Appendix A: Public Comments and Responses

The NOA for the Draft EIS was published in the Federal Register on April 19, 2024, at which time the 45-day comment period commenced and ended on June 3, 2024. The BLM held three public comment meetings: (1) May 6, 2024 at the Dyer Community Center, (2) May 7, 2024, at the Tonopah Town Hall in Tonopah, Nevada, and May 9, 2024 as a virtual meeting. A total of 15,622 comment letters from agencies, businesses, organizations, and interested parties were received on the DEIS via mail, email, or the Rhyolite Ridge ePlanning website. All comments on the DEIS that were received were read and given careful consideration. Each comment was included in a comprehensive database, analyzed for its content, and appropriate responses were prepared. In some cases, the comments provided information or suggested changes that were incorporated into this FEIS.

The table below presents all comments that were received on the DEIS. The table includes the comment letter number, commenter name, the specific comment, and the BLM's response to the comment. Comments were generally transcribed verbatim in order to retain the originality of the comments received. In responding to comments, every effort was made to address all questions, concerns, and other points presented by the commenter on the Project. The "Response" provided, in many cases, refers to information already contained in the DEIS, and provides an explanation or clarification using this information to respond to the comment. Where the comment has resulted in a change in the FEIS text, this is indicated in the response. The responses also note where statements are made that are not specific comments on the DEIS.

Comment Letter No.	Comment Number	Comment	Response
Sarah Alonso – April 17, 2024			
1	1.1	I am against the lithium mine that is proposing to destroy Tiehm's Buckwheat habitat. As a Nevada resident, we should be preserving this plant instead of developing an open pit mine.	Comment noted.
Undisclosed – April 17, 2024			
2	2.1	Why on earth do you need this lithium mine when electric car purchases are going down the drain?? Car lots are PACKED full of electric cars that people refuse to purchase. Let's keep this BLM land the way it is, just leave it alone. SO MANY wildlife and plant life will be negatively affected if this is approved. What a shame it would be. Do the right thing and say no to this lithium mine. Please.	Comment noted.
Undisclosed – April 17, 2024			
3	3.1	What a great proposal - lets get it happening	Comment noted.
Personal Information Requested to be Withheld – April 17, 2024			
4	4.1	My first choice is that this mining company should find a different location where there are no threatened or endangered species and less potential environmental and ecosystem damage; there are plenty of such locations in Nevada and neighboring states. Ecosystems are finely tuned interrelationships among plants, animals, invertebrates, microbiomes, and the geological landscape both above and below ground. Humans don't fully understand these complex relationships and have done untold ecological damage throughout history. This lithium mining plan will likely be just another in the litany of ecosystem destruction. Do we fully understand the role of the Tiehms Buckwheat plants in this place? Do we really care or want to know? Surely Nature placed them there for a reason! I applaud that the mining company wishes to minimize the damage to these plants, but I don't know if this is truly possible unless another area is chosen. I say leave them and their ecosystem alone! Find another location to mine for lithium, or move the mining area totally away from the acreage where the plants reside.	The Project proposes development of a locatable mineral resource. Relocation of the Project is not possible because the proposed activities must occur on the mining claims held by the proponent where the resource deposit is located. The North and South Overburden Storage Facility (OSF) Alternative was developed that relocates some proposed facilities outside of Tiehm's buckwheat critical habitat and further away from Tiehm's buckwheat plants and subpopulations to minimize disturbance in Tiehm's buckwheat critical habitat.
Jean Public – April 19, 2024			
5	5.1	the lithium boron mine was to use almost 8000 acres of nevada land for a boron mine. this is unacceptable. let this projeiteer buy land and mine it. private land. we dont want our national public landand nature destroyed like this for a local profiteer. this is an outlandish horrific anti environmental idea. itshoud lnot be permitted. blm is killing all nature. we must stop this viciousness at this killing nature agencyi am totally opposed tothis project i want to b ekept advised of the sneaky ways this vicious agency keeps these horrible anti nature projects alive. destroing all this land, what a horuror this is b kerbk1492)@aol.com	The Project proposes development of a locatable mineral resource. Relocation of the Project is not possible because the proposed activities must occur on the mining claims held by the proponent where the resource deposit is located. The North and South OSF Alternative was developed that relocates some proposed facilities outside of Tiehm's buckwheat critical habitat and further away from Tiehm's buckwheat plants and subpopulations to minimize disturbance in Tiehm's buckwheat critical habitat.
Karla Werning – April 22, 2024			
6	6.1	Lithium is hugely important, but not more so than protecting diverse life in Nevada. It is already difficult to survive in this harsh environment. The Tiehms buckwheat range is very small; it should ALL be off limits, completely protected.	The Proposed Action is consistent with the 1872 Mining Law, as amended, which confers a statutory right to enter upon public lands that are open to mineral entry to explore for and develop mineral deposits. The Project would implement applicant-committed environmental protection measures (ACEPMs) described in Section 2.1.13 of the Final EIS to reduce impacts to Tiehm's buckwheat, as well as Tiehm's buckwheat protection plans for the Proposed Action and North and South OSF Alternative. The Tiehm's buckwheat protection plans have been attached to the Threatened and Endangered Species Supplemental Environmental Report (SER).
Undisclosed – April 22, 2024			
7	7.1	This project should definitely proceed without further delay. The plan is reasonable and the tradeoffs are definitely acceptable.	Comment noted.
Personal Information Requested to be Withheld – April 24, 2024			
8	8.1	I support Ioneer's Rhyolite Ridge project because it will provide good paying jobs for rural Nevada and ensure the U.S. will not depend on a foreign source of lithium to make electric batteries. A robust environmental regulatory U.S. process will also ensure that the global environment will not be diminished.	Comment noted.
Eric Johnson – April 24, 2024			
9	9.1	Amphibian populations are declining worldwide, and amphibians are experiencing high extinction rates due to habitat loss, climate change, chytrid fungus, pollutants, pesticides, and invasive species. Amphibians are the most threatened class of vertebrates. Long-term amphibian monitoring should be conducted to ensure that the Rhyolite Ridge Lithium Boron Mine Project does not affect amphibians, such as the California toad and western toad. Long-term stormwater and groundwater quality monitoring should also be conducted.	Sections 3.18.1.5 and 3.18.2.5 of the EIS describe existing conditions of amphibians. Sections 4.18.1 and 4.20.18 describes impacts from the Proposed Action and alternatives to amphibians. Additional details are provided in the Wildlife Resources SER. Long-term amphibian monitoring is not included as part of the Proposed Action. Impacts to amphibians are anticipated to occur from Project dewatering operations. The Proposed Action does include

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		Amphibian Refuge supports the Rhyloite Ridge Lithium-Boron Mine Project. Lithium and boron are essential metals needed for sustainable energy technologies, such as lithium use in batteries and boron use in electric motors. The United States cannot be limited to just foreign sources for such metals. Reduction of greenhouse gas emissions through the use of sustainable energy technologies will benefit amphibians by reducing climate change impacts. Thank you for this opportunity to comment. References: Catenazzi, A. 2015. State of the World's Amphibians. Annual Review of Environment and Resources, 40: 91-119. Collins, J.P., and M.L. Crump. 2009. Extinction in Our Times: Global Amphibian Decline. New York, NY: Oxford University Press.Kolbert, E. 2014. The Sixth Extinction, an Unnatural History. New York, NY: Bloomsbury. Luedtke et al. 2023. Ongoing Declines for the World's Amphibians in the Face of Emerging Threats. Nature, Volume 622, 12 October 2023, 308-314. McCallum, M.L. 2007. Amphibian Decline or Extinction? Current Declines Dwarf Background Extinction Rate. Journal of Herpetology, Volume 41, Number 3, pp. 483-491.	mitigation and monitoring for water resources and wildlife resources related to groundwater use and drawdown in Section 4.21 of the EIS.
Jonathan Price – April 24, 2024			
10	10.1	I support mining of lithium and boron at the Rhyolite Ridge project. Ioneer Ltd. has invested in preservation of the Tiehm's buckwheat and has committed to continued funding for its preservation. If Ioneer were not allowed to go forward with mining, there would be little or no protection for the plant. One wildland fire could easily eliminate the buckwheat in the Rhyolite Ridge area. That is, Ioneer's plan for mining will protect the buckwheat.	Comment noted.
Paul Rudik – April 24, 2024			
11	11.1	I / We. Paul Rudik and family and investors, are excited about what is happening at INR in the GOOD Old USA???? (our cousins) please move forward with this important project for the future and the people of US ???? Buckwheat is in the best hands it has ever been in. Cheers Paul Rudik and Family of Investors from Australia ????	Comment noted.
Angela Villavicencio – April 25, 2024			
12	12.1	Hello, I have attached some comments for the Rhyolite Ridge Lithium-Boron Mine Project. Please let me know if you have any questions or require any additional information. Thank you, Angela Villavicencio	Comment noted.
	12.2	Dear committee members, I am writing to you as a concerned stakeholder regarding the Rhyolite Ridge Lithium-Boron Mine Project in Esmeralda County, Nevada. I'm currently a student at Arizona State University and was asked to find a project that interested us. As someone who values the conservation of our environment and the sustainable use of natural resources, I believe it is crucial to carefully consider the potential impacts of this project on both the local ecosystem and the broader environment. I recognize the importance of lithium and boron as key components in various industries, however, it is essential to ensure that their extraction does not come at the expense of our environment's health and integrity. There were a few concerns that came to mind when reading the draft EIS. In section 3.18.1.1 regarding aquatic species, I think it's imperative that further analysis of the area is conducted. The section states that there is a possibility that these aquatic species occur here because there's potential habitat. I really urge project managers to do a thorough research into this before proceeding	Occurrences of aquatic species and potential habitat in the analysis area and vicinity are discussed in Sections 3.18.1.1 and 3.18.1.2. Additional details are provided in the Wildlife Resources SER. Whether aquatic species occur or not, ACEPMs would be implemented as discussed in Section 2.1.13 of the Final EIS that would limit impacts to potential habitat. Mitigation is discussed in Section 4.21 of the Final EIS and includes monitoring of surface water resources and mitigation of impacts.
	12.3	I also believe that there should be more concern for the avian species of this area, especially the 36 that are protected under the Migratory Bird Treaty Act. If there is a potential that water usage will affect these migratory birds then this project needs to reconsider how to mitigate this problem. This also brings up concern for the 22 non-special status mammal species and 15 reptile species. In conclusion, I urge the project managers to monitor and address environmental impacts throughout the project's lifecycle continually. I encourage the project managers to explore opportunities for implementing innovative technologies that can minimize the project's ecological footprint and enhance its overall sustainability. Thank you for taking the time to read my comments and considering my input on this important matter. I look forward to seeing the results of the development of the Rhyolite Ridge project. I would Sincerely, Angela Villavicencio	Impacts to wildlife are discussed in Sections 4.18 and 4.20.18 of the Final EIS and would be negligible to moderate depending on impacts to water resources. Mitigation is discussed in Section 4.21 of the Final EIS and includes monitoring of surface water and groundwater resources and mitigation of impacts. A Bird and Bat Conservation Strategy and an Eagle Conservation Plan (ECP) have been prepared for the Project to reduce impacts to golden eagles, migratory birds, bats, and other avian species that may potentially be impacted by the Project. Additional detail on impacts to wildlife can be found in the Wildlife Resources SER.
David Hagh – April 25, 2024			
13	13.1	Hello Mr. Distel, I am a senior student at ASU Polytechnic. As part of my Ecosystem Management and Planning Class, the teacher is making us participate in the NEPA process by commenting on an EIS. I have chosen your Rhyolite Ridge Lithium-Boron Mine Project to comment on, and have attached my stakeholder letter to this email. Looking forward to your thoughts on it. Regards, David Hagh	Comment noted.
13	13.2	**Rhyolite Ridge Lithium-Boron Mine Project - Stakeholder Comment** 4/25/24	The EIS has been prepared consistent with the National Environmental Policy Act (NEPA) and analyzes and discloses the environmental impacts of the Project. The EIS discusses impacts to Native American traditional values in

Comment Letter No.	Comment Number	Comment	Response
		Dear Scott Distel, I am writing to you to state my opinion on the recent proposal by your agency to build a lithium-boron mine in Rhyolite Ridge. Judging from what I've read in your EIS, the mine will be a great help to the economy of the surrounding area and for Nevadans for sure, however there are numerous other problems that could arise from this endeavor. This includes things like environmental damage and hidden costs to the populace. While it is true that the construction of the Lithium-Boron mine has the potential to both create jobs and generate plenty of profit that would greatly help an area of Nevada in the long run, this would also lead to the destruction of a pristine environment where numerous species of Nevada wildlife live. The process of digging the mine would create a massive leveled area miles across, leaving the land uninhabitable for the animals that reside in that area such as ocelots and eared quetzals. This habitat destruction could also damage sacred Native American sites nearby, which would lead to a major issue with Native relations in Nevada in the future. Furthermore, it's highly possible that the construction of this mine is not even legal under NEPA. There are multiple stakeholders in this project besides myself, such as conservationists, native residents, rock climbers, nature enthusiasts, and small businesses. NEPA requires that any project must take into consideration the environmental impact of any major construction on both the local fauna and the human residents. If any danger is discovered to either, the mine In short, I believe that although the construction of the lithium-boron mine in Rhyolite Ridge may bring great economical profits to an area in Nevada suffering from depression, I believe that the environmental damage it would cause, the sacredness of the site to Native Americans, and the possible costs to the local residents convinces me to lobby against the project. Unless my fears about the mine construction are assuaged, I believe this lithium-boron mine project should be stopped, or at the very least rethought very heavily. construction may have to be delayed indefinitely. In short, I believe that although the construction of the lithium-boron mine in Rhyolite Ridge may bring great economical profits to an area in Nevada suffering from depression, I believe that the environmental damage it would cause, the sacredness of the site to Native Americans, and the possible costs to the local residents convinces me to lobby against the project. Unless my fears about the mine construction are assuaged, I believe this lithium-boron mine project should be stopped, or at the very least rethought very heavily. Regards, David Hagh	Sections 4.8 and 4.20.8, impacts to local populations in Sections 4.10 and 4.20.10, and impacts to wildlife in Sections 4.18 and 4.20.18. Consultation with Native American tribes has been conducted as described in Section 5.2 of the EIS and is ongoing.
Sarah Raney – April 25, 2024			
14	14.1	Good evening! I am writing with regard to the Rhyolite Ridge Lithium-Boron Mine Project. As a stakeholder, and as a student studying biology and ecosystem management, I am deeply invested in potential impacts to ecosystems and their wildlife populations, as well as potential environmental injustices. Due to this, I am concerned about the risk the mine could pose to endangered species in the area. Although the EIS states that the project was designed to avoid impacts to Tiehm's buckwheat in the area, it then says that the plant's environment could be affected in critical ways; I am concerned that these impacts would pose a significant threat to this endangered species, particularly when it comes to this area as the plant is native to Nevada.	An alternative to the Proposed Action, the North and South OSF Alternative, was developed that relocates proposed facilities to minimize disturbance in Tiehm's buckwheat critical habitat to the extent possible. Impacts to Tiehm's buckwheat are discussed in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER.
14	14.2	I am also concerned about the potential that this project would add to a long history of environmental injustice and environmental racism, as the counties examined were all low-income and several had Native populations residing in them. Thank you for your time and consideration!	Environmental Justice communities, including minority, low-income, and American Indian or Alaska Native are described in Section 3.3 and impacts are described in Sections 4.3 and 4.20.3. Section 5.2 of the EIS describes the government-to-government consultation details and timeline that has occurred with consulting Tribes.
Dylan Rodvik – April 29, 2024			
15	15.1	Hello, Please see the attached document for my comment on the Rhyolite Ridge Lithium-Boron Project DEIS. Thank you. [Attachment: Rodvik_Public Comment_Rhyolite Ridge.pdf]	Comment noted.
58	58.1	Please see the provided PDF	Comment noted.
15 and 58	15.2 and 58.2	Dear Scott Distel and Randy Martin, I am writing to express my concerns and provide input regarding the Draft EIS (DEIS) for the proposed Rhyolite Ridge Lithium-Boron Mine, and its potential impact on the natural systems of Nevada, particularly with regards to Tiehm's buckwheat and Monarch butterflies. As considerations are made for the Final EIS (FEIS) of this project, I wanted to point out the potentially unrecognized symbiotic associations of these two species on an endemic scale, and the importance of considering the risk of a snowball decline for both species in the FEIS. As noted in the DEIS, Tiehm's buckwheat (Eriogonum tiehmii) is an Endangered Speciest Act (ESA) listed endemic plant species found only in the Rhyolite Ridge area of Nevada. The DEIS notes that Tiehm's buckwheat plays a vital role in its ecosystem, providing food and habitat for a diverse range of pollinators, including bees and butterflies. The DEIS also notes that "Pollinator diversity was found to be greater in Tiehm's buckwheat sites than surrounding areas" and that "pollinator community in the Tiehm's buckwheat population are composed of species that are more rare" (3.12.3). Among these pollinators are Monarch butterflies (Danaus plexippus), which are an ESA candidate species addressed in the DEIS, and are known to have strong associations with other native species of buckwheat (SOURCE). Given that "Tiehm's buckwheat is the dominant insect pollinated plant species in its habitat where it occurs" (3.12.3), I believe that the potential for higher than expected declines in both species may result from this project if the interdependence of these species is not fully understood and mitigated for. Alternative B of the DEIS is claimed to be the least impactful to these species, however it poses to remove 20% of Tiehm's buckwheat habitat, and has been identified as a disturbance to Monarch butterfly migrations between Nevada and California. While the DEIS does provide a comprehensive overview of the impacts to Monarch butterflies as a result of Milkweed loss, it fails to address	Impacts to Tiehm's buckwheat and monarch butterfly, including impacts to pollinators and host plants, are discussed in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER. Monarch butterfly was not observed during pollinator studies, nor during baseline field surveys. Although the monarch butterfly may be a potential pollinator of Tiehm's buckwheat, the current available scientific data does not show monarch butterfly is uniquely associated with Tiehm's buckwheat as opposed to any other butterfly species.

Comment Letter No.	Comment Number	Comment	Response
		how the loss of Tiehms buckwheat will impact these migrations as well as local Monarch butterfly populations. The disruption of these two species could have cascading effects on other plant and animal species in the area. I urge the BLM, USWFS, and Ioneer Mining to investigate and consider the potential impacts of the Rhyolite Ridge Lithium-Boron Mine on associations between Tiehm's buckwheat and Monarch butterflies while creating the FEIS. It is essential to prioritize the preservation of these species and their habitats for the well-being of future generations and the integrity of our ecosystem. Thank you for taking the time to address these concerns and for your commitment to environmental stewardship. Sincerely, Dylan Rodvik [Attachment 77368 Federal Register/Vol. 87, No. 241/Friday, December 16, 2022/Rules and Regulations]	
Personal Information Requested to be Withheld – May 6, 2024			
16	16.1	I am impressed with the steps Ioneer is taking to mitigate environmental concerns while developing our important resource – lithium and boron. Metals necessary to meet climate goals. For a climate and electric goals to be taken seriously we need USA and local sources of these metals to be developed.	Comment noted.
Theresa and Karl Moller – May 6, 2024			
17	17.1	We want to thank Ioneer for involving the community in this process. I hope that you are going to route the traffic through Cage Springs and not bother the Hot Box area.	Section 4.9 of the EIS describes access to the Hot Box area. Cave Springs Road through the Operational Project Area (OPA) would remain open to the public, and use of the access road from the Proposed Action would not close visitor access and associated recreation at the Fish Lake Valley Springs (Hot Box).
Bill Kirby – May 6, 2024			
18	18.1	Please reconsider an alternate route to the mine site that reduces traffic on Hwy 264, which is used heavily by agricultural and school traffic. A secondary route from Hot Ditch Road to Hwy 773, then on to Hwy 6, would accomplish this and save the mining company a lot of fuel.	This alternate route was considered but eliminated from detailed analysis. A description of the alternative and rationale for eliminating the alternative is provided in the EIS in Appendix C.
Harold Campbell – May 5, 2024			
19	19.1	Re: The DEIS for loneer's Rhyolite Ridge Project I am writing in support of permitting loneer's Rhyolite Ridge Lithium-Boron Project in Esmeralda County, NV. I have lived in Reno since 1998 and strongly believe that Nevada's mineral resources should be developed to benefit both the state and the country. I recently became aware of the Rhyolite Ridge project through a report on Channel 2 News in Reno and felt it was important to express my support for the project. According to their website, loneer will be operating in an environmentally responsible way with little to no lasting impact on the land. In fact, loneer will be leaving much of the lithium-boron ore untouched in order to protect the endangered Tiehm's buckwheat plant. Because of the unique nature of the ore, lithium and boron will be recovered in large vats without the need for leach pads, tailings dams or tailings ponds resulting in no possibility of any ground water contamination. Sulfuric acid, necessary to process the ore, will be produced on site. A by-product of this process is heat, which will be converted to electricity providing more than enough power to operate the entire facility for the life of the mine. Not only will the Rhyolite Ridge mine be energy independent, but the surplus electricity can also potentially be sold to the local power grid. Development of Rhyolite Ridge, and other Nevada mining operations, will help to make the US less dependent on unreliable and/or hostile foreign countries and provide a reliable supply chain for materials needed to boost domestic production of batteries for a cleaner, more energy efficient future. The economic impact on Nevada and Esmeralda County from sales taxes, property taxes and Net Proceeds of Mines revenue will range from approximately $600,000 in the first year of construction to between $5.2 to $11 .6 million during the estimated 26 years of lithium-boron production. The operation will create 500 jobs during the construction phase and 350 jobs over the more than 26-year life of the mine. The median annual income, plus benefits, for loneer employees will be about $141,00 In summary, this project is a rare win-win opportunity to capitalize on Nevada's mineral wealth that will benefit the county, state and our nation with little to no lasting impact on the environment. Thank you for your time reviewing my comments. Kind Regards, Harold Campbell	Comment noted.

Comment Letter No.	Comment Number	Comment	Response
Louis and Joyce Rossi – May 9, 2024			
20	20.1	Dear Mr. Distel, We are writing in support of permitting loneer's Rhyolite Ridge Lithium-Boron Project in Esmeralda Co. NV. We are long-time Nevada residents, having lived in Reno since the ear1y 1960s. We recently became aware of the Rhyolite Ridge Lithium-Boron project through a three-part report on Channel 2 News in Reno. Since then, we have downloaded and read through loneer's Draft Environmental Impact Report. We support development of the mine for the following reasons: • We are impressed by loneer's commitment to mine in an environmentally responsible way with little impact on the land, ground water and the endangered Tiehm's buckwheat plant. • The unique characteristics of the Rhyolite Ridge deposit will allow for extraction of lithium using much less water when compared with other lithium deposits and most other metal mines. • Recovery of lithium from the mineralized rock will be by the vat leach process meaning there will be no leach pads, tailings ponds or tailings dams and therefore no chance of ground water contamination. • A weak sulfuric acid solution, needed to dissolve lithium from the ore, will be produced on site. The heat produced as a by-product of sulfuric acid production will supply more than enough energy to power the entire operation for the life of the mine, making it completely independent of Nevada's power grid. • Currently, the US depends on importing lithium, mainly from Argentina, Chile, China and Russia making our country dependent on imports from unreliable nations and creating a supply chain which can be interrupted at any time. Production of the lithium-boron minerals from the Rhyolite Ridge deposit will provide a reliable supply chain for materials needed to boost domestic production of batteries for a cleaner, more energy efficient future. • The European Union, Canada, Australia and China have all listed lithium as critical to their own nation's development of future energy needs resulting in a reduction of their exports of lithium and an increase in worldwide competition for importing this critical mineral. • Once the project is in production, it will increase domestic lithium production by 400% and provide enough lithium to power 370,000 vehicles per year for over 20 years. • The financial impact on Nevada and Esmeralda County will be enormous. The project will employ up to 500 people during the construction phase, with 350 people employed over the life of production. The median annual income of loneer's employees, including a generous benefits package, will be approximately $141,000. • Financial benefits to Esmeralda County from sales taxes, property taxes and Net Proceeds of Mines revenue will range from approximately $600,000 in the first year of construction to between $5.2 to $11.6 million during the estimated 26 years of lithium-boron production. In summary, this project is a rare win-win opportunity to capitalize on Nevada's mineral wealth that will benefit the county, state and our nation with little to no lasting impact on the environment. Thank you for your time reviewing our comments. Sincerely, Louis and Joyce Rossi	The Project's economic effects are discussed in Sections 4.10 and 4.20.10 of the EIS and in the Social and Economic Values SER.
Ken Ellzey – April 28, 2024			
21	21.1	As a Nevada resident, I support Ioneer's Rhyolite Ridge Project. I believe the project will bring economic growth and foster the energy transition, while protecting Nevada's environment.	The Project's economic effects are discussed in Sections 4.10 and 4.20.10 of the EIS and in the Social and Economic Values SER.
Economic Development Authority – April 29, 2024			
22	22.1	Please add our letter of public comment to the review of the Draft EIS for the Ioneer project. Best Regards Paul Miller Executive Director Southwest Central Regional Economic Development Authority (SWCREDA)	Comment noted.
22	22.2	May 1, 2024 Ioneer Public Comment for Draft EIS and Community Engagement The Southwest Central Regional Development Authority (SWCREDA) is pleased to offer this letter of support for Public Comment for the Draft EIS and Community Engagement of Ioneer's Rhyolite Ridge Lithium/Boron Development in Esmeralda County. The Ioneer developers are long-time members of the Dyer, Silver Peak, Goldfield, and Tonopah communities, Ioneer and their local team have proven to be faithful environmental stewards and respected community members. They have cultivated and earned a strong, positive reputation as a mine development that can be trusted with both the county and business leaders within the community.	Comment noted.

Comment Letter No.	Comment Number	Comment	Response
		I have reviewed the Operational Environmental Protection Measures disclosed in the Mine Plan of Operations, which is also part of the Draft EIS. Ioneer's commitment to Tiehm's Buckwheat flower, Air Quality, Cultural Resources, Water Resources, Materials and Waste Management and so many other very important local resources including wildlife and avian species are all covered and addressed to provide the best practices to protect and provide the safety measures above and beyond the requirements. Rhyolite Ridge will provide important economic benefits for the local region, the state of Nevada, and the United States. The Rhyolite Ridge Project will create family-supporting jobs in rural Nevada, employing approximately 350 people while the mine operates, and 500 people during the construction phase. The expected $54 million of labor income during construction and $38 million of annual labor income during operations will be transformational. Once in operation, Rhyolite Ridge is expected to generate between $13 million and $31 million in annual fiscal tax revenue for state and local governments. The impact will immediately make a positive economic impact for all of Esmeralda and Northern Nye County and is in complete alignment with the goals of our office, this project directly supports significant and long-lasting positive economic development and community investments for our region, including the following: • Creation of new, skilled jobs for the region's workforce and support regional economic development opportunities. • Advancement of diversity, equity, inclusion, and access within the project and future workforce, amongst suppliers/vendors, and within the region. • Facilitation and support of community-driven betterment projects. Investing In the Community Ioneer has remained committed to engaging the local community since the commencement of planning for the Rhyolite Ridge Project began six years ago in Fish Lake Valley, Ioneer has sought, at every opportunity, to address any environmental and socio-economic challenges. On behalf of SWCREDA, I would like to express our strong and full support for this project. I am very excited about the opportunity to expand our local economic development opportunities and support the advancement of creating a vibrant economy. Sincerely, Paul Miller Executive Director, SWCREDA Southwest Central Regional Economic Development Authority Serving Nye and Esmeralda Counties Office - 775-727-0716 Cell – 775-482-4533 swcreda@gmail.com	
Genevieve Kennerly, Andrea Kennerly – April 29, 2024			
23	23.1	I strongly oppose this project being carried out. It will greatly damage the natural environment, specially impacting the plant Eriogonum tiehmii. E. tiehmii is recognized as endangered and the execution of this project would likely lead to its permanent extinction. The theoretical rewards of this project going forward are minimal and it is not in the interests of American citizens to allow entire species to be eradicated. I personally am horrified that the BLM would consider allowing a company to drive any plant or animal to extinction, when our natural world is one of the greatest American treasures. It would be an eternal shame to allow Ioneer to execute the proposed Rhyolite Ridge project and I hope that BLM can recognize that. Again, I strongly oppose the Ioneer Rhyolite Ridge project. [Attachment: 2022-27225.pdf]	The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat in Sections 4.12 and 4.20.12. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the Endangered Species Act (ESA), the BLM has initiated formal consultation with the U.S. Fish and Wildlife Service (USFWS) through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.
Parker Lloyd – April 29, 2024			
24	24.1	Society depends on balance of social, economic, and environmental demands. Each depends on the other, and ultimately this is a matter of the balance being destroy in favor economic gain. Lithium can be mined elsewhere, but Tiehm's buckwheat can only grow in one spot in the entire world. Thousands of people agree that is a higher priority.	The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. The Project proposes development of a locatable mineral resource. Relocation of the Project is not possible because the proposed activities must occur on the mining claims held by the proponent where the resource deposit is located. The North and South OSF Alternative was developed that relocates some proposed facilities outside of Tiehm's buckwheat critical habitat and further away from Tiehm's buckwheat plants and subpopulations to minimize disturbance in Tiehm's buckwheat critical habitat.
Jack Desai – May 1, 2024			
25	25.1	The Rhyolite Ridge Lithium-Boron Project will help Ioneer to produce critical energy materials. It would be a great asset for the local economy and surrounding areas. It woultrantud bring in more people and workers to the area which in turn will bring in more revenue for the surrounding communities. Your full cooperation in advancing this project will be highly appreciated by the entire Hawthorne community.	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.

Comment Letter No.	Comment Number	Comment				Response
Joe Barnes – May 1, 2024						
26	26.1	Section	Page Number	Section	Please see the comment matrix files I am attaching for the DEIS and Wildlife SER. My comments represent input from the U.S. Fish and Wildlife Service's Migratory Bird Program, and relate primarily to potential golden eagle impacts. [Attachments: 20240501_rr_EIS_comment_form_FWS_jb.docx; 20240501_rr_WildlifeSER_comment_form_FWS_jb.docx]	Comment noted.
	26.2	3.1.3.2	3-13	Avian Species; Golden Eagle paragraph 1	FWS recommends adding loss of territory as a potential impact from disturbance. I recommend adding language to the third sentence in this paragraph: "Breeding pairs of golden eagles with territories (nests) within these buffers may be subject to disturbance resulting in a loss of annual productivity or territory loss."	Revision made to Section 3.2.2.2 in the Wildlife Resources SER and in Section 4.18.1.2 in the Final EIS.
	26.3	3.1.3.2	3-13	Avian Species; Golden Eagle; paragraphs 2-4	It is possible that site-specific conditions (e.g., topographic shielding) may contribute to FWS agreeing to modify the appropriate disturbance buffers for eagles. However, considerations to that extent have not been shown to apply for golden eagle territories 9 and 10. In addition to line-of-sight considerations, the type of disturbance, presence of suitable foraging habitat, likely home range information, loss of suitable habitat, and other factors are considered.	This statement is a direct reference from Section 4.2 Activity Buffer of the Golden Eagle Protection Best Practices, Nevada Mineral Exploration and Mining Industry (August 2018) document. Therefore, no edit made.
	26.4	3.1.3.2	3-14	Fig. 3-2	Please explain why nest occupancy (in-use) information is presented from 2021 in this figure dated 2024-02-21. I recommend all golden eagle nests be shown without inferring in-use status since that condition changes annually. As the FWS has indicated during previous reviews, survey efforts prior to 2024 have not been conducted in a way that would provide accurate information relating to nest use status or territory occupancy.	Figure revised to show previously identified golden eagle nests by quarter section per Ioneer's Draft Eagle Conservation Plan (Ioneer 2023b). Nest use from 2021 has been removed.
	26.5	3.1.3.2	3-15	Avian Species; Golden Eagle; first paragraph of the page	Please update the notation of potential impacts from blasting. In addition to disruption of nesting success and productivity, and foraging, disturbance may also result in loss of breeding territories.	Revision made to Section 3.2.2.2 of the Wildlife Resources SER and Section 4.18.1.2 of the Final EIS.
	26.6	3.1.3.2	3-15	Avian Species; Golden Eagle; second paragraph of the page	While an ECP is under development, there is no finished version that meets FWS's expectations at this time, so it is not possible to determine how adherence to an ECP will reduce impacts to golden eagles.	The first sentence has been revised to remove the first statement of reducing impacts to golden eagles. Ioneer has voluntarily prepared the ECP and the ACEPMs as committed to by Ioneer in the ECP were included in the impacts analysis (Ioneer 2023). The September 2023 version was made available during drafting of the EIS. The EIS discloses that Ioneer is working to refine the ECP with the USFWS.
	26.7	3.1.3.2	3-15	Avian Species; Golden Eagle; third paragraph of the page	While the amount of total surface disturbance from the project (Operational Project Area = 6,369 acres) may be small in relation to the entire 10-mile survey area surrounding the project, it is not an insignificant amount of disturbance as it relates to adjacent golden eagle territories. Territory-holding adult golden eagles in Nevada are year-round residents with very high site fidelity and strong territory defense behaviors, so it is generally not possible in a relatively dense project-area population for individuals to simply forage elsewhere. In addition to other forms of direct disturbance, localized reduction of home range size, foraging habitat, prey base, etc. all contribute to potential impacts to individual golden eagle territories which can impact reproduction or cause territory loss.	Surface disturbance associated with the Proposed Action and alternatives would occur within the OPA as described in Section 2.1 and 2.2 of the EIS. Sentence revised to "Any reduction in prey base could impact golden eagles, including reproduction and territory use" in Section 4.18.1.2 of the EIS.
	26.8	4.18.1.2	4-40	Golden Eagle: first paragraph	While I understand an Eagle Conservation Plan is in development, please fully consider the range of disturbance impacts to golden eagles for this project. For golden eagle territories 9 and 10, topographic position (and relative shielding from project development) is a consideration when FWS considers potential disturbance impacts but disturbance in the form of habitat loss, reduced home range size, loss of foraging areas, and reduced prey base can all impact golden eagles and result in breeding and territory loss. There is no evidence that topographic shielding on the order seen for this project will substantially reduce direct disturbance, or disturbance in the form of habitat loss that may result in breeding impacts or territory loss. FWS regulations managing the Bald and Golden Eagle Protection Act (BGEPA) are based on a Preservation Standard "consistent with the goals of maintaining stable or increasing breeding populations in all eagle management units, and the persistence of local populations throughout the geographic range of each species (USFWS 2016)." Loss of golden eagle breeding territories and reduced breeding success are both forms of take under the BGEPA.	Impacts to golden eagles from habitat loss, reduction of home range, loss of foraging areas, and reduced prey base are described in Section 4.18.1.2. Additionally, this section has been updated per the previous comment.
	26.9	4.18.1.2	4-40	Golden Eagle: third paragraph	While an ECP is under development, there is no finished version that meets FWS's expectations at this time, so it is not possible to determine how adherence to an ECP will reduce impacts to golden eagles.	The first sentence has been revised to remove the first statement of reducing impacts to golden eagles. Ioneer has voluntarily prepared the ECP and the ACEPMs as committed to by Ioneer in the ECP were included in the impacts analysis (Ioneer 2023). The September 2023 version was made available during drafting of the EIS. The EIS discloses the Ioneer is working to refine the ECP with the USFWS.

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	26.10	4.18.1.2	4-41	Wildlife Resources: Golden Eagle: fourth paragraph	While the amount of total surface disturbance from the project (Operational Project Area = 6,369 acres) may be small in relation to the entire 10-mile survey area surrounding the project, it is not an insignificant amount of disturbance as it relates to adjacent golden eagle territories. Territory-holding adult golden eagles in Nevada are year-round residents with very high site fidelity and strong territory defense behaviors, so it is generally not possible in a relatively dense project-area population for individuals to simply forage elsewhere. In addition to other forms of direct disturbance, localized reduction of home range size, foraging habitat, prey base, etc. all contribute to potential impacts to individual golden eagle territories which can impact reproduction or cause territory loss. As defined in this DEIS, a "moderate, long-term to permanent, and localized" impact to golden eagles indicates a likelihood of measurable impacts to the golden eagle population which is contrary to FWS's management preservation standard with regards to maintaining a stable or increasing population under the BGEPA. Please clarify that the area of surface disturbance includes the full Operational Project Area (6,369 acres).	Surface disturbance associated with the Proposed Action and alternatives would occur within the OPA as described in Sections 2.1 and 2.2 of the EIS. The EIS disclosed impacts from proposed surface disturbance, which is 2,306 acres for the Proposed Action and 2,271 acres for the North and South OSF Alternative. Ioneer is not proposing surface disturbance of the entire Plan of Operations (Plan) boundary.
	26.11	4.20.18.2	4-74	Cumulative Effects Analysis: Golden Eagles – Proposed Action paragraph	Please clarify why the increase in disturbance in the CESA is expected to be 2,306 acres as opposed to the Operational Project Area (OPA) of 6,369 acres. Given the exploration and other activities that are planned to occur within the OPA I recommend this be used to calculate the increase in habitat disturbance here, and throughout the document as necessary. When considering the duration of impacts to golden eagles, disturbance would be expected throughout the life of the project. Please recharacterize disturbance as long-term instead of "short-term" as noted in the effects duration.	Surface disturbance associated with the Proposed Action and alternatives would occur within the OPA as described in Sections 2.1 and 2.2 of the EIS. The EIS disclosed impacts from proposed surface disturbance, which is 2,306 acres for the Proposed Action and 2,271 acres for the North and South OSF Alternative. Exploration acres have been included in these totals. Ioneer is not proposing surface disturbance of the entire Plan boundary. The duration of cumulative effects to golden eagles was reviewed and revised to long-term.
	26.12	4.20.18.2	4-74	Cumulative Effects Analysis: Golden Eagles – Proposed Action paragraph	Please clarify how the OPA might change in the North and South OSF Alternative compared to the Proposed Alternative. In terms of disturbance to golden eagles, I believe the more appropriate area to be considered is the OPA and not the 2,271 acres of new surface disturbance as it is characterized in the DEIS for this alternative. As noted for the Proposed Action, please revise impacts from this alternative to be "moderate, long-term, and localized."	Surface disturbance associated with the Proposed Action and alternatives would occur within the OPA as described in Sections 2.1 and 2.2 of the EIS. The EIS disclosed impacts from proposed surface disturbance, which is 2,306 acres for the Proposed Action and 2,271 acres for the North and South OSF Alternative. Exploration acres have been included in these totals. Ioneer is not proposing surface disturbance of the entire Plan boundary and the Plan boundary is the same under the Proposed Action and North and South OSF Alternative. The intensity of cumulative effects to golden eagles was reviewed and revised to moderate.
Undisclosed – May 2, 2024						
27	27.1	I am concerned that this proposed mine may harm sage grouse and their habitats. Sage grouse are declining and need greater protection. Please avoid sage grouse habitat or, if this is not possible, then require effective compensatory habitat mitigation. I think removing livestock grazing from degraded BLM lands would be good mitigation. Thank you.				The EIS describes sage-grouse use of the area and sage-grouse habitat in Section 3.12.1. Impacts to sage-grouse are addressed in Sections 4.12 and 4.20.12.1. Additional details are provided in the Threatened and Endangered Species SER.
Personal Information Requested to be Withheld – May 3, 2024						
28	28.1	Please do not allow the Ioneer mine to be built. This project has been rushed through over the objections of the American people and the scientific community. We can't solve one ecological crisis by making another; how long are we going to kick the can down the road? Tiehm's buckwheat might survive climate change, but it can't do that if it's destroyed by the mine. I am asking you from the bottom of my heart to act with the consent of the governed, not as an appendage of an Australian mining company.				The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.
Ian Goldsmith – May 4, 2024						
29	29.1	The Rhyolite Ridge Lithium-Boron project will provide a domestic source which provide enough lithium to power 370,000 vehicles per year for over 20 years. This domestic supply of lithium is critical to achieving goals envisioned in the Infrastructure Investment and Jobs Act. Ioneer has developed an extraction and processing plan which will be done in an environmentally responsible manner.				Comment noted.
Ruth Carraher – May 6, 2024						
30	30.1	Please see attached files - word document and pdf. [Attachements: RR_RACcomments_DEIS_05-06-2024.docx; RR_RACcomments_DEIS_05-06-2024.pdf]				Comment noted.

Comment Letter No.	Comment Number	Comment	Response
30	30.2	Attention: Rhyolite Ridge Lithium-Boron Mine Project - DOI-BLM-NV-B020-2021-0020-EIS Dear Mr. Distel: I am submitting these comments in support of Ioneer developing the Rhyolite Ridge Lithium-Boron project. The company, Ioneer, is proposing the construction of a quarry and the facilities to process the Li-B mineralized rock. Ioneer has conducted all required baseline surveys/reviews and has developed and submitted a Plan of Operations to the Bureau of Land Management (BLM). The review by the BLM has assessed 57 additional alternatives prior to the proposed action published in the DEIS. This proposed action is based on Ioneer working closely with the BLM and USFWS, with county and state agencies, with local communities, and with 7 indigenous tribes in Nevada. The USGS, in researching those minerals deemed to be critical, used the criteria of non-fuel mineral, element or substance which has a high risk of supply chain disruption and serves essential function in energy technologies. Because of the use of lithium for battery storage the USGS includes lithium on the list of critical minerals. The Rhyolite Ridge Lithium-Boron project in Esmeralda County Nevada will provide minerals critical to meeting the goals envisioned in the Infrastructure Investment and Jobs Act. Rhyolite Ridge will provide enough lithium to power 370,000 vehicles per year for over 20 years. Once the project is in production it will increase domestic lithium production by 400%. Additionally, the boron produced from this project will meet goals envisioned by the CHIPS and Science Act. Boron is being used and is part of the development of future, more efficient computer chips and semiconductors. Boron is also be used in smart phone and computer touch screens, in medicinal grade glass vials, in abrasives, cleaning products, insecticides, and insulation. Production of the lithium-boron minerals from Rhyolite Ridge deposit will provide a reliable supply chain for materials needed to boost domestic production of batteries for our new energy (clean/green/electrification future) economy. The USA depends on importing lithium from Argentina, Chile, China, Russia and small amounts from several other nations. This makes our nation dependent upon a supply chain which can be interrupted at any time, and depends on imports from unreliable nations. Also, the European Union, Canada, Australia and China have all listed lithium as critical to their own nation's development of future energy needs, so there will be reduction of their exports of lithium and an increase in worldwide competition for importing this critical mineral. Ioneer coordinated closely with the BLM and USFWS on protection for the Tiehm's Buckwheat. An "Applicant Proposed Conservation Measures for Tiehm's Buckwheat and its Critical Habitat" was developed for this project incorporating protections for Tiehm's Buckwheat present in the area. Project features were redesigned and relocated to minimize impact on the buckwheat. In regards to the Tiehm's Buckwheat I personally have spent over 250 days on the ground and, though not a botanist, I did note that Tiehm's Buckwheat preferentially grows in areas disturbed by boron mining from the early 1900s and the disturbed areas from 1980s boron exploration. This was also noted in the DEIS 4.20.12.3 "Tiehm's buckwheat has colonized several soil sample trenches that are estimated to be between 40 and 80 years old in subpopulations 1, 2, 3, 4, and 6". Characteristics of the lithium-boron mineralized rock allow for extraction of the lithium using much less water when compared with other lithium ore bodies. The production plan will not utilize leach pads, but will be conducted with vat leaching, and no tailings dams will be needed. The leachant needed to extract the lithium from the rock will be manufactured on-site, with the heat produced from this process will be to power used a steam turbine generator. Enough power will be generated to operate the facility independent of the local power grid in Esmeralda County. Federal, state, and county agencies, along with 9 indigenous tribes and the local communities of Dyer, Silver Peak and Goldfield were included in the review of the plans to identify/assess potential impacts of the development. The project will employ up to 500 people during the construction phase, with 350 people employed over the life of production. During production employees will have a median annual income of $141,000. Esmeralda County will see financial benefits with revenues from various taxes, Net Proceeds of Mines, ranging from approximately $600,000 in the first year of construction to between $5.2 to $11.6 million during production. Esmeralda County revenues have averaged $5,191,000 from 2020 through 2022, this will increase county revenues during production by 100% to 200% (accessesmeralda.com/county_office/auditor_recorder/financial_reports.php) per year. Off-Take Agreements are in place with car manufacturers and battery manufacturers. Several of these agreements are with Nevada based companies which will use the lithium product from Rhyolite Ridge for manufacturing of batteries in the state of Nevada. In the interest of full disclosure I am acknowledging my interest in the Rhyolite Ridge Project: I, along with 2 other geologists, staked the claims on the project and vended them to Paradigm Minerals USA LLC in 2016. Sincerely, Ruth A. Carraher	The Project's economic effects are discussed in Sections 4.10 and 4.20.10 of the EIS. Tiehm's buckwheat habitat preferences are described in the EIS in Section 3.12.3 and in the Threatened and Endangered Species SER.
Undisclosed – May 9, 2024			
31	31.1	This mine would desecrate Newe homelands. It would cause pollution and threaten endangered plants. Say no to this mine.	In-depth analyses of the direct, indirect, and cumulative impacts associated with the Proposed Action and alternatives were conducted in compliance with Federal Lands Policy and Management Act (FLPMA), National Historic Preservation Act (NHPA), and NEPA. Section 4.8 of the EIS contains the analysis as related to Native American Traditional Values. Government-to-government consultation and coordination for the Project was initiated in 2020

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			and is described in Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process. During consultation, the Project was redesigned to avoid impacts to culturally significant areas. Tribal consultation is ongoing and will continue through the life of the Project. If avoidance of areas of tribal concern is not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected Tribes to reduce or eliminate impacts.
Emma Rosen – May 7, 2024			
32	32.1	I am strongly against the proposed lithium mine on Rhyolite Ridge. I was born and raised in Nevada and natural spaces like these are what makes our state special and unique, not to mention the impact on water quality and the endangered buckwheat. The proposed plan would almost certainly put at risk the very existence of the buckwheat which is endemic to Nevada. Even the alternative would be majorly disruptive to the little habitat that the buckwheat inhabits. I have been to Rhyolite Ridge surveying Pinyon Jays and these special charismatic, and threatened birds also call this mountain range home. I would like to see this acknowledged as a potential impact as well. Besides the impact on these specific species the mine would destroy the local ecosystem and the natural beauty of the mountain. Although the mine would only exist for 23 years the impacts would devastate the mountain, water, and endangered and threatened species. For these reasons I am strongly against the proposed mine and I believe the best option is the NO ACTION ALTERANTIVE. NO to environmentally costly mining. YES to life, to ecosystems, and to beauty. Not to mention that the proposed project would reduce access to PUBLIC land, and its indigenous stewards are against this project. I stand in solidarity with the true and original inhabitants of the land.	The EIS evaluates effects to Tiehm's buckwheat in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. Impacts to pinyon jay are analyzed in the EIS in Sections 4.18 and 4.20.18 and detailed further in the Wildlife Resources SER. For safety of the public, the active mine area would be fenced with controlled access. Areas within the Plan boundary but outside the active mine area would remain available for public use. The public would be able to continue to travel along Cave Springs Road through the OPA. An escort would be provided as described in Sections 4.6.1 and 4.13.1. Impacts to public access are described in the EIS in Sections 4.13 and 4.20.13 and further detailed in the Transportation and Access SER.
Personal Information Requested to be Withheld – May 7, 2024			
33	33.1	I've been following the Rhyolite Ridge Project for a little while and I am impressed with the way that Ioneer has been handling the project. There's always a sense of hesitancy when controversial matters are introduced around mining. I was impressed with the pause that was taken by Ioneer when Tiehm's buckwheat became a larger topic and then the steps they took in planning to mitigate destroying the species. There are a lot of great responses from the local community as well. At the meeting this evening, all their ducks were in a row. Its clear Ioneer has been heavily involved in listening to local concerns and making sure the needs of the communities would be met, including hundreds of quality jobs. Mining in Nevada has come a long way and has become much more responsible. I support the Rhyolite Ridge Lithium-Boron Project proposed by Ioneer. This will be an excellent opportunity for the local community for decades to come. I support Ioneer and the steps they've taken to construct, operate, and reclaim this resource so far in a responsible way. It's clear the community supports the project as well.	Comment noted.
Chloe Novak – May 7, 2024			
34	34.1	I was lucky enough to spend summer of 2023 in the Silver Peak Range assisting on a floristic inventory research project. I have hiked hundreds of miles throughout the range, meticulously documenting the incredible diversity of plant species that occur there. All of them – not just Tiehm's buckwheat – are unquestionably threatened by a project of this magnitude, regardless of the alternative presented. The discoveries we made in the Silver Peak Range were truly astounding – in many instances, we recorded plants that had previously only been known from California, or thought to be endemic to other mountain ranges. One plant species that occurs directly within the planned open pits – regardless of the alternative – is the Munz's mariposa lily, *Calochortus kennedyi* variety munzli. This population will be completely extirpated under any of the alternatives presented. Through the depletion of groundwater, introduction of invasive species, deterrence of native fauna though 24 hour lights, noise, and dust disturbance, it is not an exaggeration to say that the entire Silver Peak Range and its constituent ecosystems will be irreparably destroyed if this mine proceeds. All to make an Australian billionaire even richer at the expense of our amazing public lands.	As described in the EIS in Section 3.14, baseline vegetation surveys occurred throughout the Plan boundary. Baseline surveys documented *Calochortus* species. *Calochortus kennedyi* variety *munzii* is not a Nevada BLM special status plant species or Nevada Division of Natural Heritage (NDNH) watchlist species. Impacts to vegetation resources, including from invasive plants, from development of the Project are described in Sections 4.14 and 4.20.14 of the EIS and detailed further in the Vegetation Resources SER. Impacts to water resources are described in Sections 4.16 and 4.20.16 of the EIS. Impacts to wildlife are described in Sections 4.12, 4.18, 4.20.12, and 4.20.18 of the EIS.
Peri Lee Pipkin – May 7, 2024			
35	35.1	I'm concerned about water use in the Fish Lake Valley, this project will create a dust bowl in Dyer, which already faces water overdraw issues. This will compromise the way of life in the valley & harm the endemic fish, toad, and snail that live there, along with several rare and state listed endangered species, such as the sodaville milkvetch. The footprint of the mine is too close to the sacred Cave Springs and will destroy the sacred valley it lies in. Additionally, this project will create dust & make pollination of the buckwheat near impossible, dooming the species to extinction	Water resource impacts were modeled for the Project and included an evaluation of the cumulative uses of water in the Fish Lake Valley. Impacts to water resources are described in Sections 4.16 and 4.20.16 of the EIS and described further in the Water Resources and Geochemistry SER. Impacts to air quality and climate change are analyzed in Sections 4.1 and 4.20.1 of the EIS and described further in the Air Quality and Climate Change SER. Baseline vegetation surveys were conducted throughout the Plan boundary and Sodaville milkvetch was not encountered. See Sections 4.12, 4.14, 4.20.12, and 4.20.14 for analysis of impacts to special status plant species. Consultation with local tribes is ongoing. During consultation, the Project was redesigned to avoid impacts to culturally significant areas. Tribal consultation would continue through the life of the Project. If avoidance of areas of tribal concern is not feasible, specific operating procedures, stipulations, or mitigation measures

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			would be developed in consultation with the affected Tribes to reduce or eliminate impacts.
	35.2	I'm not anti-mining, I think this project is sited improperly – too close to special biodiversity and cultural sites that make Esmeralda County unique & biodiverse. Additionally, the labor force (migrant men/day laborers) will cause the valley to see increased crime & violence. This project must be re-sited to protect the area culture, water, and biodiversity.	The Project proposes development of a locatable mineral resource. Relocation of the Project is not possible because the proposed activities must occur on the mining claims held by the proponent where the resource is located. Impacts from increased population associated with the Project are described in Sections 4.10 and 4.20.10 of the EIS and in the Social and Economic Values SER.
Timothy Kennedy – May 7, 2024			
36	36.1	The Silver Peak Range, Fish Lake Valley, and "Rhyolite Ridge" and all species of flora and fauna that exist there need to be protected. We cannot keep removing species of the Jenga tower that is our ecosystem and expect it to remain stable. It's not "one flower," its every species before, and every species after. We have to draw the line now.	The Project incorporates ACEPMs described in Section 2.1.13 of the EIS to reduce impacts to plants and wildlife. The EIS evaluates effects to vegetation including Tiehm's buckwheat, and wildlife in Sections 4.12, 4.14, 4.18, 4.20.12, 4.20.14 and 4.20.18. Additional details are provided in the Threatened and Endangered Species, Vegetation Resources, and Wildlife Resources SERs. In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.
Peri Lee Pipkin – May 9, 2024			
37	37.1	Hi all, I am a botanist that has been working in the Silver Peaks for the past several years to compile a floristic inventory of the Silver Peak Range and surrounding valleys in Esmeralda County. My flora will head to publication this year, and has locations of several rare plants that occur in and around the project area, as well as groundwater dependent plants that occur in the Fish Lake Valley near the site of water extraction. How can I submit my data and in what format so that it is considered in the environmental impact report and so that these other rare plants are not lost? Thank you for your time, Peri Lee	As described in the EIS in Section 3.14, baseline vegetation surveys occurred throughout the Plan boundary. Impacts to vegetation resources, including impacts from invasive plants, from development of the Project are described in Sections 4.14 and 4.20.14 of the EIS and detailed further in the Vegetation Resources SER. Impacts to water resources are described in Sections 4.16 and 4.20.16 of the EIS. Additionally, in response to this comment, the BLM responded via email on May 15, 2024, with directions on how to provide data.
Gary Parks – May 10, 2024			
38	38.1	Re: The DEIS for loneer's Rhyolite Ridge Project Dear Mr. Distel, I am writing in favor of permitting loneer's Rhyolite Ridge Lithium-Boron Project in Esmeralda County, NV. I am a strong believer in developing America's natural resources rather than relying on foreign sources for critical minerals that will keep our economy strong. Currently, the US depends on importing lithium mainly from Argentina, Chile, China and Russia making our country dependent on imports from unreliable nations and creating a supply chain which can be interrupted at any time. Production of the lithium and boron minerals from the Rhyolite Ridge deposit will provide a reliable supply chain for materials needed to boost domestic production of batteries for our future green energy economy. loneer, like all western mining companies, will operate under very strict environmental regulations that will protect the land, water and wildlife. As an example, loneer will be leaving valuable lithium-boron ore in the ground to protect the endangered Tiehm's buckwheat. The unique characteristics of the Rhyolite Ridge deposit will allow for extraction of the lithium and boron using much less water when compared with other lithium deposits. Recovery of lithium from the mineralized rock will be by the vat leach process meaning there will be no leach pads, tailings pond or tailings dams and no chance of groundwater contamination. Once the project is in production, it will increase domestic lithium production by 400% and provide enough lithium to power 370,000 vehicles per year for over 20 years. The boron produced from this project will be used in items such as smart phone and computer touch screens, in production of semiconductors, in medicinal grade glass vials, in abrasives, cleaning products, insecticides, and insulation. The project will bring high-paying mining jobs to Esmeralda County, employing up to 500 people during the construction phase and 350 people during the 26 years of production. During production employees will have a median annual income of approximately $141,000. Thank you for taking the time to read my comments. Hopefully the Rhyolite Ridge deposit will soon be in production, benefiting Esmeralda County, Nevada and the Nation. Sincerely, Gary Parks	Comment noted.
My-Lan Le – May 10, 2024			
39	39.1	Hello, I am submitting my comment requesting that the environmental consulting firm selected for monitoring Tiehm's Buckwheat as well as for dust monitoring be publicized upon decision. Thank you, My-Lan Le	The selection of contractors for implementing monitoring would not impact the outcome of the NEPA analysis; therefore, are not discussed in the EIS.

Comment Letter No.	Comment Number	Comment	Response
Nancy Wolverson – May 10, 2024			
40	40.1	Re: The DEIS for loneer's Rhyolite Ridge Project Dear Mr. Distel, This letter is written in support of permitting loneer's Rhyolite Ridge Lithium-Boron Project in Esmeralda Co. NV. I am a retired geologist, a graduate of UNR and a resident of Nevada from 1979-1989 and then again from 2005-present. I am familiar with lithium deposits in general and have reviewed the DEIS and news related to the project since development activities were initiated. I support development of the mine for the following reasons: • I am impressed by loneer's commitment to mine in an environmentally responsible way with little impact on the land, ground water and the endangered Tiehm's buckwheat plant. • The unique characteristics of the Rhyolite Ridge deposit will allow for extraction of lithium using much less water when compared with other lithium deposits and most other metal mines. • Recovery of lithium from the mineralized rock will be by the vat leach process with no leach pads, tailings ponds or tailings dams, and therefore ground water contamination is minimized. • A weak sulfuric acid solution, needed to dissolve lithium from the ore, will be produced on site. The heat produced as a by-product of sulfuric acid production will supply more than enough energy to power the entire operation for the life of the mine, making it independent of Nevada's power grid. • Currently, the US depends on importing lithium, mainly from Argentina, Chile, China and Russia, making our country dependent on imports from generally unreliable nations, thus creating a supply chain which can be interrupted at any time. Production of the lithium-boron minerals from the Rhyolite Ridge deposit will provide a reliable domestic supply chain for materials needed to boost domestic production of batteries for a cleaner, more energy efficient future. • The European Union, Canada, Australia and China have all listed lithium as critical to energy needs of their own nations, resulting in a reduction of their exports of lithium, and an increase in worldwide competition for this critical mineral. • Once the project is in production, it will increase domestic lithium production by 400% and provide enough lithium to power approximately 370,000 vehicles per year for at least 20 years. • The Boron produced from this project will be used in items such as touch screens for smart phones and computers and in the production of semiconductors, medicinal grade glass vials, abrasives, cleaning products, insecticides, and insulation. • The financial impact on Nevada and Esmeralda County will be significant. The project will employ up to 500 people during the construction phase, and then 350 people throughout the life of production. The median annual income of loneer's employees, including a generous benefits package, will be approximately $141,000. • Financial benefits to Esmeralda County from sales taxes, property taxes and Net Proceeds of Mines revenue will range from approximately $600,000 in the first year of construction to between $5.2 to $11.6 million during the estimated 26 years of planned lithium-boron production. This is significant for a small population rural county. In summary, this project is a rare win-win opportunity to capitalize on Nevada's mineral wealth to the benefit of the county, state and our nation, with minimal environmental impact. Thank you for your time reviewing my comments. Kind regards, Nancy J. Wolverson	Comment noted.
Ann Carpenter – May 15, 2024			
41	41.1	I provide this attachment, a signed PDF of a letter of support for the ioneer Rhyolite Ridge Project in Esmeralda Co, NV [Attachment: RR_draft-comments_ioneer_AC.pdf]	Comment noted.
41	41.2	**RE: Comments on Rhyolite Ridge Lithium-Boron Mine Project DOI-BLM-NV-8020-2021-0020-EIS** Dear Mr. Distel: I. Introduction **ioneer** is proposing to develop an operation for the Rhyolite Ridge lithium-boron deposit in Esmeralda County, Nevada. This operation will produce two elements needed to meet the goals envisioned in **the Infrastructure Investment and Jobs Act of 2023**. As well, this mine operation will lower reliance on foreign sources for lithium, a critical mineral needed to meet our expanding needs as we advance electrification in the US and abroad. The U.S. Department of Energy's January 2023 announcement of the conditional loan commitment, through the DOE Loan Programs Office, to the Rhyolite Ridge Project (ioneer) will advance domestic production of the critical mineral, lithium. This will boost the U.S. battery supply chain[1]. I am submitting these comments on the Draft Environmental Impact Statement (DEIS) for the Rhyolite Ridge Project, published by the Tonopah Field Office of the Bureau of Land Management, Battle Mountain District. The DEIS was published on April 2024. And, importantly, I provide my strong support for ioneer's Rhyolite Ridge Project. I am a 40+ year mineral development professional, and I have extensive experience with the National Environmental Policy Act (NEPA), the U.S. Mining Law, and the BLM's surface management regulations at 43 CFR Subpart 3809 governing locatable minerals and mining activities pursuant to the U.S. Mining Law. I focus on integrating permitting, engineering studies and community engagement in mineral development efforts in the United States as well as overseas. **ioneer** has taken a very thoughtful, measured, and detailed approach to their engineering, permitting and importantly community engagement efforts. They have advanced solid community and stakeholder engagement efforts in the region, engaging early and often with a broad spectrum of stakeholders. They have responded to concerns raised, adjusted mine plans, and met with stakeholders to ensure concerns were addressed in a timely fashion. I cannot imagine any circumstance in which delaying approval for this project to proceed with production of lithium and boron would make any sense for the environment, the local and regional communities, the State of Nevada, and the country at large.	Comment noted.

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		[1] https:/lwww.energy.gov/lpo/articles/lpo-announces-conditional-commitment-ioneer-rtwolite-ridge-advance-domestic-produdion	
41	41.3	**The Country's Stated Commitment** The Biden-Harris Administration has stated its commitment to increase the domestic supply of critical minerals[2], to strengthen the nation's battery supply chain, and to electrify the transportation sector thus reducing our reliance on fossil fuels and most importantly on a foreign supply of raw materials. Worldwide demand for lithium is expected to increase dramatically soon and that demand has exceeded global production as of 2023[3]. In addition to electrifying the transportation sector, lithium will be important to the development and implementation of safe and reliable battery energy storage systems allowing for commercial applications to store energy from renewable resources (proven inconsistent energy sources) for the transition to reliable green, low carbon power-grid stability, commercial applications, and individual homes, to name a few. [2] https://crsreports.congress.gov/product/pdf/R/R47982/1 [3] https://www.statista.com/statistics/452025/projected-total-demand-for-lithium-globally	Comment noted.
41	41.4	**Addressing Concerns Raised-Committed Environmental Protection Measures** **ioneer** worked closely with the BLM and other state and federal agencies to reduce impacts that were identified in the permitting processes, including to these key areas: the endangered Tiehm's Buckwheat that grows in the area; water usage; and concerns identified related to the local electrical grid.	Comment noted.
41	41.5	Tiehm's Buckwheat Tiehm's Buckwheat is found on 10 acres of ground within the project area of 7,166 acres. **ioneer** has committed to a revised quarrying plan that will have no direct impact to the Tiehm's buckwheat's subpopulations. And the company has committed to multiple measures regarding the Tiehm's buckwheat critical habitat as outlined in the EIS. An illustration of their commitments is the ongoing (several years) operation of a greenhouse and the propagation of this buckwheat to begin to address the regrowing of this plant.	Comment noted.
41	41.6	Water Usage **ioneer** has developed a production plan that reduces the amount of water needed during operations. **ioneer's** lithium processing recycles and reuses the water in its system with much less water losses (such as lithium produced by evaporation).	Comment noted.
41	41.7	Power Generation The processing of the lithium-boron ore requires the use of acid which will be produced on site by an acid generating plant. This plant will produce enough heat and steam to generate all the electricity required to operate all the planned facilities.	Comment noted.
41	41.8	**Socioeconomic Benefits** With over 40 years of mineral development expertise to rely on, I have first-hand experience with the types of socioeconomic impacts and benefits associated with a multiyear mining project. Since 2001 I have studied sustainable development in mining projects across the world. **ioneer** has been an industry leader in the Esmeralda region with their strong community engagement and sustainability efforts at their Rhyolite Ridge project. Section 4.20 in the DEIS focuses on Social and Economic Conditions for this project. This operation will create a broad diversity of high-paying jobs and will generate local and state tax revenues that will benefit Esmeralda County and the State of Nevada for at least +20 years-all while implementing strong environmental protection measures. For those who will be directly employed at the operation the median annual income will be $141,000. From construction to the end of mine life the number of employees or contractors will range from 350-500. For Esmeralda County financial benefits (revenue) including sales taxes, property taxes and Net Proceeds of Mines will range from approximately $600,000 in the first year of construction to between $5.2 to $11.6 million during production. This will be a significant benefit to Esmeralda County where the average revenue stream for 2020 through 2022 was approximately $5,191,000 million (accessesmeralda .com/county_ office/auditor _recorder/financial_reports. php) per year. An additional benefit relates to the county road crossing the project area-this will be upgraded and maintained by **ioneer**.	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.
41	41.9	**Conclusions** The Rhyolite Ridge project will accomplish significant objectives: • Advance innovative environmental, energy generation, and community engagement processes. • Boost the development and construction of a mine in support of a green energy economy while supporting diverse, well-paying mining jobs and paying a broad spectrum of local, county, and state taxes. • Provide a reliable, domestic supply chain for the critical mineral lithium helping the country decrease its dangerous reliance on foreign sources. • Meet the goals of the **Infrastructure Investment and Jobs Act of 2023**. Approving this permit is the best choice, for the local economies and communities, for the state of Nevada and for the nation. I support this project, and recommend the BLM complete the NEPA process as quickly as possible so development can begin ASAP late in 2024, helping the communities in the region to benefit from a solid mineral development project-jobs, taxes, diversified opportunities, and environmental protections. ioneer and its community outreach programs have identified concerns, immediately addressed these, and built alternatives into their mine plan(s). There are no valid reasons to delay or deny approval of this nationally significant project. There have been vocal activists speaking out against this project, and these folks are largely not from the general area and definitely not connected with how their opposition will negatively impact the local and/or regional communities. I was at a recent BLM public meeting for the Rhyolite Ridge DEIS where I saw over a dozen people in attendance against the project-from California, Oregon or elsewhere. They stuck to themselves, with members of the Center for Biological Diversity (CBD) members in the midst. None of them attempted to reach out to local community members to discuss their opposition, and importantly find out from community members what the mine means to the locals. I am deeply concerned about a permitting process that does not foster and require all to have strong community outreach processes at their core. CBD has been a vocal 'activist' (opposition) group against this mine project and yet they are not required to meet with and get to know local community-stakeholder members and engage more deeply with all involved. I am deeply concerned by a	Public involvement opportunities for the Project have been conducted according to NEPA, Council on Environmental Quality (CEQ) regulations, and the BLM NEPA Handbook.

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		process that allows an 'activist' group who is not from the area/ the community have such negative impacts to a mining project's development WITHOUT also being required to engage deeply with all stakeholders ... their 'activism' (opposition) has deep, lasting negative impacts on communities where mining projects are being proposed and permitted. Thank you for this opportunity to submit these comments on the DEIS for this important project. Please do not hesitate to contact me if you have any questions about my comments. These are my comments alone, supported by my over 4-decade career as a mineral development professional with a focus on sustainable development, community engagement, and project development. Sincerely yours, Ann Carpenter Mineral Development Professional	
Deserea Langley – May 9, 2024			
42	42.1	I do not support the building of this mine in Tonopah, Nevada. It would have devastating effects on the natural environment for decades to come. Further, why are we opening foreign owned extractive industries to populate lands in the United States. there population will not have to deal with the effects, they will simply be making profit over the communities who will face the impacts. The BLM should actively consult with the local Native American populations in the area to understand the cultural importance of this area. Our homeland's have been targeted for too long and our families and communities are forced to deal with the environmental degradation and health disparities left from these mines.	The Project is consistent with the 1872 Mining Law, as amended, which confers a statutory right to enter public lands open to mineral entry to explore for and develop mineral deposits. The Project would implement ACEPMs described in Section 2.1.13 of the EIS to reduce impacts. Government-to-government consultation and coordination was initiated in 2020 and will continue through the life of the Project. The EIS Sections 3.8. 4.8, 4.18.8, 5.0, and the Native American Traditional Values SER discuss the consultation process.
42	42.2	Further, why would you move forward on a mining project where there is no adequate amounts of water to sustain the community. Inviting the mining industry into the area will not only pollute the land but the water resources. i do not support moving forward on this project.	Water resource impacts were modeled for the Project and included an evaluation of the cumulative uses of water in the Fish Lake Valley and Project impacts on water quantity. Impacts to water resources are described in Sections 4.16 and 4.20.16 of the EIS. Additional analysis is presented in the Water Resources and Geochemistry SER.
Undisclosed – May 9, 2024			
43	43.1	If the project does not get approval to proceed, who will be responsible for ensuring that Thiem's Buckwheat survives and prospers? Will the habitat be fenced off to protect the plant and its habitat?	The EIS includes analysis of the No Action Alternative and its impacts to Tiehm's buckwheat in Sections 4.12.3 and 4.20.12.
Cameron Mayer – May 10, 2024			
44	44.1	Per the "water use at Rhyolite Ridge" fact sheet on the Ioneer website, no effect is anticipated on local water balance in adjacent Fish Lake Valley, which is already critically over appropriated. When a single entity (Ioneer in this case) is using, at peak, 4,100 acre feet of water per year in one of the driest places in the country, any anticipation of negligible or no impact is simply hard to fathom. Furthermore, an open pit mine of the magnitude described in the draft Environmental Impact Statement, with a depth of over 900 feet, must have the potential to significantly disrupt water paths and flow patterns in an area (Silver Peak Range) that is currently largely intact in this respect.	Water resource impacts were modeled for the Project and included an evaluation of the cumulative uses of water in the Fish Lake Valley. Impacts to water resources are described in Sections 4.16 and 4.20.16 of the EIS and included analysis of the impact of the quarry on groundwater. Additional analysis is presented in the Water Resources and Geochemistry SER.
	44.2	I also have concerns regarding the potential for adverse impacts to people and wildlife caused by airborne dust from retired pivots and fallowed fields in Fish Lake Valley. It has been seen at other locales, such as nearby Owens Lake in the Owens Valley, that even a powerful agency with comparatively a lot of resources, like the Los Angeles Department of Water and Power (LADWP), that is in a way committed and tied-in long-term to dust mitigation strategies as part of a comprehensive extraction process, can and often fails to effectively ensure adequate reduction in the interest of broader public safety. Therefore there is reason to have little faith that Ioneer can achieve a significantly better outcome with the Rhyolite Ridge project.	Surface disturbance and water use associated with the Proposed Action and alternatives are described in Section 2.1 and 2.2 of the EIS. The impacts to air quality and climate change are described in Sections 4.1 and 4.20.1 and detailed in the Air Quality and Climate Change SER.
	44.3	Most importantly, the proposed direct impact to 354 acres, or 39% of the 910 acres of critical habitat designated by the U.S. Fish and Wildlife Service for Tiehm's Buckwheat, a species endemic to 10 acres of the Silver Peak Range in Esmeralda County, Nevada, is inconsistent to the proper stewardship of this rare plant long into the future. Projected restoration carried out by setting aside and then infilling with "suitable soil salvaged and stockpiled during construction and operation", while additionally leaving 97 acres, or 11%, of critical habitat with permanent and unreclamated disturbance is furthermore inconsistent and questionable as to its feasibility, with Tiehm's Buckwheat being uniquely adapted to grow in soils with high lithium and boron levels. Additionally, the likelihood of adverse impacts caused by dust stirred up during both construction and operation, in combination with the potential for unintended spray of sulfuric acid used in the processing of ore is also not consistent with the proper care and stewardship of imperiled species.	The EIS evaluates effects to Tiehm's buckwheat in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. As described in Section 2.0 of the EIS, sulfuric acid use would occur within the processing facility and ACEPMs would be implemented to reduce dust impacts. The North and South OSF Alternative includes dust monitoring in Tiehm's buckwheat designated critical habitat.
	44.4	Lastly, the loss of public access to the site of the proposed action for recreational and other public uses is inconsistent with the intention of the Federal Land Management and Policy Act of 1976, which in part directs the Bureau of Land Management as such that "the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use."	The Project's consistency with FLPMA, land use plans, and impacts to land use, access, and recreation are discussed in the EIS in Sections 4.6, 4.9, 4.20.6, and 4.20.9. For safety of the public, the active mine area would be fenced with controlled access. Areas within the Plan boundary but outside the active mine area would remain available for public use. Public would be able to continue to travel along Cave Springs Road through the OPA. An escort would be provided as described in Sections 4.6.1 and 4.13.1.
David Gray – May 13, 2024			
45	45.1	The real primary concern with this project is in the market fundamentals for its product. The alleged demand for lithium is artificial. It is promoted by a false science narrative with the supposed need to "decarbonize" the economy. This is based upon an incorrect premise that carbon dioxide has any role in climate trends. The very premise is based upon the disingenuous science that carbon - an element - is the same as carbon dioxide - a gas molecule. The party line narrative that global warming - climate change (which is it?) is actually occurring or has not been greatly exceeded in the past by natural influences not related to human activity - is just agendized gaslighting fostered by corrupted science. Moreover, the narrative is being fueled by force - government mandates and	Comment noted.

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		propaganda. The fundamentals of a healthy free market have been hijacked with this politically driven coercion and ill effects will beset the market due to this corrupting influence. The subsidization of the Rhyolite Ridge Project by this politically driven government interference into the free market is a red flag for a Solyndra style boondoggle. While a truly free market will create some demand for the lithium and boron products, the viability of the Project should be supported in so far as it is truly economic in a free society. The false climate change/global warming narrative, the government subsidized and coerced distortions of actual demand in a free market are threatening to be a house of cards for the markets of this product. Having expressed these fundamental concerns, it is also a given that Ioneer should have the freedom to engage or attempt to engage in productive economic activity with this project in a free market, without the absurdities of ginned up threatened species, in-vogue social politics, and the deep pocket grafting that is encouraged by such government interference.	
American – May 13, 2024			
46	46.1	I appreciate this opportunity to provide comments on this important proposed action and NEPA process. At the outset, I believe that this and other federal planning and NEPA analysis processes should actively consider how the proposed action and alternatives may add to or help solve the climate and extinction crises. These overlapping crises pose an existential threat to humanity and the health of the biosphere. On the climate crisis, please review the attached IPPC report. This report summarizes the overwhelming international scientific consensus on the severity of the climate crisis and the urgent need to phase out the use and development of fossil fuels. On the extinction crisis, there are an increasing number of scientific reports on the rapid loss of biological diversity and how this loss undermines the stability, resilience, and productivity of the ecosystems upon which life on Earth depends. Overall, this compelling science demonstrates the urgent need for bold and innovative solutions. Questions arise like: how can fossil fuel use be reduced and replaced by clean, renewable energy sources? How can any destruction, degradation, or fragmentation of wildlife habitat be avoided, reduced, or successfully mitigated? How could construction materials be sourced from sustainable producers and practices? How could the use of any toxic chemicals be replaced by safer alternatives? How could gains in energy and water conservation be achieved? How could any harmful invasive plants be prevented, controlled, reduced, or eradicated? Please consider these questions in moving forward. On this specific proposed action, I know that mining is important to help fight the climate crisis but I am also worried that this mining may cause the extinction of a unique plant species. It would be tragic if in solving one crisis we make another one worse. If there are feasible alternative locations for this mining, then those should be used. If this mining proceeds, then BLM should ensure that maximum protection is achieved for this unique plant species. There should be robust accountability and transparency in doing so. Thank you very much for your kind consideration of my comments and the attachment. [Attachments: Climate Change IPCC 2023 Summary Report.pdf]	The Project's impact on climate change and the impacts of climate change on the surrounding area are discussed in the EIS in Sections 4.1 and 4.20.1. Additional information, including information on the IPCC document is available in the Air Quality including Climate Change SER. The IPCC 2023 Summary Report referenced in this comment is a summary report of all the underlying IPCC Sixth Assessment Reports (AR6). As a result, the existing analysis in the Air Quality including Climate Change SER and the EIS provide the current citation and documentation for the IPCC analysis. Confirmation of appropriate citation for IPCC was made throughout the Air Quality including Climate Change SER and the EIS. Relocation of the Project is not possible because the proposed activities must occur on the mining claims held by the proponent where the resource is located. The Project would implement ACEPMs described in Section 2.1.13 of the EIS to reduce impacts to Tiehm's buckwheat and designated critical habitat. In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.
Janet and John Porn – May 7, 2024			
47	47.1	Sir; We are writing about the Rhyolite Ridge Mine permit for Ioneer LTD. It appears the company (Ioneer) has and is doing everything requested of it. Ioneer is working with all the affected parties to cooperate the best they can for all concerned. Taking responsibility for the mines proper operation is huge. Keeping the air, water and land clean, maintained and reuseable are every ones concern. It appears they are willing, capable, and able to do this. We are in favor of Ioneer Rhyolite Ridge Mine being allowed to operate. Thank you, Janet Porn John Porn Of course the land must be reclaimed by Ioneer when the mine stops operation.	Comment noted.
Debra Strickland, Nye County Board of Commissioners – May 7, 2024			
48	48.1	Subject: Rhyolite Ridge Lithium-Boron Mine Project. Dear Sir, The Nye County Board of County Commissioners respectfully would like to provide the following comment on the Rhyolite Ridge Lithium-Boron Project's Draft EIS, proposed to be developed by Rhyolite Ridge LLC (Ioneer). Nye County has had a long history with mining in the area and has been a primary driver for economic development across the region. Rhyolite Ridge will provide important economic benefits for the local region, the state of Nevada, and the United States. The Rhyolite Ridge Project will create family-supporting jobs in rural Nevada, employing approximately 350 people while the mine operates, and 500 people during the construction phase. The expected $54 million of labor income during construction and $38 million of annual labor income during operations will be transformational. Section 3-10 of the Draft EIS correctly states that "average weekly mining wages and salaries are among the highest for any industry in the Nevada non-metro counties". The Draft EIS estimates the total direct economic output to be $178 million during the construction phase and $125 million annually, once the mine is in operation. This level of long-term economic impact will be significant for nearby communities, Tribal and local businesses, and Nevada.	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.

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		Tonopah is one of the closest towns to the proposed operation, and as we expect that the area will also realize increased business due to the influx of workers who will purchase goods at our local stores, stay in our hotels and motels, and eat at our restaurants. As stated in Section 1-2 of the Draft EIS, the Project is also in conformance with the Tonopah Resource Management Plan, which contains the following objective: "Public lands located within the BLM TFO boundaries .. .include the following objective for locatable minerals (BLM 1997): To provide opportunity for exploration of locatable minerals such as gold, silver, copper, lead, zinc, molybdenum, etc. consistent with the preservation of fragile and unique resources in areas identified as open to the operation of the mining laws." Ioneer has been committed to engaging our community, as evidenced by providing regular updates to the Nye County Commission for the last 5 years. Ioneer has also consistently supported local charitable events in the Tonopah Area like the Nevada State Mining Championships and has financially supported several Tonopah High School students as they move on to higher education through their scholarship program. Thank you for your careful consideration. Sincerely, Debra Strickland, Chair Nye County Board of Commissioners	
Don Kaminski, Tonopah Town Board – May 8, 2024			
49	49.1	Dear Sir: The purpose of this letter is to express, on behalf of the Tonopah Town Board, our complete support for the Rhyolite Ridge Lithium-Boron project in Esmeralda County. The project has been proposed for development by Ioneer Rhyolite Ridge LLC (Ioneer) following the release of the project's DEIS. For many years, Ioneer representatives have provided regular updates to this body regarding their project and have sought input from the town board as well as the community at large. Because we are a mining community, we know how important it is for mining companies, whether in the development phase or the operational phase, to stay engaged with and support local communities: Ioneer has led by example in this regard. We have found them to be strong supporters of community and philanthropic causes and note that locally, Tonopah Main Street, Tonopah Historic Mining Park, and our annual Jim Butler Days celebration, to name only a few, have all benefited from their community engagement. We stand ready to support them as their project moves forward and know there will be considerable benefits for our community. From increases in population, to greater opportunities for support business and industry, the short and long-term benefits are tremendous. Do we believe their community engagement attitude will continue once they are fully operational? We absolutely do. In 2020 Ioneer introduced a scholarship program at Tonopah High School which has since granted more than $30,000 to graduating seniors. We were honored that the first slate of scholarship recipients was announced during a meeting of this Board in 2020; and we applaud Ioneer for their continued support of Tonopah High School graduates as they embark on their higher education journeys. Ioneer has also held regular and ongoing meetings with businesses and members of the Tonopah community to examine housing needs for their workforce by identifying the opportunity that awaits, collaboratively addressing the challenges, and helping to develop innovative plans. In short, their actions speak louder than their words, and we are excited they will be a cornerstone employer for our region for decades to come. According to the Draft EIS, the Project would add approximately 500 direct jobs during the construction phase, and 350 direct jobs during the quarrying and processing phase, along with hundreds more indirect and induced jobs - many of these are expected to be created here in Tonopah and last throughout the life of.the Project which spans more than two decades. Tonopah is thus expected to realize substantial financial benefits through increased commerce and related tax revenues. Accordingly, the Tonopah Town Board wholeheartedly expresses our support for the Rhyolite Ridge Lithium-Boron Project and encourages you to approve this project, which will be of tremendous benefit to our Town and the broader community. Sincerely, Jorie Eastley for- Don Kaminski Chairman Tonopah Town Board	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.
Glenn A. Gierzycki – May 13, 2024			
51	51.1	Re: The DEIS for the loneer Rhyolite Ridge Lithium-Boron Project Dear Mr. Distel, This letter is in support of the Rhyolite Ridge Lithium-Boron Project of loneer Ltd. In Esmeralda County, Nevada. Production from the Rhyolite Ridge Project will be a provide a needed boost to the mineral security of the United States. The United States has not proceeded with urgency in the past to secure the vital materials needed for a modern society. This lack of materials also applies to the needs of the US military. This project, built on American soil, by American workers, can provide some of those vital minerals.	Comment noted.

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		I believe this project can be built and managed in an environmentally safe manner while helping the national and local economies. The massive amount of scrutiny the project has received ensures that this will be a very environmentally sound mine. From the relatively small mining "footprint" to low water usage and a continuing commitment to the environment, the Rhyolite Ridge Project will be an asset that America needs. I believe this project is vital to the future of the United States, its military, its technology sector and all its people. I believe this project needs to be approved. As for me, I have lived in Reno for 45 years and have traveled extensively in the state, often on dirt roads in remote places. I do not believe that this project will harm the natural beauty of the state in any way. Sincerely,	
Chairwoman Margaret Cortez, Timbisha Shoshone Tribe; Scott Lake, Center for Biological Diversity; Ian Bigley, Earthworks; Kevin Emmerich, Basin and Range Watch; Fermina Stevens, Western Shoshone Defense Project; Laura Cunningham, Western Watersheds Project; John Hadder, Great Basin Resource Watch – May 17, 2024			
51	51.1	Dear Mr. Distel, Please find attached a request for an extension to the comment period on the Rhyolite Ridge Draft Environmental Impact Statement, DOI-BLM-NV-B020-2021-0020-EIS, from the Timbisha Shoshone Tribe, the Center for Biological Diversity, Great Basin Resource Watch, Western Shoshone Defense Project, Earthworks, Basin and Range Watch, and Western Watersheds Project. Thank you, Scott Scott Lake (he/his) Nevada Staff Attorney Center for Biological Diversity (802) 299-7495 slake@biologicaldiversity.org [Attachments: 240517_Coalition Extension Letter FINAL.pdf; Email from Scott Distel, BLM, to Doug Furtado, BLM, December 21, 2023]	Comment noted.
51	51.2	Re: Rhyolite Ridge Project DEIS Comment Period; Extension Request Dear BLM: The Timbisha Shoshone Tribe, Center for Biological Diversity, Great Basin Resource Watch, Western Shoshone Defense Project, Earthworks, Basin and Range Watch, and Western Watersheds Project hereby request a 45-day extension to the comment period for the Rhyolite Ridge Lithium-Boron Mine Project Draft Environmental Impact Statement (DEIS), DOI-BLMNV-B020-2021-0020-EIS. The current 45-day comment period is insufficient in light of the length and complexity of the DEIS and supporting documents. The DEIS itself is 230 pages long. In addition, BLM has included various aspects of its environmental analysis-including critical details about the project's design and environmental impacts-in 20 accompanying "supplemental" reports, which cumulatively total over 1,300 pages. A 45-day comment period does not provide the interested public, including the undersigned organizations, a sufficient opportunity to review these voluminous documents and offer meaningful, constructive feedback, and is therefore inconsistent with the clear and robust public participation requirements of the Federal Lands Policy and Management Act (FLPMA), and the National Environmental Policy Act (NEPA). Both FLPMA and NEPA emphasize and mandate public participation, "with their statutory framework largely in unison on such a requirement." *W. Watersheds Project v. Zinke*, 441 F. Supp. 3d 1042, 1069 (D. Idaho 2020). FLPMA Section 309(e) directs that: > In exercising his authorities under this Act, the Secretary, by regulation, shall establish procedures, including public hearings where appropriate, to give ... the public adequate notice and an opportunity to comment upon the formulation of standards and criteria for, and to participate in, the preparation and execution of plans and programs for, and the management of, public lands. 43 U.S.C. § 1739(e); *see also* 43 U.S.C. § 170l(a)(5) (FLPMA Section 102(a)(5)): "[I]t is the policy of the United States that ... the Secretary be required to establish comprehensive rules and regulations after considering the views of the general public . . . ."); 43 U.S.C. § 1712(f) (FLPMA Section 202(f)): "The Secretary shall allow an opportunity for public involvement and by regulation shall establish procedures, including public hearings where appropriate, to give . . . the public, adequate notice and opportunity to comment upon and participate in the formulation of plans and programs relating to the management of the public lands."). NEPA, meanwhile, aims to "ensure[ ] that the agency will inform the public that it has indeed considered environmental concerns in its decision-making process." *Balt. Gas & Elec. Co. v. Nat. Res. Def Council*, 462 U.S. 87, 97 (1983). To this end, federal agencies "must provide the public with sufficient environmental information, considered in the totality of circumstances, to permit members of the public to weigh in with their views and thus inform the agency decision making process." *Bering Strait Citizens for Responsible Res. Dev. v. U.S. Army Corps of Eng'rs*, 524 F.3d 938, 953 (9th Cir. 2008); *see also Trout Unlimited v. Morton*, 509 F.2d 1276, 1282 (9th Cir. 1974) (explaining that an EIS prepared under NEPA "should provide the public with information on the environmental impact of a proposed project as well as encourage public participation in the development of that information"); *Idaho Sporting Cong., Inc. v. Alexander*, 222 F.3d 562, 568 (9th Cir. 2000) (holding that the Forest Service violated NEPAs public participation requirements because SIRs were not presented at the earliest time possible, as NEPA requires, and because public participation procedures attached to the preparation of the SIRs were not as thorough as NEPA mandates).	The BLM responded on May 20, 2024, that the request was considered but no extension granted. The EIS is in conformance with CEQ and the Fiscal Responsibility Act (FRA), Division C, Title III, Section 321 – National Environmental Policy Act (NEPA) Amendments. The EIS was initiated in 2020 and has been prepared per the 2020 CEQ regulations. Public scoping was extended from 30 days to 76 days and occurred from December 20, 2022 to March 6, 2023. Public scoping meetings occurred January 4 and 5, 2023. The public comment period occurred from April 19, 2024 through June 3, 2024. Public comment meetings occurred May 6, 7, and 9, 2024. The Draft EIS and Supplemental Information Report (SIR) and SERs were available to the public during the public comment period on the BLM's EPlanning Website. The public participation periods including scoping and public comment have been included in the schedule per CEQ 1506.10, BLM Handbook H-1790-1, and the FRA.

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		It must be noted that the planning process for the Rhyolite Ridge project has not been carried out in a way that fosters informed decision-making and public participation. First, the process has been unreasonably rushed, with BLM's own staff remarking, "This is a very aggressive schedule that deviates from other project schedules on similar projects completed recently and concurrently at the District and State." Email from Scott Distel, BLM, to Doug Furtado, BLM, December 21, 2023.	
51	51.3	Second, BLM's public rollout of the DEIS was disorganized and confusing. BLM issued a press release on Friday, April 12, stating that BLM was "seeking public comment on a draft environmental impact statement for the proposed Rhyolite Ridge Lithium-Boron Mine Project." The press release also stated that "[p]ublication of the draft EIS for the proposed mine opens a 45-day public comment period, ending on May 27, 2024." However, BLM did not actually publish the DEIS on that date; nor did BLM issue the legally required notices in the Federal Register. In response to inquiries, BLM stated that it would not publish the DEIS for another week. However, four days later, on Tuesday, April 16, BLM surreptitiously posted the DEIS and accompanying SIRs on its eplanning website with no additional public notification. Again, BLM did not publish the federal register notice that must precede publication of a Draft EIS. Finally, on Friday, April 19th, BLM issued a federal register notice and revised its previously issued press release to state the correct comment deadline, running from the April 19th publication date. The unusual way in which the DEIS was presented to the public will undoubtedly lead to confusion as to the duration and subject matter of this comment period. As such, a 45-day extension is appropriate to ensure that all members of the interested public, including members of affected local communities and Native American Tribes, have a sufficient opportunity to provide meaningful and informative feedback to BLM on this highly impactful project. In conclusion, because of the length and technical complexity of the DEIS and supporting documents, as well as the unusual way that BLM has thus far conducted the Rhyolite Ridge permitting process, the Timbisha Shoshone Tribe and the undersigned groups request a 45-day extension of the comment period on the DEIS. Thank you, Chairwoman Margaret Cortez Timbisha Shoshone Tribe /s/ Scott Lake Scott Lake Nevada Staff Attorney Center for Biological Diversity P.O. Box 6205 Reno, NV 89513 (802) 299-7495 slake@biologicaldiversity.org Ian Bigley Earthworks Southwest Organizer (775) 772-8393 ibigley@earthworksaction.org Kevin Emmerich Basin and Range Watch Fermina Stevens Western Shoshone Defense Project Laura Cunningham California Director Western Watersheds Project John Hadder Executive Director Great Basin Resource Watch CC: Douglas Furtado, BLM Battle Mountain District Manager (dfurtado@blm.gov) Jon Raby, BLM Nevada State Director (jraby@blm.gov)	The BLM issued the press release on April 12, 2024, which stated “Publication of the draft EIS for the proposed mine opens a 45-day public comment period, ending on June 3, 2024.” The federal register Notice of Availability was issued on April 19, 2024. The public comment period occurred from April 19, 2024 through June 3, 2024. Public comment meetings occurred May 6, 7, and 9, 2024. The Draft EIS, SIR, and SERs were available to the public during the public comment period on the BLM’s EPlanning Website. The public comment period occurred for 45 days per CEQ 1506.10, BLM Handbook H-1790-1, and the FRA. The BLM responded on May 20, 2024, that the request was considered but no extension granted.
Timothy Hipp – May 14, 2024			
52	52.1	I am writing in STRONG SUPPORT of the Ioneer Lithium Project. Esmeralda County is the poorest county in the state of Nevada. Without this and other mines, the county will no longer be able support itself and will cease to exist. Ioneer is engaged with the community and gives frequent updates to the County Commissioners (I was one) as well as hosting community meeting in Fish Lake Valley. The future of our county should be determined by its residents and not outside environmentalists who have never stepped foot in the county.	Comment noted.
Carl Cash – May 15, 2024			
53	53.1	The USA needs Ryolyte Ridge lithium to become less dependent on foreign sources. Ioneer continues to expend every effort to act environmentally responsible. It seems the preservation of the Theims Buckwheat is dependent on Ioneer more than any other sources. I support approval of the EIS and issuance of a formal affirmative ROD.	Comment noted.
Brianna Hanson – May 15, 2024			
54	54.1	See Attached Letter Please	Comment noted.

Comment Letter No.	Comment Number	Comment	Response
54	54.2	RE: Comments on Rhyolite Ridge Lithium-Boron Mine Project DOI-BLM-NV-8020-2021-0020-EIS Dear Mr. Distel: **Introduction** **ioneer** is proposing to develop an operation for the Rhyolite Ridge lithium-boron deposit in Esmeralda County, Nevada. This operation will produce two elements needed to meet the goals envisioned in **the Infrastructure Investment and Jobs Act of 2023**. As well, this mine operation will lower reliance on foreign sources for lithium, a critical mineral needed to meet our expanding needs as we advance electrification in the US and abroad. The U.S. Department of Energy's January 2023 announcement of the conditional loan commitment, through the DOE Loan Programs Office, to the Rhyolite Ridge Project (ioneer) will advance domestic production of the critical mineral, lithium. This will boost the U.S. battery supply chain[1]. I am submitting these comments on the Draft Environmental Impact Statement (DEIS) for the Rhyolite Ridge Project, published by the Tonopah Field Office of the Bureau of Land Management, Battle Mountain District. The DEIS was published on April 2024. And, importantly, I provide my strong support for ioneer's Rhyolite Ridge Project. **ioneer** has taken a very thoughtful, measured, and detailed approach to their engineering, permitting and importantly community engagement efforts. They have advanced solid community and stakeholder engagement efforts in the region, engaging early and often with a broad spectrum of stakeholders. They have responded to concerns raised, adjusted mine plans, and met with stakeholders to ensure concerns were addressed in a timely fashion. I am the CEO of Pathfinder Tonopah and we have a brownfield copper (critical mineral) mine redevelopment project in the region, the Liberty Mine Complex. My team has extensive experience with the National Environmental Policy Act (NEPA), the U.S. Mining Law, and the BLM's surface management regulations at 43 CFR Subpart 3809 governing locatable minerals and mining activities pursuant to the U.S. Mining Law. We believe ioneer has presented a strong mine plan and we support the approval of this regionally important critical mineral mine development project in central-western Nevada. [1] https:/lwww.energy.gov/lpo/articles/lpo-announces-conditional-commitment-ioneer-rtwolite-ridge-advance-domestic-produdion	Comment noted.
54	54.3	**The Country's Stated Commitment** The Biden-Harris Administration has stated its commitment to increase the domestic supply of critical minerals[2], to strengthen the nation's battery supply chain, and to electrify the transportation sector thus reducing our reliance on fossil fuels and most importantly on a foreign supply of raw materials. Worldwide demand for lithium is expected to increase dramatically soon and that demand has exceeded global production as of 2023[3]. In addition to electrifying the transportation sector, lithium will be important to the development and implementation of safe and reliable battery energy storage systems allowing for commercial applications to store energy from renewable resources (proven inconsistent energy sources) for the transition to reliable green, low carbon power-grid stability, commercial applications, and individual homes, to name a few. [2] https://crsreports.congress.gov/product/pdf/R/R47982/1 [3] https://www.statista.com/statistics/452025/projected-total-demand-for-lithium-globally	Comment noted.
54	54.4	**Addressing Concerns Raised-Committed Environmental Protection Measures** **ioneer** worked closely with the BLM and other state and federal agencies to reduce impacts that were identified in the permitting processes, including to these key areas: the endangered Tiehm's Buckwheat that grows in the area; water usage; and concerns identified related to the local electrical grid.	Comment noted.
54	54.5	Tiehm's Buckwheat Tiehm's Buckwheat is found on 10 acres of ground within the project area of 7,166 acres. **ioneer** has committed to a revised quarrying plan that will have no direct impact to the Tiehm's buckwheat's subpopulations. And the company has committed to multiple measures regarding the Tiehm's buckwheat critical habitat as outlined in the EIS. An illustration of their commitments is the ongoing (several years) operation of a greenhouse and the propagation of this buckwheat to begin to address the regrowing of this plant.	Comment noted.
54	54.6	Water Usage **ioneer** has developed a production plan that reduces the amount of water needed during operations. **ioneer's** lithium processing recycles and reuses the water in its system with much less water losses (such as lithium produced by evaporation).	Comment noted.
54	54.7	Power Generation The processing of the lithium-boron ore requires the use of acid which will be produced on site by an acid generating plant. This plant will produce enough heat and steam to generate all the electricity required to operate all the planned facilities.	Comment noted.
54	54.8	**Socioeconomic Benefits** ioneer has been an industry leader in the Esmeralda region with their strong community engagement and sustainability efforts at their Rhyolite Ridge project. Section 4.20 in the DEIS focuses on Social and Economic Conditions for this project. This operation will create a broad diversity of high-paying jobs and will generate local and state tax revenues that will benefit Esmeralda County and the State of Nevada for at least +20 years-all while implementing strong environmental protection measures. ioneer through its permitting, engineering and community outreach efforts has identified concerns, immediately addressed these, and built alternatives into their mine plan(s). There are no valid reasons to delay or deny approval of this nationally significant project. For those who will be directly employed at the operation the median annual income will be $141,000. From construction to the end of mine life the number of employees or contractors will range from 350-500.	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.

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		For Esmeralda County financial benefits (revenue) including sales taxes, property taxes and Net Proceeds of Mines will range from approximately $600,000 in the first year of construction to between $5.2 to $11.6 million during production. This will be a significant benefit to Esmeralda County where the average revenue stream for 2020 through 2022 (accessesmeralda .com/county_ office/auditor _recorder/financial_reports. php) was approximately $5,191,000 million per year. An additional benefit relates to the county road crossing the project area-this will be upgraded and maintained by **ioneer**.	
54	54.9	**Conclusions** The Rhyolite Ridge project will accomplish significant objectives: • Advance innovative environmental, energy generation, and community engagement processes. • Boost the development and construction of a mine in support of a green energy economy while supporting diverse, well-paying mining jobs and paying a broad spectrum of local, county, and state taxes. • Provide a reliable, domestic supply chain for the critical mineral lithium helping the country decrease its dangerous reliance on foreign sources. • Meet the goals of the **Infrastructure Investment and Jobs Act of 2023**. Approving this permit is the best choice, for the local economies and communities, for the state of Nevada and for the nation. **ioneer** through its permitting, engineering and community outreach efforts has identified concerns, immediately addressed these, and built alternatives into their mine plan(s). I see no valid reasons to delay or deny approval of this nationally significant project. I provide this letter of support for this project. Approving this mine project will help the communities in the region to benefit from a solid mineral development project through jobs, taxes, diversified opportunities, and environmental protections. Thank you for this opportunity to submit these comments on the DEIS for this important project. Please do not hesitate to contact me if you have any questions about my comments. Sincerely, Brianna Hanson CEO Pathfinder Tonopah	Public involvement opportunities for the Project have been conducted according to NEPA, CEQ regulations, and the BLM NEPA Handbook.
William Helmer – May 17, 2024			
55	55.1	I am requesting that the comment period be extended at least 30 days beyond the current deadline of June 3, 2024. A 45 day comment period does not leave enough time for the public to analyze the proposed project. There was a long delay, and only a few meetings regarding the project. It is extremely important for the public to be allowed enough time to comment on a proposed mining project in a very environmentally sensitive area. Also, please post the time that comments are due. Usually comments are due at 11:59 pm on the due date, but not always. I have seen the time and the due date posted for other BLM NEPA projects. I will be submitting more comments later. Thank you.	The public comment period occurred from April 19, 2024 through June 3, 2024. Public comment meetings occurred May 6, 7, and 9, 2024. The Draft EIS, SIR, and SERs were available to the public during the public comment period on the BLM's EPlanning Website. The BLM responded on May 23, 2024, that the request was considered but no extension granted, as well as that public comments were due at 11:59 P.M. on June 3, 2024. The public comment period occurred for 45 days per CEQ 1506.10, BLM Handbook H-1790-1, and the FRA.
Dylan Rodvik – May 19, 2024			
56	56.1	Please see the PDF submission	Comment noted.
57	57.1	Please see the submitted PDF	Comment noted.
56 and 57	56.2 and 57.2	To whom it may concern at the BLM Battle Mountain District Office, I am writing today to convey my concerns and utilize the opportunity to provide public feedback regarding the Draft Environmental Impact Statement for the proposed Rhyolite Ridge Lithium Mine in Nevada, and the potentially harmful impacts on the otherwise undisturbed local ecosystems within the project area. My comment focuses in particular regards to the endemic Tiehm's buckwheat and Monarch butterfly populations. As BLM decision makers prepare to write the Final Environmental Impact Statement for the proposed project, I felt it warranted to highlight the potentially unrecognized interdependent relationships of these two species at a local and project scale level, as well as the unrecognized potential risk of a dual-species decline for both ESA species while preparing the Final Environmental Impact Statement of this proposed project. As highlighted in the Draft Environmental Impact Statement, Tiehm's buckwheat (Eriogonum tiehmii) is listed under the Endangered Species Act, which is noted as an endemic plant species found only in the Rhyolite Ridge area. The Draft Environmental Impact Statement is sure to claim that Tiehm's buckwheat plays an incredibly integral role in its local ecosystem, providing pollinator food sources and refuge habitat for a diverse range of pollinator insects, including native bees and migrational Monarch butterflies. The Draft Environmental Impact Statement also highlights that "Pollinator diversity was found to be greater in Tiehm's buckwheat sites than surrounding areas" and that "pollinator communities in the Tiehm's buckwheat populations are composed of species that are more rare" (3.12.3). Some of the pollinators listed as "rare" consist of Monarch butterflies (Danaus plexippus), which are an Endangered Species Act candidate species, and are well understood to have strong preferences towards other native species of buckwheat (Xerces Society n.d.). Given the identified understanding that "Tiehm's buckwheat is the dominant insect pollinated plant species in its habitat where it occurs"(3.12.3), I believed it is within good reason to suspect there is a potential for higher than anticipated reductions in both specie's populations as a result from the proposed project if the interdependence between these two species is not fully understood and adequate mitigations are not provided or available to them as part of the project implementation process. Alternative B of the Draft Environmental Impact Statement claims that it is the least harmful to these species. That being said, Alternative B poses to remove up to 20% of current Tiehm's buckwheat habitat, and has been recognized as a potential disruption for Monarch butterfly migrations between the state of Nevada and the state of California. Although the Draft Environmental Impact Statement does provide an extensive summary of the harms to Monarch butterfly migrations as a result of Milkweed (Asclepias syriaca) population degradation, I feel that it inadequately	Impacts to Tiehm's buckwheat and the monarch butterfly, including impacts to pollinators and host plants, are discussed in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER. The monarch butterfly was not observed during pollinator studies, nor during baseline field surveys. Although the monarch buttery may be a potential pollinator of Tiehm's buckwheat, the current available scientific data does not show monarch butterfly is uniquely associated with Tiehm's buckwheat as opposed to any other butterfly species.

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		addresses how the loss of Tiehm's buckwheat will impact the Monarch butterfly's migration patterns as well as endemic level Monarch butterfly population numbers. The disturbance of these two species could have a snowball impact on other animals and plant species in the area. I sincerely encourage Ioneer Mining, The USFWS, and BLM to spend resources to fully understand and investigate the potential harms of the Rhyolite Ridge Lithium Mine on symbiotic relationships between Tiehm's buckwheat and Monarch butterflies at an endemic level during the creation of the Final Environmental Impact Statement. It is critical to place emphasis on the conservation of these two species and their endemic habitats for the future well-being and the cohesion of our nation's ecosystems. I appreciate you taking necessary time to read and include these concerns in the Final Environmental Impact Statement, and for your dedication to managing our public lands for all people. Sincerely, Dylan Rodvik	
Dempster Drowley – May 20, 2024			
59	59.1	I support the Rhyolite Ridge Project in the interest of national security, jobs, and contribution to an anticipated electric energy future.	Comment noted.
Personal Information Requested to be Withheld – May 20, 2024			
60	60.1	Ioneer's Rhyolite Ridge project will provide good job opportunities in the community, and help support families. Ioneer has been actively working with the BLM, the Fish and Wildlife Service, and other stakeholders, to modify its plan to reduce impacts to Tiehm's buckwheat and habitat, and have gone above and beyond to establish a program to grow, re-seed and support the propitiation of Tiehm's buckwheat. I believe it will thrive far better into the future because of Ioneer's efforts. The actions of Ioneer are exactly the type of responsible corporate / mining company behavior which should be encouraged. Our country needs it own domestic supply of lithium. Rhyolite Ridge will drastically increase domestic production if this critical mineral. We need the entire supply chain for battery production to be sourced and located within the U.S. economic growth and national security require it. I support this mining project.	Comment noted.
Frank Prado – May 21, 2024			
61	61.1	Hello, My name is Frank Prado and I am a US citizen residing in Florida. For my profession, I strategically partner with healthcare executives to maximize their use of electronic medical records. Over the past year, artificial intelligence has been a cornerstone for future planning and clinician workflow enhancements. This has pushed me to learn more about emerging technologies and zooming out to understand how our country can best position ourselves for the developing AI revolution. The utilization of clean energy will be integral for future AI use-cases (e.g data center growth), and because the Rhyolite Ridge project is an avenue to mine a domestic lithium source, this will support the production of lithium-ion batteries to support the increased energy demand. Because of these downstream impacts, I am writing in support of the Rhyolite Ridge project. Developing clean energy sources such as lithium-ion batteries in conjunction with solar and wind energy sources will have a net positive impact on our climate and domestic economy when compared to traditional non-renewable energy sources. As a concerned citizen and advocate for the United States remaining an advanced and safe country for all, I will reiterate my position of support for the Rhyolite Ridge mining project. Respectfully, Frank Prado	Comment noted.
Not Provided – May 21, 2024			
62	62.1	The move to electric vehicles is a scam, aimed at being seen as green or "sustainable" when in reality the process of creating these vehicles is detrimental to the environment. As a US Citizen, a resident of Nevada, and American Indian, it is not hard to see that the ploy of shifting to EVs is just an excuse to keep car infrastructure alive. I do not agree that ripping into our mother earth and destroying land, vegetation, and ecosystems for the collection of natural resources is in the best interest of future generations to come. Especially for a company whose headquarters are not even from this country. Why should we destroy our natural resources that have been providing for its inhabitants for thousands of years to be ripped up to support foreign interests or the capitalist ideology. How about supporting across country hyper speed public transit rather than supporting consumer debt to buy the latest EV. Especially in this economy, do you really think people have the funds to buy a new car when they can't even afford homeownership or food? Thanks Biden.	Comment noted.
Personal Information Requested to be Withheld – May 22, 2024			
63	63.1	This project does not fully protect the buckwheat species that is endangered, and will damage or kill some portion of its habitat. It should therefore be denied unless it can fully protect the species.	Due to the location of the mineral resource, full avoidance of Tiehm's buckwheat critical habitat is not possible. The Proposed Action and alternative include ACEPMs and Buckwheat Protection Plans to reduce impacts to Tiehm's buckwheat. The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.

Comment Letter No.	Comment Number	Comment	Response
Thomas McDonald – May 22, 2024			
64	64.1	See Attached	Comment noted.
202	202.1	To Whom It May Concern: Attached is a comment my wife and I would like to submit regarding the Rhyolite Ridge Lithium-Boron Project in Esmeralda County. Thank you for your consideration, Tom McDonald	Comment noted.
64 and 202	64.2 and 202.2	RE: Rhyolite Ridge lithium-Boron Project Dear Sir, My wife and I currently own and operate 41 Burger Kings and three ACE Hardware stores in Southern Nevada. As Nevada business owners, we would like to submit a comment regarding the Rhyolite Ridge lithium-Boron Project in Esmeralda County, proposed to be developed by loneer Rhyolite Ridge LLC (loneer). Rhyolite Ridge will provide important economic benefits for the local region, the state of Nevada, and the United States. The Rhyolite Ridge Project will create family-supporting jobs in rural Nevada, employing approximately 350 people while the mine operates, and 500 people during the construction phase. The expected $54 million of labor income during construction and $38 million of annual labor income during operations will be transformational for the local region. Once in operation, Rhyolite Ridge is expected to generate between $13 million and $31 million in annual fiscal tax revenue for state and local governments. In addition to the significant economic benefits for Nevada, this project will also help the United States become less dependent on other countries for our supply of lithium, a vital mineral for the production of batteries and critical for achieving the goal we all have of promoting economical and reliable green energy. The Draft Environmental Impact Statement estimates the total direct economic output to be $178 million during the construction phase and $125 million annually, once the mine is in operation. This level of long-term economic impact will be significant for nearby communities, Tribal and local businesses, and Nevada. loneer is focusing on engaging with local, regional, Tribal, and state businesses to execute its large-scale industrial project, and as demonstrated by its decadelong presence in the Fish Lake Valley region, is committed to doing business locally. loneer has involved regional and state contractors at every step of the procurement process. Local and Tribal businesses will also naturally benefit from construction activity and other downstream economic development opportunities. Potential opportunities include hotels, B&Bs, lodging, restaurants, hardware stores, staging yards, waste disposals, and transportation needs. loneer has conducted and will continue to conduct outreach with multiple Tribal Nations to discuss community benefit opportunities, cultural resource monitoring, economic development partnerships and federal technical and workforce development opportunities. The Project will provide important and sustained economic development opportunities for the community in addition to substantial tax revenue to this economically challenged region of Nevada. Thank you for your consideration,	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.
John Rupp – May 23, 2024			
65	65.1	Attached are our comments regarding the draft EIS for Rhyolite Ridge. John D. Graham and John A. Rupp, Paul H. O'Neill School of Public and Environmental Affairs Indiana University Bloomington, IN 47405 rupp@indiana.edu (812) 345-9064	Comment noted.
	65.2	Comments of John D. Graham and John A. Rupp, Paul H. O'Neill School of Public and Environmental Affairs, Indiana University, Bloomington, Indiana* Qualifications of Commenters John D. Graham, Professor of Risk and Policy Analysis John D. Graham joined the Harvard School of Public Health as a post-doctoral fellow in 1983 and as an assistant professor in 1985. From 1990 to 2001, Graham founded and led the Harvard Center for Risk Analysis (HCRA). In 1995, Graham was elected president of the Society for Risk Analysis (SRA), an international membership organization of 2,400 scientists and engineers. In 2009, Graham received the SRA's Distinguished Lifetime Achievement Award, the Society's highest award for excellence. From 2001 to 2006, Professor Graham served a Senate-confirmed role in the George W. Bush administration as Administrator, Office of the Information and Regulatory Affairs, Office of Management and Budget. From March 2006 to July 2008, Graham was dean of the Frederick Pardee RAND Graduate School (PRGS) at the RAND Corporation in Santa Monica, California. He later served as Dean of the O'Neill School at IU until 2019, when he joined the full-time faculty. As a scholar, Professor Graham is an author of more than ten books and 200 scientific articles; he is also an elected fellow of the National Academy of Public Administration. His most recent book is entitled *The Global Rise of the Modern Plug-In Electric Vehicle: Public Policy, Innovation, and Strategy* (Elgar Publishing, UK, 2021). John R. Rupp, Clinical Associate Professor Emeritus	Qualifications and comments noted.

Comment Letter No.	Comment Number	Comment	Response
		John R. Rupp, is Clinical Associate Professor Emeritus at the O'Neill School at Indiana, University. He began his career as a mineral exploration geologist at Salisbury & Dietz Company in Spokane, Washington. After service for Consolidated Resources of America in Cincinnati, Ohio, he joined Exxon Company USA as a production geologist in Midland, Texas. He then moved to IU where he served first as a senior research scientist at the Indiana Geological Survey and later as a full-time faculty member at the O'Neill School, where he helped design the energy-policy concentration in the MPA/MSES programs and taught courses on energy technology and policy. He is currently active as a consultant on a wide range of energy issues. **Recent Scholarship on Critical Minerals** In recent years, Professors Rupp and Graham engaged in collaborative research on the role of public policy in the development of critical minerals for the clean energy transition. In 2019 Professors Rupp and Graham published an assessment of the world's ability to mine the quantities of lithium necessary to meet the explosive demands from clean energy policies. They found that a surprising number of planned lithium mines in Asia, South America, Europe, and the USA were delayed or cancelled because of local community concerns about the adverse impacts of mining operations. They concluded that governments around the world need to enact additional incentives for local communities to serve as hosts of lithium mines. More recently, Professors Rupp and Graham were commissioned by the Wilson Center in Washington, DC to assess the capabilities of South America to meet the world's needs for expanded lithium supplies. Although South America has a privileged geological position in lithium reserves, Professor Rupp and Graham found substantial socio-political and governance barriers to the expansion of lithium mining, especially in Chile, Argentina, and Bolivia. They concluded that it would not be wise for the world to count on South America as the exclusive source of a dramatic increase in global lithium supplies. Most recently, Professors Rupp and Graham have formed a research team at IU to assess the progress and limitations of the nascent critical materials industry in the United States. The focus is on seven specific materials: cobalt, copper, graphite, lithium, manganese, neodymium, and nickel. All seven materials will play a crucial role in the electric vehicle transition for the next decade. Rupp, Graham, and student collaborators are building a database to track the progress of the United States in establishing mines and processing materials for these materials. One of the initial papers from this effort is now under peer review at a scientific journal. Additional papers are in the pipeline. This work is funded by the internal resources of Indiana University. **Comments on the Draft Environmental Impact Assessment for the Rhyolite Ridge Lithium-Boron Project in Nevada.** The comments below are strictly those of the authors and do not necessarily represent the positions of the O'Neill School or Indiana University. The comments were not funded or sponsored by any outside entity.	
	65.3	**Comment #1: The United States federal government, under recent Republican and Democratic presidents, has established a national priority to expand the mining and processing of critical minerals in the United States.** The last three US presidents (Barack Obama, Donald Trump, and Joe Biden) have had numerous policy disagreements. One issue where they are united is the national priority to expand the mining and processing of critical minerals in the United States. Each of the last three presidents has used executive-order authority to direct federal agencies to take the necessary steps to expand the mining and processing of critical minerals in the United States. The current administration is on record as stating that "The project represents another step by the Biden-Harris administration to support the responsible, domestic development of critical minerals to power the clean energy economy."	The decision to be made is based on the analysis of impacts as required by NEPA, CEQ regulations, and the BLM NEPA Handbook.
	65.4	**Comment #2: The United States Congress, with support from President Biden, has authorized the Departments of Energy and Defense to provide financial assistance (loans and grants) to stimulate the mining and processing of critical minerals in the United States.** The US Congress and President Biden have collaborated on new legislation that seeks to stimulate greater mining and processing of critical minerals in the United States. In the Inflation Reduction Act of 2022, for example, Congress authorized tax credits for costs of mining and processing the critical minerals used in clean energy technologies. Congress also provided the Department of Energy (DOE) with new budgetary authority to offer grants and loan guarantees to companies working to mine and process critical minerals in the United States. Congress has also provided the Department of Defense with new budgetary authority to subsidize mining and processing of critical materials that are crucial to the national security of the United States. In accord with these federal programs, the developer at Rhyolite Ridge (Ioneer) has secured a $700 million dollar conditional loan from the DOE to partially support the capital costs of this project.	The decision to be made is based on the analysis of impacts as required by NEPA, CEQ regulations, and the BLM NEPA Handbook.
	65.5	**Comment #3: Lithium has been identified as a critical mineral/material by both the US Geological Service and the US Department of Energy.** The Department of Interior, through the US Geological Survey, has identified lithium as a critical mineral that is crucial to the national security of the United States. Drawing from the USGS determination, the US Department of Energy has determined that lithium is a critical material for the energy security of the United States, including the clean energy transition. In June 2023 DOE published a "criticality matrix" that rates each critical material according to its "criticality" for the Unites States economy and security. Lithium has rated at highest level in terms of both "important to the energy system "of the United States and the degree of supply chain vulnerability from 2025 to 2035. (https://www.energy.gov/sites/default/files/2023-07/doe-critical-material-assessment_07312023.pdf).	The decision to be made is based on the analysis of impacts as required by NEPA, CEQ regulations, and the BLM NEPA Handbook.
	65.6	**Comment #4: Federal, state, and local agencies have been working collaboratively for several years to minimize any adverse environmental impact that might occur from a new lithium mine at Rhyolite Ridge, Nevada.** The review of the developer's plan at Rhyolite Ridge has been led by the Bureau of Land Management Battle Mountain District Office Tonopah Field Office 1553 South Main Street Tonopah, Nevada 89049. The Cooperating Agencies include the United States Department of Energy, the United States Environmental Protection Agency, the United States Fish and Wildlife Service Ecological and Migratory Bird Programs, the Nevada Department of Wildlife, the Nevada Division of Forestry, the Nevada Division of Environmental Protection, and Esmeralda County and Nye County of the State of Nevada. In the Draft Environmental Impact Statement, the BLM has concluded that the new lithium mine at Rhyolite Ridge can proceed without significant adverse environmental impact.	The BLM has involved cooperating agencies as required by CEQ regulations and analyzed environmental impacts in accordance with applicable laws, regulations, and agency policy.
	65.7	**Comment #5: The developer's plan for mining at Rhyolite Ridge is environmentally responsible.** The developer has conscientiously designed the planned mining and processing operation to have minimal negative impacts on the environment, in particular the North and South OSF Alternative. The systems applied to the entire process stream are both innovative and exceptional in the mining industry. Within the Draft Environmental Impact Statement, careful consideration of all facets of the operation's impacts ranging from the social/economic implications to those involving the physical environment have been designed in consultation with technical environmental experts, impacted stakeholders, and numerous local, state and federal regulatory agencies. Of particular note are the consideration and incorporation of Tribal nation's concerns, the water management system that will result in zero net discharge and careful management of the impacts on local water supplies, and the zero-carbon emission power supply system.	The EIS evaluates environmental impacts associated with the Proposed Action and alternatives.

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	65.8	**Comment #6: The BLM and Cooperating Agencies have worked with the developer to minimize any adverse impact of the new lithium mine on Thiem's Buckwheat.** In collaboration with experts at federal agencies, the developer at Rhyolite Ridge has developed a multi-faceted plan of research and development, coupled with a suite of mitigation activities, designed to specifically address the preservation of an endangered species, Thiem's Buckwheat, and to help the current population of Tiehm's Buckwheat reproduce and thrive.	The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER.
	65.9	**Comment #7: The future sustainability of Tiehm's Buckwheat is likely more promising with BLM approval of the new lithium mine than it would be without approval of the proposed development.** The forces of nature, grazing, and climate change – not mining – have led to the endangerment of Thiem's Buckwheat. A key to the survival of this endangered species may be additional ecological research to identify feasible ways to protect the flower. This research – and promising protective measures -- are more likely to be funded and implemented following BLM approval of the mine at Rhyolite Ridge than if BLM withholds approval of the mine. In other words, the ongoing harm to the habitat of Tiehm's Buckwheat is more than offset by the ecological gains that will flow from Ioneer's multi-year investment in R&D and mitigation activities to protect, nurture, and sustain the current limited population of Tiehm's Buckwheat that occurs near the proposed mining operation.	Consideration of effects to Tiehm's buckwheat has been conducted as required by the ESA. The BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat.
	65.10	**Comment #8: If BLM Disapproves the Rhyolite Ridge Lithium Mine, Greater Environmental Harms Could Occur at Other Locations Around the World Where Environmental Reviews Are Less Rigorous Than Are in the United States.** In risk analysis of regulatory actions, it is crucial to analyze the risks created by a regulatory action, as well as risks that may be reduced by such action. The regulatory framework in the U.S to protect the environment from adverse impacts associated with mining activities is universally recognized to he be the most comprehensive and effective in the world. If BLM disapproves the mine at Rhyolite Ridge, lithium mining will occur at other locations around the world that have less environmental protections than those in existence within the U.S. where multiple federal, state, and local agencies collaborate to minimize adverse impacts on the environment.	The effects analysis has been prepared according to NEPA, CEQ regulations, and the BLM NEPA Handbook. Assessment of lithium mining effects in other parts of the world is beyond the scope of purpose and need of this analysis.
Not Provided – May 24, 2024			
66	66.1	My family lives by CMR, we WILL be directly impacted by this mine and the rest of the fake renwable energy crap. I have worked for mining companies like this and they are all the same. They told everyone what they wanted to hear with a smile and unicorns are flying around. I does not take a rocket scientist tp read this and see that not only is this going to cause destruction of everything they touch, it IS going to make the water poisoned or dry. It is going to poison all of us and wildlife. Oh and farming will suck. Not only am I against this I am against all the green energy stuff coming. Not about the environment except for making it worse, this is about money and none of us can say anything because it is federal and you don't matter. The BLM can't handle horse management and don't think they understand that all those poisonous gases mentioned are above levels for health concerns. This area is very special to our family and now it is gone. Our son who has planned his whole life to be self-employed in the community he loves will have to move somewhere safer then next door. You destroyed or will destroy everything we love about this area and it is the reason we live here. Sadly too many people live here now who don't understand mining and your BS. That is actually being said you will destroy. The things that you disturb are worse than all the things in this reported. I hope the valley residents on board with this get what you deserve. When it is all said and done and we are all sick with no water or wild life you will take your money and run and the people here will still not get it!!! NO MORE	The air quality impacts were modeled for the Project and no pollutants are projected to exceed national or state standards. Section 4.1 of the EIS includes additional air quality information and impacts analysis. Section 4.19 describes impacts to wild horse and burros, Section 4.16 describe impacts to water resources, including quantity and quality, and Section 4.18 describes impacts to wildlife resources. Section 4.20.10 describes the estimated taxes that would be generated and distributed both locally to Esmeralda County as well as up through to federally, as well as direct, indirect, and inducted values.
Denis Phares – May 24, 2024			
67	67.1	Please find attached Dragonfly Energy's support letter for Ioneer's Rhyolite project.	Comment noted.
	67.2	Bureau of Land Management Scott Distel, BLM Project Manager SO Bastian Road Battle Mountain, Nevada 89820 RE: Rhyolite Ridge Lithium-Boron Project Dear Sir, I represent Dragonfly, we would like to submit a comment regarding the Rhyolite Ridge Lithium-Boron Project (Rhyolite Ridge) in Esmeralda County, proposed to be developed by loneer Rhyolite Ridge LLC. Rhyolite Ridge is one of the most advanced lithium projects in the U.S., with significant resources that can help us build a U.S. green energy storage supply chain. The vast majority of lithium processing occurs outside of the United States. Rhyolite Ridge will be an important domestic source of refined lithium materials so that we are able to build our domestic supply chains and be compliant with the Inflation Reduction Act and other U.S. Government objectives regarding reliable, clean energy. Dragonfly seeks the U.S. government to swiftly support the localization of lithium mine and processing development in the U.S. to support the significant investments we are making throughout the U.S. for green energy storage supply chain. Rhyolite Ridge Lithium Boron projects are important for the following reasons: ■ To reduce carbon footprint in the US ■ Green energy storage production for Dragonfly in the US ■ To secure critical minerals in the US Thank you for your consideration, Dr. Denis Phares Ph. D	The BLM is considering the proposal as required by NEPA, mining laws, CEQ regulations, and BLM surface management regulations.
Jeff Sutich, NNDA – May 22, 2024			
68 and 189	68.1 and 189.1	Dear BLM, Please see the attached comment letter in support of the Rhyolite Ridge Lithium project. Best regards, Jeff Sutich Executive Director Northern Nevada Development Authority	Comment noted

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68	68.2 and 189.2	May 21, 2024 The Northern Nevada Development Authority (NNDA) is the state-designated Regional Development Authority (RDA) for the Sierra Region of Nevada that includes Mineral County which was included within the area of analysis for the Rhyolite Ridge Lithium-Boron Project. NNDA helps to grow and strengthen the region's economic ecosystem and facilitates business-to-business resources to support existing businesses – such as we would like to provide these comments on the Rhyolite Ridge Lithium-Boron Project Draft EIS. The lithium supply chain has become a major focal point in bolstering and diversifying Nevada's economy as it is the only state in the Nation that has all stages of the supply chain – from mining and processing to recycling - located within its borders – and the State stands to benefit for many decades from the lithium material that Ioneer will provide from Rhyolite Ridge. In 2023, The State was designated as one of the 31 unique Tech Hubs Across America in October of 2023. Led by the University of Nevada, Reno, the Hub aims to build a self-sustaining and globally competitive full lithium lifecycle cluster, spanning extraction, processing, manufacturing, and recycling. Through its many academic, industry and non-profit partners, including NNDA which is tasked with Enhancing the Existing Value Network and Supply chain (Gaps);, the team aims to pioneer a complete lithium supply chain, from resource management of critical materials to the rejuvenation, repurposing, and recycling of lithium batteries, and to the reinvention of the future generations of batteries. The Rhyolite Ridge Project's creation of lithium material is an important component in this endeavor. According to the Draft EIS Section 4.10.1, the Project is estimated to create 500 jobs during the construction period, and up to 350 direct jobs during mining operations. Hawthorne (located in Mineral County), by being one of the closest towns to the Project, stands to benefit for many years because of the operations at Rhyolite Ridge as many of the workers and their families are likely to reside in the community. Further, local businesses including hotels, restaurants, and mine support services are likely to see an uptick in activity that likely will result in the creation of even more local jobs and economic opportunity. The NNDA for many years has worked with Ioneer by connecting them with the local business community to find areas of synergy and opportunities for business development, in addition to community colleges within our territory to develop Project specific training programs for local citizens. The North and South Overburden Storage Facility Alternative being proposed in the Draft EIS will spur much needed economic development for this traditionally underserved part of rural Nevada, and we look forward to working with Ioneer as their Project is slated to create significant economic development and employment opportunities for decades to come. We thank you for considering these comments on behalf of NNDA,	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.
Eric Kaufman – May 24, 2024			
69	69.1	Hello; I live in Fish Lake Valley and am curious about the 10 foot draw down on aquifer impacts. I read something saying that it would represent the final, ultimate, amount of lowering of the aquifer, but maybe I'm wrong on that. So I guess my two questions: Does this mean that via monitoring wells the aquifer will not drop below 10 feet, and if it does, what happens? Does this mean that after the mine closes, the aquifer will not drop below 10 feet, and if it does, what happens? Thanks so much for any clarity you can provide, Eric	The 10-foot drawdown contour was used to assess impacts of the Proposed Action and alternatives. Impacts to groundwater are described in the EIS in Sections 4.16 and 4.20.16. Additional information is found in the Water Resources and Geochemistry SER. EIS Section 4.21 includes monitoring surface water and groundwater and mitigating impacts.
Peter Flanagan – May 24, 2024			
70	70.1	I fully support the Rhyolite Ridge Lithium-Boron Project We need critical minerals, like Lithium, made here in USA, with USA workers!	Comment noted.
Board of Mineral County Commissioners – May 24, 2024			
71	71.1	Please see the attached letter in support of the Ioneer project near Mineral County. All the best, T. Jaren Stanton, Esq. District Attorney, Mineral County District Attorney's Office	Comment noted.
204	204.1	Hello, Attached is the Mineral County Board of Commissioners comment letter for the Rhyolite Ridge Lithium-Boron Project. Thank You Bonnie DeMars Clerk-Treasurer Chief Deputy	Comment noted.
71	71.2 and 204.2	The Mineral County Board of Commissioners would like to submit the following comment regarding the Rhyolite Ridge Lithium-Boron Project in Esmeralda County, proposed to be developed by Ioneer Rhyolite Ridge LLC (Ioneer). Through many years of communication between Ioneer and Mineral County we know that the Project has been designed in a responsible manner and subject to the highest standard of environmental review. The North and South Overburden Storage Facility Alternative being proposed in the Draft EIS will provide much needed economic development for this underserved part of rural Nevada while also meeting national carbon emission objectives. The Draft EIS is well-reasoned and addresses all the local government impacts that are anticipated. We are confident that the Project will be of significant benefit for local businesses and residents in Mineral County. According to the Draft EIS for the Project, "Mineral County has the highest percentage of low-income populations within the area of analysis, which includes Hawthorne, Mina, and Luning." (Section 3.3 - Environmental Justice). In addition to providing meaningful	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER. Effects to environmental justice populations, including low-income populations, are evaluated in Sections 4.3 and 4.20.3.

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		employment opportunities for our residents who will be able to commute to work at the facility, our local hotels, restaurants, gas stations, product vendors and other local businesses will all benefit from the activity at Rhyolite Ridge which is slated to be in operation for decades. The Hawthorne Army Depot is the largest ammunition storage facility in the world and played a pivotal role in supplying ordnance to the Pacific Theater during World War II. As such, the town of Hawthorne has a long military history and is appropriately nicknamed "America's Patriotic Home". Therefore we are well aware of the importance for the United States to develop a domestic supply of critical materials. Both the lithium and boron that will be produced at nearby Rhyolite Ridge are crucial for national defense applications. Ioneer has for many years indicated their commitment to hiring locally and instituting training programs for workers in the region, including partnering with local community colleges and vo-tech institutions to deliver training in advance of operations. Moreover, Ioneer is taking meaningful recruitment actions, including hosting job fairs for local communities and Tribes and affirmative recruiting in disadvantaged communities in the region. Thank you for your careful consideration. Chairman Larry Grant Vice Chairman Curtis Schlepp Commissioner Tina Manzini	
Amanda Hilton, NVMA President – May 24, 2024			
72	72.1	To Whom it May Concern: Attached please find a letter of support for the Rhyolite Ridge project. Regards, Amanda Hilton	Comment noted.
72	72.2	The Nevada Mining Association respectfully submits the following comments regarding loneer's proposed Rhyolite Ridge Lithium-Boron Mine Project in Esmeralda County, Nevada. The Rhyolite Ridge project is an exciting opportunity to develop local sources of lithium and boron - two materials essential for the increased deployment of clean technologies and sustainability. <u>The Nevada Mining Association and Mining in Nevada</u> First organized in Tonopah, Nevada, in 1913, the Nevada Mining Association (NVMA) currently consists of more than 400 companies that comprise Nevada mining and rely, in whole or in part, on this state's foundational industry. These member companies are engaged across the broad spectrum of the industry in Nevada, from exploration and discovery to development and construction, to operation and production, to closure and reclamation. The NVMA provides a voice for Nevada's mining industry in federal, state, and local policy matters, community engagement, public education, and workforce development. Mining in Nevada and in the U.S. is in global competition. Access to mineral resources and the costs of doing business weigh heavily on a decision to mine in the U.S. verses South America, Africa, and other mineralized areas of the world. Furthermore, the products mined in Nevada, especially lithium, have significant strategic importance to the U.S. in terms of climate change, technological innovation, energy independence, economic stability, and the national interest. In the absence of domestic metallic and industrial mineral production, the U.S. must import from foreign sources, making Nevada mining a national security interest. Mining offers great benefits to the communities in which it operates and to the state as a whole. Mining operations and mining-related businesses are found in every county in Nevada, and the mining industry makes significant contributions to the economic wellbeing of the state and counties, paying all taxes and fees that all general businesses are required to pay in addition to two industry-specific taxes. Further, the mining industry is known for being a great partner of education in the communities in which it operates by teaming with local efforts to sponsor everything from programs for at-risk students to construction of facilities. Nowhere is the presence of mining more important than in rural Nevada where it is a major economic driver in communities like Tonopah, Elko, Winnemucca, Battle Mountain, and Eureka. With direct and induced employment numbering near 37,000, average wages near $100,000, paid leave policies, and employer-provided health insurance, mining offers tremendous opportunities to rural residents and reduces the strain on the State's social safety net.	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.
72	72.3	<u>Benefits of the Rhyolite Ridge Lithium-Boron Mine Project</u> The NVMA is confident that the Rhyolite Ridge project will provide significant, much needed economic benefits and opportunities for Nevada in addition to critical minerals for the security of the U.S. supply chain. Rhyolite Ridge will provide important economic benefits for the local region, the state of Nevada, and the United States. The Rhyolite Ridge Project will create family-supporting jobs in rural Nevada, employing approximately 350 people while the mine operates, and 500 people during the construction phase. The expected $54 million of labor income during construction and $38 million of annual labor income during operations will be transformational. Once in operation, Rhyolite Ridge is expected to generate between $13 million and $31 million in annual fiscal tax revenue for state and local governments. The Draft Environmental Impact Statement estimates the total direct economic output to be $178 million during the construction phase and $125 million annually, once the mine is in operation. This level of long-term economic impact will be significant for nearby communities, Tribal and local businesses, and Nevada. The Rhyolite Ridge Lithium-Boron project is expected to employ 400 to 500 workers during the construction phase, and 320 to 350 during operation with median total compensation levels of $141,000 per year. In addition, the operation is estimated to contribute $15-25 million in taxes during construction and $13-35 million annually once in operation. When considering the life of the mine (30 to 50 years) and the direct, indirect, and induced jobs that will be created, the Rhyolite Ridge Lithium-Boron project will be transformational for the people, children, and businesses of Esmeralda County and its communities. loneer is focusing on engaging with local, regional, Tribal, and state businesses to execute its large-scale industrial	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.

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		project, and as demonstrated by its decadelong presence in the Fish Lake Valley region, is committed to doing business locally. The impacts to small business are obvious, creating opportunities for new ones and allowing existing businesses to thrive and expand. Throughout every step of the procurement process, loneer has involved regional and state contractors. Local and Tribal businesses will also naturally benefit from construction activity and other downstream economic development opportunities. Potential ancillary opportunities include, but are not limited to, diverse lodging options, restaurants, hardware and other retail stores, staging yards, waste disposals, and transportation options. In particular, loneer is committed to continuing its outreach with multiple Tribal Nations to discuss community benefit opportunities, cultural resource monitoring, economic development partnerships, and federal technical and workforce development opportunities.	
72	72.4	Strengthening the Domestic Supply Chain and Enhancing National Security This project will be only the second lithium operation in Nevada and all of North America. The need for lithium worldwide has skyrocketed with the development of renewable energy technologies. Due to its bountiful mineral resources, Nevada is uniquely positioned to fulfill that demand. In the 20th century, lithium production was almost non-existent, but accelerated quickly in response to technological demands. Production was 150,000 tons in 2000, 400,000 tons in 2010, and about 600,000 tons in 2020. As the demand continues to grow, so must the supply through new sources and new mining operations. The Rhyolite Ridge Lithium-Boron project is expected to produce 22,000 tons of lithium carbonate per year, significantly supplementing the country's supply. Unfortunately, the vast majority of lithium processing currently occurs outside of the United States. Rhyolite Ridge will invest in the domestic production of lithium and other critical minerals, which are essential to national security. The U.S. is dependent on foreign sources for the processed versions of many of these minerals. Without intervention, that reliance will only grow. The Rhyolite Ridge Project will inject Nevada lithium and boron into the U.S. electric vehicle supply chain, which will immediately make a positive economic impact. Once operational in 2026, Rhyolite Ridge will quadruple domestic lithium production and be sufficient to power approximately 400,000 electric vehicle cars per year for decades to come. Its 22,000 tons of produced lithium chemicals annually will provide a boost to American-made automobiles and help accelerate the clean energy transition. The refined lithium chemicals produced at Rhyolite Ridge will be immediately ready to be used by battery makers. The on-site production facility will also produce large quantities of borates, also a significant material for clean technologies and environmental sustainability. Boron is used in solar panels and the heat tubes inside them, microwave cookware, and the screens on mobile phones and other such devices. That material is thin and strong because of the borosilicate glass. Boron is also used in fiberglass insulation, making houses and buildings more energy efficient.	Comment noted.
72	72.5	Conservation Efforts by loneer The North and South Overburden Storage Facility Alternative proposed in the Draft EIS thoroughly examines potential local environmental impacts while also meeting national carbon emission reduction objectives. The Draft EIS is well-reasoned and addresses all anticipated environmental impacts Upon learning of the Tiehm's Buckwheat, the Rhyolite Ridge Lithium-Boron project took immediate actions to conserve and preserve the species, including the protection of current populations from non- mining threats. Further, the Rhyolite Ridge Lithium-Boron project has worked with federal land managers, state regulators, and researchers to learn more about the Tiehm's Buckwheat. This work has led to the development of a habitat suitability model and the funding of baseline studies and genetic research to identify undiscovered Tiehm's Buckwheat populations and to better understand the plant's lifecycle along with the soil and climatic factors on which the buckwheat depends. Additionally, in cooperation with the BLM, seeds have been sustainably collected for study; they have been banked and propagated with an eye toward natural germination and seedling planting. Significantly, the Rhyolite Ridge Lithium-Boron project's operational plans were modified specifically to avoid, minimize, and mitigate impacts on the Tiehm's Buckwheat and ensure that populations are preserved and protected while allowing mining activities to occur.	The EIS evaluates effects to Tiehm’s buckwheat and designated critical habitat for the Proposed Action and North and South OSF Alternative in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER.
72	72.6	Conclusion The Rhyolite Ridge Project will provide important and sustained economic development opportunities for the community in addition to substantial tax revenue to this economically challenged region of Nevada. Rhyolite Ridge will positively benefit the regional and domestic supply chains during both its construction and operation phases. The project has carefully considered its environmental impacts and adjusted plans accordingly. The Nevada Mining Association appreciates the opportunity to provide comments on the Rhyolite Ridge Lithium-Boron Mine Project, which will be a globally significant, long-life, low-cost source of lithium and boron. The project will provide the materials necessary for a sustainable and thriving planet, while strengthening the U.S. critical minerals supply chain. The Draft EIS offers a thorough evaluation of the project, which should be allowed to move forward into construction and production as quickly as possible. Please contact me if you have any questions. Sincerely, Amanda Hilton President	Comment noted.
Brady Godbey – May 24, 2024			
73	73.1	Dear Bureau of Land Management, I am writing to express my strong support for the Rhyolite Ridge Lithium-Boron Mine Project. As we strive for a more sustainable future, projects like Rhyolite Ridge play a crucial role in meeting our clean energy needs and promoting environmental responsibility. At Fluor, we have collaborated with Ioneer since 2018 on the development and planning for this project. Our firsthand experience has highlighted several key points in favor of the Rhyolite Ridge project: 1. Resource Potential: Esmeralda County, Nevada, holds the largest known lithium and boron deposit in North America. The availability of these critical materials is essential for advancing technologies such as electric vehicles, renewable energy storage, and other clean energy applications. 2. Economic Impact: The project has the potential to create jobs locally, nationally, and globally. It will contribute to economic growth and stability, benefiting communities and supporting the transition to a low-carbon economy. 3. Sustainable Design: We applaud and embrace the efforts by Ioneer to produce a sustainable design. The project’s innovative cost-saving measures make it an attractive investment for the future.	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER. ACEPMs to minimize impacts are described in the EIS in Section 2.1.13.

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		4. Responsible Mining Practices: Rhyolite Ridge stands out as one of the most meticulously planned projects. By extracting lithium and boron efficiently, it minimizes its environmental footprint while meeting growing demand for these critical minerals. Compared to all other critical mineral projects in development today, the Rhyolite Ridge project is one of the most positively impactful projects for the United States. I urge the Bureau of Land Management to support the necessary permits and approvals for this vital initiative. Let us work together to build a cleaner, more prosperous future. Thank you for your attention to this matter. Sincerely,	
Emily Ketchen and Simon Clarke – May 27, 2024			
74	74.1	Dear BLM Rhyolite Ridge Team, Please see attached public comment letter for the Rhyolite Ridge Lithium-Boron Project's Draft Environmental Impact Statement from Simon Clarke, CEO of American Lithium Corp./Tonopah Lithium Corp. Kind regards, Emily Ketchen [Attachment: FNL_ioneer_DEIS_Call_To_Action.pdf]	Comment noted.
207	207.1	Dear BLM Rhyolite Ridge Team, Please see attached public comment letter for the Rhyolite Ridge Lithium-Boron Project's Draft Environmental Impact Statement from Simon Clarke, CEO of American Lithium Corp./Tonopah Lithium Corp. Kind regards, Emily Ketchen Director of Administration	Comment noted.
74	74.2	RE: Rhyolite Ridge Lithium-Boron Mine Project To whom it may concern: American Lithium (dba Tonopah Lithium Corp. in Nevada) would like to provide the following comment on the Rhyolite Ridge Lithium-Boron Project in Esmeralda County, proposed to be developed by Rhyolite Ridge LLC (Ioneer). The Project is projected to create hundreds of long-term jobs in the area while also becoming a key domestic supplier of lithium necessary to create a cleaner, more sustainable future as well as helping domestic energy security. (See the Rhyolite Ridge Draft EIS Section 3-10, 3-11). By background, American Lithium is an advanced lithium developer with assets located in Nye and Esmeralda Counties near the town of Tonopah. We have developed a strong relationship with the Ioneer team over the last seven years and have seen first-hand the diligent work that they have done to collaborate with the local community, including local businesses, Tribes, and other Project developers including ourselves. They are great neighbors and understand, like we do, that it is critical for future energy security that all the large lithium projects in Nevada are developed and brought into construction as soon as possible. We look forward to continuing to work with them over the coming years to help provide the lithium required for domestic markets and to benefit the local communities, Nevada and North America at this critical time in the global transition of energy. Additionally, we are equally impressed with Ioneer's commitment to listen to experts including federal agencies to ensure the Rhyolite Ridge Project is developed in a way that is environmentally responsible. One of the strongest operational components of the Project is their ability to generate their own carbon-free power by leveraging the heat generated by their sulfuric acid plant to produce electricity while also extracting the lithium and boron products from the ore at Rhyolite Ridge (Section 2-6 of the Rhyolite Ridge Draft EIS). As the United States is currently dependent on foreign sources for the processed versions of the minerals needed for the energy transition, the Rhyolite Ridge Project is one of several world-class mining and processing projects that the country will need in the decades to come, including our own TLC project and several other projects in Nevada and nation-wide. Accordingly, we express our complete support for the Rhyolite Ridge Lithium-Boron Project, and we thank you for considering these comments.	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.
Steve Harris – May 26, 2024			
75	75.1	I am in support of this project as while following the progression, I find this effort to be responsible and well thought out. It will help us be less dependent on foreign suppliers whom will most certainly not be as safe or committed to our environment. The jobs created by this effort will also help American workers to provide for themselves and their families. This project will also help us achieve a lighter footprint on our planet evironmentaly. Please consider these points when moving this worthwhile effort forward. Thanks	Comment noted.
Han Cho – May 29, 2024			
76	76.1	Dear Whom it may concern, My name is Han Cho, who represents EcoPro Innovation Co., Ltd. We would like to submit our comment regarding the Ioneer Rhyolite Ridge LLC's Rhyolite Ridge Lithium-Boron Project (Rhyolite Ridge) in Esmeralda County. We believe Ioneer's Rhyolite Ridge project is important for the following reasons. • Playing critical role in the U.S. electric vehicle supply chain • Beneficial to the environmental impact by reducing carbon footprint in the U.S. • Support raw material procurement for lithium chemicals and cathode production in the U.S. Ioneer's Rhyolite Ridge project is one of the most advanced lithium projects in the North America.	Comment noted.

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		We believe the project will play critical role in establishing strong U.S. electric vehicle supply chain. Rhyolite Ridge will support securing critical raw material inside the U.S. and North America where we plan to expand on lithium chemical production and cathode active material production. Rhyolite Ridge's product will comply with the Inflation Reduction Act and other government objectives regarding electric vehicle production. As of now, most of the lithium is produced overseas outside the United States. We, EcoPro Innovation, would like to request unhesitating and full support of the U.S. government for ioneer's Rhyolite Ridge project. It would greatly support our investments in the U.S. and North America for the electric vehicle supply chain. I appreciate your consideration, Han Cho	
Personal Information Requested to be Withheld – May 29, 2024			
77	77.1	Lahontan Audubon Society comments on DOI-BLM-NV- B020-2021-0020-EIS, the draft EIS on the BLM Rhyolite Ridge Lithium-Boron Project	Comment noted.
77 and 180	77.2 and 180.1	Nevada Native Plant Society P.O. Box 8965 Reno, Nevada 89507 May 29, 2024 Rhyolite Ridge Lithium-Boron Mine EIS c/o BLM Battle Mountain District 50 Bastian Rd. via mail and ePlanning Battle Mountain, NV 89820 On behalf of the Nevada Native Plant Society, I am pleased to provide comments to the Bureau of Land Management (BLM) for the draft Environmental Impact Statement (dEIS) for the proposed Rhyolite Ridge Lithium-Boron Project in Esmeralda County, Nevada. The Nevada Native Plant Society (NNPS) is a non-profit organization whose mission is to stimulate an interest in and an appreciation of native plants and their conservation. Our primary concerns are the adverse environmental impacts of the proposed mining project on the endangered Eriogonum tiehmii (Tiehm's buckwheat), an endemic plant only found in the proposed mining project area on public land, and on its Critical Habitat designated by the U.S.F.W.S. Many of the issues which we raised in our February 1, 2023 scoping comments to the BLM on the impacts of the mining proposal on Tiehm's Buckwheat are mentioned in the dEIS. However, our major issue on protecting this endangered species and its critical habitat from adverse mining impacts was inadequately addressed. Neither the proposed action nor the North and South OSF alternative comply with federal legal and regulatory requirements. Instead, the proposed action, according to the dEIS, would result in the disturbance and degradation of 354 acres (39%) of designated Critical Habitat and the permanent destruction and loss of 97 acres (11%) of designated Critical Habitat. The North and South OSF alternative would result in disturbance and degradation of 197 acres (22%) and permanent destruction and loss of 45 acres (5%) of designated Critical Habitat. Only the no action alternative would result in no disturbance or loss of designated Critical Habitat for Tiehm's buckwheat; therefore, we could only support the no action alternative at this time. In addition to providing an alternative without these unacceptable impacts to the Critical Habitat of Tiehm's buckwheat, the BLM should also re-write the dEIS to adequately comply with the requirements of the Endangered Species Act, the National Environmental Policy Act and other laws and regulations. Our specific comments follow.	The EIS is consistent with NEPA, mining laws, CEQ regulations, BLM surface management regulations, and the BLM NEPA Handbook.
77 and 180	77.3 and 180.2	1. Unclear Purpose and Need for the Action: The BLM's stated purpose for the dEIS - to respond to the proposed Plan of Operations (PoO) - is compromised by the uncertainty in the description of the project as disclosed by the applicant (p.2) - "Should the exploration activities out-lined in this PoO provide sufficient geological and geotechnical information to modify the quarry plan, Ioneer will evaluate the potential to extend the life of the Project and obtain all necessary permits or amendments from the appropriate regulatory agencies at that time." The entire EIS would need to be rewritten in order for the BLM to publicly scope for comments on the actual changed mining proposal, evaluate the environmental impacts of a new PoO, provide for a new public comment period on a draft EIS, finalize the EIS, and make a decision based on a new and accurate PoO. Until the mining proposal is finalized, an EIS cannot be developed.	The Proposed Action and alternatives are described in Section 2.0 of the EIS.
77 and 180	77.4 and 180.3	2. Inadequate Range of Alternatives: The BLM has failed to comply with NEPA by not providing an alternative that provides for a permitted mine, but also one with no adverse impacts to the endangered Tiehm's buckwheat and its designated Critical Habitat. The No Action alternative is the only alternative which can be properly considered.	Alternatives considered are described in Appendix C of the EIS. The Project proposes development of a locatable mineral resource. Relocation of the Project is not possible because the proposed activities must occur on the mining claims held by the proponent where the resource deposit is located. The North and South OSF Alternative was developed that relocates some proposed facilities outside of Tiehm's buckwheat critical habitat and further away from Tiehm's buckwheat plants and subpopulations to minimize disturbance in Tiehm's buckwheat critical habitat.
77 and 180	77.5 and 180.4	3. Inadequate Mitigation: We recognize that mitigation of adverse mining impacts to endemic species, such as Tiehm's buckwheat, when its small habitat area would be surrounded by a mine, including a deep open pit, tons of excavation and dumping of waste rock, tons of dust generated by mining operations and other disturbances is a challenge to legally required mitigation. The mitigation proposed by the applicant seems insignificantly small and ineffective when considering in the dEIS the massive mining impacts to the entire population of this species. For example, dust is a significant threat to the continued existence of plants only a few feet from mining roads. The proposed mitigation of constantly watering the roads when operating in order to keep down the dust will facilitate the establishment of invasive species, which will also threaten the existence of the buckwheat.	The *Buckwheat Protection Plan: Applicant Proposed Conservation Measures for Tiehm's Buckwheat and its Critical Habitat* was prepared by Ioneer in close coordination with the BLM and USFWS to address potential impacts to the Tiehm's buckwheat and its critical habitat. ACEPMs to reduce dust and invasive plants are described in Section 2.1.13 of the EIS. Additionally, Ioneer has committed to dust monitoring and management, as described in the *Buckwheat Protection Plan: Applicant Proposed Conservation Measures for Tiehm's Buckwheat and its Critical*

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			Habitat. Ioneer has also developed a Noxious and Invasive Weed Management Plan that would be required to be implanted for the Project, which includes prevention, detection, containment, and removal for weed control.
77 and 180	77.6 and 180.5	We are also concerned about statements in the dEIS about an ACEPM of growing and transplanting Tiehm's buckwheat and an ACEPM of protecting pollinator communities. We again are providing a link to research on the ecology of Eriogonum Tiehmii **(https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/ecs2.4187)** that assessed the arthropod communities in E. tiehmii habitat, the most common visitors to the E. tiehmii flowers, and the importance of pollination for seed set. The results show that these plants are specifically adapted to their native soil types and that there were no unoccupied sites that could support both establishment and growth of E. tiehmii seedlings. The dEIS failed to discuss and disclose the ineffectiveness of transplanting E. tiehmii plants as "mitigation" for adverse mining impacts. Instead, the applicant's Buckwheat Protection Plan (Appendix I), discusses identifying sites for seeding and transplanting as "reclamation," without any independent scientific support. In addition, in our scoping comments, we specifically requested information on who would be responsible for mitigation for impacts on the endangered species. Instead in the dEIS, we read about EPMs and ACEPMs, without an explanation of how the proposed voluntary mitigation would be be enforced and by whom, penalties for noncompliance, or any actions required by BLM of the applicant if mitigation failed and/or if disturbances exceeded those estimated in the dEIS. Please clarify exactly what mitigation, if any, will be required by the BLM and how it will be implemented and enforced by the BLM, if the current proposed mining project goes forward.	The referenced paper was considered in the analysis. Mitigation for Tiehm's buckwheat is described in EIS Section 4.21.
77 and 180	77.7 and 180.6	Inadequate mitigation in addition to not avoiding disturbance, degradation, and permanent losses of nearly 59% of the 910 acres of designated Critical Habitat again leads us to support only the No Action alternative.	Under the Proposed Action, 39 percent of designated critical habitat is proposed to be disturbed (354 acres of 910 acres) with 11 percent permanent. The North and South OSF Alternative was developed that relocates some facilities outside of Tiehm's buckwheat critical habitat and further away from Tiehm's buckwheat subpopulations to minimize impacts to the extent possible. Under the North and South OSF Alternative, 22 percent of designated critical habitat is proposed to be disturbed (197 acres of 910 acres), with five percent permanent.
77 and 180	77.8 and 180.7	Our comments and those of others concerned with the protection of this endangered plant species and its Critical Habitat should lead the BLM to select the No Action Alternative for the current mining proposal and developing a new EIS with a range of alternatives which will not threaten the existence of the endangered Tiehm's buckwheat. Sincerely, , Chair Conservation Committee Nevada Native Plant Society	The Project proposes development of a locatable mineral resource. Relocation of the Project is not possible because the proposed activities must occur on the mining claims held by the proponent where the resource deposit is located. The North and South OSF Alternative was developed that relocates some proposed facilities outside of Tiehm's buckwheat critical habitat and further away from Tiehm's buckwheat plants and subpopulations to minimize disturbance in Tiehm's buckwheat critical habitat. Alternatives considered and dismissed from analysis are listed in Appendix C of the Draft EIS.
Not Provided – May 29, 2024			
78	78.1	American Battery Technology Company (ABTC) is dedicated to promoting responsible mining practices that prioritize environmental stewardship. Responsible mining is not just a necessity but a responsibility we owe to future generations. We also believe that the establishment of a domestic circular economy for battery metals is a necessity for the electric vehicle transition, and for national security as the economy continues to increase its usage of critical minerals in consumer products. ABTC is supportive of Ioneer's efforts in bolstering the critical minerals supply chain within the United States, which is essential for our nation's technological and economic advancement. By harnessing domestic resources, the United States can reduce its dependence on foreign imports and ensure a more secure and reliable supply of critical minerals vital for the production of batteries and other high-tech applications. ABTC also believes in ensuring projects provide benefit to their community members, contribute to long-term economic growth and stability in the region, and work to build a skilled labor force that can support the growing demands of the critical minerals sector. Ioneer has put forth an effort to engage local community members and stakeholders throughout its development phases, and is working to provide expanded employment and career development opportunities in rural Nevada.	Comment noted.
Edward Hartman – May 29, 2024			
79	79.1	My family moved to Fish Lake Valley in 1972. My father grew alfalfa for livestock in Southern California dairies. We have farmed here for nearly fifty years. Since that time some things have changed and mostly for the better. We remain a small population of just over 300 residents. We now have highspeed internet access and yet the community remains remote mostly made up of farmers, ranchers, retirees and miners. The one paved road is Highway 264 and its eighty miles to a town like Bishop, California or Tonopah with any sort of services. The Ioneer Rhyolite Ridge project promises to bring more opportunity, diversity and support for basic emergency services. I am impressed with the diligence, commitment and sensitivity we have witnessed throughout the permitting and development of this project. Ioneer has invested years of working with residents; listening, informing and improving the parameters of the project. Environmental concerns, traffic and dust management, water usage and endangered species that could be affected have all been addressed in a thoughtful and considerate manner. Ioneer has demonstrated that they are a responsive and responsible member of our small community.	Comment noted.
Willliam and Frances Hartman – May 29, 2024			
80	80.1	Ioneer will not only bring revenue to our county (which is one of the poorest in Nevada) but they have also been a supporter of opportunity for the youth of Fish Lake Valley, Silver Peak and Goldfield. They have provided scholarships and encouragement for families and students. They have supported community events and have taken an interest in the community knowing they will be a part of it for the life of the mine. We all understand that this will be a multigenerational project. They have sponsored multiple public meetings and have been a responsible and transparent company as the mining project has proceeded from concept to potential fruition. We find no negative in the proposed mining project or its impact on our environment. We are grateful that such a supportive and responsible company has chosen to develop the unique deposit of lithium and boron and has worked so diligently to inform and involve the citizens of Fish Lake Valley/Dyer.	Comment noted.
Dennis Bradley – May 30, 2024			
81	81.1	I fully support this project of producing lithium here in the US for the economic benefit and for national security.	Comment noted.

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Lyndsey Wright – May 30, 2024			
82	82.1	Bureau of Land Management 50 Bastian Road Battle Mountain, Nevada 89820 Attention: Scott Distel RE: Comments on Rhyolite Ridge Lithium-Boron Mine Project DOI-BLM-NV-B020-2021-0020-EIS Dear Mr. Distel: I. Introduction The U.S. is fortunate Ioneer is proposing to develop an operation for the Rhyolite Ridge lithiumboron deposit in Esmeralda County, Nevada which will produce two elements needed to meet the goals envisioned in the Infrastructure Investment and Jobs Act of 2023. The U.S. Department of Energy's January 2023 announcement of the conditional loan commitment, through the DOE Loan Programs Office, to the Rhyolite Ridge Project (Ioneer) will advance domestic production of a critical mineral, lithium. This will boost the U.S. battery supply chain[1]. In light of the national importance for domestic production of lithium, the Women's Mining Coalition (WMC) is submitting these comments on the Draft Environmental Impact Statement (DEIS) for the Rhyolite Ridge Project, published by the Tonopah Field Office of the Bureau of Land Management, Battle Mountain District. The DEIS was published on April 19, 2024. [1]https://www.energy.gov/lpo/articles/lpo-announces-conditional-commitment-ioneer-rhyolite-ridge-advancedomestic-production	Comment noted.
82	82.2	About WMC WMC is a grassroots organization with over 200 members nationwide. Our mission is to advocate for today's modern domestic mining industry, which is essential to our Nation. WMC members work in all sectors of the mining industry including hardrock and industrial minerals, coal, energy generation, manufacturing, transportation, and service industries. We convene Washington, D.C. Fly-Ins to give our members an opportunity to meet with members of Congress and their staff, and with federal land management and regulatory agencies to discuss issues of importance to both the hardrock and coal mining sectors. WMC members have extensive experience with the National Environmental Policy Act (NEPA), the U.S. Mining Law, and the BLM's surface management regulations at 43 CFR Subpart 3809 governing locatable minerals and mining activities pursuant to the U.S. Mining Law. We have provided comments on numerous NEPA documents for proposed locatable mineral projects on public lands administered by the U.S. Bureau of Land Management (BLM) and on National Forest System lands administered by the Forest Service. Some WMC members also have expertise in preparing third-party NEPA documents. Lastly, our Advisory Council is made up of industry experts from all facets of the mining industry. Based on this experience, WMC is well qualified to review the DEIS and to provide these comments. This letter expresses WMC's strong support for the Rhyolite Ridge Project because the development of the project will increase the domestic supply of lithium by 40%. The project will also generate many socioeconomic benefits for the communities near the mine and for the State of Nevada. WMC cannot imagine any circumstance in which delaying approval for this project to proceed with production of lithium and boron would make any sense for the environment, the State of Nevada, and the country at large.	Comment noted.
82	82.3	II. The U.S. Urgently Needs the Lithium and Boron to be Mined at the Rhyolite Ridge The Biden-Harris Administration is committed to increase the domestic supply of critical minerals[2] to strengthen the nation's battery supply chain to electrify the transportation sector thus reducing our reliance on fossil fuels and most importantly on a foreign supply of raw materials. Worldwide demand for lithium is expected to increase dramatically in the near future and that demand has exceeded global production as of 2023[3]. In addition to electrifying the transportation sector, lithium will be important to the development and implementation of safe and reliable energy storage systems allowing for commercial applications to store energy from renewable resources for the transition to green, carbon-free power grids. [2]https://crsreports.congress.gov/product/pdf/R/R47982/1 [3]https://www.statista.com/statistics/452025/projected-total-demand-for-lithium-globally	Comment noted.
82	82.4	III. Operation Planning and Applicant-Committed Environmental Protection Measures Ioneer worked closely with the BLM and USFWS to reduce impacts to the endangered Tiehm's Buckwheat that grows in the area, to limit the amount of water usage and to eliminate tying into the local electrical grid. Tiehm's Buckwheat • Tiehm's Buckwheat is found on 10 acres of ground within the project area of 7,166 acres. Ioneer has committed to a quarrying plan that will have no direct impact to the buckwheat's subpopulations. • Ioneer has committed to the following: o collecting and banking Tiehm's Buckwheat seeds; o construction of a green house and the propagation of the buckwheat (already in progress); o protecting designated buckwheat critical habitat; o establishing fencing with signage to protect critical habitat; o controlling public access to the critical habitat;	Impacts to Tiehm's buckwheat are discussed in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER. Impacts from proposed water use are described in Sections 4.16 and 4.20.16 of the EIS.

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		o conducting pollinator habitat reclamation; o controlling invasive species; o management of light sources to minimize impacts on pollinators; o dust control mitigation; o using barriers when blasting to prevent dust carrying into buckwheat habitat; o including awareness training for employees and contractors on the buckwheat and its critical habitat; o monitoring of the subpopulation of buckwheat and its critical habitat. Water Usage • Ioneer has developed a production plan to reduce the amount of water needed during operations which uses much less water than other lithium operations around the globe. • Ioneer has acquired water rights in the area and designed an operation which will use 15% less water from within the State Engineer's designated groundwater basin than is currently allocated.	
82	82.5	IV. Power Generation The processing of the lithium-boron ore requires the use of acid which will be produced on site by an acid generating plant. This plant will produce enough heat and steam to generate all the electricity required to operate all of the planned facilities.	Comment noted.
82	82.6	V. Socioeconomic Benefits Many WMC members have first-hand experience with the types of socioeconomic impacts and benefits associated with a multi-year, large mining project like Rhyolite Ridge. Based on our review of Section 4.20 on Social and Economic Conditions in the DEIS, it is clear that this operation will create high-paying jobs and generate local and state tax revenues that will benefit Esmeralda County and the State of Nevada for at least 20 years. Section 4.20 presents the results from the IMPLAN economic modeling software, which is a widely accepted socioeconomic impact assessment methodology that is used to evaluate how proposed projects will affect nearby communities. For example, EIS documents prepared by the U.S. Bureau of Land Management (BLM) have used IMPLAN for the socioeconomic analyses for several Nevada gold mines. Based on this accepted methodology, WMC has confidence that the results of the IMPLAN modeling effort for the Rhyolite Ridge Project are a data-driven and reasonable prediction of the likely socioeconomic impacts and benefits associated with the project. For those who will be directly employed at the operation the median annual income will be $141,000. From construction to the end of mine life the number of employees or contractors will range from 350-500. For Esmeralda County financial benefits (revenue) including sales taxes, property taxes and Net Proceeds of Mines will range from approximately $600,000 in the first year of construction to between $5.2 to $11.6 million during production. This will be a significant benefit to Esmeralda County where the average revenue stream for 2020 through 2022 was approximately $5,191,000 million (accessesmeralda.com/county_office/auditor_recorder/financial_reports.php) per year. Another benefit to the county is the county road crossing the project area will be upgraded and maintained by Ioneer.	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.
82	82.7	IV. Conclusions Approving the Rhyolite Ridge project is the only logical decision because the project will accomplish significant objectives: • Meet the goals of the Infrastructure Investment and Jobs Act • Provide a reliable, domestic supply chain for the critical mineral lithium • Boost the development and construction of a green energy economy	Comment noted.
82	82.8	WMC urges the BLM to complete the NEPA process as quickly as possible so development can begin late in 2024. There are no valid reasons to delay or deny approval of this nationally significant project. The State of Nevada supports the development of lithium resources as shown by statements from the Nevada Senators: "As one of the few places in the United States with an abundance of lithium and other critical minerals, Nevada is central to strengthening our domestic clean energy supply chain and making electric vehicles more available and accessible," said Senator Rosen. "Nevada's lithium battery economy is key to our country's clean energy future, and that's why I've fought to ensure our companies have access to the resources they need to support their operations," said Senator Cortez Masto. Thank you for this opportunity to submit these comments on the DEIS for this important project. Please do not hesitate to contact us if you have any questions about our comments. Sincerely yours, Emily Hendrickson WMC President Ruth Carraher WMC Co-Founder and Board Member	Comment noted.
Personal Information Requested to be Withheld – May 31, 2024			
83	83.1	Please see the attached comment from the Zero Emission Transportation Association (ZETA).	Comment noted.
83	83.2	May 31, 2024	Comment noted.

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		Bureau of Land Management United States Department of the Interior 1848 C St NW Washington, DC 20240 **RE: Public Comment on Rhyolite Ridge Draft Environmental Impact Statement** *Submitted electronically via BLM NEPA Register Submission Page* The Zero Emission Transportation Association (ZETA) is an industry-backed coalition of member companies advocating for 100% electric vehicle (EV) sales. ZETA is committed to enacting policies that drive EV adoption, create hundreds of thousands of jobs, dramatically improve public health, and significantly reduce emissions. Our coalition spans the entire EV supply chain including vehicle manufacturers, charging infrastructure manufacturers and network operators, battery manufacturers and recyclers, electricity providers, and critical minerals producers, among others. ZETA's membership includes Ioneer Rhyolite Ridge LLC ("Ioneer"). We thank the Bureau of Land Management (BLM) for the opportunity to comment on the Draft Environmental Impact Statement (EIS) on Ioneer's proposed Rhyolite Ridge Project. Mineral and refining projects such as Rhyolite Ridge will be crucial to reducing dependence on foreign supply chains, fueling the continued expansion of clean energy both at home and abroad, and creating good-paying jobs. Thoughtful analysis under the National Environmental Policy Act (NEPA) plays a crucial role in ensuring that new domestic mineral and refining projects are developed in a sustainable and environmentally conscious manner.	
83	83.3	**ZETA Believes the BLM's Draft EIS is Comprehensive** We believe that the North and South Overburden Storage Facility Alternative proposed in the Draft EIS thoroughly examines potential environmental impacts. The project will provide significant economic benefits in Nevada and strengthen U.S. economic competitiveness and supply chain security.	Comment noted.
83	83.4	**Economic Development Benefits** Rhyolite Ridge will provide significant economic benefits to the local region, the State of Nevada, and the United States economy. According to Ioneer's projections, the project will create 500 construction-phase jobs over a two-to-three construction period. Once operational, Rhyolite Ridge will be able to support approximately 350 direct jobs.[1] This type of economic development will sustain families across rural Nevada and positively impact rural and Tribal communities, injecting $38 million of income into the region annually. The project is expected to generate between $13 and $31 million in annual tax revenue for state and local governments, funding crucial public services across Nevada.[2] Ioneer has focused its efforts on engaging with local, regional, Tribal, and state businesses to execute the Rhyolite Ridge project, and is committed to doing business locally, as demonstrated by its decade-long presence in the Fish Lake Valley region.[3] Also, Ioneer has conducted outreach with multiple Tribal Nations to discuss community benefit opportunities, workforce development opportunities, and economic development partnerships.[4] This engagement will ensure that the benefits of the Rhyolite Ridge project are felt both locally and nationally. [1]https://eplanning.blm.gov/public_projects/2012309/200540745/20075692/250081874/20230327_Rhyolite_Ridge_Lithium_Boron_Project_EIS_Public_Scoping_Report_508.pdf [2]Ibid. [3]https://www.ioneer.com/rhyolite-ridge-project/community/ [4]https://rhyolite-ridge.ioneer.com/wp-content/uploads/2024/05/RR-Quarterly-Newsletter-May-2024.pdf	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.
83	83.5	**National Security Benefits** The vast majority of lithium extraction and processing occurs outside of the United States, with over half of global battery-grade lithium coming from China. Lithium is a crucial component of electric vehicle (EV) batteries, smartphones, battery storage systems, and many other advanced technologies. Demand for lithium will only grow as the clean energy expansion continues. Reliance on foreign sources of lithium, especially geopolitical adversaries such as China, presents significant national security risks. Without intervention, and the cultivation of projects such as Rhyolite Ridge, those risks will only grow. Once operational in 2026, Rhyolite Ridge will quadruple domestic lithium output. The project will produce and refine 22,000 tons of lithium chemicals annually, sufficient to power 400 thousand EVs per year for decades to come.[5] Rhyolite Ridge will onshore a key segment of the EV supply chain and increase manufacturers' ability to meet domestic content requirements for tax credits such as the New Clean Vehicle Credit (30D). This combination will further drive consumer adoption of EVs and grow the broader U.S. economy. [5]https://eplanning.blm.gov/public_projects/2012309/200540745/20075692/250081874/20230327_Rhyolite_Ridge_Lithium_Boron_Project_EIS_Public_Scoping_Report_508.pdf	Comment noted.
83	83.6	**Conclusion** ZETA appreciates the opportunity to comment on BLM's Draft EIS. Ensuring that domestic mineral and processing projects meet high environmental standards will help position the United States as a responsible leader in the clean energy expansion while ensuring that benefits accrue to local communities. The Rhyolite Ridge project will benefit U.S. supply chain security, expand the growth of the U.S. electric vehicle industry, and create good-paying jobs in rural Nevada. We encourage BLM to finalize the Rhyolite Ridge Draft EIS as proposed. Thank you for your consideration. **Albert Gore** Executive Director Zero Emission Transportation Association (ZETA)	Comment noted.
Personal Information Requested to be Withheld – June 1, 2024			
84	84.1	Re: The DEIS for Ioneer's Rhyolite Ridge Project Dear Mr. Distel, I am writing in support of permitting Ioneer's Rhyolite Ridge Lithium-Boron Project in Esmeralda County, NV. I am a geologist in the mining industry, having lived in Reno since the 1970s. In addition to a career in mining in the US, I have also worked in China, South America and Mexico and am well aware of foreign mining practices and the lax environmental regulations in those	Impacts to groundwater are discussed in EIS Sections 4.16, 4.20.16, and the Water Resources and Geochemistry SER. Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.

Comment Letter No.	Comment Number	Comment	Response
		countries compared to the US. Mining mineral deposits in the US benefits not only the US economy but the planet as a whole. I am convinced Ioneer will develop the lithium-boron resource in an environmentally responsible way, according to US regulations, with minimal long-term impact on the local environment. In fact, according to their website, Ioneer will be leaving much of the lithium-boron ore untouched in order to protect the endangered Tiehm's buckwheat plant. On going research, voluntarily paid for by Ioneer, includes propagation of new plants to ensure the continued existence of Tiehm's buckwheat in the area. Because of the unique nature of the Rhyolite Ridge deposit, the only such deposit in the world, lithium and boron will be recovered in large vats without the need for leach pads, tailings dams or tailings ponds resulting in very little water use and no possibility of any ground water contamination. On-site production of the weak sulfuric acid, necessary to process the ore, generates heat that will be converted to electricity providing more than enough power to operate the entire facility for the life of the mine. Not only will the Rhyolite Ridge mine be energy independent, the surplus electricity can potentially be added to the local power grid. Development of Nevada's lithium and boron resources will benefit both the state and the country and help to make the US less dependent on unreliable and/or hostile foreign countries and provide a reliable supply chain for materials needed to boost domestic production of batteries for a cleaner, more energy efficient future. The economic impact on Nevada and Esmeralda County from sales taxes, property taxes and Net Proceeds of Mines revenue is expected to generate between $13 million to $31 million annually. The operation will create 500 jobs during the construction phase and 350 jobs over the more than 26-year life of the mine with a direct economic output of $178 million during construction and $125 million once the mine is in production. The economic impact is very significant for nearby communities, Tribal and local businesses and Nevada. Thank you for your time reviewing my comments. Kind Regards,	
84	84.2	RhyoliteRidge-1-500685589_Attachment same as 84.1.	Comment noted.
Joni Eastley – June 1, 2024			
85	85.1	Please accept this comment in support of Ioneer's project at Rhyolite Ridge. I have lived in Central Nevada for 40 years and during that time have not only worked in the mining industry, but have seen first-hand the benefits these projects bring to local communities. With the push from the federal and various state governments to encourage more electrical vehicle sales, this project will provide the materials necessary to meet those mandates. I have spoken to many residents of Tonopah about this project and have heard nothing but support.	Comment noted.
David Johnson – June 1, 2024			
86	86.1	We need to source these minerals in the U.S. Foreign dependence impinges our national security.	Comment noted.
James and Sandra Merlino – June 1, 2024			
87	87.1	We are in complete support of Ioneer's lithium project in Fish Lake Valley.	Comment noted.
Personal Information Requested to be Withheld – June 1, 2024			
88	88.1	I support of Ioneer's lithium project in Fish Lake Valley.	Comment noted.
Zachary Newell – June 1, 2024			
89	89.1	I am in full support for Ioneer coming to the tonopah area. I own the hardware store in town and think it would be a great thing for them to be here Zachary newell Central Nevada Hardware	Comment noted.
Not Provided – June 1, 2024			
90	90.1	Lithium is important for batteries to help respond to the climate crisis. But the extinction crisis is serious too. I support this mining so long as it does not contribute to the extinction of an ESA listed plant. There are other locations for lithium mining whereas extinction is forever.	Relocation of the Project is not possible because the proposed activities must occur on the mining claims held by the proponent where the mineral resource deposit is located. The North and South OSF Alternative was developed that relocates proposed facilities to minimize disturbance in Tiehm's buckwheat critical habitat.
Justin Shaffer – June 1, 2024			
91	91.1	I am strongly against the rhyolite project, and all the traffic, road damage, light pollution, and trash it will bring to the wonderful peaceful fish lake valley. Lithium is not the future of batteries. We have lithium mines, if we need another the Salton is much more suitable.	Comment noted.
Not Provided – June 2, 2024			
92	92.1	In considering all alternate options for the mine, those who are opposed to the mine will claim that there are many different options for a domestic supply of lithium. However, the importance of the boron (in form of boric acid) this mine will produce can not be understated. A stable domestic supply of boron is just as important if not more important than lithium for securing a sustainable transition to carbon dioxide free energy sources. Boron is used in many applications including, but not limited to, production of metal alloys (for automotive, civil, and defence use), fertilizers for maximizing farming yield, glass (including the glass used in solar panels), wood treatments, and medicine/medical applications. Given the relative geo-political instability of Turkey (where most of the world's boron is currently produced), securing a domestic supply chain of boron is just as important as securing a domestic supply of lithium. I hope, given the previous delays in the mine's approval, and the extensive work completed to date, including several years of planning and environmental ground work, the BLM can approve this mine in one of the two alternative options proposed this year. I look forward to closing out this matter, and construction/production commencing in an environmentally sustainable manner, which the BLM has ensured with the detailed oversight during the NEPA process. Thank you for your continued efforts.	Comment noted.
Stretch Baker – June 2, 2024			
93	93.1	Minning makes work. Thats good for all.	Comment noted.
Charles Galt – June 2, 2024			
94	94.1	I am 100% for, wholeheartedly agree with , in concurrence with, the proposals by mining interests in the ore body of LITHIUM near Silver Peak Nevada. I want to see this resource harvested, processed, refined and put onto the market for use in batteries and other products that are needed for the technological age we are in and continue to grow amid. I am satisfied that the environment of the endangered plant will be preserved and the succeeding generations will have much less mortality and hence lessenedthreat of extinction than is currently being offered by the BUR. OF LAND	Comment noted.

Comment Letter No.	Comment Number	Comment	Response
		MANG., the US Fish & Wildlife, the National Forest Service, the U. S. National Park Service and all other government entities that continue to mismanage almost every aspect of the lands that they administer.	
Robert Perchetti – June 2, 2024			
95	95.1	I am in support of Ioneer's lithium project in Fish Lake Valley.	Comment noted.
Harry Chahal – June 2, 2024			
96	96.1	I Harry Chahal support Ioneer's lithium project in Fish Lake Valley and think it would really benefit the community.	Comment noted.
Not Provided – June 2, 2024			
97	97.1	A quién corresponda, Soy residente de Fish Lake Valle, Nevada, y quisiera enviar este comentario sobre el Proyecto de Litio y Boro propuesto por Rhyolite Ridge. Creo que la Alternativa de la Instalación de Almacenamiento de Material de Descarga Norte y Sur, propuesta en el Borrador de la Declaración de Impacto Ambiental presenta completamente los posibles impactos ambientales locales. Creo que el Proyecto proporcionará beneficios económicos significativos y muy necesarios, así como oportunidades para los residentes locales. La de Declaración de Impacto Ambiental es lógica y aborda todos los impactos ambientales que se anticipan. El Informe Sumplementario de Justicia Ambiental afirma que la población minoritarian (la cual incluye a los ciudadanos Hispanos/Latinos) constituye el 29% de la población del Condado de Esmeralda. Yo vivo aquí y creo que un proyecto minero como Rhyolite Ridge proporcionará muchas oportunidades, ya sea para trabajar en la mina o para operar negocios como restaurantes que apoyen el proyecto. El futuro del proyecto proporcionará oportunidades para que nuestras familias obtengan buenos empleos y permanezcan en la comunidad durante muchos años. Gracias por su consideración Translation: *To whom it may concern, I am a resident of Fish Lake Valley, Nevada, and would like to submit this comment on the Rhyolite Ridge proposed Lithium and Boron Project. I believe that the North and South Discharge Material Storage Facility Alternative, proposed in the Draft Environmental Impact Statement fully presents the potential local environmental impacts. I believe the Project will provide significant and much-needed economic benefits as well as opportunities for local residents. The Environmental Impact Statement is logical and addresses all the environmental impacts that are anticipated. The Environmental Justice Supplemental Report states that the minority population (which includes Hispanic/Latino citizens) makes up 29% of Esmeralda County's population. I live here and I think a project mining operations such as Rhyolite Ridge will provide many opportunities, either to work in the mine or to operate businesses such as restaurants that support the project. The future of the project will provide opportunities for our families to obtain good jobs and remain in the community for many years to come. Thank you for your consideration*	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.
Trish Rippie – June 2, 2024			
98	98.1	Having been a property owner and resident of Nye and Esmeralda Counties for over 40 years I would like to submit my comments as someone very familiar with the area. Esmeralda County is desperately in need of a boost to their economy. With less than 1000 residents the county budget is so small they are pressed to provide basic services such as road maintenance and utilities. Ioneer will provide a positive economic impact that is desperately needed here. They have already spent millions on a little plant that no one knew or cared about until they started mine exploration in the area. Let's move past this. It's a non-issue now. When I first learned about Ioneer I was mostly concerned about the impact on the water resources of Fish Lake Valley where the water table has already dropped substantially. There is a lot of lithium exploration going on all over central Nevada and I am more concerned about the mines that will be using the brine evaporation method. Ioneer is hard-rock mining and won't be using as much water. I welcome Ioneer into our county. They have shown every indication of a desire to be good citizens of our communities and with the influx of new workers and their families we may be able to achieve a higher level of community services in the very small towns that will be affected. Mining built this region and the people who have survived here through the last 7 or 8 decades of declining population and boom and bust cycles should have more say than out-of-state environmental activists who have no idea of what it's like to live in an area with no doctors, no supermarkets, no public transportation, etc. It's great to want to go all out to save an obscure plant but not at the expense of the people who live here, especially not when Ioneer has already gone above and beyond in what needs to be done to preserve the species.	Effects on social and economic values from the Project are described in the EIS in Sections 4.10 and 4.20.10 and in the Social and Economic Values SER.
Personal Information Requested to be Withheld – June 2, 2024			
99	99.1	Sunday, June 2, 2024 Bureau of Land Management Attention: Rhyolite Ridge Lithium-Boron Mine Project 50 Bastian Road Battle Mountain, Nevada 89820 To Secretary of the Interior Deb Haaland, BLM Director Tracy Stone-Manning, BLM Nevada State Director Jon Raby, Battle Mountain District Manager Douglas Furtado, and Tonopah Field Manager Perry B Wickham: Subject: Please protect Tiehm's buckwheat by selecting the no-action alternative for the Rhyolite Ridge Mine EIS -- Rhyolite Ridge Lithium-Boron Mine Project (NEPA Number: DOI-BLM-NV-B020-2021-0020-EIS) I strongly urge the Bureau of Land Management (BLM) to select the no-action alternative for the Rhyolite Ridge lithium-boron mine environmental impact statement. The mine would result in the extinction of the rare wildflower Tiehm's buckwheat (Eriogonum tiehmii) and shouldn’t be allowed to proceed. Tiehm's buckwheat is protected by the Endangered Species Act. The BLM isn’t permitted to take actions that would jeopardize the species' existence or cause adverse modification to its critical habitat—and the proposed Rhyolite Ridge mine will clearly do both those things.	The EIS evaluates effects to Tiehm’s buckwheat and designated critical habitat in Sections 4.12 and 4.20.12. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm’s buckwheat and its designated critical habitat. The air quality impacts were modeled for the Project and no pollutants are projected to exceed national or state standards. Sections 4.1 and 4.20.1 of the EIS include additional air quality information.

Comment Letter No.	Comment Number	Comment	Response
		The mine and the heavy industrialization of the site will outright destroy 22% of the plant's critical habitat and severely degrade the rest. It will pollute the environment with toxic mining dust and sulfuric acid mist, interrupt the movement of pollinators and wildlife, and drain precious Nevada groundwater, significantly harming Tiehm's buckwheat over the long term. The mine will put this rare wildflower on a trajectory toward extinction, and the proposed mitigation measures do nothing to change that. Tiehm's buckwheat is a fragile species. Transplanting it and growing new populations elsewhere almost certainly won't work. And even if it did, it wouldn't make up for destroying the species' native range. Tiehm's buckwheat is one of a kind. We need to protect native wildlife, not eliminate it. I urge the Battle Mountain District Office to comply with the Endangered Species Act and protect Tiehm's buckwheat by choosing the no-action alternative for the Rhyolite Ridge mine environmental impact statement. "The ultimate test of a moral society is the kind of world that it leaves to its children." -- Dietrich Bonhoeffer Thank you for your consideration of my comments. Please do NOT add my name to your mailing list. I will learn about future developments on this issue from other sources. Sincerely, San Rafael, CA	
Trisha Wallace – June 3, 2024			
100	100.1	I DO NOT support this mining project. The damage that has already occurred to the wildlife and habitat is irreversible, and obviously if the mine is allowed to operate, the area will be damaged permanently. There used to be (only ten years ago) a very healthy bighorn sheep herd that frequented the area where the mine is going to be, and once they started test drilling and starting their project, the sheep vacated the area. It has been very sad to watch. Also, the idea that the mine will pump water from below, in Fish Lake Valley to supply their water needs, is absolutely atrocious. The valley has had agriculture as its main economic income source for over 100 years, and this amount of water pumping/wasting threatens the farmers livelihood who currently live and work in the valley, not to mention the people who call Fish Lake home, as their well levels will inevitably drop. (2500 gallons a minute 24 hours a day will deplete the aquifer quite quickly I'm thinking). To me, it is wasting, as the carbon footprint of an electric vehicle is far greater than most people think it is. It is quite simply the fleecing of the country to think that electric vehicles are going to "save" the planet. The waste alone from these vehicles is causing irrevocable harm. I am greatly saddened at the prospect of this mine coming to the valley, as my own ancestors settled here and farmed over 100 years ago, and my own son was hoping to continue their legacy. If this mine is allowed to invade this beautiful, historic area, his own livelihood will be threatened as well as the traditions of this valley. I also question whether a full anthropological study has been conducted, as the mine's location is extremely close to a well established Native American cave/campsite. Regardless of any of my personal feelings, the fact remains that this mine would completely destroy a very beautiful part of Nevada's habitat. The wildlife has already been altered, as well as the topography. Damage has already been done, and mine operation has not even truly begun.	Wildlife impacts are discussed in Sections 4.18 and 4.20.18. Impacts to groundwater levels have been modeled for the Project and are described in Sections 4.16 and 4.20.16. Impacts to wildlife and water resources would be minimized by ACEPMs and mitigation described in Section 4.21. Cultural resource surveys completed for the Project are discussed in Section 3.2. Government-to-government consultation and coordination for the Project was initiated in 2020 and is described in Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process. During consultation, the Project was redesigned to avoid impacts to culturally significant areas. Tribal consultation is ongoing and will continue through the life of the Project. If avoidance of areas of tribal concern is not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected Tribes to reduce or eliminate impacts.
Peri Lee Pipkin – June 3, 2024			
101	101.1	EIS comment for "Rhyolite Ridge Lithium-Boron Mine Project" Peri Lee Pipkin June 2, 2024 As a botanist conducting a large scale floristic inventory in the Silver Peak Range, I am writing to strongly suggest that Action C: No Action is prioritized in the proposed Rhyolite Ridge lithium-boron mine project in consideration of the impact this would have on sensitive, rare species in the area and the impact groundwater extraction would have on this community. I also request that tribal members be directly consulted with this project, as the valley is the homeland of the Timbisha Shoshone and Paiute people, who need adequate and respectful representation in this planning process.The two projected alternatives are not sufficient in protecting the limited natural resources in the area and it is pertinent that no action be taken. Some examples are abbreviated here but elaborated on futher with references in the attached document. Tiehm's Buckwheat: the Plan identifies direct avoidance of individual plants as its primary protective measure (APCM1 in BLM 2024b p. 17), however "direct avoidance" fails to mitigate the magnitude, scale, and duration of a 2,271 acre industrial-scale mining project that would encompasses the entire global range of the species. The numerous proposed activities would occur within and adjacent to occupied and critical habitat and would have a cumulative effect across the 23 years of proposed mine life (BLM 2024a p. 2-1). The project boundary in Argentite canyon impacts habitat for the Nevada State Listed and critically imperiled Tonestus graniticus (Lone Mountain Serpentweed, Nevada rank S1, Global rank G1) (Pipkin collection #2680, data submitted to Nevada Division of Natural Heritage), recently discovered in the Silver Peak Range in 2023. Industrial scale disturbance would undoubtedly impact this population through dust and the cutting of new roads. The project intends to draw water from sensitive wetlands in which the rare plant Chloropyron tecopense is reliant on groundwater for survival. The plant is currently in petition for Endangered Species Listing and is ranked as a rare plant in both California and Nevada (Natureserve). In addition, the Fish Lake Valley is home to the endemic Fish Lake Tui Chub, an undescribed Toad on both the Nevada BLM sensitive species list and Nevada Division of Natural Heritage watch list, an endemic scorpion, and rare and undescribed spring snails (Corey Lange, personal communication). Most of Esmeralda County is currently in a period of ongoing and varying drought conditions (pg 24 Esmeralda County Water Resource Plan). New lithium and gold mines currently in the planning and permitting process are looking to reallocate water from agriculture to mining in several Esmeralda water basins (pg. 32 Esmeralda County Water Resource Plan) The Fish Lake Valley basin is experiencing irreparable damage from water production that exceeds annual recharge. This overdraft is resulting in collapse of aquifer storage. Preventing further decline of the water table in Fish Lake Valley and efforts to replace the water that has been removed from storage should be a priority for the County. (pg. 48, Esmeralda County Water Resource Plan). Drawing water from the Fish Lake Valley will run the risk of creating a dust bowl in Fish Lake Valley, irreparably harming rare and sensitive wildlife, and destroying the livelihood of local residents.	Government-to-government consultation and coordination for the Project was initiated in 2020 and is described in Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process. During consultation, the Project was redesigned to avoid impacts to culturally significant areas. Tribal consultation is ongoing and will continue through the life of the Project. If avoidance of areas of tribal concern is not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected Tribes to reduce or eliminate impacts. The Draft EIS analyses direct and indirect impacts to the Tiehm's buckwheat in Section 4.12 and cumulative effects in Section 4.20.12. Impacts to Tecopa birdbeak are described in EIS Section 4.1. Impacts to wildlife, including Tui chub, and other aquatic species are described in EIS Section 4.18 and 4.20.18. An NDNH request was submitted to identify additional species in the Plan of Operations boundary and its five kilometer radius. A response was received on June 14, 2024. No scorpions or *Tonestus graniticus* (Lone Mountain serpentweed) were identified (NDNH 2024). Newly identified species were added to the EIS and SERs, as applicable. Proposed water use is described in EIS Sections 2.1 and 2.2 and would be sourced from groundwater. Groundwater impacts were modeled for the Project and considered cumulative effects of water usage in Fish Lake Valley. Impacts are discussed in EIS Sections 4.16 and 4.20.16.

Comment Letter No.	Comment Number	Comment	Response
		The Timbisha Shoshone Tribe have continuously used Fish Lake Valley for hunting, gathering food, and performing ceremonies since at least the early 1800s, and utilize the area today for hunting and pine nut harvesting (pg 7). The area has high cultural and spiritual value to the Timbisha tribal members, as spiritually and culturally this land is the birthplace and burial ground of many of their ancestors and relatives. (Documented from oral interviews with contemporary Timbisha tribal members.) (pg 10) There are specific sacred sites in the area related to the Timbisha Shoshone legends in the Silver Peak Range, significant because of the presence of ceremonial and burial grounds. Cremation ceremonies were performed at specific sites, with ashes and belongings buried in rock formations near the proposed Rhyolite Ridge Project. The sacred burial grounds have been left unprotected, and industrial scale development would desecrate the area. As per request of the tribe, the Silver Peak Range should be closed off to all environmentally damaging activities such as woodcutting and mining, as Tribal members feel that the land needs time to recover from past environmental damage (pg. 11). Thank you for your time, Peri Lee Pipkin	
101	101.2	**EIS comment for "Rhyolite Ridge Lithium-Boron Mine Project"** Peri Lee Pipkin June 2, 2024 As a botanist conducting a large scale floristic inventory in the Silver Peak Range, I am writing to strongly suggest that Action C: No Action is prioritized in the proposed Rhyolite Ridge lithium-boron mine project in consideration of the impact this would have on sensitive, rare species in the area and the impact groundwater extraction would have on this community. I also request that tribal members be directly consulted with this project, as the valley is the homeland of the Timbisha Shoshone and Paiute people, who need adequate and respectful representation in this planning process.The two projected alternatives are not sufficient in protecting the limited natural resources in the area and it is pertinent that no action be taken. Some examples are as follows:	The Project proposes development of a locatable mineral resource. Relocation of the Project is not possible because the proposed activities must occur on the mining claims held by the proponent where the resource deposit is located. Government-to-government consultation and coordination for the Project was initiated in 2020 and is described in Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process.
101	101.3	1. Tiehm's Buckwheat: the Plan identifies direct avoidance of individual plants as its primary protective measure (APCM1 in BLM 2024b p. 17), however "direct avoidance" fails to mitigate the magnitude, scale, and duration of a 2,271 acre industrial-scale mining project that would encompasses the entire global range of the species. The numerous proposed activities would occur within and adjacent to occupied and critical habitat and would have a cumulative effect across the 23 years of proposed mine life (BLM 2024a p. 2-1). This magnitude of impact would fundamentally alter habitat integrity, pollination, and dispersal. It would also exacerbate the effects of limited habitat availability and the species' inherently poor dispersal capabilities (USFWS 2022a p. 50), ultimately affecting its long-term survival. Construction of new haul and access roads would be approximately 50 m from subpopulation 3 and less than 300 m from subpopulation 1 which is the second largest subpopulation for the species (USFWS 2022a; BLM 2024b). The Project would permanently destroy 197 acres or 22% of the 910 acres of designated critical habitat deemed essential for Tiehm's buckwheat conservation (BLM 2024b p. 18; USFWS 2022a). **Reference:** Bureau of Land Management [BLM]. 2024a. Draft Environmental Impact Statement for the Rhyolite Ridge Lithium Boron Project. DOI-BLM-NV-B020-2021-0020-EIS. Bureau of Land Management [BLM]. 2024b. Supplemental Environmental Report 17: Threatened and Endangered Species. Appended to the Draft Environmental Impact. Statement for the Rhyolite Ridge Lithium Boron Project. DOI-BLM-NV-B020-2021-0020-EIS. US Fish and Wildlife Service [USFWS]. 2022a. Species status assessment report for Eriogonum tiehmii (Tiehm's buckwheat), Version 2.0. Department of the Interior California-Great Basin Region. Sacramento, California. May, 2022.	The Project proposes development of a locatable mineral resource. Relocation of the Project is not possible because the proposed activities must occur on the mining claims held by the proponent where the resource deposit is located. The North and South OSF Alternative was developed that relocates some proposed facilities outside of Tiehm's buckwheat critical habitat and further away from Tiehm's buckwheat plants and subpopulations to minimize disturbance in Tiehm's buckwheat critical habitat. The EIS evaluates effects (direct, indirect, and cumulative) to Tiehm's buckwheat and designated critical habitat in Sections 4.12 and 4.20.12. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.
101	101.4	2. The project boundary in Argentite canyon impacts habitat for the Nevada State Listed and critically imperiled *Tonestus graniticus* (Lone Mountain Serpentweed, Nevada rank S1, Global rank G1) (Pipkin collection #2680, data submitted to Nevada Division of Natural Heritage), recently discovered in the Silver Peak Range in 2023. Industrial scale disturbance would undoubtedly impact this population through dust and the cutting of new roads. Observation photograph available here: https://www.inaturalist.org/observations/175936946 **Reference:** https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.148875/Tonestus_graniticus	An NDNH request was submitted to identify additional species referenced in the area of analysis. A response was received on June 14, 2024. *Tonestus graniticus* (Lone Mountain serpentweed) was not identified (NDNH 2024).
101	101.5	3. The project intends to draw water from sensitive wetlands in which the rare plant *Chloropyron tecopense* is reliant on groundwater for survival. The plant is currently in petition for Endangered Species Listing and is ranked as a rare plant in both California and Nevada (Natureserve). In addition, the Fish Lake Valley is home to the endemic Fish Lake Tui Chub, an undescribed Toad on both the Nevada BLM sensitive species list and Nevada Division of Natural Heritage watch list, an endemic scorpion, and rare and undescribed spring snails (Corey Lange, personal communication). **Reference:** https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.158897/Chloropyron_tecopense https://www.biologicaldiversity.org/species/fish/pdfs/Fish-Lake-Valley-Tui-Chub-Petition.pdf https://heritage.nv.gov/assets/documents/2022-01-Watch_List.pdf	Proposed water use is described in EIS Sections 2.1 and 2.2 and would be sourced from groundwater. Impacts to Tecopa bird's beak are described in EIS Section 4.1. Impacts to wildlife, including Tui chub, and other aquatic species are described in EIS Sections 4.18 and 4.20.18.
101	101.6	4. Most of Esmeralda County is currently in a period of ongoing and varying drought conditions (pg 24 Esmeralda County Water Resource Plan). New lithium and gold mines currently in the planning and permitting process are looking to reallocate water from agriculture to mining in several Esmeralda water basins (pg. 32 Esmeralda County Water Resource Plan) The Fish Lake Valley basin is experiencing irreparable damage from water production that exceeds annual recharge. This overdraft is resulting in collapse of aquifer storage. Preventing further decline of the water table in Fish Lake Valley and efforts to replace the water that has been removed from storage should be a priority for the County. (pg. 48, Esmeralda County Water Resource Plan). Drawing water from the Fish Lake Valley will run the risk of creating a dust bowl in Fish Lake Valley, irreparably harming rare and sensitive wildlife, and destroying the livelihood of local residents. **Reference:** https://cms2.revize.com/revize/esmeraldanew/highlighted%2012-14-22%20-%208th_Draft_EC_Water_Resource_Plan_June_2022.pdf	Groundwater impacts were modeled for the Project and considered cumulative effects of water usage in the Fish Lake Valley. Impacts are discussed in EIS Sections 4.16 and 4.20.16.
101	101.7	5. The Timbisha Shoshone Tribe have continuously used Fish Lake Valley for hunting, gathering food, and performing ceremonies since at least the early 1800s, and utilize the area today for hunting and pine nut harvesting (pg 7). The area has high cultural and spiritual value to the Timbisha tribal members, as spiritually and culturally this land is the birthplace and burial ground of many of their ancestors and relatives. (Documented from oral interviews with contemporary Timbisha tribal members.) (pg 10) There are specific sacred sites in the area related to the Timbisha Shoshone legends in the Silver Peak Range, significant because of the presence of ceremonial and burial grounds. Cremation ceremonies were performed at specific sites, with ashes and belongings buried in	Government-to-government consultation and coordination for the Project was initiated in 2020 and is described in Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process. During consultation, the Project was redesigned to avoid impacts to culturally

Comment Letter No.	Comment Number	Comment	Response
		rock formations near the proposed Rhyolite Ridge Project. The sacred burial grounds have been left unprotected, and industrial scale development would desecrate the area. As per request of the tribe, the Silver Peak Range should be closed off to all environmentally damaging activities such as woodcutting and mining, as Tribal members feel that the land needs time to recover from past environmental damage (pg. 11). **Reference:** Fowler, Catherine S., Molly Dufort, &Mary C Rusco. 8 August 1995. Timbisha Shoshone Tribe's Land Acquisition Program: Anthropological Data on Twelve Study Areas. Thank you for your time, Peri Lee Pipkin M.S. Botany	significant areas. Tribal consultation is ongoing and will continue through the life of the Project. If avoidance of areas of tribal concern is not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected Tribes to reduce or eliminate impacts.
Peter Cardenaz – June 3, 2024			
102	102.1	With regards to the proposed Rhyolite Ridge project, I would like to put my support behind this much needed undertaking. As an American, this project greatly enhances our participation in the EV efforts to reduce carbon emissions. The jobs that this project will create, and sustain, is also a great incentive for you to green light this project. Finally, it is refreshing to see a company take such care and concern for Tiehm's Buckwheat. I have personally reached out to Ioneer to see if I can help out with this effort in any way. Thank you Peter Cardenaz	Comment noted.
Karl French – June 3, 2024			
103	103.1	I am writing in support of the Rhyolite Ridge Lithium Boron project. I believe it is essential that the U.S. develop sources of the crucial minerals needed for the transition from fossil fuels to clean renewable energy. Climate change due to burning of fossil fuels is real and threatens many ecosystems and humanity itself if left unchecked. I believe Ioneer's plan for the development of Rhyolite Ridge is well thought out and environmentally sustainable. As climate change is everyone's problem, I believe it is in eveyone's best interest to go forward with this project. Sincerely, Karl French	Comment noted.
Not Provided – June 3, 2024			
104	104.1	I am supportive of this project. It is very difficult to get a new project off the ground in the US. Or anywhere really. But that is very important to the health of a country, its economy, and its people. So in general i try to be supportive of these. I am an environmentalist. So I understand the concerns with sensitive ecosystems. But those should not be judged in a vacuum. And I think the mitigation measures are adequate. So I hope this project can proceed and be a success for the company, the community, our country and the environment. Good luck!	Comment noted.
Not Provided – June 3, 2024			
105	105.1	It is obvious ioneer is designing a responsible and sustainable facility. Support this facility/project moving forward.	Comment noted.
Paul Campos – June 3, 2024			
106	106.1	Hello, My name is Paul Campos I am in favor of having the Ioneer lithium-boron at Rhyolite Ridge move forward. I own the A-Bar-L Western Store in Tonopah and I can tell you, things are tough. We have been serving Central Nevada over 50 years, and it has always been a struggle to stay in business. This project will provide much needed jobs in Central Nevada and are essential to the health a vitality of our communities. I am all for doing what we can to preserve the natural habitat, through relocation, replanting and reclamation efforts when the project is completed. The Buckwheat plant can do nothing for you or anyone on its own. If it can moved replanted or reestablished elsewhere, that would be great. I for one do not want this plant to stop and opportunity to provides jobs for a few hundred families. It would definitely increase the tax base for Esmerelda County and help the economy throughout Central Nevada. Please vote to allow Ioneer to move forward with their project. Thank you, Paul Campos	Comment noted.
Personal Information Requested to be Withheld – June 3, 2024			
107	107.1	I support the approval for the proposal for mining of lithium and borax in the Rhyolite Ridge proposal by Ioneer LTD. This mine and the mining of Lithium and Borax is needed by the United States and should be approved not only for the valuable minerals needed by society today, but these minerals that also will help protect the environment in future years as electrification occurs. The United States should be approving not only this mine but also many other mining permits to bring this much needed mineral production to the USA where geopolitical forces cannot control the citizens of the USA. They have shown a commitment both verbally and being the only interested party to monetarily protect and plan for the survival of Tiehm's Buckwheat. By having greenhouses (paid for solely by Ioneer and not by the groups that won't put their money where their mouth is but just use the court system to sue and try to block all mining even if environmentally sound) that not only protect the seeds but also can propagate the endangered plant, they have shown this commitment to protect this endangered species.	Comment noted.
Personal Information Requested to be Withheld – June 3, 2024			
108	108.1	Please see submitted files and attachments for comment.	Comment noted.
183	183.1	Mr. Distel, Please find attached a copy of the comment letter from the Center for Biological Diversity, Great Basin Resource Watch, Western Shoshone Defense Project, Sierra Club, Earthworks, Basin and Range Watch, and Western Watersheds Project, submitted this morning along with all attachments and references, via eplanning.	

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		Thank you,	
108	108.2	240603 FINAL RR DEIS Comments FOR SUBMISSION.pdf	Comment noted.
108 and 183	108.3 and 183.2	June 3, 2024 Via BLM E-planning portal U.S. Bureau of Land Management (BLM) 50 Bastian Road Battle Mountain, NV 89820 BLM_NV_BMDO_P&EC_NEPA@blm.gov **Re: Rhyolite Ridge Lithium-Boron Mine EIS** Dear BLM: Pursuant to BLM's public notice, 89 Fed. Reg. 28803-04 (April 19, 2024), please accept these comments on the Rhyolite Ridge Lithium-Boron Mine (Mine or Project) and BLM's Draft EIS (DEIS), from the Center for Biological Diversity, Great Basin Resource Watch, Western Shoshone Defense Project, Sierra Club, Earthworks, Basin and Range Watch, and Western Watersheds Project. As shown below, BLM's review and potential approval of the Project violates a number of federal laws and implementing regulations, including the Endangered Species Act (ESA), the Federal Land Policy and Management Act (FLPMA), the National Environmental Policy Act (NEPA), and laws concerning the protection of Native American cultural and religious resources. The commenting groups adopt and include by reference herein into the administrative record all previous comments or materials submitted to BLM regarding the Project.	The EIS is consistent with NEPA, mining laws, CEQ regulations, BLM surface management regulations, and the BLM NEPA Handbook. The Project's consistency with FLPMA and land use plans is discussed in the EIS in Sections 4.6.
108 and 183	108.4 and 183.3	**I. ENDANGERED SPECIES ACT (ESA) VIOLATIONS** **A. The Proposed Action and North and South OSF Alternative Violate BLM's Affirmative Conservation Duty Under Section 7(a)(1) of the ESA.** The Endangered Species Act (ESA) is "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation." *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 180 (1978). Congress enacted the ESA in 1973 "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved." 16 U.S.C. § 1531(b). The ESA's "primary purpose . . . is to prevent animal and plant species endangerment and extinction caused by man's influence on ecosystems, and to return the species to the point where they are viable components of their ecosystems." H.R. Rep. No. 95-1625, at 5 (1978), reprinted in 1978 U.S.C.C.A.N. 9453, 9455. Section 7(a)(1) of the ESA imposes on all federal agencies, including BLM, a mandatory duty to conserve listed species. 16 U.S.C. § 1536(a)(1). The statute defines the terms "conserve," "conserving," and "conservation" to mean "the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary." 16 U.S.C. § 1532(3). Accordingly, Section 7(a)(1) requires agencies to take actions that will tend to increase endangered and threatened species' populations. *See* 16 U.S.C. § 1532(3); *Sierra Club v. Clark*, 755 F.2d 608 (8th Cir. 1985). This is more than a generalized duty; it requires agencies to consult, develop programs, and "take whatever actions are required to ensure the survival of each [listed] species." *Sierra Club v. Glickman*, 156 F.3d 606, 616 (5th Cir. 1998). The Act's legislative history is replete with statements that Congress intended this affirmative duty to be taken literally and seriously by agencies. *See TVA v. Hill*, 437 U.S. 153, 183-84 (1978) (statement of Rep. Dingell); *see also House v. United States Forest Serv.*, 974 F. Supp. 1022, 1028 (E.D. Ky. 1997) (enjoining timber sale due to agency's failure to comply with affirmative duty to place an endangered species "at the top of its priority list"). Further, Section 7(a)(1)'s affirmative conservation duty supersedes a federal agency's primary mission as well as other statutory duties. *Carson-Truckee Water Conservancy Dist. v. Clark*, 741 F.2d 257, 259 (9th Cir. 1984); *Pyramid Lake Paiute Tribe of Indians v. United States Dep't of Navy*, 898 F.2d 1410, 1417-18 (9th Cir. 1990). As the U.S. Supreme Court has observed, the ESA requires the Secretary of the Interior to give the "highest priority" to the preservation of listed species, and directs federal agencies to "halt and reverse the trend toward species extinction, whatever the cost." *Hill*, 437 U.S. at 184. As described below, both the Proposed Action and North and South OSF Alternative will jeopardize the continued existence of Tiehm's buckwheat, and are therefore inconsistent with BLM's affirmative conservation duty under Section 7(a)(1). At the very least, both action alternatives will result in substantial damage to the ecosystem on which Tiehm's buckwheat depends. Further, both alternatives place BLM's objectives under its "multiple use" mandate and the 1872 Mining Law above its ESA obligations; in other words, BLM has failed to afford threatened and endangered species the "highest priority," as the ESA requires. Importantly, the losses incurred by either alternative cannot be offset by conservation actions elsewhere. Tiehm's buckwheat exists on only ten acres within the proposed project area, and efforts to transplant the species have proven an abject failure. For all of these reasons, approving either the Proposed Action or the North and South OSF alternative would violate ESA Section 7(a)(1), 16 U.S.C. § 1536(a)(1).	The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat in Sections 4.12 and 4.20.12. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.
108 and 183	108.5 and 183.4	**B. The Proposed Action and North and South OSF Alternative Would Jeopardize the Continued Existence of Tiehm's Buckwheat and Adversely Modify its Critical Habitat, in Violation of ESA Section 7(a)(2).** ESA Section 7(a)(2) requires each federal agency, in consultation with a federal wildlife agency (Fish and Wildlife Service), to insure that any proposed action is not likely to jeopardize the continued existence of a listed species, or result in the destruction of adverse modification of its critical habitat. 16 U.S.C. § 1536(a)(2). To "jeopardize the continued existence of" means "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." 50 C.F.R. § 402.02. "Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species." *Id.* Whenever a proposed action may affect a listed species, the action agency must engage in "formal consultation" with a wildlife agency, in this case FWS. *Id.* § 402.14(a). During formal consultation the wildlife agency prepares a "biological opinion," *id.* § 402.14, which must detail "how the agency action affects the species or its critical habitat." 16 U.S.C. § 1536(b)(3)(A).	In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. The Biological Assessment evaluates the current status of Tiehm's buckwheat and the effects of the Project. The USFWS will evaluate the Biological Assessment and the applicant's Buckwheat Protection Plant to prepare a Biological Opinion. Section 7 consultation is ongoing.

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		A biological opinion must evaluate both the current status of any affected listed species as well as the effects of the proposed action on those listed species. 50 C.F.R. § 402.14(g)(2)-(3). Under Section 7's implementing regulations, "effects of the action" include: > [A]ll consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. *Id.* § 402.02. Agencies are required to "use the best scientific and commercial data available" in assessing impacts to protected species during the formal consultation process. *Id.* § 402.14(d); 16 U.S.C. § 1536(a)(2). Based on this information, the wildlife agency must determine whether the action, taken together with cumulative effects, is "likely to jeopardize the continued existence of listed species." 50 C.F.R. § 402.14(g)(4). Although the wildlife agency is responsible for the content of the biological opinion, the ultimate duty to ensure that an activity does not jeopardize the continued existence of a listed species, or result in the destruction or adverse modification of critical habitat, lies with the action agency—in this case, BLM. Here, neither the Proposed Action nor the North and South OSF Alternative comply with the ESA's prohibitions on jeopardy and adverse modification. First and most obviously, both action alternatives would directly destroy a significant portion of Tiehm's buckwheat's critical habitat. The Proposed Action would directly eliminate 354 acres, or 38 percent of the species' total designated critical habitat, while the North and South OSF Alternative would eliminate 197 acres, or 22 percent of designated critical habitat. Further, both action alternatives can reasonably be expected to "reduce appreciably the likelihood of both the survival and recovery of [Tiehm's buckwheat] in the wild by reducing the reproduction, numbers, or distribution of that species," and both would "appreciably diminishes the value of critical habitat as a whole" for Tiehm's buckwheat conservation (*see generally* Fraga 2024, Appendix A). 50 C.F.R. § 402.02. Although BLM and Ioneer propose various avoidance, mitigation, and translocation measures that would, in the most optimistic (and arguably unrealistic) scenario, allow the species to cling to survival while its habitat is converted into an industrial site, the wholesale destruction of roughly a quarter of the species' total critical habitat is wholly inconsistent with the ESA, which requires the protection and conservation of the ecosystems on which threatened and endangered species depend. As the Ninth Circuit Court of Appeals has explained, "the purpose of the ESA is to promote populations that are self-sustaining without human interference." *Trout Unlimited v. Lohn*, 559 F.3d 946, 957 (9th Cir. 2009). This purpose "can be deduced from the statute's emphasis on the protection and preservation of the habitats of endangered and threatened species." *Id.* (citing 16 U.S.C. § 1531(b)). Eliminating the species' critical habitat—as well as the ecological processes that such critical habitat provides—is completely at odds with the statute's goals and emphasis. Further, neither the DEIS nor the Buckwheat Protection Plan demonstrate that any of the proposed mitigation measures will be effective, as required by the ESA, NEPA, and FLPMA. The Buckwheat Protection Plan, for example, focuses heavily on reclamation, but largely ignores the fact that reclamation of critical habitat will not begin until year 19 of operations. Neither the DEIS nor the Protection Plan consider how a 19-year absence of areas deemed "critical" to the survival and recovery of Tiehm's buckwheat will impact the species. In addition, the Protection Plan fails to describe the proposed reclamation activities in sufficient detail to evaluate their efficacy. Put bluntly, the so-called "Protection Plan" is better described as a plan to make a plan, which unreasonably and unlawfully delays development of specific plan components until after Project approval. The Protection Plan also fails to incorporate several of FWS's conservation recommendations, and fails to provide a satisfactory explanation as to why Ioneer has chosen to disregard best practices with respect to an endangered species. For a detailed description of how the Buckwheat Protection Plan fails to protect Tiehm's buckwheat from the existential threats posed by the proposed mine, *see* Appendix A (Fraga 2024), Appendix B (Emerman 2024), and Appendix C (McCarthy 2024). Finally, BLM and Ioneer cannot rely on translocation or offsite planting to satisfy their ESA obligations. Although translocation has been utilized in limited circumstances to assist species that are no longer viable in the wild, its application to a species that would be viable and self-sustaining in the wild, but for the proposed Project, violates the ESA. The statute mentions artificial propagation merely as a means "to bring any endangered species or threatened species to the point at which the measures provided pursuant to this [Act] are no longer necessary." 16 U.S.C. § 1532(3). The ESA's legislative history also confirms that the ESA is primarily focused on natural populations. *See* H.R. Rep. No. 95-1625, at 5, reprinted in 1978 U.S.C.C.A.N. at 9455. Relying on the offsite propagation of Tiehm's buckwheat would also be inconsistent with the ESA's fundamental purpose of protecting the ecosystems on which endangered species depend. And critically, there is currently no credible evidence that Tiehm's buckwheat can be successfully transplanted. For all of these reasons and per the discussion below, approving either the Proposed Action or the North and South OSF Alternative would violate the ESA.	
108 and 183	108.6 and 183.5	**II. FEDERAL LAND POLICY AND MANAGEMENT ACT (FLPMA) VIOLATIONS** **A. BLM Failed to Review and Regulate the Project Under the Correct Permitting Regimes.** The DEIS lists the required permits for the Project (Appendix B), but fails to note that the water pipeline and associated infrastructure requires a Right-of-Way (ROW) under FLPMA Title V. The existing limited ROW for the dirt access road (which itself needs to be amended/revised) is not sufficient for the expanded uses of the Project and required water pipeline and infrastructure. The DEIS erroneously assumes that the large water supply pipeline from Fish Valley fits within the existing minimal dirt road ROW held by the County. DEIS at 3-16. Under FLPMA and mining and public land law, BLM's review and approval of the water/infrastructure line(s) is not governed by the 1872 Mining Law and BLM's 43 C.F.R. Part 3809 regulations, as assumed by BLM in the DEIS, but rather under FLPMA Title V. The proposed activities are beyond the scope of those contemplated and approved in the original/existing ROW. This necessitates, at a minimum, an amended (more properly, a new) special use permit and ROW subject to full FLPMA, ESA, and NEPA compliance. Such ROW/permit review is entirely discretionary with BLM and the agency is not governed by any constraints under the Mining Law. This includes the requirement that all such activities (in addition to those on-site) be consistent and comply with all laws, regulations, and the applicable RMP and BLM policies, handbooks, and guidance. Under FLPMA Title V, Section 504, BLM may grant a Right-of-Way (ROW) only if it "(4) will do no unnecessary damage to the environment." 43 U.S.C. § 1764(a). Rights of way "shall be granted, issued or renewed … consistent with … any other applicable laws." *Id.* § 1764(c). A rightof- way that "may have significant impact on the environment" requires submission of a plan of construction, operation, and rehabilitation of the right-of-way. *Id.* § 1764(d). A Title V SUP/ROW "shall contain terms and conditions which will … (ii) minimize damage to scenic and esthetic values and fish and wildlife habitat and otherwise protect the environment." *Id.* § 1765(a). *See also* § 1765(b) (additional environmental protection requirements). The terms of this section do not limit "damage" specifically to the land within the ROW corridor, but to all lands and resources that may be affected by the ROW (here, the Mine Project and all its impacts). BLM not only has the authority to consider the adverse impacts on lands and waters outside the immediate ROW corridor, but it also has an obligation to protect these public resources under FLPMA. In *County of*	This concern is discussed in the SIR. Whether the Project is permitted under 2920 or 3809 regulations, the EIS will still analyze and disclose impacts from the Proposed Action and alternatives and include measures to reduce environmental impacts.

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		Okanogan v. National Marine Fisheries Service, 347 F.3d 1081 (9th Cir. 2003), the court affirmed the Forest Service's imposition of mandatory minimum stream flows as a condition of granting a ROW for a water pipeline across USFS land. This was true even when the condition/requirement restricted or denied vested property rights (in that case, water rights). *Id.* At 1085-86. BLM must also comply with the financial requirements of FLPMA regarding ROW applications and approvals. *See* 43 U.S.C. § 1701(a)(9); 43 U.S.C. § 1764(g); 43 C.F.R. § 2805.20; 43 C.F.R. Part 2800. The DEIS also erroneously limits BLM's review of the Project to its duty to "prevent unnecessary or undue degradation" (UUD) under FLPMA, presuming that Ioneer has valid statutory rights to use and occupy its claims under the 1872 Mining Law. There is no information and analysis verifying that all of the mining and millsite claims to be utilized by the Project are valid under the Mining Law. BLM must verify, and require the company to provide evidentiary proof, that all claims under the Mining Law proposed to be used by the Project are valid under the Mining Law. Without such verification, the company/claimant has no rights to use and occupy the claims (except for preliminary exploration which has already occurred) and BLM has full discretion over the project under FLPMA and BLM's multiple use authorities (i.e., BLM is not limited by the "unnecessary or undue degradation" standard in FLPMA). Relatedly, BLM must fully consider the various alternatives of not approving an activity on public land unless that activity is proposed on lands covered by claims that have been verified to be valid under the Mining Law (including denying the ROW discussed above).	
108 and 183	108.7 and 183.6	**B. The Project and BLM's Review Do Not Comply with FLPMA.** Even if Ioneer can show that all of its activities on its mining and millsite claims meet the strict test for valid rights under the Mining Law (which has not been shown), as an overarching mandate for BLM's management of public lands, FLPMA requires that BLM "take any action necessary to prevent unnecessary or undue degradation of the lands." 43 U.S.C. §1732(b) (the UUD standard). "FLPMA's requirement that the Secretary prevent UUD supplements requirements imposed by other federal laws and by state law." *Ctr. for Biological Diversity v. U.S. Dept. of the Interior*, 623 F.3d 633, 644 (9th Cir. 2010). This duty is "the heart of FLPMA [that] amends and supersedes the Mining Law." *Mineral Policy Center v. Norton*, 292 F. Supp. 2d 30, 42 (D.D.C. 2003). BLM cannot under any circumstances approve a mining project that would cause UUD. 43 C.F.R. § 3809.411(d)(3)(iii). As part of preventing UUD, BLM must ensure that all operations comply with the Performance Standards found at § 3809.420. *See* 43 C.F.R. § 3809.5 (definition of UUD, specifying that failing to comply with the Performance Standards constitutes UUD). These Standards require BLM to ensure that all operations comply with all environmental protection standards, including standards for air, water and threatened and endangered species. *See* 43 C.F.R. § 3809.5 (definition of UUD includes "fail[ure] to comply with one or more of the following: … Federal and state laws related to environmental protection."). The current rules: "retain[ed] the general performance standards (paragraphs (a)(1) through (a) (5) from the 2000 rule because they provide an overview of how an operator should conduct operations under an approved plan of operations and clarify certain basic responsibilities, including the operator's responsibility to comply with applicable land use plans and BLM's responsibility to specify necessary mitigation measures." 66 Fed. Reg. 54835, 54840 (Oct. 30, 2001). One of these standards is BLM's duty to impose "mitigation measures to protect public lands." 43 C.F.R. § 3809.420(a)(4). "Mitigation measures fall squarely within the actions the Secretary can direct to prevent unnecessary or undue degradation of the public lands. An impact that can be mitigated, but is not, is clearly unnecessary." 65 Fed. Reg. 69998, 70052 (Nov. 21, 2000) (preamble to rule section that remains in force). BLM's mitigation policy, as detailed by the Interior Solicitor, acknowledges the need to ensure compliance with an RMP as part of its mitigation duties under the FLPMA UUD standard. In discussing the previous rulemaking (quoted above) with approval, the Solicitor reiterated "'the operator's responsibility to comply with applicable land use plans and BLM's responsibility to specify necessary mitigation measures.'" M-37039, The Bureau of Land Management's Authority to Address Impacts of its Land Use Authorizations through Mitigation, 20, n.115 (Dec. 21, 2016) (Mitigation Opinion). In addition, BLM has the authority—and indeed, an obligation—to reject a proposal where mitigation cannot prevent UUD. "Although mitigation may contribute in some instances to the avoidance of UUD, in other cases, the impacts to resources may be of a nature or magnitude such that they cannot be mitigated sufficiently to prevent UUD." M-37039 at 20. According to the Solicitor: > the destruction of unique habitat in a particular place might not be adequately compensated by post-use restoration or protection of lesser habitat elsewhere. *In such a case, where mitigation cannot prevent UUD, the BLM has authority to reject the application for approval of the public land use based on the proponent's inability to prevent UUD.* The obligation to avoid UUD is a complementary but distinct source of authority for requiring mitigation under FLPMA. M-37039 at 20 (emphasis added). The Solicitor recognized that, without adequate mitigation, "the destruction of unique habitat in a particular place" would constitute UUD. M-37039 at 20. This duty includes, but is not limited to, species listed under the Endangered Species Act. *See Western Exploration v. U.S. Dept. of the Interior*, 250 F. Supp. 3d 718 (D. Nev. 2017). Finally, the DEIS bases BLM's review of the agency's duty to "prevent unnecessary or undue degradation of the lands," 43 U.S.C. §1732(b) (UUD) on its UUD definition at 43 C.F.R. § 3809.5. In order to properly comply with FLPMA and BLM's duties to protect public lands and resources, however, the new definition of UUD at 43 C.F.R. § 6101.4 should apply. BLM must revise its review and potential approval of the Project accordingly.	The Project's consistency with FLPMA and land use plans is discussed in the EIS in Section 4.6. The Project would implement ACEPMs to minimize impacts as described in EIS Section 2.0. Identified mitigation requirements are described in Section 4.21.
108 and 183	108.8 and 183.7	**C. The Proposed Action and North and South OSF Alternative Do Not Comply With the Tonopah RMP.** As noted herein, under FLPMA, BLM cannot approve any activity that is not in full compliance with the applicable land use plans, known as Resource Management Plans (RMPs). FLPMA requires that all activities approved by BLM comply with the requirements of binding RMPs. "The Secretary shall manage the public lands under principles of multiple use and sustained yield, in accordance with the land use plans developed by him under section 1712 of this title when they are available." *Id.* §1732(a). Here, the applicable land management plan is the Tonopah RMP, which requires BLM to "[p]rotect, restore enhance, or expand habitat for threatened, endangered, or Nevada BLM Sensitive Species." United States Dep't of Interior, BLM, Approved Tonopah Resource Mgmt. Plan and Record of Decision, 1, 9 (1997). The RMP further requires that "[h]abitat for all . . . Nevada BLM Sensitive Species (plant and animal) will be managed to maintain or increase current populations of these species." *Id.* at 9 (emphasis added). BLM Special Status Species Handbook § 6840 states that BLM Sensitive Species "will be managed… to minimize the likelihood and need for listing under the ESA." As discussed above, neither the Proposed Action nor the North and South OSF Alternative is consistent with protecting, restoring or expanding Tiehm's buckwheat habitat or increasing the population size. BLM's actions to date with Tiehm's buckwheat have already resulted in its being listed under the ESA, and the DEIS alternatives would only serve to exacerbate those same concerns.	The Project's consistency with FLPMA and land use plans is discussed in the EIS in Section 4.6. Special status species known to occur in the area are described in EIS Sections 3.14 and 3.18. Bi-state sage-grouse are discussed in Section 3.12.1. Impacts to special status plant species are described in Section 4.14 and 4.20.14. Impacts to special status wildlife are discussed in Section 4.18 and 4.20.18. Impacts to bi-state sage-grouse are discussed in Sections 4.12 and 4.20.12.

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		The Proposed Action and North and South OSF Alternative also fail to protect two other species in Fish Lake Valley that have been petitioned for ESA listing and are BLM Nevada Sensitive Species: the Fish Lake Valley tui chub (*Siphateles bicolor* ssp. 4) and the Tecopa bird's beak (*Chloropyron tecopense*). These have been added to the BLM Nevada Sensitive Species list as of September 2023 (BLM Instructional Memorandum NV-IM-2024-003). The Fish Lake Valley tui chub was petitioned for listing in 2021 and received a positive 90-day finding in 2022 (87 Fed. Reg. 51635). The Tecopa bird's beak was petitioned for listing in 2023 and has not yet received a 90-day finding. The Fish Lake Valley tui chub was previously known from several locations in Fish Lake Valley but now only survives in a single isolated spring at a privately owned ranch located in the northeast portion of the valley. Due to its small size and restricted range, this sole remaining population is particularly vulnerable to groundwater extraction and other threats such as non-native species. The Tecopa bird's beak is known from Fish Lake Valley and one other location in the Amargosa River Basin. The entirety of its habitat lies within lithium mining claims and it is surrounded by geothermal leases and exploration projects. Both of these species are entirely reliant on sustained discharge of groundwater from the aquifer in Fish Lake Valley, and as described below in Section III(E)(10), both are threatened with serious harm or extinction by the Rhyolite Ridge mine. An additional BLM Sensitive Species is the bi-state distinct population segment of the greater sage-grouse (*Centrocercus urophasianus*) ("BSSG"). BSSG is current proposed for listing, but its status has been in flux as a result of several court rulings. Nonetheless, at this time it is proposed for listing and there is a unit of proposed critical habitat in an area called Coyote Hole, just east of the Project Area. There is also an area of identified habitat north of the Project Area. Consultants for Ioneer found one male BSSG within the project area as an incidental observation in 2022 (DEIS at 3-14). As described below in Section III(E)(10), there could be significant impacts to BSSG and its critical habitat from the Project, including disturbance of habitat, increased vehicular traffic and disturbance, and dewatering of vital water sources. The Project risks irreparably degrading the proposed critical habitat of BSSG, as well as risking potential mortality of individuals. The Rhyolite Ridge Mine, and groundwater impacts therefrom, are likely to contribute to the listing of the Fish Lake Valley tui chub, the Tecopa bird's beak, and the bi-state sage-grouse under the Endangered Species Act, and thus violates BLM's sensitive species policy and the Tonopah RMP. Further, the DEIS does not indicate that BLM has complied with the 2016 RMP amendments for BSSG, which impose habitat buffers, seasonal restrictions, disturbance caps, compensatory mitigation, and other measures to minimize or offset impacts to BSSG populations and habitat.	
108 and 183	108.9 and 183.8	**D. The DEIS Does Not Demonstrate Compliance With Applicable State Permitting Requirements.** As noted, in order to prevent UUD, a project must comply with the performance standards at 43 C.F.R. § 3809.420, including State permitting laws. However, BLM cannot rely on eventual NDEP permitting (which does not require compliance with NEPA) to fulfill BLM's NEPA and FLPMA obligations. "'[A] non-NEPA document ... cannot satisfy a federal agency' obligations under NEPA.'" *Great Basin Res. Watch v. BLM*, 844 F.3d 1095, 1104 (9th Cir. 2016) (quoting *South Fork Band Council v. U.S. Dept. of the Interior*, 588 F.3d 718, 726 (9th Cir. 2009)). "[N]or have we allowed federal agencies to rely on state permits to satisfy review under NEPA." *Env'l Defense Ctr. v. Bureau of Ocean Energy Mgt.*, 36 F.4th 850, 874 (9th Cir. 2022). Here, BLM has failed to show that the Project complies with applicable State permitting requirements for water rights and water quality. ***1. The Project Does Not Have Adequate Water Rights*** Ioneer has not acquired all necessary water rights for the Project. Records from the office of the Nevada State Engineer indicate that Ioneer has acquired only a fraction of the water rights needed for the full development of its mine operations.1 For the remainder, Ioneer states that it will acquire agricultural water rights in Fish Lake Valley. *See* DEIS at 2-14. However, to utilize these water rights, Ioneer must file an application with the Nevada State Engineer to change the place and manner of use. *See* NRS 533.370. Under Nevada State Law, Ioneer must demonstrate that the change in use will not conflict with existing rights or threaten to prove detrimental to the public interest. *Id.* Further, the applications are subject to protest and judicial review. NRS 533.450. BLM has previously determined that failure to obtain all the necessary water rights for a project under Nevada State law constitutes a failure to prevent UUD under FLPMA. At the scoping meetings for this project, Scott Distel of BLM Battle Mountain District said, "By regulation the BLM cannot approve a project that requires water rights for which no water right exists…. BLM cannot authorize projects for which water rights are required where no water right exists." In a subsequent email, Mr. Distel cited 43 CFR 3809.402(a)(6) as the authority for this statement. On December 13, 2022, BLM Southern Nevada District sent a letter to Control Technology, Inc. notifying them that they were denying the company's application for a pumped hydro storage project in Clark County, Nevada. The letter stated, "Any BLM decision to authorize your hydropower project prior to the approval of the use of State water resources would result in unnecessary or undue degradation of public lands which would be inconsistent with the purposes for which BLM manages public lands." BLM 2022b (Letter to Control Technology, Inc. re: N-101255). ***2. The Project Does Not Have a Current Water Pollution Control Permit.*** The State of Nevada has not received an application from Ioneer for a required major modification of its water pollution control permit, which is not surprising given the DEIS's lack of detail regarding a number of mine facilities such as the tailings disposal facility (SOSF). This indicates that the federal permitting process is far ahead of the State process. The same problem recently occurred at the Thacker Pass mine and resulted in BLM permitting aspects of the mine plan that the State of Nevada did not. The Rhyolite Ridge project, with its highly accelerated and irregular permitting schedule, risks a similar outcome—BLM could permit aspects of the mine plan that could be deemed illegal by the State of Nevada. Failure to obtain all necessary state approvals would constitute UUD and require BLM to reject the plan of operations. [1]State of Nevada, Division of Water Resources, Online Data Portal, Hydrographic Abstract for Fish Lake Valley (Basin 117), *available at*: http://www.water.nv.gov/HydrographicAbstract.aspx.	Comment noted. The EIS acknowledges that other authorizations from federal, state, and local agencies are required and lists necessary major permits and approvals in Appendix B.
108 and 183	108.10 and 183.9	**III. NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) VIOLATIONS** **A. BLM's Permitting Process for the Rhyolite Ridge Project Violates NEPA and FLPMA Public Disclosure and Participation Requirements.** The planning process for the Rhyolite Ridge project has not been carried out in a way that fosters informed decisionmaking and public participation, in violation of both FLPMA and NEPA. First, the process has been unreasonably rushed, with BLM's own staff complaining that "This is a very aggressive schedule that deviates from other project schedules on similar projects completed recently and concurrently at the District and State." Email from Scott Distel, BLM, to Doug Furtado, BLM, December 21, 2023. According to internal BLM correspondence obtained through the Freedom of Information Act (FOIA), the Rhyolite Ridge permitting process: • "[S]ignificantly changes timelines for [the BLM interdisciplinary team (IDT)] and cooperating agencies as provided in previous versions of the schedule, without prior coordination with these groups." • Assumes, without basis, that internal comments "are specific and provide direction on how to be resolved." • Assumes that mitigation measures, which have not yet been developed, "do[] not require additional NEPA analysis or baseline."	Public involvement opportunities for the Project have been conducted according to NEPA, CEQ regulations, and the BLM NEPA Handbook. In-depth analyses of the direct, indirect, and cumulative impacts associated with the Proposed Action and alternatives were conducted in compliance with NEPA. The EIS and SERs that support the analysis were made available to the public.

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		• Assumes that "[c]ooperating agency and IDT comments are not significant and do not require new analysis or additional information to be incorporated." • Assumes that "[n]o comments" will be received "that [require] input from BLM or Ioneer in responding to." • Assumes that BLM solicitors will "have no significant comments and do not require new analysis or additional information to be incorporated." • "Public comments are minimal, and no more than 100 individual comments are received (note this states individual comments, not comment letters; typically, comment letters have multiple individual comments in them)." *Id.* This internal correspondence thus shows that the current permitting and review process is a pro forma exercise that is not consistent with the public participation requirements of both NEPA and FLPMA. Both FLPMA and NEPA emphasize public participation, "with their statutory framework largely in unison on such a requirement." *W. Watersheds Project v. Zinke*, 441 F. Supp. 3d 1042, 1069 (D. Idaho 2020). FLPMA Section 309(e) directs that: > In exercising his authorities under this Act, the Secretary, by regulation, shall establish procedures, including public hearings where appropriate, to give . . . the public adequate notice and an opportunity to comment upon the formulation of standards and criteria for, and to participate in, the preparation and execution of plans and programs for, and the management of, public lands. 43 U.S.C. § 1739(e); *see also* 43 U.S.C. § 1701(a)(5) (FLPMA Section 102(a)(5)): "[I]t is the policy of the United States that . . . the Secretary be required to establish comprehensive rules and regulations after considering the views of the general public . . . ."); 43 U.S.C. § 1712(f) (FLPMA Section 202(f)): "The Secretary shall allow an opportunity for public involvement and by regulation shall establish procedures, including public hearings where appropriate, to give . . . the public, adequate notice and opportunity to comment upon and participate in the formulation of plans and programs relating to the management of the public lands."). NEPA, meanwhile, aims to "ensure[ ] that the agency will inform the public that it has indeed considered environmental concerns in its decision-making process." *Balt. Gas & Elec. Co. v. Nat. Res. Def. Council*, 462 U.S. 87, 97 (1983). To this end, federal agencies "must provide the public with sufficient environmental information, considered in the totality of circumstances, to permit members of the public to weigh in with their views and thus inform the agency decision-making process." *Bering Strait Citizens for Responsible Res. Dev. v. U.S. Army Corps of Eng'rs*, 524 F.3d 938, 953 (9th Cir. 2008); *see also Trout Unlimited v. Morton*, 509 F.2d 1276, 1282 (9th Cir. 1974) (explaining that an EIS prepared under NEPA "should provide the public with information on the environmental impact of a proposed project as well as encourage public participation in the development of that information"); *Idaho Sporting Cong., Inc. v. Alexander*, 222 F.3d 562, 568 (9th Cir. 2000) (holding that the Forest Service violated NEPA's public participation requirements because SIRs were not presented at the earliest time possible, as NEPA requires, and because public participation procedures attached to the preparation of the SIRs were not as thorough as NEPA mandates). BLM's determination to rush the permitting process here despite significant and unresolved issues ignores the fact that "a proposed decision carries with it an inevitable momentum favoring that result, an effect NEPA seeks to avoid by 'ensur[ing] that federal agencies are informed of environmental consequences before making decisions . . . .'" *W. Watersheds Project v. Kraayenbrink*, 538 F. Supp. 2d 1302 1314-16 (9th Cir. (2007) (*quoting Citizens for Better Forestry v. United States Dep't of Agric*., 341 F.3d 961, 970 (9th Cir. 2003)). BLM's assumptions about the permitting process are unreasonable and unrealistic; many have already proven false. As this letter demonstrates, BLM's assumption that no new analysis or additional information will be required is obviously and demonstrably wrong. Moreover, BLM's various assumptions that internal and public comments will be minimal, and will not require "responding to" by either BLM or the project proponent, appear to preemptively foreclose meaningful public involvement and rigorous analysis in the planning process. In addition, many of the technical reports relied on and cited in the DEIS are from outdated mine plans. For instance, the mine subsidence evaluation (HydroGeoLogica 2020a) is based on an old configuration of the mine and the pit. In this document, the pit is conceived to be approximately 600 feet deep and the pit configuration includes destroying most of Tiehm's buckwheat's habitat. In the preferred alternative in the DEIS, the pit is over 300 feet deeper, will require more dewatering, and was moved in location. The mine subsidence evaluation is not a valid analysis to base the DEIS on because it analyzes a fundamentally different project. This same problem is true for many other technical documents including the pit lake model (HydroGeoLogica 2020b) and the geochemical characterization report (HydroGeoLogica 2020c). These documents need to be updated to reflect the current mine configuration. Finally, BLM's rollout of the DEIS was disorganized and confusing. BLM issued a press release on Friday, April 12, stating that BLM was "seeking public comment on a draft environmental impact statement for the proposed Rhyolite Ridge Lithium-Boron Mine Project." The Press Release also stated that "[p]ublication of the draft EIS for the proposed mine opens a 45-day public comment period, ending on May 27, 2024." However, BLM did not actually publish the DEIS on that date; nor did BLM issue the legally required notices in the Federal Register. BLM then informed the Center that it would not publish the Draft EIS for another week. However, four days later, on Tuesday, April 16, BLM surreptitiously posted the DEIS and accompanying SIRs on its eplanning website with no additional public notification. Again, BLM did not publish the federal register notice that is required to accompany a Draft EIS. Finally, on Friday, April 19th, BLM issued a federal register notice and changed its previously issued press release to state the correct comment deadline. This inexplicable conduct will undoubtedly lead to confusion among members of the public as to when the comments on this project are due, and what agency documents are being presented for public comment. As such it is inconsistent with the emphasis on meaningful public participation that is found in both NEPA and FLPMA, as discussed above. The public engagement process around the proposed Rhyolite Ridge mine must more adequately align with the National Environmental Policy Act (NEPA) than it has so far, and the 45-day comment period is slap in the face to the public. BLM should have allowed at least 120 days for comments to ensure the public is able to properly understand the proposed action and have their concerns fully taken into account. A more thorough and transparent public engagement process is needed. In addition, community members are currently still waiting for requested documents. The comment period must be extended due to the fact that these community members have still not been given access to the information they need in order to make meaningful comments at the DEIS stage. BLM has afforded the public longer comment periods for large complex mines such as Rhyolite Ridge; for example, for the proposed Mt. Hope Molybdenum mine BLM allowed 90 days. *See* Dear Reader Letter for the Mount Hope Project Draft Environmental Impact Statement, (November 29, 2011). The Pan Mine project, which is arguably less complex than Rhyolite Ridge, allowed for about 53 days for a comment period from March 15 to May 7 2013. *See* Abstract, Draft Environmental Impact Statement for the Pan Mine Project (March 8, 2013). BLM must address the problematic nature of streamlining. Adequate public engagement should be prioritized and the community adequately met, consistent with the spirit of NEPA. To sufficiently add these components	

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		and meet the spirit of NEPA, more time should be devoted to the permitting process, not less. Ioneer's plan for an expedited permitting for Rhyolite Ridge needs to be critically evaluated in light of this, and the comment deadline for the Draft Environmental Impact Statement (DEIS) needs to be extended at least through the end of June. In an effort to rectify BLM's errors and facilitate meaningful public input and informed decisionmaking, the signatories of this letter requested an extension to the bare-minimum 45-day comment period on May 17. Letter from the Timbisha Shoshone Tribe, Center for Biological Diversity, Great Basin Resource Watch, and Western Watersheds Project to Scott Distel, BLM (May 17, 2024). BLM rejected this request. Email from Doug Furtado, BLM to Scott Lake, Center for Biological Diversity re: Rhyolite Ridge Project (May 20, 2024).	
108 and 183	108.11 and 183.10	**B. The Ioneer Documents Rely on Euphemisms Instead of Standard Mining Industry Vocabulary, and The DEIS Duplicates this Misleading Terminology.** We have never seen the expression "spent ore The standard expressions in the mining industry are "tailings storage facility" or "tailings disposal facility." According to the SME Surface Mining Handbook, "Tailings are fine-grained mineral waste that remains after processing and recovery of the minerals of economic interest, along with process water and chemical reagents added during the milling or beneficiation stages" (Snow and Morrison, 2023). "Spent ore" is exactly the same concept, but, as far as we have ever seen, spent ore is material that is left on a heap leach pad, while material that is transferred to an engineered facility is called "tailings." In this letter, we refer to "tailings," except to quote from Ioneer documents or to use the acronym SOSF. In a similar way, the Ioneer website boasts that there will be "no tailings dam" (Ioneer, 2024a). The Definitive Feasibility Study elaborates, "The project will be an environmentally friendly operation … with no tailings dam … The SOSF has been designed to store a composite consisting of leached ore from the vats plus sulphate salts generated in the evaporation and crystallization circuits. This material is suitable for dry stacking, meaning there is no need for a conventional tailings dam" (Ioneer, 2020). By contrast, the stability analyses by NewFields (2020a) show a structural zone (see Fig. 1), which serves exactly the same function as a dam. According to Klohn Crippen Berger (2017), a filtered tailings storage facility "still requires 'structural zones' (which perform like dams), made of compacted tailings for confinement" and "if filtered tailings are placed in a stand-alone facility (pile/stack), the outer slopes must maintain structural stability (similar to a dam or a waste dump), particularly under seismic loading conditions." According to Safety First: Guidelines for Responsible Mine Tailings Management, "Because they [filtered tailings storage facilities] still require a structural zone (which is a type of dam) for containment, they must be treated as an engineered tailings facility (i.e. tailings dam) from a regulatory standpoint … The structural zone of a filtered tailings facility serves the same function as a dam" (Morrill et al., 2022). The suitability of the expression "dry stacking" by Ioneer (2020) will be addressed in our comment on the tailings disposal facility (SOSF). The use of the expression "spent ore" instead of "tailings" and of "structural zone" instead of "tailings dam" might only be a public relations matter, which would not be the most important concern. However, the real concern is that Ioneer might use these kinds of euphemisms to avoid compliance with regulations and mining industry guidance documents on tailings and tailings dams, such as Guidelines on Tailings Dams: Planning, Design, Construction, Operation and Closure (ANCOLD, 2012, 2019), Global Industry Standard on Tailings Management (ICMMUNEP- PRI, 2020), and Safety First: Guidelines for Responsible Mine Tailings Management (Morrill et al., 2022). Documents by Ioneer have not referred to any of the preceding industry guidance documents. Ioneer is not a Company Member of the International Council on Mining and Metals (ICMM, 2024),[2] the Minerals Council of Australia (MCA, 2024),[3] nor the International Lithium Association (ILA, 2024),[4] so that is entirely unclear as to what industry guidelines the company adheres. It is noteworthy that Safety First explicitly warns against the use of alternative vocabulary to avoid regulations and guidance documents. According to Safety First, "Operating companies may avoid using the word 'dam' in an attempt to skirt tailings dam safety requirements. However, it is important to note that these guidelines apply to any engineered structure that contains mine tailings, regardless of the terminology used by the operating company to describe the engineered structure" (Morrill et al., 2022). Along the same lines, the Ioneer documents refer to a "quarry" instead of an "open pit" or "mining pit" and discuss the storage facilities for "overburden" instead of "waste rock." Typically, quarries are very shallow excavations for the extraction of aggregate, while the "quarry" at the Rhyolite Ridge mine would be 960 feet deep (DEIS, Geology and Minerals SER). Moreover, the term "overburden" typically refers to unconsolidated materials or soil, not to rock types such as the sandstone, conglomerate, limestone and extrusive volcanic rocks that overlie the ore body at the Rhyolite Ridge mine, which are usually referred to as "waste rock." [2]ICMM (International Council on Mining & Metals), 2024. Our Members. Available online at: https://www.icmm.com/en-gb/our-story/our-members [3]MCA (Minerals Council of Australia), 2024. Our Members. Available online at: https://minerals.org.au/membership-and-benefits/our-members/ [4]ILA (International Lithium Association), 2024. Members. Available online at: https://lithium.org/members/	The proposed facilities are described in EIS Section 2.1. Regardless of the terminology used to describe the facilities, the EIS analyzes the environmental impacts of the proposed facilities.
108 and 183	108.12 and 183.11	**C. The DEIS Fails to Examine a Reasonable Range of Alternatives.** The DEIS suffers from two additional fundamental flaws which run afoul of NEPA. First, the purpose and need statement is unreasonably narrow, and misconstrues BLM's authority to reject or modify the proposed project. Second—and as a result of the unreasonably narrow purpose and need—the DEIS fails to examine a reasonable range of alternatives. As an initial matter, the DEIS wrongly assumes the BLM lacks discretion to deny or modify the proposed action. However, as noted above, mining operations on public lands are subject to BLM's obligation under FLPMA to "prevent unnecessary or undue degradation of the lands," 43 U.S.C. 1732(b), as well as the requirements of applicable land-use plans. 43 U.S.C. § 1712; 43 C.F.R. § 1610.5-3(a). *See also Norton v. S. Utah Wilderness Alliance*, 542 U.S. 55, 69 (2004); *Western Watersheds Project v. Bennett*, 392 F.Supp.2d 1217, 1227 (D. Idaho 2005). If mining claims cannot be utilized without violating FLPMA's strict environmental requirements, then they cannot be developed. In addition, where there is a likelihood that a mining operation could not comply with environmental regulations in a cost-effective manner, this can call into question the validity of the claim itself. *Clouser v. Espy*, 42 F.3d 1522 (9th Cir. 1994); *United States v. Kosanke Sand Corp.*, 12 IBLA 282, 546-547 (1973); United States v. Pittsburgh Pacific Co., 84 Interior Dec. 282, 290 (1977), *aff 'd sub nom. South Dakota v. Andrus*, 614 F.2d 1190 (8th Cir. 1980). "FLPMA, by its plain terms, vests the Secretary of the Interior with the authority—and indeed the obligation—to disapprove of an otherwise permissible mining operation because the operation, though necessary for mining, would unduly harm or degrade the public land." *Mineral Policy Ctr. v. Norton*, 292 F.Supp.2d 30, 42 (D.D.C. 2003). The DEIS's purpose and need statement is also unreasonably narrow. NEPA requires agencies to "specify the underlying purpose and need to which the agency is responding," 40 C.F.R. § 1502.13 (emphasis added). Agencies may not give a purpose and need statement "so unreasonably narrow that [alternatives would be eliminated and] the EIS would become a foreordained formality." *Nat'l Parks & Conservation Ass'n v. Bureau of Land Mgmt.*, 606 F.3d 1058, 1070 (9th Cir. 2009) (quoting *Friends of Southeast's Future v. Morrison*, 153 F.3d 1059, 1066 (9th Cir. 1998)). Here, the DEIS merely states: "The BLM's purpose is to respond to Ioneer's proposal as described in the Plan and to analyze the environmental effects associated with the proponent's Proposed Action and alternatives to the Proposed Action, consider reasonable alternatives, and develop and consider mitigation, when necessary, to lessen effects to environmental resources." DEIS at 1-1. The DEIS	A reasonable range of alternatives were considered as discussed in Section 2.4 of the EIS. Whether the Project is permitted under 2920 or 3809 regulations, the EIS analyzes and discloses impacts from the Proposed Action and alternatives. Mitigation is described in EIS Section 4.21.

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		describes the "need" for the action as follows: "to respond to a request for a Plan for the applicant to exercise their rights under the General Mining Law of 1872 and to prevent unnecessary or undue degradation of public lands…." *Id.* This fails to acknowledge the full spectrum of BLM's duties under various statutes, including FLPMA and the ESA. *See Nat'l Parks*, 606 F.3d at 1070 (quoting *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 199 (D.C. Cir. 1991)) (explaining that agencies "should always consider the views of Congress . . . in the agency's statutory authorization to act[.]"). The DEIS's narrow purpose and need results in an unreasonably narrow range of alternatives. NEPA requires the agency to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources." 42 U.S.C. § 4332(E); 40 CFR § 1502.14. It must "rigorously explore and objectively evaluate all reasonable alternatives" to the proposed action. *City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1310 (9th Cir. 1990). The alternatives analysis should present the environmental impacts in comparative form, thus sharply defining important issues and providing the public and the decisionmaker with a clear basis for choice. *Id.* The lead agency must "rigorously explore and objectively evaluate all reasonable alternatives" including alternatives that are "not within the [lead agency's] jurisdiction." *Id.* "While a federal agency need not consider all possible alternatives for a given action in preparing an EA, it must consider a range of alternatives that covers the full spectrum of possibilities." *Ayers v. Espy*, 873 F.Supp. 2d 455, 473 (D. Colo. 1994). Much of the DEIS's discussion of alternatives is perfunctory and limited and ignores a number of reasonable alternatives. First, as noted above, BLM failed to consider of regulating the Project under its discretionary authorities, absent a verification that each of Ioneer's mining and millsite claims are valid under the Mining Law. Further, the BLM has chosen to examine in detail two alternatives that have the same or similar impacts on most resources affected, including air quality, environmental justice, geology, hazardous materials, lands and realty, livestock grazing, Native American traditional values, recreation, socioeconomics, transportation, vegetation, visual resources, water, wetlands and riparian areas, and wildlife. *See* DEIS at 2-23 to 2-31. The two alternatives vary only in how they would impact Tiehm's buckwheat; however, as discussed above, both would jeopardize the continued existence of the species and unlawfully destroy its critical habitat, so the comparison is functionally meaningless. It is insufficient for an EIS to only consider alternatives that "are essentially identical." *Friends of Yosemite Valley v. Kempthorne*, 520 F.3d 1024, 1039 (9th Cir. 2008). "The existence of reasonable but unexamined alternatives renders an EIS inadequate." *'Ilio'ulaokalani Coal. v. Rumsfeld*, 464 F.3d 1083, 1095 (9th Cir. 2006); *see also Western Watersheds Project v. Abbey*, 719 F.3d 1035, 1050 (9th Cir. 2013) (EA for grazing permit was arbitrary and capricious where all action alternatives considered same level of grazing, but with changes to the terms and conditions to mitigate impacts, such as installing or removing fencing). Remarkably, the DEIS eliminates 57 alternatives from detailed consideration, including several alternatives that would avoid direct impacts to Tiehm's buckwheat critical habitat. *See* Project Alternatives Supplemental Information Report (SIR). The DEIS also unreasonably eliminates all alternatives that would involve backfilling the pit. *Id*. Carefully implemented backfilling will eliminate the permanent groundwater draw from a mining pit lake. Judicious development of the mining pit and choice of backfill would allow groundwater to flow through the pit without degrading groundwater. This is approach is becoming more common and is being implemented in Nevada. For example, the Water Pollution Control Permit application submitted by Kinross Mining Corp. for the Bald Mountain Mine in March 2018 describes a plan for backfilling of the "Top Pit," which would have a pit lake if not backfilled. The objective for backfilling this pit is, "[t]o avoid groundwater depletion, any pit where the pit bottom is at or below the groundwater elevation, is to be backfilled using material that meets the criteria as presented in Section 3.2.2." The proposed Rhyolite Ridge mine pit lake would be large and have an even greater effect on groundwater. Backfilling the pit in this way would also serve an effective mitigation component to surface waters, wetlands, and springs that would be affected by the long-term drawdown from the pit lake. This type of mitigation is also preserves spring sources. Monitoring wells will need to be established to up and down gradient from the backfill pit to determine whether groundwater quality is being affected. If so, a mitigation scheme of pump and treat would likely be needed. Even if the pit is not backfilled it is likely that there will be flow through at times, so a monitoring network and a plan to pump and treat would still be needed. In the Great Basin where water is scarce it is irresponsible to allow a pit lake to form where the water will be wasted, since access is not allowed.	
108 and 183	108.13 and 183.12	**D. BLM failed to include an adequate mitigation plan under NEPA and Interior Department requirements.** Under NEPA, the agency must have an adequate mitigation plan to minimize or eliminate all potential project impacts. NEPA requires the agency to: (1) "include appropriate mitigation measures not already included in the proposed action or alternatives," 40 CFR § 1502.14(e); and (2) "include discussions of: . . . Means to mitigate adverse environmental impacts (if not already covered under 1502.14(e))." 40 C.F.R. § 1502.16(a)(9). NEPA regulations define "mitigation" as a way to avoid, minimize, rectify, or compensate for the impact of a potentially harmful action. 40 C.F.R. §§1508.1(s). "[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the 'action-forcing' function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 353 (1989). NEPA requires that the agency discuss mitigation measures, with "sufficient detail to ensure that environmental consequences have been fairly evaluated." *Id.* at 352. An essential component of a reasonably complete mitigation discussion is an assessment of whether the proposed mitigation measures can be effective. *Compare Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1381 (9th Cir.1998) (disapproving an EIS that lacked such an assessment) *with Okanogan Highlands Alliance v. Williams*, 236 F.3d 468, 477 (9th Cir.2000) (upholding an EIS where "[e]ach mitigating process was evaluated separately and given an effectiveness rating"). The Supreme Court has required a mitigation discussion precisely for the purpose of evaluating whether anticipated environmental impacts can be avoided. *Methow Valley*, 490 U.S. at 351-52 (citing 42 U.S.C. § 4332(C)(ii)). A mitigation discussion without an adequate evaluation of effectiveness is useless in making that determination. *South Fork Band Council v. Dept. of Interior*, 588 F.3d 718, 727 (9th Cir. 2009) (rejecting EIS for failure to conduct adequate review of mitigation and mitigation effectiveness in mine EIS). "The comments submitted by [plaintiff] also call into question the efficacy of the mitigation measures and rely on several scientific studies. In the face of such concerns, it is difficult for this Court to see how the [agency's] reliance on mitigation is supported by substantial evidence in the record." *Wyoming Outdoor Council v. U.S. Army Corps of Eng'rs*, 351 F. Supp. 2d 1232, 1251 n. 8 (D. Wyo. 2005). *See also Dine Citizens v. Klein*, 747 F.Supp.2d 1234, 1258-59 (D. Colo. 2010) (finding "lack of detail as the nature of the mitigation measures" precluded "meaningful judicial review").	Necessary mitigation measures have been identified during preparation of the EIS and are described in Section 4.21.

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		"Mitigation measures fall squarely within the actions the Secretary can direct to prevent unnecessary or undue degradation of the public lands. An impact that can be mitigated, but is not, is clearly unnecessary." 65 Fed. Reg. 69998, 70052 (Nov. 21, 2000) (preamble to Part 3809 rule section that remains in force). BLM's mitigation policy, as detailed by the Interior Solicitor, acknowledges the need to ensure compliance with an RMP as part of its mitigation duties under the FLPMA UUD standard. In discussing the previous rulemaking (quoted above) with approval, the Solicitor reiterated "'the operator's responsibility to comply with applicable land use plans and BLM's responsibility to specify necessary mitigation measures.' *Id.* at 54,840 (emphasis supplied)." M 37039, The Bureau of Land Management's Authority to Address Impacts of its Land Use Authorizations through Mitigation, 20, n. 115 (Dec. 21, 2016) (Mitigation Opinion). The Solicitor noted that "in the hardrock mining context, the BLM has long recognized that the UUD requirement creates a 'responsibility [for the BLM] to specify necessary mitigation measures' when approving mining plans of operations." M-37039, at 19 (citations omitted). "The BLM regulations addressing surface management of hardrock mining operations on public lands have consistently included mitigation as a requirement for preventing UUD, including as part of the general performance standards in the current regulations." *Id.* Here, much of the purported mitigation relies on future pledges by Ioneer to remediate Project impacts. But such future submittals do not satisfy NEPA's requirement that mitigation measures be subject to public review in the DEIS. Also, as detailed herein, the purported mitigation measures do not satisfy the ESA's, NEPA's and FLPMA's procedural and substantive requirements, including for Tiehm's buckwheat, aquatic life, water quality and quantity, wildlife, and other affected resources. *See* Appendix A (Fraga 2024), Appendix B (Emerman 2024), Appendix C (McCarthy 2024), Appendix D (Myers 2024).	
108 and 183	108.14 and 183.13	**E. The DEIS Fails to Examine all Direct, Indirect and Cumulative Impacts of the Alternatives** Because the DEIS is legally deficient, as shown herein, BLM must revise the DEIS and subject it to additional public review as required by NEPA. BLM failed to fully review all direct, indirect, and cumulative environmental impacts of the Project. 40 C.F.R. §§1502.16, 1508.8, 1508.25(c). Direct effects are caused by the action and occur at the same time and place as the proposed project. §1508.8(a). Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. §1508.8(b). Types of impacts include "effects on natural resources and on the components, structures, and functioning of affected ecosystems," as well as "aesthetic, historic, cultural, economic, social or health [effects]." *Id.* Regarding cumulative impacts: > An [EIS's] analysis of cumulative impacts 'must give a sufficiently detailed catalogue of past, present, and future projects, and provide adequate analysis about how these projects, and differences between the projects, are thought to have impacted the environment.' … Without such information, neither the courts nor the public ... can be assured that the [agency] provided the hard look that it is required to provide. *Te-Moak Tribe of Western Shoshone v. U.S. Dept. of Interior*, 608 F.3d 592, 603 (9th Cir. 2010). The Ninth Circuit has repeatedly faulted the Nevada BLM's failures to fully review the cumulative impacts of mining projects. In one case, vacating BLM's approval of the Mt. Hope Mine, the court stated that "'in a cumulative impact analysis, an agency must take a 'hard look' at all actions that may combine with the action under consideration to affect the environment.'" *Great Basin Resource Watch v. BLM*, 844 F.3d 1095, 1104 (9th Cir. 2016) (quoting *Te-Moak Tribe*). BLM violated NEPA here because it "did not 'identify and discuss the impacts that will be caused by each successive project, including how the combination of those various impacts is expected to affect the environment.'" *Id.* at 1105, *quoting Great Basin Mine Watch*, 456 F.3d 973-74. In *Great Basin Mine Watch*, the Ninth Circuit required "mine-specific … cumulative data," a "quantified assessment of their [other projects] combined environmental impacts," and "objective quantification of the impacts" from other existing and proposed mining operations in the region. *Id.* at 972-74. The agency cannot "merely list other [projects] in the area without detailing impacts from each one." *Id.* at 972. *See also ONRC v. Goodman*, 505 F.3d 884, 893 (9th Cir. 2007). Overall, the DEIS is severely lacking in the required full analysis of the project's impacts, including the cumulative impacts from all of the other past, present, and reasonably foreseeable future activities within the Cumulative Effects Study Areas (CESAs) for all affected resources such as wildlife, plants, air and water, cultural, economic, recreation, etc. Instead, the DEIS provides only generalized statements on potential cumulative impacts, along with a table of acreages of these activities (DEIS Table 4-6 at 4-47/48), with none of the required detailed quantification of cumulative impacts. The DEIS admits that it hasn't done the required *quantitative* analysis of critical cumulative impacts: "Acres of disturbance are not applicable to air quality, environmental justice, hazardous materials and solid waste, social and economic values, and transportation and access; thus, impacts to those resources are *discussed qualitatively*." DEIS at 4-46 (emphasis in original). Further, the Ninth Circuit has squarely rejected the Nevada BLM's reliance on a list of acreages along with a brief mention of impacts from other activities – ruling that such a cursory review violates NEPA in striking down a Nevada BLM EIS for a large mining project: > The Bureau responds that the acreage of surface disturbance with the Pete Project, at least, is implicitly included in the cumulative effects analysis for other resources, such as soils and vegetation. We have held, however, that this is insufficient under NEPA. "*A calculation of the total number of acres to be [impacted by other projects] in the watershed is a necessary component of a cumulative effects analysis, but it is not a sufficient description of the actual environmental effects that can be expected from logging those acres*." *Klamath-Siskiyou*, 387 F.3d at 995. The Bureau also gives no explanation for why other mining projects were not explicitly discussed in the cumulative impacts analysis. *Great Basin Resource Watch v. Hankins*, 456 F.3d 955, 973 (9th Cir. 2006) (emphasis added). As just one example, the DEIS acknowledges a number of geothermal energy leases, but says that impacts from future operations on these leases need not be considered "unless a detailed plan has been submitted." DEIS at 4-45. That does not satisfy BLM's duty to quantify the impacts from all "reasonably foreseeable future activities" (see Section III(E)(15), below). This is especially concerning, as BLM admits elsewhere that future geothermal operations are "likely." DEIS at 4-51. Specific resources and issues that do not receive the required "hard look" in the DEIS are discussed in the following sections.	In-depth analyses of the direct, indirect, and cumulative impacts associated with the Proposed Action and alternatives were conducted in compliance with NEPA and CEQ regulations. Effects analyses are presented in EIS Section 4.0 and associated SERs.

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108 and 183	108.15 and 183.14	***1. The DEIS Does Not Provide Reliable Studies or Data to Support its Conclusions.*** As Fraga (2024, Appendix A) explains: > Industry funded research presents a potential conflict of interest, as it provides an opportunity for the sponsoring company to influence scientific results in favor of their proposed projects (Hall and Scott 2001, Nature 2001). If research outcomes do not align with desired results, corporate funders may seek to discredit, or suppress findings (Holzman 2021). Here, Ioneer and its contractors have gone to great lengths to dispute and discredit the only available published, peer-reviewed study on Tiehm's buckwheat, which Ioneer itself funded (McClinton et al. 2022a). McClinton et al. identified Tiehm's buckwheat as a soil specialist that supports a relatively diverse assemblage of arthropods. The Draft Buckwheat Protection Plan rely heavily on unpublished and non-peer-reviewed reports and technical memos in an effort to counter the McClinton et al. (2022a) study. As the U.S. Fish and Wildlife Service (FWS) has explained in comments on the draft plan, Ioneer's attempt to discredit the McClinton et al. study's findings, while simultaneously "hand-picking tidbits" from the same study "weakens the overall findings and conclusions of the plan." FWS also questions whether Ioneer is utilizing the "best available science" as the ESA requires, given its reliance on "research, reviews, reports, and memos that have been commissioned by Ioneer over the past few years" that "have not been provided to USFWS or BLM, do not provide detailed methods orlocations of the studies, and/or are not peer reviewed." Appendix A (Fraga 2024). The Buckwheat Protection Plan's efforts to counter the McClinton et al. (2022a) study fail to recognize that the conflict between Tiehm's buckwheat conservation and the proposed mine do not hinge on the species' status as a soil specialist or the specific pollinator community it is associated with; rather, the conflict centers on the sheer magnitude of the proposed disturbance surrounding the entire global range of a single site endemic species, which presents a significant extinction risk.	The EIS considers the McClinton 2020 and 2022 papers to describe the Tiehm's buckwheat pollinator community. The EIS relies on best available data for the analysis of effects.
108 and 183	108.16 and 183.15	***2. The DEIS Significantly Underestimates the Likelihood of Pit Wall Failure and Erosion of Occupied Tiehm's Buckwheat Habitat into the Pit.*** Information presented in this section summarizes Appendix B (Emerman 2024). Please refer to this report for a far more detailed analysis than is provided here. The DEIS includes geotechnical analyses that argue that Tiehm's buckwheat could not be affected by instability of the mine pit slopes. The DEIS chose a value of 1.2 as the minimum factor of safety for both the operational and post-closure periods. The factor of safety is the ratio of the resistance to the load, so that a factor of safety of 1.0 indicates a slope at the cusp of failure, equivalent to 50% probability of failure. Geo-Logic Associates (2023) updated previous stability analyses by considering six sections across the quarry, including TR02E-11, which is close to the population of Tiehm's buckwheat that has a separation distance of 15 feet from the quarry. The limit equilibrium method was used to show factors of safety for the operational period ranging from 1.20 to 1.26, thus satisfying the minimum value set by the DEIS. By adding buttresses to promote slope stability for the post-closure period, the factors of safety increased to the range 1.25 to 1.45. The stability analyses assumed that, after depressurization and dewatering, the slope materials would remain unsaturated indefinitely. The Adaptive Management plan called for the cessation of mining activity if monitoring indicated instability near Tiehm's buckwheat habitat. Some information in the DEIS is inconsistent with information in other sources and the BLM has indicated that other information is already out of date. For example, the Tiehm's buckwheat population geospatial information in the DEIS, which was created by Ioneer, is not the same as the geospatial information previously used by the US Fish and Wildlife Service. In particular, the FWS layer shows the closest separation distance between the Thiem's buckwheat and the quarry to be 17 feet. According to the FWS layer, subpopulations of Thiems's buckwheat are found 380 feet, 332 feet, 283 feet, and 177 feet from the quarry on the western side. The Ioneer map places those same subpopulations 208 feet, 329 feet, 281 feet, and 165 feet, respectively, from the edge of the quarry. From a geotechnical standpoint, a critical issue is that BLM has stated that the position of the haul road is going to change, Email from Scott Distel, BLM to Patrick Donnelly, Center for Biological Diversity, re: GIS information for Rhyolite Ridge (May 20, 2024), although the quarry as mapped has the exact dimensions to accommodate the haul road as currently mapped. Thus, if the position of the haul road changes, then the location of the quarry will also change, even though the location as shown in the DEIS was the basis for the stability analyses in the DEIS. a. Factor of Safety The factors of safety that are calculated in the DEIS cannot be regarded as reliable. The geotechnical parameters for each geologic unit that are the input data for the stability analysis are stated with ultra-precision, sometimes with five significant digits, and with no range of uncertainty. Some of the geotechnical parameters were obtained from another consulting report that is not available for public review, while other parameters were simply the judgment of Geo-Logic Associates. The DEIS does not specify which parameters were developed from data and which were based on "judgment." The DEIS presents some of the raw data that were used to develop the geotechnical parameters, which show a very small number of measurements for each geologic unit with a high degree of scatter. The calculated factors of safety are also stated as single values with no range of uncertainty. In particular, there is no sensitivity analysis that would show the range of possible factors of safety that could result from reasonably possible alternative values for the geotechnical parameters and there is no distribution of possible values for the factor of safety that would make it possible to estimate the probability of failure. The DEIS does not identify any source or type of material for the buttress, so that the geotechnical parameters of the buttress should be regarded as strictly hypothetical. Failures of mine pit slopes are incredibly common in comparison with other types of industrial accidents. The mean annual probability of failure of a mine pit slope is about 6% with a range of 2-20%. According to the Guidelines for Open Pit Slope Design (Read and Stacey 2009, cited in Emerman 2024), for mine pit slopes with High consequences of failure, the minimum factor of safety should be in the range 1.3-1.5 and the maximum probability of failure over the entire design life (as opposed to an annual probability) should be 5%. This was subsequently affirmed by the SME Surface Mining Handbook (Mohanty et al. 2023, cited in Emerman 2024). Since the adaptive management plan calls for the cessation of mining activity as a response to slope instability affecting sensitive habitat, the consequences of slope failure at the Rhyolite Ridge mine should be placed into the High category (on a three-level scale of Low, Medium, and High). The range of 1.3-1.5 for the minimum factor of safety depends upon the uncertainty in the input data with the upper end corresponding to high uncertainty. Based upon both the high data uncertainty and lack of attention to data uncertainty addressed above, the appropriate minimum factor of safety during the operational phase should be 1.5, which is significantly greater than the value of 1.2 that was chosen in the DEIS.	1) A conservative approach was used for estimation of geotechnical parameters based on the materials encountered on site. Material properties are listed on Figure 3-5 of the GeoLogic Associates report. 2) The material properties utilized in the analyses were derived from the EnviroMine (2019) report. The material parameters incorporated are conservative values based on the results of various laboratory tests. These conservative values provide a reliable foundation for the stability analyses, reducing the need for additional sensitivity analyses regarding the material properties. Materials Properties are listed on Figure 3-5 (GLA 2022). This conservative approach ensures that the safety factors used are robust and account for any potential variability in the material properties. Material properties are listed on Figure 3-5 of the GLA report. 3) For the report completed by GLA, no new drilling and geotechnical tests were conducted. Instead, the geotechnical data were sourced from previous investigations and other available resources. Specifically, they relied on the geotechnical report prepared by EnviroMine in 2019 to obtain the necessary geotechnical parameters and details of the cross sections required for stability analyses. This existing report provided a set of data, eliminating the need for additional fieldwork or testing by GLA. The GLA report from 2022 incorporates the test results from the EnviroMine (2019) report, which includes a variety of tests such as direct shear tests, uniaxial compressive strength tests, triaxial tests, and Brazilian tensile strength tests, among others. These tests provide a thorough characterization of the material properties, ensuring that there is no uncertainty regarding the material properties used in the stability analyses. The availability of these detailed test results and laboratory reports means that the data used are robust and reliable, thus supporting the conclusions drawn in the GLA report. 4) See response number 2, 3, and 7. 5) See response number 2 above 6) To address the uncertainty in material properties, GLA utilized the values provided in the previous report by EnviroMine for their initial analyses. These values offer a baseline for understanding the geotechnical characteristics of the site. The following was added to Section 2.1.1: "The buttress material is included in Table 1 of Geo-logic and Associates 2023 Geotechnical Report (GLA 2023)."

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		The DEIS fails to ensure an adequate factor of safety in the post-closure period. The appropriate minimum factor of safety should increase in the transition from the operational to the post-closure period. Some industry publications have argued that the post-closure factor of safety should be greater than 2.0 or as high as credible with the probability of failure reduced to the ALARP (As Low as Reasonably Practicable) level. There are two principal reasons for the need to increase the minimum acceptable factor of safety. After pit closure, there will be a long-term degradation in the strength of the adjacent rock masses due to rewatering of the pit and the time-delayed responses to blasting and the radical changes in topography and stress levels that accompanied construction of the pit. For example, the removal of the weight of overlying rock could result in the slow opening of joints (cracks). Thus, the first reason is that there is considerable uncertainty as to the rate or degree to which the rock masses will degrade. There is even considerable theoretical uncertainty regarding the coupled interactions of erosion and slope instability and how those interactions are coupled with climate change. The second reason is that the post-closure period will see a reduction in or a complete lack of slope monitoring and trained on-site personnel, thus limiting the ability to detect and respond to changes in slope stability. It should be noted that, in addition to raising the minimum value of the factor of safety for the post-closure period, the factor of safety should be calculated based upon the anticipated future reduced rock strength, not the rock strength that exists during the operational period. In response to the above concerns, the Large Open Pit Project published the Guidelines for Mine Closure, which describe a procedure for determination of the appropriate minimum factor of safety for the post-closure period. The procedure involves the calculation of a Relative Stability Guideline (RSG), which is the product of the score for the Pit Wall Condition Class (on a scale of 1 to 7 with lower scores indicating more competent slopes), the Adjacent Impact Consequence (on a scale of 1 to 5 with higher scores indicating more severe consequences), and the Existing Design Confidence (on a scale of 1 to 5 with higher scores indicating less design confidence or greater data uncertainty). Since the pit slopes at the Rhyolite Ridge mine would have factors of safety slightly greater than 1.2 (although those calculations are highly unreliable, as explained above), the pit slopes would be placed into Pit Wall Condition Class C, corresponding to a score of 5. Pit Wall Condition Class C is described in the Guidelines for Mine Closure as “unvegetated slopes with uncontrolled rockfall risk and undesirable risk of failure” with a “high level of concern.” In terms of failure consequences, the Guidelines for Mine Closure do not address the irreplaceable loss of biological resources, but other five-level consequence classifications, such as the Global Industry Standard for Tailings Management place accidents with “catastrophic loss of critical habitat or rare and endangered species” into the most severe category of Extreme consequences. Thus, a score of 5 for Adjacent Impact Consequences, corresponding to Very High consequences would yield an RSG score of 25 multiplied by the score for Existing Design Confidence. The Guidelines for Mine Closure require a minimum factor of safety greater than 1.5 for RSG in the range 20 to 50 and a minimum factor of safety greater than 2.0 for RSG in the range 50 to 100. On that basis, the minimum post-closure factor of safety of 1.2, which was assumed by the DEIS, would not be appropriate even if the Existing Design Confidence could be raised to the level of Very High (corresponding to a score of 1). The Existing Design Confidence is certainly not at the level of Very High, based on the low-quality geotechnical data that are currently available. If the Existing Design Confidence could be raised to a level of Medium with a score of 3, then the RSG score would be 75, which would demand a post-closure factor of safety greater than 2.0. In summary, the appropriate minimum factor of safety for the post-closure period would be 2.0 with the factor of safety calculated based on the anticipated future degraded rock strengths. b. Zone of Instability The Department of Industry and Resources (Western Australia) has detailed guidelines for calculating the post-closure Zone of Instability. There is no application of these or similar guidelines or any corresponding discussion of the width of the unstable zone anywhere in the DEIS. The Western Australian guidelines specify that a safety bund wall with a width of 5 meters should be constructed at least 10 meters outside of the Zone of Instability, so that the safe region begins 15 meters (roughly 50 feet) beyond the Zone of Instability. The calculation involves connecting a line from the toe of the pit to the surface with an angle of 45° for unweathered (strong) rocks and an angle of 25° with respect to the horizontal for weathered (weak) rocks. Some studies have shown the calculation procedure to be insufficiently conservative (insufficiently protective) because some pit slope failures have resulted in breakback angles significantly less than 25°. In the application of the Western Australian guidelines to the Rhyolite Ridge mine, all rock units at the stratigraphic level of geologic unit B5 of the Cave Spring Formation or higher were regarded as weak based on the description of the units in the DEIS. In the absence of any information, the unknown buttress material was also regarded as weak or weathered. The widths of the Zones of Instability were calculated for the same six sections for which stability analyses were updated in the DEIS. All widths were reduced when a buttress was added to the section, except in the single section in which there was no Zone of Instability even without a buttress. Thus, the widths ranged from 0 to 450 feet without a buttress and from 0 to 225 feet with a buttress. Adding 50 feet to establish a safe region resulted in safe regions ranging from 50 to 500 feet upslope from the edge of the quarry without a buttress and 50 to 275 feet upslope from the edge of the quarry with a buttress. It is most important that Section TR02E-11, which is closest to the population of Thiem’s buckwheat that has separation distance of 15 feet from the quarry, has a Zone of Instability of 400 feet, with the safe region beginning 450 feet from the edge of the quarry. In other words, the Zone of Instability at Section TR02E-11 would extend far into the population of Tiehm’s buckwheat. It should be noted that, according to the Western Australian guidelines, the Thiem’s buckwheat population that has a separation distance of 15 feet from the quarry could not be in the safe region even if there were no Zone of Instability (setting the region at 50 feet beyond the edge of the quarry). c. Other Issues The mining plan involves the depressurization and the dewatering of the geologic units prior to construction of the quarry. The DEIS expresses the opinion that the slope materials will not be rewetted even by extreme precipitation or snowmelt events because the water will infiltrate to a very shallow depth and then evaporate. The preceding is only an opinion because it is not accompanied by any data, calculations or modeling. In particular, there is no consideration as to the hydrogeological and meteorological processes by which the geologic units became saturated and then pressurized in the first place. Thus, it should be assumed that the relevant geologic units will eventually become re-saturated and re-pressurized and there should be some consideration as to the time period over which this will occur. In addition, there should be some consideration as to the localized impact of the large volume of water that will be applied to the haul roads for dust suppression. At the present time, nearly all large-scale mining projects involve the application of an Adaptive Management plan (also called the Observational Method). For complex projects, not all actions can be planned in advance. Instead, a monitoring program is set up together with a set of preplanned actions ready for execution as a response to every possible adverse observation. The DEIS does describe a plan for monitoring slope instability, but only in terms of the particular instruments that will be used. The description of pre-planned responses to indications of instability consists of a single sentence that states that the mining activity could cease in response to any evidence of slope instability that could affect sensitive habitat. It is difficult to determine whether the assertion is meant to be taken literally, since it is found in a report by Geo-Logic Associates that is an attachment to the DEIS, and certainly does not represent a binding commitment by the mining company. The following flaws in the DEIS have been identified in the geotechnical analysis:	7) The effect of watering the surface for dust control purposes is not significant and does not warrant analysis in the slope stability assessments for mine closure. This means that the water used to control dust on the mine surface does not appreciably affect the stability of the mine slopes. Therefore, including this factor in the slope stability analysis is unnecessary. The primary concern of dust control is to minimize airborne particulates for environmental and health reasons, which has minimal impact on the geotechnical stability of the slopes. 8) GLA undertook a full assessment by examining various cross-sections throughout the mine site. They conducted multiple stability analyses on different walls to ensure a thorough evaluation of the mine's stability. These analyses are detailed in the geotechnical report by GLA (2022). The report includes stability assessments for 19 distinct sections of the mine walls, the results are documented in the report. Also, the details and outcomes of these analyses are presented in Appendix G of the report. This extensive examination of multiple cross-sections ensures that all critical areas of the mine are evaluated, providing an understanding of the overall stability and safety of the mine site during and after closure. 9) GLA did not use Guidelines for Mine Closure published by the Large Open Pit Project (LOPP), which is mentioned here in the comments as the reference. Geo-Logic Associate used Chapter 9 of “Guidelines for Open Pit Slope Design” (Read & Stacey, 2009) for design criteria, which is one of the sources typically used in US. The "Guidelines for Open Pit Slope Design" by Read and Stacey (2009) does not explicitly provide a fixed minimum Factor of Safety for mine closure and post-closure periods. Instead, it emphasizes that the acceptable Factor of Safety should be determined based on specific site conditions, the nature of the materials, and the risk associated with potential slope failures. Typically, the guidelines suggest a more conservative Factor of Safety for the post-closure period compared to the operational period, acknowledging the long-term stability requirements and potential consequences of failure. This level of safety is deemed sufficient based on geological assessments and historical data, making it a practical and economically viable choice for mine closure operations. It allows for the allocation of resources towards other critical areas of the closure plan, ensuring a comprehensive and financially sustainable approach. Furthermore, the effectiveness of a 1.2 Factor of Safety is reinforced by GLA’s proposed methodologies for slope monitoring. Continuous and advanced monitoring techniques are integral to detecting any potential instabilities in real-time, thereby preventing slope failures during and after the mine closure process. These monitoring strategies include the use of instruments like inclinometers, piezometers, and radar systems, which provide precise and timely data on slope movements and groundwater conditions. With proactive monitoring in place, a Factor of Safety of 1.2 can ensure the long-term stability of mine slopes, as any signs of potential failure can be addressed promptly, thereby maintaining safety and structural integrity throughout the closure phase (Geo-Logic Associates, Inc. 2023. Supplemental Geotechnical Report. Rhyolite Ridge Lithium-Boron Project. Esmeralda County, Nevada. March 2023 Revised June 14, 2023). 10) See response to number 9 above. 11) The geotechnical report from GLA adhered to the methodologies and standards outlined in the "Guidelines for Open Pit Slope Design" by Read & Stacey (2009). These guidelines are internationally recognized and provide comprehensive criteria for assessing the stability of open pit slopes. Consequently, the report did not incorporate the Zone of Instability guidelines specified by the Western Australian Department of Industry and Resources, as it focuses primarily on ensuring compliance with the Factor of Safety requirements specified in the Read & Stacey guidelines. The stability of the slopes, as shown in the GLA report, is fundamentally dependent on the thorough slope stability analyses conducted in accordance with these established guidelines.

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		• The DEIS failed to identify a specific source for the buttress material with estimation of the geotechnical parameters for that particular source. • The DEIS failed to sufficiently justify how geotechnical parameters were chosen and what data back up those parameter choices. • The DIES failed to account for uncertainty in geotechnical parameters. • The DEIS failed to include uncertainty, such as the standard deviation, in the calculated factors of safety. • The DEIS failed to include an adequate sensitivity analysis based on a range of reasonable values for the geotechnical parameters. • The DEIS fails to anticipate that slope materials may not remain unsaturated. The factors of safety should be recalculated for a range of possible pore pressures and water tables, including the eventual possibility that pore pressures and the water table will return to pre-mining levels. If the factors of safety are strongly dependent upon the assumption that all slope materials will be unsaturated, then the results for unsaturated materials should be used with great caution. • The DEIS fails to account for localized rewatering of slope materials that could result from the surface application of water for dust suppression, and how such watering could affect slope stability. • The DIES failed to give possible values of the factor of safety for each pit wall section. • The DEIS failed to ensure that the minimum factor of safety be 1.5 and the maximum probability of failure should be 5% during the operational period (prior to buttress construction). • The DEIS failed to ensure that the minimum factor of safety be 2.0 during the post-closure period (after buttress construction). • The DEIS failed to adhere to Zone of Instability guidelines of the Western Australian Department of Industry and Resources. The connecting lines for the geologic units that are stratigraphically higher than Unit B5 of the Cave Spring Formation should have an angle of 25° with respect to the horizontal. • The DEIS fails to ensure that Tiehm's buckwheat plants do not fall into the pit. Populations located within the Zone of Instability are at high risk of imminent destruction due to pit wall collapse. The DEIS fails to provide a specific and detailed adaptive management plan, only hand waving that mining operations will cease if there is pit wall instability. It seems unlikely that after investing billions in the mine, mining would simply stop. Any claims that the mine will be closed in response to evidence of slope instability should be supported by a binding commitment from the mining company.	12) The current geotechnical report details the location of the Tiehm's buckwheat plants on Figure 12. The report did not account for the presence or location of these plants in their stability analysis as an external load as it was determined to be lightweight and not be a significant load factor. Of the 19 cross-sections used in the analysis, the general location of the plants and their habitat were captured in the study (GLA 2023 Figure 12). The buckwheat protection plan provides more detail regarding the location of the plants and the habitat and discusses the monitoring required for slope stability. 13) Monitoring and management measures are detailed in the GLA report as well as the Buckwheat Protection Plan that was made available to the public within the Threatened and Endangered Species SER. Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS. The Biological Opinion will, in part, assess impacts from pit stability. 14) Geo-Logic Associates (2022) used "Guidelines for Open Pit Slope Design" (Read &Stacey, 2009) which is a source commonly used for mining in the US. The Factor of Safety used 1.2 and is consistent with a site that includes monitoring including for the buttress. Please see the response to #9 above. 15) The Factor of Safety and critical failure surfaces were calculated by Geo-Logic Associates (2022) using data on the material obtained from the site. Rock mass degradation over time was not a specific geotechnical consideration. Failure surfaces are discussed as being monitored using inclinometers and surface methods (GLA Supplemental Report, 2023). 16) For the design, GLA used "Guidelines for Open Pit Slope Design" (Read & Stacey, 2009) which is a source used for mining in the US. The Factor of Safety used was 1.2 and is consistent with a site that includes monitoring. Please see the response to #9 above. 17) The Supplemental Geotechnical Report (GLA, 2023) discusses individual sections of the pit and follows the Guidelines for Open Pit Slope Design (Read & Stacey 2009). Individual material properties were identified and provided in Table 1 of the supplemental document. 18) Setback requirements for plants on the ground surface are not included in the geotechnical analysis. The design criteria factor of safety of 1.2 is a minimum and provides stability for the pit walls (GLA, 2023). Please refer to the Buckwheat Protection Plan for specific information regarding plant protection. 19) Adaptive management and slope monitoring are discussed in the Supplemental Geotechnical Report (GLA, 2023). Options are explained that include monitoring of slopes and the geology and groundwater in the zone supporting the slopes.
108 and 183	108.17 and 183.16	***3. The DEIS Significantly Underestimates the Impacts of Dust Deposition on Tiehm's Buckwheat and its Habitat.*** Information presented in this section summarizes Appendix C (McCarthy 2024). Please refer to this report for a far more detailed analysis than is provided here. The DEIS fails to adequately consider and address the project's dust deposition impacts on Tiehm's buckwheat and its critical habitat for several reasons, including: **Fugitive dust emissions are underestimated.** Fugitive dust emissions from quarry blasting, quarry excavation operations, overburden loading/unloading, service roads, watering trucks, and overburden wind erosion are not included in the fugitive dust dispersion modeling impacts on critical habitat. **Model inputs are systematically biased low.** Multiple dispersion model or emission inputs systematically bias the results to lower fugitive dust emissions. Silt fraction, meteorology, and water truck emissions activity are inadequate. Minor and major sources of fugitive dust are not included in critical habitat deposition modeling.	An air quality impact analysis was prepared for the Project, which was reviewed by the BLM and cooperating agencies, and was approved for use in the NEPA. The air quality impacts analysis demonstrates compliance with both secondary and primary National Ambient Air Quality Standards (NAAQS), including for particulate matter. The Clean Air Act identifies two types of NAAQS, which are primary standards and secondary standards. Primary standards, which are what is assessed in the Air Quality Impact Analysis, provides public health protection, including sensitive human populations. Primary standards are more stringent than the secondary standards. The secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

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		Resuspended herbicide and/or chemical suppressants will affect critical habitat. Indirect effects of dust deposition and dust suppression on critical habitat are not considered at all. Resuspension of particles and dust deposition of mine dust with adsorbed/absorbed herbicides or chemical dust suppressants is not considered. **Water truck emissions and water requirements are inadequate.** Dust suppression activities from Water Trucks are inadequately modeled for emissions activity and water management. **Model documentation is insufficient.** DEIS documents, supplemental reports, appendices, and attachments are insufficient for evaluation of model domain and model results for critical habitat dust deposition. Dispersion modeling was not performed for the North and South OSF alternative. For detailed discussion of the flaws in the DEIS and its supporting documents related to the analysis of dust deposition, see Appendix C (McCarthy 2024).	A particulate matter impact analysis was prepared as part of the Buckwheat Protection Plan for the North and South OSF Alternative. This particulate matter impact analysis was used to assess particulate matter deposition from haul trucks in proximity to designated critical habitat and Tiehm's buckwheat subpopulations and was used in the Buckwheat Protection Plan for the North and South OSF Alternative in assessing Project particulate matter deposition impacts relative to the particulate matter threshold that was established using the best available science. The results showed the Project is below the established threshold, and the Buckwheat Protection Plan includes measures to monitor particulate matter deposition within designated critical habitat and provides protocols and procedures to assess the established threshold during the life of the Project. This will allow for appropriate management implementation if data from monitoring shows the need to modify the threshold or implement other management requirements to meet the intent of the conservation measure detailed in the Buckwheat Protection Plan for the North and South OSF Alternative. Impacts to Tiehm's buckwheat from dust are disclosed in EIS Section 4.12 and additional clarification was added to Section 3.3.3 of the Threatened and Endangered Species SER. This additional clarification was added to the SER and was available to the public during the comment period as Appendix B of the Threatened and Endangered Species SER.
108 and 183	108.18 and 183.17	***4. The DEIS Fails to Take a Hard Look at Water Quality Impacts*** a. <u>The pit lake water quality forecast systematically underestimates acidity and other solutes.</u> While the DEIS's method of simulating aqueous chemical reactions within the proposed pit lake seems sound, but the model does not account for the leaching of solutes, including acids, from the exposed pit wall. The rock around the proposed pit lake and the rock proposed for partial backfill contains appreciable sulfide (up to 1.94% sulfide S), and includes some net-acid generating rock, Appendix D (Myers 2024) (citing HydroGeoLogic 2021, Piteau 2022), as demonstrated in the kinetic tests ("humidity cells"). Consequently, the model of solute leaching from runoff and eventual flooding of the Rhyolite Ridge pit needs to account for the duration over which that rock has been exposed to the atmosphere. *Id.* As Piteau (2022) acknowledges, "[t] geochemical composition of run-off depends on the exposure of rock in contact with water and the frequency of precipitation that rinses the rock exposure." That is, less-frequent rinsing means there is a longer period for soluble oxidation products to accumulate between rinses, thus producing higher concentrations of solutes. The model used to evaluate pit lake water quality entirely ignores the duration over which sulfidebearing rock would be exposed to the atmosphere, and instead assumes that that the concentration of aqueous solutions leaving each type of wall rock would be consistent over the entire duration of the model simulation. Appendix D (Myers 2024) (citing Piteau 2022). The model's tendency to underestimate solute concentrations is particularly extreme with respect to the "slug" of accumulated weathered and oxidized compounds that would be released into the pit lake from the "reactive zone" near the water line. *Id.* The term "reactive zone" describes the fracture rock zone behind the pit face, which is only flushed to the pit lake when submerged by the lake surface. As the lake reaches its final elevation, the leachate will carry solutes into the pit lake that will have accumulative after oxidation for approximately 40 years. *Id.* However, the model assumes this will be equivalent to the concentrations observed after just one week of oxidation in the laboratory. Naturally, sulfide-bearing rock that has oxidized for more than 40 years will release far more soluble pollutants than the same rock after being oxidized for a week, but the model entirely ignores this factor. Relatedly, the model has no internal accounting to indicate how much sulfate in the pit lake would have originated from various sources, including groundwater, direct precipitation, wall rock, and backfill, and does not consider the portion of total sulfide S in each source (e.g., wall rock and submerged backfill) that would be lost by flushing to the pit. *Id.* Further, the assumption that solute concentrations measured in a controlled laboratory kinetic test would accurately represent field conditions is entirely arbitrary. For the type of highly soluble elements released by sulfide mineral oxidation, there is no basis for assuming that concentrations derived from a controlled laboratory test with a water/rock ratio of 1:1 would accurately represent the concentrations that would occur under field conditions, where the hydraulic flow and associated water/rock ratios would vary widely. *Id.* This introduces a systematic bias that underestimates pollutant loads to the pit lake and generates model uncertainty. The rationale given for using humidity cell data to directly estimate field concentrations is that "early flush concentrations . . . comprised the highest solute concentrations and thus . . . represent greatest mass loading that could occur upon inundation" (Piteau 2022, p.47). However, early-time date from humidity cell tests only contain the "highest solute concentrations" relative to other samples from this operationally defined lab test protocol. Solute concentrations in leachate from sulfide-bearing waste rock under field conditions can be tens or even hundreds of times higher than concentrations in humidity cell effluent from the same rock. The humidity cell test results therefore do not provide "conservative estimates" as Piteau (2022, p.47) claims. Further, these high concentrations in early tests are artifacts of how the rock were handled before testing began (particularly moisture and temperature). Had the Rhyolite Ridge samples of sulfide-bearing wall rock been held longer before lab testing began, these early concentrations would have been higher, and the model estimates for the pit lake would be higher. This type of model sensitivity to arbitrary testing methods is an indication of erroneous model assumptions. BLM's modeling analysis also incorrectly ignores long-term leaching, causing it to further underestimate pollution inputs. Piteau (2022) states that the model assumes submerged backfill to be "non-reactive." However, leaching from the backfill could continue for as long as hundreds of years, as BLM recently acknowledged for the Thacker Pass project.	In-depth analysis of the direct, indirect, and cumulative impacts associated with the Proposed Action and alternatives were conducted in compliance with NEPA. EIS Section 4.16 contains the water resources and geochemistry analysis. Additional information including the modeling approach is in the Water and Geochemistry SER. Piteau 2024 describes the method that analyte leaching from wall rock and backfill was incorporated into the quarry lake chemistry model. The method applied utilized kinetic testing results that simulate sulfide oxidation in the pit wall rock and backfill materials. The model does account for inflow volumes from various sources (i.e., groundwater, precipitation). Use of laboratory humidity cell data for prediction wall rock leachate is an accepted practice for pit lake chemistry analysis (see NDEP Guidance for geochemical modeling). Backfill leaching is also incorporated into the quarry lake water chemistry model utilizing humidity cell data. The model does not assume that the backfill is non-reactive. The numerical groundwater flow modeling was used to assess whether the quarry lake would be terminal or outflow to local groundwater. In the model simulation and all the sensitivity runs, the quarry lake was a terminal pit lake that did not outflow to groundwater. The recovered pit lake level is more than 100 feet below local groundwater levels indicating that groundwater flow gradients will be from the local groundwater into the quarry lake. Effects on varying recharge on groundwater levels and quarry lake recovery were evaluated through the sensitivity analysis applied to the groundwater flow model. Pan evaporation rates and quarry lake evaporation rates are consistent with meteorological monitory data at the methodology for estimating evaporation from a pit lake surface. Sensitivity analyses on evaporation rates indicated that the quarry lake will remain terminal under the range of likely evaporation rates.

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		b. <u>The DEIS ignores evidence that the pit lake could be a flow-through lake.</u> A flow-through pit lake would allow pit-lake water to flow from the pit into the groundwater table on the downstream side of the lake. Although the DEIS claims the pit lake would be terminal, DEIS at 2-29, 4-5, 4-33, BLM's analysis improperly relies on assumptions that make prediction of a terminal lake more likely. Further, the DEIS provides information about the pit lake that does not reflect the analysis of Piteau (2024a). For instance, the DEIS claims the state-state level for the pit lake will be 100 feet below the surrounding groundwater, DEIS at 4-33, but Piteau (2024a:58) indicates that there will be only a four-foot difference. Based on the Piteau (2024a) analysis, seasonal variations or even a high amount of pit wall runoff could cause the pit lake to flow into the surrounding groundwater. The DEIS fails to consider that while the pre-mining water table slopes across the proposed pit, a pit lake would be a flat surface. Thus, the DEIS does not consider whether the flat pit lake surface would exceed the recovered groundwater level at any point along the pit perimeter, or provide sufficient pressure into a confined aquifer unit to cause outward flow. The modeling also fails to account for seasonal variability and long-term dry conditions. Groundwater levels that recharge seasonally or rapidly recover from a long-term drought would cause significant fluctuations in the pit lake elevation, and may result in groundwater levels recovering at different rates around the pit. Varying pit lake elevations could wet and dry reactive rock or allow the pit lake to flow through. Given that Piteau (2024a) places the groundwater divide just four feet above the quarry lake, it is highly probable that such fluctuating levels would occasionally cause the lake to flow through. The model also applies an inappropriately high evapotranspiration (ET) rate for the pit lake, thus underestimating pit lake elevations and the potential for flow-through conditions. Piteau (2024a) uses a 90.7 in./yr. pan evaporation rate which yields a 63.5 in./yr. pit-lake evaporation rate. Because the pit lake will be below the pit walls and sheltered from the wind, 90.7 is likely an inappropriate pan coefficient, which causes the model to overestimate evaporation. Overestimating evaporation, in turn causes the model to underestimate the pit lake elevation. A higher-elevation pit lake resulting from lower evaporation rates could be flow-through. In sum, despite the model's biases, the evidence suggests that the quarry lake will likely have periods during which it is flow-through and discharges into surrounding groundwater. BLM needs to address the flow-through scenario as likely, even if intermittent, and provide a defensible mitigation plan to avoid groundwater contamination.	Based on the groundwater flow model results and model sensitivity analyses, a flow-through condition at the quarry pit lake is not anticipated.
108 and 183	108.19 and 183.18	***5. The DEIS Fails to Adequately Consider Impacts to Groundwater Hydrology and Groundwater-Dependent Ecosystems.*** Information presented in this section summarizes Appendix D (Myers 2024) and Appendix E (Myers 2021). Please refer to these reports for a far more detailed analysis than is provided here. a. <u>The DEIS's Groundwater Model Does Not Consider Seasonality or Drought.</u> Both the HGL and Piteau modeling use an annual time step, which is too course to reflect impacts to groundwater levels or their impacts on surface water expression. The models use constant annual precipitation for both recharge, pit lake input and pit wall runoff. Piteau simulated agricultural pumping on an annual basis, using annual time steps. The use of annual time steps prevents the model from adequately accounting for seasonality in the system, including pumping, recharge and evapotranspiration (ET). For instance, simulating on an annual basis does not consider the increased ET and pumping during summer or the recharge occurring primarily during spring. Thus, the baseline for groundwater drawdown from existing agricultural pumping is not appropriately modeled. b. <u>There is Insufficient Evidence to Support the DEIS Model's Assumptions Regarding Groundwater Compartmentalization.</u> The groundwater model cited in the DEIS assumes that various faults and lineaments will be flow barriers and simulated them as such in the numerical model. Some of the hydrogeologic units in the model are compartmentalized as a result. However, neither Piteau (2023) nor HGL (2020a) presents adequate hydrologic evidence to support the assumption. The discussion of the TW-02 pumping test in HGL (2020a) misinterprets the data and ignores evidence suggesting constant inflow rather than compartmentalization. TheTW-02 pumping test was too short to provide useful information retarding connections in the groundwater aquifer, and a lack of simulated recovery at well TW-03 suggests that the model is too segmented. In short, there is likely more connection to surrounding aquifers than simulated in the model. The assumption that the area has segmented hydrogeology is based on little supporting data and may suggest a poor conceptual model of the area. The analysis of groundwater for this project should not depend on compartmentalization of portions of the groundwater aquifer. As a result of the model's poor fit, the predicted drawdown from the Project is likely to be very different from the modeling outputs. This calls much of BLM's impacts analysis into question, as predictions regarding impacts and the development of mitigation measures hinge on the hydrologic modeling, and specifically the modeled drawdown which, as explained above, is not scientifically defensible. This alone invalidates much of the DEIS analysis. c. <u>Mapped Calibration Residuals Demonstrate Model Inaccuracy</u> Calibration "residuals" also indicate inaccuracy or poor fit in the DEIS groundwater model. Model calibration involves minimizing "residuals," or data points that do not align with observed conditions. The DEIS utilizes a methodology that produces both "negative" and "positive" groundwater residuals, meaning there is as much of a chance for the modeled potentiometric groundwater surface to be above ground level as below. The mapped calibration residuals for the Rhyolite Ridge model show a significant "aerial bias," with spring elevations under- or overpredicted by up to hundreds of feet. Aerial bias in the model residuals render the simulated connectivity over much of the model domain very inaccurate. d. <u>BLM's Assumption that Drawdown Must be at least 10 Feet to Affect Springs has no Scientific Basis.</u> Any reduction in the groundwater level beneath a spring will cause the flow to lessen or cease. Spring discharge depends on the groundwater gradient at the spring; simply decreasing that gradient by lowering the groundwater table upgradient will decrease the discharge even though there has been no reduction in the groundwater table at the spring. There are 12 springs, including Cave Spring (SP-01) within the projected maximum 10-foot drawdown area and 20 springs within the one-mile buffer around the 10-foot drawdown (BLM 2024a, p 4-32). These springs within the buffer will be just as affected by drawdown as those within the 10-foot drawdown because springs occur wherever groundwater intersects the surface and any	A numerical groundwater flow model was used for assessing potential impacts which was reviewed by the BLM and cooperating agencies and approved for use in NEPA analysis. In-depth analysis of the direct, indirect, and cumulative impacts associated with the Proposed Action and alternatives were conducted in compliance with NEPA. EIS Section 4.16 contains the water resources and geochemistry analysis. Impacts to groundwater-dependent ecosystems are discussed in Section 4.17. Additional information is in the Water and Geochemistry SER and Wetland and Riparian Resources SER. a) Annual estimates for recharge, evapotranspiration, and pumping are utilized in the model over its 200-year simulation based on information for these parameters that is primarily reported as annual data (e.g., annual NDWR pumping records. The sensitivity of model predictions to these parameters was evaluated for the groundwater flow model. Assessment of potential impacts to seeps and springs is not limited to the groundwater flow model but would rely more on required monitoring of surface water flow and groundwater water levels with mitigation requirements should dewatering pumping affect surface waters. b) The presence of several geologic structures is supported by the drillhole, and surface geology data collected during exploration for the Project. However, only three fault structures were incorporated in the groundwater flow model based on water level observations. While limited in duration, the available pump test data does not contradict the fault interpretations. In addition, the sensitivity analysis evaluated the simulation of the three fault zones included in the model. Predicted drawdown changed little when the conductivity of the fault zones and other lithologic units were increased. c) The model calibration results in acceptable calibration statistics. There is no spatial bias in the simulation of spring elevations. Instead, calibration to spring locations is biased by the assumption that the regional groundwater elevation is at the ground surface at the spring locations. This assumption overestimates groundwater levels at the locations of seeps and springs that are sourced from perched water zones rather than regional groundwater.

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		decrease in the groundwater table will affect the flow. Wetland plants depending on those springs will also be affected by decreased water in the vadose zone, as discussed below regarding the Fish Lake Valley Wetlands. BLM has often justified using a 10-foot drawdown to separate the predicted drawdown from natural variability. This is fallacious reasoning. Modeled drawdown occurs in addition to natural groundwater level changes. BLM has considered less than 10 feet for other projects. The groundwater modeling completed for the Copper Flat project in New Mexico (BLM 2019) is one example. JSAI (2013, cited in Myers 2024, Appendix C) Figure 3.9 presented the one-foot drawdown around the downstream end of the stream that would be affected by water supply pumping. JSAI (2013, cited in Myers 2024, Appendix C) summarized: "The figures indicates that peak groundwater-level drawdown along Animas Creek and most of Percha Creek will be less than 1 ft. Drawdown in a small area along lower Percha Creek is projected to be greater than 1 ft and less than 2 ft. The projected effects on evapotranspiration and surface discharge from the shallow aquifers are correspondingly small." JSAI (2013, cited in Myers 2024, Appendix C). Table 3.5 also tabulated drawdown as low as 0.01 feet expected at springs affected by the project. Other federal EISs for mining projects have used a much lower drawdown contour for the consideration of impacts. The following is a small sample of those documents drawn from different states: • Donlin Gold Project, Final Environmental Impact Statement, Alaska, 2018. This FEIS considers drawdown to 0.1 feet due to the nearby wetlands that could be dried (Myers 2024, Appendix C). • Haile Gold Mine Project, Final Environmental Impact Statement, 2014, SAC 1992-24122- 41A The FEIS considers drawdown to 1 foot (Myers 2024, Appendix C). e. <u>BLM's Hypotheses Regarding Perched Springs are Unsupported.</u> The DEIS states that the springs in the project area likely will not be affected by drawdown because it assumes the springs are perched. Neither the DEIS nor supporting documentation provide conclusive evidence the springs are perched. The DEIS notes that "Cave Spring and SP-02 through SP-05 are likely related to a fault zone at the base of the exposed Rhyolite Ridge Tuff formation" (BLM 2024b, p ES-4). Neither the DEIS nor supporting documents presents evidence this fault compartmentalizes the groundwater. A similar argument applies to SP-06 and SP-07 which "are likely related to a fault zone along the southern edge of the OPA" (*Id.*) Chemistry data presented in HGL (2020a, Table B-3) suggests that the monitoring wells are screened deeper in the aquifer, but does not indicate compartmentalization. Pit dewatering that lowers the pressure at depth would significantly change groundwater flow gradients so that groundwater would be pulled deeper into the aquifer. In general, the hydrogeologic data is insufficient to adequately protect Cave Springs or to design a decent monitoring/mitigation plan. f. <u>The DEIS Does Not Adequately Analyze Potential Impacts to Wetlands and Groundwater-Dependent Ecosystems</u> Even small drawdowns or changes in groundwater flow can adversely affect wetland vegetation because wetland plans often survive on water in the "vadose zone" above a shallow groundwater table. Vadose zone water has two sources: water percolating downward from recent precipitation, and shallow groundwater drawn upward by capillary action. Lowering the shallow water table increases the distance that water must move upward through the capillaries and decreases the water available to wetland vegetation. Here, the pit area dewatering and quarry lake refilling will divert substantial amounts of water from northeast Fish Lake Valley. The piezometric surface maps of the quarry area shows groundwater flows down Cave Springs drainage to enter Fish Lake Valley not far from McNett Ranch. Modeling predicts dewatering will average 280 gpm (450 afa) and peak at 650 gpm (BLM 2024b). Modeling also predicts a pit lake will develop over about 60 years after which it will evaporate 347 afa when full. Thus, dewatering and pit lake evaporation will intercept approximately 10% of the predicted recharge in the Silver Peak Range in perpetuity. Modeling does not predict the 10-foot drawdown will reach the McNett Ranch, but as explained above, any change in the groundwater level controlling flow to the springs at McNett Ranch could be detrimental. Because the flow path from the quarry area is directly towards the McNett Ranch, it is likely there will be some significant impact. The DEIS notes that quarry evaporation will have a "minor, permanent" effect on Fish Lake Valley. It is minor only when considering the valley as a whole, but not correct when considering as a localized impact. Current pumping in Fish Lake Valley is already causing groundwater declines. Recent agricultural pumping as estimated by Piteau (2023) is 29,700 afa, based on the last five years of pumping records obtained from the Nevada Division of Water Resources. Total discharge, pumping and ET, exceeds natural recharge (approximately 30,000 afa) which causes the groundwater table to lower. Piteau Figures 2.14, .15, and .16 show that northern, central, and southern Fish Lake Valley wells have declined 0.47, 1.1, and 2.2 ft/y, respectively, since 1970. Because agricultural pumpage and ET continues to exceed natural recharge, the decline will continue, even without the Rhyolite Ridge project. GeoLogic (2024) prepared a geologic and geochemical analysis and to concluded the McNett Ranch waters are not from the project area. That may be true for existing groundwater conditions, but drawdown from the Project would affect flow at the ranch in two ways: by changing the gradient, and removing shallow groundwater from the mix of flow. Piteau's currently postulated groundwater compartments cannot be assumed to protect McNett Springs, or any spring in the northeastern Fish Lake Valley, from future impacts. In addition, impacts are not limited to those resulting from pumping the project water supply. The proposed pit could intercept flows that would reach the northeastern Fish Lake Vally, including the McNett Ranch area, and cause drawdown in the shallow groundwater that affects the surface recharge and discharge. Finally, the relationship between Tiehm's buckwheat and vadose zone moisture is unknown and has never been investigated. Tiehm's buckwheat lives in a porous substrate. It co-occurs with the facultative wetland plant *Sporobolus airoides*, implying some source of underground moisture may affect the Tiehm's buckwheat habitat. The DEIS should have considered impacts from pumping and dewatering at the mine site to possible interactions between Tiehm's buckwheat and the vadose zone. g. <u>The Proposed Monitoring and Mitigation is Inadequate to Protect Spring Resources.</u> In general, the hydrogeologic data is insufficient to adequately protect Cave Springs or to design a decent monitoring/mitigation plan, as described herein. BLM's monitoring plan is also insufficient. BLM suggests two water resources mitigation measures. The first, WR-01 (BLM 2024a, p 4-77) proposes monitoring the flow rates at any surface water resources (springs) within the predicted ten-	d) Impacts detailed as a result of groundwater drawdown are considered predicted impacts based on the groundwater model developed for the Project, which details a predicted maximum extent of 10-foot drawdown. The EIS assesses the predicted 10-foot drawdown contour and a one-mile buffer. A change in groundwater elevations of 10 feet or more was selected by the BLM for identifying areas of potential drawdown impacts. This threshold was established by the BLM based on the fact that natural fluctuations in water levels, particularly in fractured rock aquifers, commonly exceed 10 feet. Drawdowns of less than 10 feet are not considered since these changes probably would not be measurable or distinguishable from natural seasonal and annual variations in groundwater levels. In addition, it is important to note that the 10-foot drawdown contour has been used as the threshold for defining the potential drawdown impact area for numerous other BLM EISs for mining projects in northcentral Nevada over the past 30 years. The BLM acknowledges that numerical models could be used to provide predictions of drawdown of less than 10 feet, and drawdown of less than 10 feet could significantly impact flow in some perennial springs and streams. However, considering the broad regional extent of the numerical modeling domain, and lack of hydrogeologic data outside of the mine exploration and mining area, it is not reasonable to use numerical modeling to predict areas with drawdown of less than 10 feet. The potential for drawdown effects is therefore addressed via monitoring requirements that can be expanded based on monitoring results. The one-mile buffer was added to account for additional areas where impacts from less than a 10-foot drawdown contour may take place. Due to uncertainty in the modeling, BLM Battle Mountain District required a one-mile buffer to be placed on the predicted maximum extent of 10-foot drawdown to address this potential modeling uncertainty and establish the locations for monitoring drawdown effects on surface water resources. The hydraulic connectivity of surface water resources with the deep groundwater aquifer in the area of analysis is currently unknown, therefore the potential for impacts at present seeps, springs, and streams throughout the area of analysis is acknowledged but subject to monitoring for verification. Drawdown monitoring would inform the actual extent of impacts from dewatering on surface water sites that are dependent on upon the extent of hydraulic connectivity between surface waters and the groundwater targeted by the dewatering. e) The Draft EIS does not draw conclusions regarding whether seeps and springs are connected to regional groundwater or perched water. Instead, it notes that predicted effects associated with groundwater drawdown would not occur "if these springs are perched features." The Draft EIS summarizes the findings of Cave Spring documentation provided in Confluence 2019 and Piteau 2023. These surveys and reports quantify surface flow that emanates at Cave Spring from a fault zone at the base of an exposure of the Rhyolite Ridge Tuff Formation. Monitoring of flows at Cave Spring and groundwater levels between the Project and Cave Spring are included in the proposed monitoring plan to assess and mitigate Project effects. f) The Water Resources SER examines the wetlands in the analysis area in Section 2.3.2.1. These wetland areas are outside the predicted area of affect for groundwater resources. Ground surface areas with Tiehm buckwheat observations are more than 100 feet higher than local groundwater levels, indicating that the vadose zone water in those areas is not sourced from local groundwater. g) Mitigation measures for seeps and springs focus on maintaining the current use of those surface water features. Effects of groundwater pumping on seeps and spring would indicate that they were sourced from local groundwater. As such, flow supplementation would also be sourced from local groundwater for consistent water chemistry with the existing conditions.

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		foot drawdown and one-mile buffer. "If monitoring indicates that flow reductions in surface waters are occurring, and that these reductions are likely the result of Proposed Action drawdown, Ioneer would be responsible for implementing mitigation at the affected surface water resource to enhance or replace the impacted surface water resource." (*Id*). However, there is no plan to monitor groundwater levels between the pit and the spring, therefore the DEIS does not provide a means for showing that any observed reductions are the result of mine operations. Mitigation measure WR-92 does require Ioneer to monitor groundwater levels between "the pit and existing groundwater or surface water rights." Thus, a monitoring well would be required only if the source has a water right. This does not sufficiently protect groundwater-dependent ecosystems and wetlands. Mitigation for surface water rights or springs for either WR-01 or WR-02 would require make-up water as proposed by BLM and Ioneer mitigation strategy. However, this form of mitigation does not preserve spring sources, so it is inadequate to protect any cultural values of the springs and preserve the natural riparian areas. Make-up water also may not be appropriate for the resource because it could have different chemistry. Springs and wetland seeps have water with chemistry based on the source. The local ecosystem would have evolved with and could depend on that chemistry. Even so, if the water is sourced nearby from other sources could harm the local balance. For example, if a nearby well replaces a spring that goes dry, then pumping that well will draw from the very resource that dewatering has already depleted, adding to the problem. Generally monitoring wells only provide information after the water system has been affected, thus is a poor mitigation for avoiding impacts. Once drawdown has reached intermediate monitoring, there is a certain momentum will continue the expansion of the drawdown even if the cause of the drawdown is removed.	
108 and 183	108.20 and 183.19	***6. The DEIS Fails to Adequately Describe or Analyze the Impacts from The Project's Tailings Disposal Facility.*** a. <u>BLM and Ioneer Use Inaccurate and Misleading Terminology.</u> BLM and Ioneer refer to the tailings dump as the "Spent Ore Storage Facility" (SOSF) which does not clearly communicate to the public that this is actually a permanent waste disposal facility. However, as a tailings disposal facility it is subject to all the regulations involving tailings and tailings impoundments. b. <u>Ioneer Analyzed Only Two Tailings Samples With Widely Divergent Properties.</u> NewFields (2020a) measured the geotechnical properties of only two samples of tailings, referred to as "Vat 3" and "IBC Cycle 1" (see Fig. 2a). The two samples had very different geotechnical properties. The specific gravities of the fine-grained tailings were either 2.42 or 2.68 (see Fig. 2b), while the percentages of fine-grained tailings were either 15.3% or 27.3% (see Fig. 2c). For sample "Vat 3," the dry density after maximum compaction was 71.3 pounds per cubic feet, which was achieved at the optimum geotechnical water content for maximum compaction of 20.6% (see Fig. 2d). For sample "IBC Cycle 1," the dry density after maximum compaction was 79.2 pounds per cubic feet, which was achieved at the optimum geotechnical water content of 30.7% (see Fig. 2d). For an unexplained reason, the shear strength parameters (cohesion and friction angle) were measured using the direct shear test on "Vat 3" and the triaxial test on "IBC Cycle 1," so that it is difficult to compare the two samples (see Fig. 2e). Finally, the hydraulic conductivity of "Vat 3" was two orders of magnitude greater than that of "IBC Cycle 1" (see Fig. 2f). In summary, the geotechnical parameters of the tailings that will be used to construct the SOSF are very poorly known. For a filtered tailings storage facility, one of the most important parameters is the optimum geotechnical water content, which is known only to be somewhere in the range of 20-30% (see Fig. 2d). c. <u>The Appropriate Method For Measuring Water Content Has Not Yet Been Determined.</u> NewFields (2020a) obtained very different water contents for the two samples, depending upon the drying temperature and the drying time. For "IBC Cycle 1," geotechnical water contents ranged from 34.8% to 39.9% for drying at 60°C and ranged from 45.5% to 48.4% for drying at 110°C (see Fig. 3a), thus also showing the very different water contents of subsamples of "IBC Cycle 1." An additional sample "Vat 4" showed geotechnical water contents of 33.0% and 37.0% for drying at 60°C and 110°C, respectively (see Fig. 3a). For an unspecified sample, the measured geotechnical water contents ranged from 38.3% to 41.5% for drying from 24 to 48 hours (see Fig. 3b). NewFields (2020a) never resolved the issue as to the correct procedure for measuring the geotechnical water content of tailings, but acknowledged that it was a crucial issue. According to NewFields (2020a), "Based on the data, it has been determined that the drying temperature has an effect on the measured moisture content … The influence of temperature and time on the measured moisture contents indicates that absorbed, structural water is present in the spent ore. This phenomena has implications on additional laboratory testing so that data reported by different entities is comparable. More importantly, it has implications for construction, operations and field control of compacted spent ore and composite waste materials." d. <u>The DEIS's Stability Analyses are Not Reliable.</u> It is difficult to connect the properties that were assumed in the stability analyses (see Fig. 4) with the properties that were measured in the two tailings samples (see Figs. 2a-e). For example, NewFields (2020a) states that the tailings in the structural zone will be compacted to 95% of their maximum dry density. On that basis, and based on the measured maximum dry densities, optimum geotechnical water contents, and 95% compaction, the compacted wet weights of samples "Vat 3" and "IBC Cycle 1" would be 81.7 and 90.7 pounds per cubic feet, respectively. Thus, it is difficult to understand and it is not explained how NewFields (2020a) arrived at a unit weight of 100 pounds per cubic foot for the structural zone (see Fig. 4). The geotechnical parameters for the common fill and the alluvium were not related to measurements, but were only estimates that were defended by recourse to "experience." According to NewFields (2020a): "Local alluvium will be sourced for common fill and a conservative frictional strength was considered for the stability evaluation for the SOSF and the Underdrain Pond embankments … The site is underlain by dense to very dense alluvium. Any loose materials at the ground surface will be stripped, as necessary, and the surface compacted prior to facility development. The unit weight and shear strength of this material were estimated based on our regional experience." In addition, the stability analyses assumed a low water table without justification. Specifically, they assumed that the water table within the filtered tailings facility would be only 5 feet above the geomembrane. According to NewFields (2020a), "The phreatic surface [water table] within the SOSF was conservatively modeled five feet above the geomembrane, representing minor	a) The Draft EIS describes the Spent Ore Storage Facility (SOSF) and its closure in place. The Mine Plan of Operations/Nevada Reclamation Permit (Ioneer 2022) was used for descriptions of the SOSF and closure b) The SOSF design incorporates the range of material properties for the material contained and adheres to Factor of Safety requirements for this type of facility in Nevada. More details can be found in the Rhyolite Ridge Spent Ore Storage Facility Engineering Design Report (NewFields 2020) and the Spent Ore Storage Facility Geotechnical Stability Analysis (NewFields 2019). c) The moisture content for material placed in the facility would be monitored for compliance with its design requirements and Factor of Safety. Moisture measurements would use the standard methodology at a Nevada-certified analytical laboratory. More details can be found in the Rhyolite Ridge Spent Ore Storage Facility Engineering Design Report (NewFields 2020) and the Spent Ore Storage Facility Geotechnical Stability Analysis (NewFields 2019). d) See the response to comment b) above. At the hydraulic permeabilities anticipated, the materials in the facility are expected to drain. More details can be found in the Rhyolite Ridge Spent Ore Storage Facility Engineering Design Report (NewFields 2020) and the Spent Ore Storage Facility Geotechnical Stability Analysis (NewFields 2019). The Clay Tailings Filter Stack associated with the Thacker Pass Project discussed in the comment referencing The Thacker Pass Project-Engineering Design Report-Clay Tailing Filter Stack, Waste Rock Storage Facilities, Coarse Gangue Stockpile, Mine Facilities and Process Plan-Storm Water Management prepared by NewFields in April 2020, has different hydraulic conductivity properties and therefore, different predicted drainage and water levels. e) A failure of the SOSF designed and constructed to Nevada specifications is not reasonably foreseeable. f) See the response to comment c) above. g) The Project includes a construction design of the facility developed and stamped by a Nevada-Certified Professional Engineer. More details can be found in the Rhyolite Ridge Spent Ore Storage Facility Engineering Design Report (NewFields 2020) and the Spent Ore Storage Facility Geotechnical Stability Analysis (NewFields 2019). h) The Plan of Operations includes collection of seepage from the SOSF for use as process water. The effectiveness of the evapotranspiration (ET) cover was based on an ET model developed by Geo-Logic Associates (2020) appearing in the Water Resources SER. Predicted draindown rates were developed as part of the facility design and used to size the collection ponds that are included in the design and

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		accumulation of draindown fluid along the liner." The assumption was not conservative in any way because, due to precipitation, surface runoff, water contained within the tailings, and the ongoing consolidation of the tailings (which reduces the pore space), the water table can often rise to onethird to one-half of the height of the filtered tailings stack. In fact, the very same month (April 2020), NewFields (2020b) carried out stability analyses for the clay tailings filter stack (CTFS) at the Thacker Pass mine that assumed that the water table will rise to one-half of the height of the tailings stack. Moreover, both sets of stability analyses made the same assumption that draindown of water within the tailings stack would be negligible. e. The DEIS Does Not Consider the Consequences of Failure of the Tailings Storage Facility. Despite the finding that the SOSF will be unstable in response to an earthquake with a return period of 475 years, there is no discussion of the consequences of failure of the SOSF and there does not seem to be any available document that discusses this question. The first and obvious question is the destination of the tailings after failure of the filtered tailings stack. The EIS needs to analyze the effect of failure especially given that the Tailings disposal facility (SOSF) is in the drainage. f. The DEIS Has No Plan For Ensuring the Appropriate Water Content. The outcome of the analyses of tailings properties and the stability analyses in NewFields (2020a) is the design criteria for the SOSF. The optimum geotechnical water content is stated as the range 25-35% (see Fig. 6), which is quite a large range. The design criteria do not state how the water content will be measured or why the range of 20-30% that was found for the two tailings samples (see Fig. 2d) is irrelevant. The line below states the geotechnical water content of the tailings as 35-75% (see Fig. 6), which presumably means the expected water content as the tailings leave the filter presses. Thus, the filtered tailings are expected to be far wetter than optimum and there is no discussion of any plan for obtaining the appropriate water content for proper compaction. For reference, based on a bulk dry density of 75 pounds per cubic foot, and a particle specific gravity range of 2.4-2.6 (see Fig. 6), the saturated geotechnical water content would be in the range 41.6- 44.8%, so that the expectation is that much of the filtered tailings will be over-saturated (with considerable free water) after leaving the filter presses. It will be impossible to safely construct the filtered tailings storage facility with such over-saturated tailings. g. The Tailings Management Plan is Extremely Preliminary for a Mining Project at Such an Advanced Stage. Because of the high risk that tailings storage poses to a mining project, the plan for the tailings storage facility needs to proceed at a faster pace than the other aspects of the project. According to the SME Tailings Management Handbook, "The level of engineering complete for a TSF [Tailings Storage Facility] is greater than the level of engineering required for the rest of a mining project to support permitting requirements" (Henderson and Morrison, 2022). The SME Tailings Management Handbook quantifies that level of engineering by stating that, prior to producing the Definitive Feasibility Study, 70-90% of the engineering for the tailings storage facility should have been completed (see *id.* Fig. 7). Figs. 8a-b taken from the SME Tailings Management Handbook give more specific examples as to what it means for 70-90% of the engineering to be completed prior to producing the Definitive Feasibility Study. In terms of tailings sampling, not only should samples be available from a pilot plant (which should be completed prior to producing the Feasibility Study), but samples should be "available from additional confirmatory test work" (Henderson and Morrison, 2022; see Fig. 8a). In terms of tailings characterization, the engineering should be at the stage of "no additional work required" (Henderson and Morrison, 2022; Fig. 8a). In terms of the design basis, not only should the design be complete (which should be the case prior to producing the Feasibility Study), but the design should be "final" with "design criteria fully agreed to by owner and designer" (Henderson and Morrison, 2022; Fig. 8a). In terms of the failure consequence classification, not only should a preliminary dam breach analysis have been carried out (which should have been completed prior to producing the Pre-Feasibility Study), but the dam breach analysis should be at the stage of being "refined as needed including using rheological parameters" (Henderson and Morrison, 2022; see Fig. 8b). What is clear from the analysis cited in the DEIS is that Ioneer is not even close to knowing how the tailings disposal facility (SOSF) will perform, if it may fail catastrophically, and how much drainage is to be expected over time. Failure of the facility would pollute the drainage into Fish Lake Valley, so this analysis and a plan to prevent catastrophic failure is needed. The bottom line is that this aspect of the mine cannot be evaluated and BLM needs to require Ioneer to complete its technical analysis before any permit can be issued. h. The DEIS Does Not Contain Sufficient Information Regarding The Drainage Of Fluid From The Tailings Disposal Facility (SOSF), Potential For Leakage, Or Needs For Long-Term Management. According to the DEIS (p. 4-32) "The SOSF would be designed as a zero discharge facility." Under Nevada regulations "zero-discharge" does not mean that there will be no drainage. What it does mean is that no drainage is allowed to be released into the environment. The DEIS does not indicate what the drainage will be, which is not surprising since the tailings disposal facility remains largely undeveloped as discussed above. However, the amount of fluid that is draining and over what time horizon is essential in evaluating that active management will be needed and for the public to be able to evaluate the plan as required by NEPA. BLM should require a statistical analysis or research on liner failures to predict potential leakage from the liner. Given the level of toxicity anticipated for any drainage from the tailings disposal facility, detailed scrutiny is needed to ensure that the drainage where the facility is to be located will not be polluted. The DEIS also provides no justification to support the next statement: "Drainage is expected to cease shortly after the ET cover is established." The ET cover is a mitigation to prevent water from infiltrating into the tailings disposal facility (SOSF) and requires evaluation under NEPA. The DEIS also states that "The facility operations and nearby waters would be monitored in accordance with NDEP WPCP requirements to verify that the facility is not contributing to water quality degradation." However, Ioneer has not even submitted an application to the State of Nevada on the current mine plan, so there is no way for the public to review whether or not the yet to be proposed monitoring will be adequate. The DEIS fails to identify monitoring points.	Plan of Operations. Facility monitoring would be required by both the BLM and NDEP Bureau of Mining Regulation and Reclamation (BMRR). Specific monitoring locations would be identified in the Water Pollution Control Permit (WPCP) and the monitoring plan contained in the final Plan of Operations.

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		Tailings drainage is likely to be highly toxic based on the Rhyolite Ridge Baseline Geochemical Characterization Report (HGL 2020b). The Meteoric Water Mobility Profile table shows some results for the three ore processing waste streams destined for the tailing dump (SOSF). It is not clear from the DEIS if these test results represent the expected chemical profile of the drainage, nor how the chemical profile would change over time. The mobility test shows extremely high levels of TDS, sulfate, boron, aluminum, magnesium, sodium, fluorine, and low pH for the Sulfate Salt Residue and Spent Ore (tailings). There are also high levels of a number of other metals such as arsenic, thallium, uranium, and chromium to name a few, especially in the Sulfate Salt Residue. Indeed if this is representative of drainage there will need to be a plan for drainage management. DEIS also fails to provide an estimated volumetric draindown profile. The engineering design report only states, "It is anticipated that the operational draindown from the SOSF [Spent Ore Storage Facility] will be minimal" (Newfields 2020). This is an inadequate description. The application needs to include a summary from the original source, and there needs to be a description of how the draindown is to be managed. Given the information in the application the toxicity of the tailings drainage could persist for a long time. Is Ioneer planning to treat this fluid after mining and processing is discontinued?	
108 and 183	108.21 and 183.20	***7. The DEIS Lacks Critical Details Concerning the Waste Rock Management Plan.*** The DEIS states that about 20% of the waste rock is potentially acid generating (PAG). It is therefore critical for Ioneer to design and implement an effective waste rock management plan. Unfortunately, the information presented in DEIS is incomplete, inaccurate, and fails to demonstrate the effectiveness of proposed waste rock management measures, as described below. a. <u>The Waste Rock Analysis Incorrectly Relies On Precipitation Averages Without Accounting For Water Pules From Significant Weather Events.</u> Precipitation in the Great Basin is not regular with many years of low precipitation punctuated with short-duration but significant rainfall. Representative significant precipitation events for the Project area are 3.01 inches at Silver Peak (August, 21, 2023) and 3.07 inches at Dyer (August, 2, 2015) (NOAA 2024). There is no evidence in the DEIS or supporting documents that precipitation pulses have been taken into account in any of the analysis including seepage eliminating from the waste rock and into the subsurface of the waste rock. b. <u>The DEIS does not provide a clear picture of the expected fraction of net-acid generating rock that will be produced over the project mine life.</u> The environmental analyses conducted to determine the potential for Rhyolite Ridge waste rock ("overburden") to produce acidic leachate seem internally consistent but similar to results from other Nevada mines. The problem is that the Overburden Management Plan (OMP) (Piteau 2024) is entirely focused on the averages, and gives almost no information on the specific mass of waste rock that will be net-acid generating, and that will thus need to be handled selectively to reduce the potential for acidic runoff or other detrimental environmental impacts. According to the OMP the interim overburden management plan: > quantifies the volumes and masses of different lithologic groups to be excavated, identifies the bulk ARD properties of each, estimates the potential for impacts from a bulk standpoint, and combines those attributes to produce guidelines for overburden rock placement and management. One shortcoming of the overburden management plan is that it estimates impacts "from a bulk standpoint." But the waste rock won't be homogeneously blended, so the impacts won't be from bulk characteristics, but rather from specific areas that have excess acid-generating material. For example, Table 4.2, "Average Acid-Base Accounting Properties for Lithologic Units" shows the average acid-base accounting for each lithologic unit, and also provides a helpful comparison of these results that are based on actual acid/base analyses relative to the estimated "surrogate" values from whole-rock. But, there is no indication of the fraction of rock from each lithologic unity that is expected to generate acidic leachate. Table 5.2, "Yearly Schedule of Overburden Placement to West OSF" (from IMC, 2022) presents estimates for the mass of rock scheduled for disposal in the West OSF, but gives no indication about how much of the rock each year will probably be net-acid generating and thus possibly subject to selective handing. In order to understand the potential for acidic drainage BLM needs to require the Overburden Management Plan needs provide estimates for how much net acid-generating rock will be produced from each lithologic unit during each year of projected mine operation. Placement of the acid generating rock in the open pit, as far below the premining water table as practical, will ensure that the sulfide minerals become isolated from oxidative weathering and thus that the acid and metals bound in the sulfide minerals become permanently stable. This subaqueous disposal closure method avoids any concerns over long-term oxidation and leaching of solutes from acid-generating rock in subaerial waste facilities. The case against placing sulfidic rock in the pit is that any oxidation products released from the rock before it is flooded could flow into the pit lake or out to groundwater. The remedy for this is to include a plan to pump water out of the flooded backfill before it enters lake or flows out to the surrounding aquifer and treat the water as needed. Monitoring plus pumping or other treatment of water in pit backfill is not ideal. But under the current plan, the pit backfill is already the largest destination for waste rock (Figure 5.2 "OSF Mass through time," Piteau 2024), and the two largest sources of waste rock proposed for pit backfill are S3 and TBX lithologies, both of which contain appreciable sulfide-bearing and acid-generating rock (Table 5.4. Yearly Schedule of Overburden Placement to Quarry Infill OSF (from IMC, 2022), Piteau 2024). This recommendation is consistent with the pit backfill alternative that we discuss in our comments on the pit lake in general.	The EIS refers to the low risk of acid rock drainage (ARD) based on 20 percent of the overburden being potentially acid generating. Samples from the site were subjected to laboratory analysis based on established and monitored NDEP methods and found to be acid neutralizing with a positive net neutralizing potential. The Overburden Management Plan (Ioneer 2022) addresses the leaching of metals, sulfide oxidation, and prescribes eliminating seepage through all overburden materials through managed closure of the OSFs. A detailed explanation of the low ARD potential and the net acid-neutralizing anticipated conditions of all OSF facilities is discussed in detail on Rhyolite Ridge Overburden Management Plan Update (Piteau 2024). Applicant protection measures have been agreed to by the proponent to verify and confirm this is observed during operation and closure. The WPCP monitoring plan, includes specific information regarding leak detection systems, surface and groundwater monitoring (including methods), and will be reported to the various state and federal agencies (Appendix H, NewFields, 2022)."
108 and 183	108.22 and 183.21	***8. The DEIS Contains Insufficient Detail Regarding the Sulfuric Acid Plant*** The acid plant is a significant aspect of the mine plan and necessary aspect of the operation, so its construction is a connected action. All aspects of the construction and operation of the acid plant need to be discussed and evaluated in the EIS. Yet, there is very little about the acid plant including how much acid is to be produced, the shipping of sulfur to the mine operation, and the general construction requirements. The DEIS fails to identify: where the sulfur will be sourced; what transit consequences will result from shipping it; will the shipping be via train or truck and what is the quantity being shipped; the environmental consequences of the transfer station; and other facets of the sulfur sourcing. Without this information, the public cannot evaluate the impacts of the sulfuric acid plant.	Impacts of the sulfuric acid plant are analyzed in detail in EIS Sections 4.1 and 4.5. Additional detail is provided in the Hazardous Materials and Solid Waste SER.
108 and 183	108.23 and 183.22	***9. The DEIS Fails to Consider the Use of Per- and Polyfluoroalkyl Substances (PFAS)***	Based on the Plan of Operations for the mine, ore processing consists of leaching in vats, and surfactants are not listed in Table 5 (Fuel, Chemical, and Reagent Summary). Therefore, PFAS in these materials are not a concern at the

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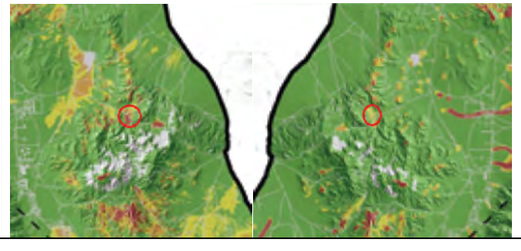
		DEIS does not discuss the potential use of per- and polyfluoroalkyl substances—known as PFAS—at these operations, which are hazardous materials that exist forever. NEPA and FLPMA require BLM to fully analyze the PFAS issue with this and cumulative activities in the region. A leading mining industry technical group, Golder & Assoc., highlighted the concerns with PFAS use in the mining industry. As a 2019 report states: > To date, mines have not been a major focus for assessment of potential PFAS impacts. However, PFAS have long been used in mining, as part of both processing and firefighting activities. PFAS may be present due to the use of aqueous filmforming foams (AFFFs) for firefighting, but also through inclusion in surfactants, ore-floating processes and other performance chemicals such as hydraulic fluids and fuel additives. This means that PFAS contamination is a risk for the mining sector and should be assessed and managed appropriately. > Who and what is at risk? > Each situation is unique, but the risks of PFAS contamination typically depend on key factors related to the site conditions and the use and value of water resources, such as the extraction and use of groundwater, and the ecological value of surface water bodies. > On and around mine sites, the risks from PFAS include the exposure of mine workers who have used or maintained fire-fighting equipment or used contaminated surface or groundwater, for instance as process make-up water or for dust control. Drinking water is a major concern too: Do mine workers, site visitors or off-site residents use the surface or groundwater as drinking water or for washing? Has livestock been exposed via surface water, groundwater or irrigation? If so, people consuming that livestock may have been exposed. Similarly, with PFAS being so easily transported through water, they may have been taken up by aquatic organisms, as well as by the birds and other animals that consume them. Local communities such as traditional owners may, in turn, be exposed via their consumption. Mundle, Why Do PFAS Matter In The Mining Sector, and What Can Be Done? (2019).	Proposed Project. However, the use of AFFFs in firefighting equipment is a potential. A brief discussion of PFAS has been added to the Hazardous Materials and Solid Waste SER, Section 3.2.1.
108 and 183	108.24 and 183.23	***10. The DEIS Fails to Take a Hard Look at Impacts to Sensitive and Imperiled Wildlife and Plant Species*** a. Bi-State Sage-Grouse The Silver Peak Range is known to be habitat for the bi-state distinct population segment of the greater sage-grouse (Centrocercus urophasianus) ("BSSG"). BSSG live in the bi-state area of the eastern Sierra Nevada and environs including in Esmeralda County. The species is currently proposed for listing as threatened (88 Fed. Reg. 25613). There is a unit of proposed critical habitat of approximately 2,600 acres within just over one mile of the Project Area, in an area called Coyote Hole. This area has numerous elements which make it priority habitat for BSSG, including highgrowing big sagebrush, a mix of forbs and grasses, and small water sources and wet meadows nearby. A single BSSG was observed by Ioneer's consultants in 2022 in the Project Area (DEIS at 3-14). It appears to have been observed just north of Cave Spring at the base of Rhyolite Ridge (EM Strategies 2022, Figure 10). This observation was incidental during a wide-ranging wildlife survey. This wildlife survey was conducted over just 5 days in August of 2022. Conducting a wildlife survey in one of the hottest months of the year during a record drought will not yield comprehensive results about wildlife use and occupancy of an area, since many of them will be dormant during periods of extreme drought. It is impossible to extrapolate any further information from the sighting of a single male sage-grouse during a single 5-day survey. There is one record on iNaturalist of a sighting of BSSG sign in the area – BSSG scat was observed in July of 2022 to the south of the Project Area along Argentite Canyon Road at 37.7876137534, -117.8577073101 (iNaturalist 2024). The Project Area and the nearby Coyote Hole proposed critical habitat are known to be important for the bi-state sage-grouse. Radio-collared sage-grouse preferentially chose both of these areas for occupancy during multiple seasons (Coates et al 2020; Figure 1). Averaged out across the year, these areas both ranked as having high habitat selection. This means that both the Project Area and the nearby proposed critical habitat are important for the conservation of the species, and any impact to the species warrants special scrutiny and attention in an Environmental Impact Statement. 	The location of bi-state sage-grouse habitat in relation to the Project is described in Section 3.12.1. A detailed analysis of potential impacts to bi-state sage-grouse and its habitat is presented in EIS Section 4.12. Impacts to tui chub and spring snails are discussed in EIS Section 4.18. Impacts to Tecopa birdbeak and other special status plant species are discussed in Section 4.14.

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		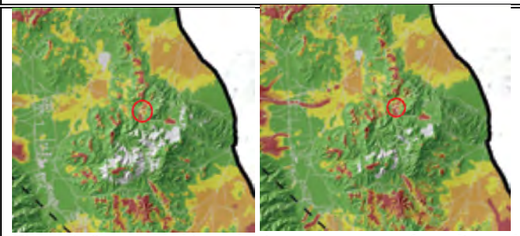 *Figure 1: Seasonal habitat selection category maps for radio-marked BSSG; Top Left is Spring; Top right is Summer; bottom left is Winter; bottom right is Annual. Red is high, orange is moderate, yellow is low, and green is non-habitat. A rough approximation of the project area is outlined in bright red. High habitat selection (red) lands can be seen in Coyote Hole and within the Project Area itself during spring, winter, and annually. Even in summer the area has moderate and low habitat selection. Map adapted from Coates et al. 2020, Figure 27.* Unfortunately, the DEIS provides no such special scrutiny or attention. Despite the known importance and regular occupancy of the habitat at Rhyolite Ridge, and despite the actual observation of an individual BSSG, Ioneer failed to provide any baseline information whatsoever about the status of the BSSG within and near the Project Area. No targeted surveys were executed; no modeling or other desktop exercises were provided; no original baseline research was conducted at all, and the DEIS provides almost no information about the status of the species nor the potential impacts it may experience from the Project. There are many other flaws with the DEIS's treatment of BSSG. The DEIS constrains its analysis of impacts to BSSG to an arbitrarily designated boundary, called the area of analysis. The DEIS uses the 10 foot groundwater drawdown contour plus one-mile buffer as the area of analysis for BSSG (DEIS SER 13 at 2-1). The DEIS provides no justification for using this boundary for the area of analysis. One could envision a variety of criteria that would go into selecting a boundary for the area of analysis of potential impacts to BSSG, including habitat quality, frequency of habitat use (based on Coates et al. 2020), proximity to access roads, connectivity, and other factors. The potential impacts to BSSG are far greater than just groundwater drawdown, so using the groundwater drawdown boundary for the area of analysis is arbitrary and unsupported by science. The DEIS also violates the BSSG RMP amendment for Tonopah Field Office (BLM 2016). Per Table ROD-2, BLM must "Require site-specific project mitigation to insure no permanent net loss of habitat due to project disturbance." Per Minerals Action #2, BLM must "Control fugitive dust on roads and pads." Per Locatable Minerals Action #1, BLM must "Mitigate long-term negative impacts to habitat from locatable mining operations to the extent practicable." The RMP amendment makes it a policy that, "When authorized land uses cause habitat loss or degradation, the BLM will require mitigation that provides a no permanent unmitigated net loss to the BSSG habitat." The DEIS takes pains to try to minimize the disclose of impacts to BSSG. For instance, an important habitat component for BSSG is the availability of springs and small wet meadows, of which there 32 within the area of analysis (DEIS at 3-14). Yet, when describing the consequences of the proposed action, the DEIS states, "There is one spring located within the proposed critical habitat east of the OPA. This spring is inside the area of analysis and the maximum extent of the predicted 10-foot drawdown area for the Proposed Action. Impacts from groundwater drawdown associated with the Proposed Action are anticipated to be minor, permanent, and localized." The DEIS fails to disclose and analyze the consequences of any of the other 31 springs within the area of analysis going dry. The drawdown of these springs would functionally eliminate the Rhyolite Ridge/Coyote Hole area as viable habitat, since springs are a necessity to the bird, and yet such a scenario is not analyzed in the DEIS. The DEIS only accounts for three potential impacts to BSSG: surface disturbance, possibly vehicle collisions, and the aforementioned groundwater drawdown. However there are many other potential impacts to BSSG which are not analyzed in the DEIS. This includes dust, air pollution, noise, visual disturbance, increased raven subsidy leading to increased raven populations, increased density of cows as they try to access areas now closed to them. Industrial development, including hardrock mining, has long been recognized as one of the leading threats to sage-grouse. BLM's 2011 National Technical Team (NTT) Report reviewed the available science and unequivocally recommended that sage-grouse priority habitats be closed to future fluid minerals leasing, future coal leasing, locatable minerals claims, and other forms of mining (NTT 2011). Since that time, new science has only underscored the threat from mining and other forms of industrial resource extraction. For instance, a recent study of greater sage-grouse in Wyoming from 2008 to 2014, Kirol et al. (2020), measured the impacts to grouse from both fossil fuel energy and renewable energy and found that ongoing surface disturbance from energy development within 8 km (4.97 miles) of a greater sage-grouse nest decreased the likelihood of nest success. Sage-grouse broods within 1 km (0.62 miles) of ongoing surface disturbance from energy development were less likely to survive than those further away. As ongoing disturbance increased, sage-grouse nests had an increasing rate of failure. Furthermore, female sage-grouse avoided habitat with higher levels of disturbance in favor of habitat with lower levels of disturbance. The study indicates that current BLM nest buffers are too small to conserve grouse and implementing disturbance caps of 3-5% does not eliminate the negative impacts of ongoing disturbance on nest survival. Pratt and Beck (2019) studied sage-grouse response to bentonite mining and found that female mortality increase 19 times when females were exposed to mining activities within 1.6 km. This increase in mortality risk has direct population consequences due to adult females being the linchpin to carrying the population forward from year to year. In addition Pratt and Beck (2019) found that nest site selection decreased by 50% when surface disturbance increased from 0% to 12%, and identified "knock-on effects" to other vital rates including: reduction in nest success, lower brood success, and riskier choices for female sage-grouse because of lower habitat continuity. Coates et al. (2023) found that sage grouse abundance declined approximately 24 % within 5 km of geothermal sites in central Nevada, while lek absence rates (e.g., local extirpation) increased by about 730 % within 2 km of geothermal development.	

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		Finally, Harju et al. (2010) observed 704 leks over 12 years and found that leks within 2km of energy infrastructure had 35-76% fewer sage-grouse compared to leks with no associated infrastructure. Leks that had energy infrastructure within a 0.4 km radius showed a 35-95% drop in male attendance. Harju et al. (2010) further found that sage-grouse occupancy was negatively affected by surface disturbance up to 4.8 km away. Harju et al. (2010) identified a 2-10 year time lag between the initial activity associated with energy infrastructure development and a measurable effect on lek attendance, indicating that the impacts from development may not be initially apparent, and long-term analysis of project impacts is required. BLM must consider these and all other potential impacts to BSSG, and per the governing land-use plan, either avoid or mitigate these impacts to achieve no net losses. b. Fish Lake Valley Tui Chub The Fish Lake Valley tui chub (*Siphateles bicolor* ssp. 4) is a critically imperiled subspecies of tui chub found in only in Fish Lake Valley. Its current distribution is limited to a single spring and outflow system at McNett Ranch, whereas it was previously known from several locations in the Valley. The loss of habitat within its former range is due to the alteration of habitats and groundwater development drawing down the aquifer. The last remaining population is immediately and severely threatened by over-appropriation of groundwater due to agriculture, potentially compounded by in-situ impacts from grazing and aquatic plant encroachment. The tui chub is also threatened by groundwater development from the geothermal energy sector, rapidly-developing and water-intensive lithium mining interests. The Fish Lake Valley tui chub was petitioned for listing under the Endangered Species Act on March 10, 2021; and received a positive 90-day finding from the US Fish and Wildlife Service on August 23, 2022 (87 FR 51635). The Service has a settlement with the Center for Biological Diversity indicating that they will issue a final 12-month finding decision on the listing petition by May 17, 2025 (U.S. District Court 2024, p. 5). The DEIS briefly discusses potential impacts to the Fish Lake Valley tui chub, however it never provides a specific analysis of impacts to the fish itself, merely including it in a generalized analysis of impacts to aquatic species (DEIS at 4-36). The only statement about potential impacts to the Fish Lake Valley tui chub is: "Potential impacts to habitat from sedimentation and fugitive dust," (DEIS at 2-31). This same cursory analysis is repeated in the Supplemental Environmental Report 19: Wildlife Resources. The 2022 biological baseline survey report gives it brief mention, simply stating, "Aquatic habitat is not present" (EM Strategies 2022, Appendix F, p. 6), while the 2020 biological baseline report makes no mention of it at all (EM Strategies 2020). Thus despite the presence of a very rare and highly threatened species which is being considered for listing under the Endangered Species Act, the DEIS fails to provide any biological baseline information whatsoever about the Fish Lake Valley tui chub. There are no population surveys, no mark-recapture studies, no habitat quality assessments, no habitat quantity delineation. The DEIS provides no information whatsoever to set a baseline so that any changes in conditions due to the Project can be assessed. The DEIS also provides no specific disclosure or analysis of potential impacts to the Fish Lake Valley tui chub. It states that fugitive dust is a potential impact, but does not quantify the amount of dust, the rate of deposition, the grain size of the dust, nor, crucially, how dust deposition might affect the species or its habitat. It also cites sedimentation as a possible threat but does not describe how much sedimentation may occur, and how sedimentation may alter the tui chub's tiny habitat. In reality, there are several recognized threats to the Fish Lake Valley tui chub, many of which involve groundwater drawdown (Center for Biological Diversity 2021). And as described above regarding groundwater, there are several ways in which the Project could cause groundwater drawdown impacts that would impact the Fish Lake Valley tui chub and its habitat. c. Springsnails Wong's springsnail (*Pyrgulopsis wongi*) and the Fish Lake Valley pyrg (*Pyrgulopsis ruinosa*) have been detected within or directly adjacent to the Project Area (DEIS at 3-22). These are both extremely sensitive species whose life cycle is reliant on access to consistent water supply and static water temperature and geochemistry (FWS 2017, p. 42-45). Perturbations to the hydrologic regime which supports them may result in their extirpation or extinction. The DEIS fails to provide any baseline information whatsoever on Wong's springsnail or the Fish Lake Valley pyrg. No population estimates, habitat delineation, or habitat conditions are provided. It appears no baseline surveys occurred for these species, in violation of NEPA. The DEIS states, "If dewatering impacts are realized at Cave Spring, then depending on the amount of water reduction and habitat lost, fatalities to individual Wong's springsnails or the population may occur. Impacts to Wong's springsnails would be moderate to major, long-term, and localized." Wong's springsnail is restricted to the eastern Sierra Nevada and disjunct water holes eastward into the Great Basin (NatureServe 2024). Cave Spring is well within the 10-foot groundwater drawdown contour due to dewatering for the mine (DEIS at Figure 4-7). If Cave Spring has not already gone dry, it will certainly likely be severely impacted by dewatering for the mine (Myers 2024, p. 8-9). No mitigation is provided for this potential outcome. Mitigation Measure WR-01 (DEIS at 4-77) is insufficient to mitigate impacts to Cave Spring because by the time impacts are detected it would be too late to reverse them (Myers 2024, p. 11). It's unlikely that Wong's springsnail can survive complete desiccation. Replacement water would be of a different temperature and geochemistry than Wong's springsnail is adapted to, and would not succeed in maintaining the viability of the species. Wong's springsnail is highly likely to be extirpated from Cave Spring. The DEIS states, "Potential impacts to habitat from sedimentation and fugitive dust," would occur, possibly negatively impacting the Fish Lake Valley pyrg. DEIS at 2-31. However, this is the extent of the DEIS's consideration of this highly sensitive species. Such cursory examination of a species that potentially faces an extirpation risk from the proposed project fails to satisfy NEPA's "hard look" requirement. d. Tecopa Bird's Beak The DEIS fails to provide any analysis of the impacts of the project on the rare plant the Tecopa bird's beak (*Chloropyron tecopense*). The Tecopa bird's beak was petitioned for protection under the Endangered Species Act in 2023, due to many of the factors discussed in the cumulative impacts analysis of this document as well as due to impacts from the Rhyolite Ridge Mine (Center for Biological Diversity 2023). The Tecopa bird's beak lives in alkali wetlands and moist playa margins, relying on springs and seeps to sustain its mesic habitat. It lives in the entire Fish Lake Valley wetland area from the McNett Ranch outflow zone, through the Hot Well area and The Crossing, and nearly completely encircling the Fish Lake Valley Playa. There is also a population at Gap Spring. In addition to the	

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		Fish Lake Valley and Gap Spring populations, there are several populations along the Amargosa River in Nye County, Nevada and Inyo County, California. The habitats for this species are sustained by shallow groundwater. The DEIS and accompanying documentation fail to adequately document potential impacts to the Tecopa bird's beak. The DEIS states, "Dewatering is not anticipated to impact Tecopa birdbeak because the known locations are outside of the one-mile buffer of the predicted groundwater drawdown contour," describing any impacts from dewatering as "negligible, long-term, and localized," (DEIS at 4-28). However, Piteau (2023) documents several potential impacts form pumping and dewatering to the Tecopa bird's beak. Dewatering will cause reductions in evapotranspiration of 100 acre feet per year or more over the long term from base case within the evapotranspiration zone 6, described as "bare playa with some saltgrass. Damp," (*Id.*, Figure 4.22). This is precisely the Tecopa bird's beak's habitat. Since existing discharge in this evaporation zone is 1,900 acre-feet per year (*Id.*, p. 47), this is a permanent decline of some 5% of evapotranspiration within this zone. Other zones including greasewood zones, near where the bird's beak lives, would also experience long-term or permanent decreases in evapotranspiration (*Id.*, Figure 4.22).	
108 and 183	108.25 and 183.24	***11. The DEIS Fails to Consider Adverse Impacts from Subsidence.*** There is the distinct potential for dewatering for the project to cause subsidence in the area of the mine, but this was ignored in the DEIS. HydroGeoLogica (2020a) demonstrates the significant potential for subsidence due to dewatering for the mine pit. While the report is based on a previous configuration of the mine plan, it nonetheless is illustrative for our purposes. If anything, it underestimates the amount of subsidence because it is modeled using a shallower pit and lower dewatering levels. Yet it still shows up to one foot of land subsidence in Cave Springs Wash (HydroGeoLogica 2020a, p. 8). However, the DEIS is mixed in its treatment of the subject. In one location the DEIS states, without substantiation or references, that no subsidence is expected to occur (DEIS at 2-24). Later, the DEIS states, "minor subsidence may occur," (DEIS at 4-32). In neither case is a reference provided nor substantiation provided for the claims made. And both seem to directly refute the 2020 report, which finds up to 1 foot of subsidence, which is hardly minor. The DEIS must include an updated subsidence analysis and provide an accurate analysis of the impacts of such subsidence.	Subsidence impacts are discussed in the Water Resources and Geochemistry SER, Section 3.2.1.2 and Final EIS Section 4.16. This discussion was added to the Geology and Minerals SER, Section 3.2 and Final EIS Section 4.4.
108 and 183	108.26 and 183.25	***12. The DEIS Fails to Consider Environmental Justice Impacts.*** According to section 4.10 of the DEIS, the Rhyolite Ridge mine would require 500 workers for construction and 350 for operations. The project site is in Fish Lake Valley, which is a small agricultural community. It is expected that a majority of workers will have to come from outside of the community. Quarrying and processing would generate demand for 230 housing units from non-local labor (direct, indirect, and induced) from up to 402 new, non-local adults (includes single and married). It is expected that many of these workers will live in temporary housing such as trailer parks. This results in worker housing dynamics that are often referred to as "man camps"— where predominantly non-local temporary workers live. The construction of man camps and coordinating other forms of worker housing is a connected action that must be considered relevant to this NEPA analysis. The EIS must analyze the potential direct, indirect and cumulative effects of proposed man camps, including the potential increase of violence. At the very least, an analysis of the impact of "man camps" must be added to the DEIS consideration of indirect or cumulative impacts. In February of 2019, the Department of Justice published a report titled, Violent Victimization Known to Law Enforcement in the Bakken Oil-Producing Region of Montana and North Dakota, 2006-2012 (DOJ 2019). This report analyzed increases in violent crime as a result of man camps, or worker housing, associated with extractive industry. The report found that, "From 2006 to 2012, the rate of violent victimization known to law enforcement in the Bakken oil-producing region of Montana and North Dakota increased, particularly the rate of aggravated assault, which increased 70%. There was no similar increase in rates of violent crime in the counties surrounding the Bakken oil region." There is clear documentation from federal sources that a drastic increase in violence is to be expected based on objective evidence. Moreover, it is well understood through the issue of Missing and Murdered Indigenous People (MMIP) that this type of violence provides greater impacts Indigenous people as well has increase gender-based violence, such as rape, human trafficking, murder, and domestic assault. Furthermore, it is the obligation of federal agencies to address environmental justice based on Executive Order 12898. It is the responsibility of federal agencies to mitigate undue and disproportionate environmental impacts affecting historically marginalized communities such as low-income, Black, Indigenous, or communities of color. It is part of the federal government's Trust Responsibility with Tribes to ensure the physical health and wellness of Indigenous Peoples. Therefore, given the available information, it is the role of the federal government to include an analysis of the effects of man camps (or worker housing) on the local community with a specific focus on impacts to Indigenous Peoples. According to section 4.10 of the DEIS, Esmeralda county has 44% low-income residents, and Native American residents meeting environmental justice requirements, and that "Overall impacts to communities with environmental justice concerns within the area of analysis are anticipated to be moderate to major, long-term, and regional." Therefore it is known that the Rhyolite Ridge project would require significant non-local labor in a community with limited existing housing. Research conducted by the federal government clearly shows a connection between worker housing and increases in violence. It is the obligation of the federal government to take a "hard look" under NEPA, and therefore the EIS must analyze this predictable increase in community violence with specificity in terms of impacts to Indigenous communities and along gendered lines. This region is known to currently lack adequate funding for basic community safety and this has already resulted in gender based harm, "Some of the concerns include lacking sufficient medical care, access to legal materials, inmate safety, understaffing, and separation of inmates of different genders (Esmeralda County 2012)." Social and Economic Values Supplemental Environmental Report for the Rhyolite Ridge Lithium-Boron Project April 2024 ES-3. In regards to worker housing, Missing and Murdered Indigenous Peoples, and other forms of gender based violence, the Federal Government has the following obligations: • The BLM must take a hard look at the pattern of non-local worker housing resulting in increased localized violence and specifically along racial lines with Native Americans and gendered lines. o Using the best available research, the BLM must predict how their permitting actions for this project will increase violence inflicted upon specific communities which qualify for environmental justice screening.	A detailed analysis of potential impacts to environmental justice communities is presented in EIS Sections 4.3 and 4.20.3. Additional information is provided in the Environmental Justice SER.

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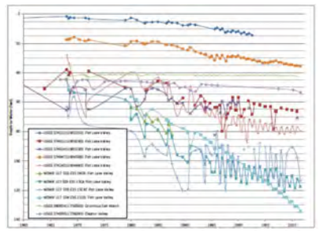
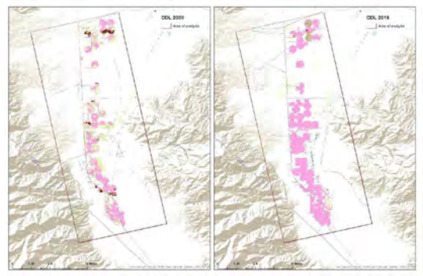
		• The BLM must work to mitigate impacts to environmental justice communities. The EIS should analyze not only increases to law enforcement and incarceration which address violence after it happens, but also preventative mitigations.	
108 and 183	108.27 and 183.26	***13. The DEIS Fails to Adequately Consider Cumulative Impacts.*** a. Agriculture. Fish Lake Valley is experiencing irreparable damage from water production that exceeds annual recharge (Esmeralda County 2022, p. 48). Water levels in Fish Lake Valley have declined up to 2.5 feet per year, causing more than 75 feet of cumulative drawdown (*Ibid*, p. 1). Historic groundwater levels are shown in Figure 2. This overdraft is causing aquifer storage to collapse, with the exact amount depending on the type of materials that comprise the local aquifers. This decrease in pore space reduces the aquifer's ability to store groundwater and cannot be reversed in the future (*Ibid*, p. 38). The vast majority of groundwater is extracted for irrigation (NDWR 2019, p. 8). The two main irrigation water uses are alfalfa and pasture. Fish Lake Valley "has long been a place for alfalfa farms along with cattle and horse ranches and some fruit trees," (Esmeralda County 2011, p. 14). Esmeralda County (2012, p. 38) notes that stabilizing the Fish Lake Valley groundwater resource will require a combination of increasing agricultural efficiency and decreasing the irrigable area within the basin. Other measures mentioned are preventing artesian flows from wells and limiting groundwater withdrawals from California.  *Figure 2: Selected groundwater level from 1960 to 2011 (Esmeralda County 2022, p. 50).* In addition to increased groundwater withdrawal, groundwater recharge from runoff may be declining and contributing to the groundwater decline. Surface water flows are an important source of irrigation water in the agricultural areas of Fish Lake Valley, with surface water diversions for agriculture from Chiatovich, Leidy, Busher, Perry-Aiken, and McAfee Creek drainages (Esmeralda County 2022, p. 26). Figure 3 shows land under alfalfa cultivation and pasture/grass in Fish Lake Valley, in 2009 and 2019. Within the red boundary shown in Figure 3, we estimate that the amount of land used to grow alfalfa has increased by about 3290 acres. This increase is also evident from the figure itself. Grass/pasture has conversely decreased by ~1938 acres but practically all of the conversion was due to alfalfa cultivation. The amount of shrubland converted to grass/pasture over this time period is ~540 acres.  *Figure 3: Agricultural land in Fish Lake Valley in (a) 2009 and (b) 2019. Alfalfa is shown in pink and grass/pasture in light green. (National Croplands Database 2020)* b. Geothermal Energy As of 2023, there are active geothermal leases encompassing part or all of 47 sections of public land in the vicinity of the Fish Lake Valley wetlands, including leases held by Open Mountain Energy, Ormat, and a subsidiary of Fervo Energy (Fig. 4; NDOM 2022a).	The potential for the Proposed Action to effect groundwater, including at McNett Ranch was evaluated in the groundwater model prepared for the project. The model and analysis (Sections 4.14 and 4.16) found that there would be no impact to springs at McNett Ranch or to Tecopa birdbeak because they are located outside of the one-mile buffer of the 10-foot drawdown contour. Cumulative effects for past, present, and reasonably foreseeable future actions were analyzed within respective Cumulative Effects Study Areas (CESAs). CESAs for each resource are listed in Table 4-5. Table 4-6 lists each CESA boundary, and lists each of the past, present, and reasonably foreseeable future actions (RFFAs) within each CESA. Cumulative impacts from these identified past, present, and RFFAs are described for each resource in Section 4.20. Past, present, and RFFAs outside of the defined CESA boundaries were not included in the analysis. The cumulative effects analysis considers the impacts of past, present, and reasonably foreseeable mining and geothermal projects. The groundwater model included analysis of cumulative drawdown in Fish Lake Valley and found that the maximum differential drawdown between the Proposed Action and No Action Alternative 200 years after the end of quarrying would be less than 20 feet. While mining claims exist throughout the CESAs, they may or may not be developed in the future. Mining claims and fluid mineral lease information for projects without submitted applications has been added to the cumulative effects analysis. Impacts from future mining or geothermal projects would include analysis of impacts on surface and groundwater resources specific to each project.

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		 *Figure 4: Map of Fish Lake Valley population area of the Tecopa bird's beak, with geothermal leases, by section, and geothermal exploration projects. Each highlighted section has at least one geothermal lease parcel in it. (Lease data per NDOM 2022a)* There are two active geothermal exploration projects in the area. Open Mountain Energy conducted exploration beginning in summer of 2022, with ongoing activities observed in summer of 2023. These exploration activities occurred on previously existing well pads. This project was located in the vicinity of McNett Ranch, to the north of Hot Ditch Road. There is a second active geothermal exploration project in the vicinity of the Fish Lake Valley wetlands, and that is Ormat's Lone Mountain Geothermal Exploration Project. BLM approved this exploration project in March of 2023, and drilling commenced shortly thereafter. This project is located east of the Fish Lake Valley salt marsh, closer to Rhyolite Ridge. Drilling activities at this location continued into fall of 2023. While geothermal exploration projects, through pump testing, may temporarily alter localized hydrologic conditions, it is geothermal production projects that will cause a cumulative impact to stress on the groundwater system. Geothermal energy production has a long track record of drying up thermal water features or otherwise altering hydrologic systems so as to change surface water availability. There is abundant peer-reviewed literature documenting this, and the U.S. Fish and Wildlife Service has previously recognized this phenomenon in its emergency listing of the Dixie Valley toad (87 FR 20336; April 7, 2022) and supporting documentation. In general, geothermal energy production involves pumping hot water to the surface, and utilizing its heat or steam to spin a turbine and generate energy. In older geothermal energy systems, water would generally evaporate off as steam, resulting in a net loss to the groundwater aquifer. In more modern systems, called closed-loop binary cycle systems, the hot water is used to heat a thermal transfer medium, frequently pentane, which is then used to create energy. The hot water can then be reinjected into the aquifer, theoretically avoiding the problems with water loss from the older technologies. However, just because groundwater is not being directly consumed, does not mean there will not be changes to surface water features. Myers (2017, p. 7-8), writing about the Dixie Meadows Geothermal Project but speaking about general concepts, describes some of the mechanisms through which geothermal energy production may affect groundwater flow and surface water discharge: > Production wells [c]ould pull water from the natural discharges to the springs because pumping causes a drawdown in the potentiometric surface (a pressure gradient). Injection would create zones of pressure that would be higher than the background, as necessary to assure fluids flow into the fractures. Much of the injected flow would follow similar pathways as occurred before development because those pathways are most transmissive, but the limitation of the existing fractures would require higher pressure to force the fluid through the fractures. This would result in a substantial amount leaking off into other fractures or the bulk media, which would cause a net loss of flow. It is also possible that reinjection would not occur into the same fracture zones as the water removed for geothermal development. As described above, the most permeable fractures are few, and due to heterogeneity, there is no certainty that permeable fractures in the injection wells would intersect the permeable fractures in the collection wells. This would cause reinjected water to be lost to the circulation, especially if reinjection reaches fractures that are transverse to the general fracture trend found in the fault system. Therefore, there are two ways that recirculation could lose water – by leaking off into bulk media or by reinjection to fractures not connected to the collection wells. Pumping from the geothermal reservoir would alter the aquifer's natural pressure gradients. Water would be pulled from natural discharge zones due to depressurization at the pumping sites while high pressure would be experienced in areas near injection wells. The reinjection wells would almost certainly not replace water in the same exact locales that it was pumped from. Permeable fractures in the injection wells would not necessarily intersect the permeable features. Reinjected water might be lost to the circulation, particularly if reinjection reaches fractures transversal to the general fracture trend found in the fault system (Myers 2017, p. 8). Reinjection can also cause deformation and shattering of substrate, potentially offering new pathways for gas and water circulation and therein altering the hydrology of the adjacent surface features (Rissman et al. 2012, p. 232). Numerous analyses of the environmental impacts of geothermal energy have cited changes to surface manifestations of geothermal waters as inherent in geothermal energy production technology (Kristmannsdottir & Armannsson 2003, p. 454-455; Bayer et al. 2015, p.374; Maochang 2001, p. 99). "Historical evidence shows that natural thermal features have been affected, often severely, during the development and initial production stages of most hightemperature geothermal systems," (Hunt 2001, p. 99). "Changes in surficial features and land elevations accompanying geothermal development should be viewed as the rule, rather than the exception," (Sorey 2000, p. 708). There are many examples of geothermal energy projects in the Great Basin drying up or significantly altering nearby thermal springs. These include at Brady's Hot Springs, where thermal hot springs sufficient to host a resort and spa (at a minimum flow of 21 gallons per minute) completely dried up upon the drilling and pumping of geothermal wells (Lund 1982, p. 14). Upwards of 27 geysers at Beowawe, Nevada used to shoot thermal water 8 meters into the air (White 1998, p. 1), however upon commencement of geothermal drilling and pumping, the geysers ceased to flow, and	

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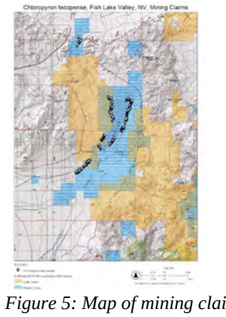
		groundwater levels fell 65 to 130 meters (*Id.*, p. 12). The geysers have never resumed their flow. Steamboat Hot Springs, near Reno, experienced a significant decline of surface discharge from geysers and springs including a reduction of thermal water discharge to Steamboat Creek by 40% (Sorey 2000, p. 707). Geothermal pumping in Long Valley Caldera near Mammoth, California has resulted in springs drying up and declines in pressure in the geothermal aquifer (Sorey 2000, p. 707). This has also resulted in a 30-40% reduction in thermal water content in the springs at Hot Creek Fish Hatchery (*Id.*). Notably, the literature shows impacts from the geothermal energy production in this area extending many kilometers away from the points of diversion (*Id.*). The ways geothermal energy may impact adjacent groundwater dependent ecosystems can be paradoxical. For instance, the North Dixie Valley geothermal project, a 56-megawatt project that has been in production since 1985, has experienced land subsidence as a result of their pumping (Sorey 2000, p. 708; Huntington et al. 2014, p. 5). In order to counteract land subsidence issues, the operator began pumping cold basin fill aquifer water and reinjecting it above the hot geothermal reservoir (Huntington et al. 2014, p. 5). This misguided mitigation effort may have contributed to the groundwater table decreasing some 2.5-3 meters from 2009-2011 (Albano et al. 2021, p. 79). Significant changes to vegetative composition in the area of the geothermal power plant were evident when pumping of the basin-fill aquifer began (*Id.*, p. 80). It is likely that some amount of the shallow groundwater in the Fish Lake Valley wetlands is sourced from geothermal aquifers. Eakin (1950, p. 29) reports temperatures of 77°F/25°C at the McNett Ranch flowing well, which is approximately 12°C above the average annual air temperature (Rush and Katzer 1973, p. 39). The Fish Lake Valley Hot Well is famous for its hot spring soaking activities, with water in the tub usually around 103°/40°C (*Personal observation, P. Donnelly*). Discharge from both of these springs helps feed the wetlands that sustain imperiled species like the Tecopa bird's beak. Another indicator of geothermal input is the chemistry of the water. The chemical character from the McNett Ranch flowing well is indicative of water supplied, at least partially, from sources related to volcanic activity (Eakin 1950, p. 31). Water from such sources is typically characterized by relatively high chloride, fluoride and boron content compared to normal groundwater. Partial analysis of the sampled spring in turn indicates lower but still relatively high chloride content, suggesting that it may represent water similar to that of the McNett flowing well mixed in with shallow groundwater of considerably lower dissolved solids (*Ibid*). It's clear that geothermal waters contribute at least some amount of flow to the shallow groundwater system. Further contribution could be made through interconnectivity between the deeper geothermal aquifer and the shallow alluvial aquifer. Widespread geothermal energy development in the Fish Lake Valley wetland area could result in a decrease in geothermal discharge from surface water sources like McNett Ranch and the Fish Lake Valley Hot Well, as well as a decrease in contribution from the geothermal aquifer to the shallow groundwater flow system. Combined with drawdown from the Rhyolite Ridge Mine, this could substantially alter the aquifer dynamics in the area, potentially causing drawdown within the Fish Lake Valley wetlands. c. <u>Mineral Exploration and Development</u> The DEIS inadequately considered the cumulative impacts of Mineral exploration and development within the CESA. Numerous mining interests are operating and developing prospects in Fish Lake Valley. Figure 5 depicts the hundreds or likely thousands of mining claims across the Fish Lake Valley wetlands. Blue hashing represents placer claims, orange represents lode claims. As can be seen, essentially the entirety of the Tecopa bird's beak's habitat is within mining claims. Data for this map was obtained from BLM's Mineral & Land Records System (BLM 2023).  *Figure 5: Map of mining claims in the Fish Lake Valley population area of Tecopa bird's beak. (Data per BLM 2023)* Lithium Corporation claims to hold 11,360 acres of mining claims in Fish Lake Valley, targeting brines underneath the playa (Lithium Corporation 2023). These claims are "covering the most prospective portions of the playa," (Lithium Corporation 2019). Lithium Corporation announced they were beginning exploration activities on the playa on September 7, 2023, mobilizing a reverse circulation drill to drill what will eventually be 1200 foot deep boreholes (Junior Mining Network 2023). Exploration activity was observed on the eastern edge of the playa on September 14, 2023. Acme Lithium Inc. claims to hold 4,139 acres of mining claims in Fish Lake Valley (Acme Lithium 2023). Their claims are lode claims, meaning they would be targeting lithium claystones for an open-pit mine. They have conducted geophysical surveys and surface sampling (*Id.*). Nevada Alaska Mining Company holds a significant number of claims in the area, but the exact acreage or number of claims is unknown. Any of these claims or active exploration projects could become a full-fledged mineral development project at any time. Should development ensure, those with placer claims are likely to become brine extraction projects; those with lode claims are likely to become open-pit mines. Either project type can have substantial impacts to the groundwater system and physical and human	

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		environments of the Fish Lake Valley area. Without reciting them here, it's clear that appreciable new groundwater pumping for mining in Fish Lake Valley would have compounding effects in concert with the anticipated impacts of the Rhyolite Ridge Mine, and that such projects needs to be considered in the cumulative impacts analysis.	
108 and 183	108.28 and 183.27	**IV. THE PROJECT WOULD VIOLATE WESTERN SHOSHONE TREATY RIGHTS.** Under the U.S. Constitution, treaties between the United States and another sovereign government are the "supreme law of the land," on equal footing with federal statutes and the Constitution itself. U.S. Const., Art. VI. Federal courts interpret treaties between Native American tribes and the U.S. government as they were understood by the tribes who negotiated them. *Tulee v. Washington*, 315 U.S. 681, 684-85 (1942). Courts must interpret treaties liberally and resolve ambiguities in favor of Native Americans. *Seneca Nation of Indians v. New York*, 382 F.3d 245, 259 (2d Cir. 2004). Courts should not construe treaties to the prejudice of the tribes, *Antoine v. Washington*, 420 U.S. 194, 199 (1975), *Squire v. Capoeman*, 351 U.S. 1, 7 (1956), and should rule against tribes only when the clear language of the treaty warrants such a ruling. *Or. Dep't of Fish and Wildlife v. Klamath Indian Tribe*, 473 U.S. 753, 774 (1985). In addition, the "reserved rights" doctrine provides that whatever rights were not ceded in a treaty or divested by statute are retained as Native American rights. *Winters v. United States*, 207 U.S. 564, 576-77 (1908); *United States v. Winans*, 198 U.S. 371, 381-82 (1905); *Worcester v. Georgia*, 31 U.S. 515, 552-53 (1832). The reserved rights doctrine can therefore impose a servitude—a restriction on land use favoring the tribe—on the federal lands to which the rights apply. *Winans*, 198 U.S. 371. In *Winans*, for example, the Court held that fishing rights were part of a larger set of rights the Yakima Tribe of Washington retained. *United States v. Winans*, 198 U.S. 371, 380 (1905). The Treaty was not "a grant of rights to the Indians, but a grant of right from them." *Id.* at 381. The Western Shoshone have occupied their land "[s]ince time immemorial." *W. Shoshone Nat'l Council v. United States*, 73 Fed. Cl. 59, 61 (2006). In 1863, seeking to gain uncontested access to Shoshone lands the United States entered into a series of five treaties known as the Doty Treaties, including the Treaty of Ruby Valley. *Id.* The treaty gave the United States only non-possessory rights in Shoshone lands; specifically, it granted "routes of travel . . . military posts . . . telegraph and overland stage lines . . . construction of a railway . . . [and] that the Shoshone country may be explored and prospected for gold and silver, or other minerals." Thus, according to the terms of the treaty, the Shoshone ceded no land. Although the U.S. Supreme Court has ruled that the Western Shoshone subsequently "relinquished" their land claims, *United States v. Dann*, 470 U.S. 39 (1985); *Shoshone Nat'l Council v. United States*, 73 Fed. Cl. 59 (2006), this outcome has been disputed under principles of international law. In 2002 the Inter-American Commission on Human Rights concluded that the United States had violated the human rights of the Western Shoshone under the American Declaration of the Rights and Duties of Man, by denying the right to due process (Article XVIII), the right to equality before the law (Article II), the right to a fair trial (Article XVIII) and the right to property (Article XVIII), in connection with determination and protection of Western Shoshone property rights in their ancestral lands. Mary and Carrie Dann, Case No. 11.140, Inter-Am. C.H.R., Report No. 75/02, OEA/Ser.L./V/II.117, doc. 1 rev. 1 (2002). And in 2006, the U.N. Commission for the Elimination of Racial Discrimination urged the United States to "[d]esist from all activities planned and/or conducted on the ancestral lands of Western Shoshone or in relation to their natural resources, which are being carried out without consultation with and despite protests of the Western Shoshone peoples." U.N. Comm. for the Elimination of Racial Discrimination [CERD], Early Warning and Urgent Action Procedure, Decision 1 (68), U.N. Doc. CERD/ C/USA/DEC/1 (Apr. 11, 2006).	Consultation with Tribes has been conducted in accordance with applicable laws and regulations. The EIS describes ongoing consultation with the Tribes in Sections 4.8 and 5.2. Several Indian Claims Commission and federal court cases have addressed alleged taking of land including territory described in the Treaty of Ruby Valley. Judgement on these cases found that a taking occurred and aboriginal title was extinguished. In response to these cases, Congress passed the Western Shoshone Claims Distribution Act to provide for distribution of the settlement funds.
108 and 183	108.29 and 183.28	**V. THE PROJECT WOULD VIOLATE THE FEDERAL GOVERNMENT'S RESPONSIBILITIES TOWARD INDIGENOUS PEOPLES AND SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT.** **A.** Tribal Consultation As sovereign nations, tribes have a role and a relationship with the federal government that makes them distinct from other stakeholder groups throughout the NEPA process, as the "[f1ederal government and Indian tribal relationships reflect the political and historical development of the Nation." BLM Manual § 1780, Tribal Relations (Dec. 15, 2016). The federal trust responsibility requires the BLM to engage in government-to-government consultation, and this mandate is reflected in the BLM's own governing documents. (*Id.*) BLM's Tribal Relations Manual provides that "[t]he BLM conducts government-to-government consultation with Indian tribes to improve collaborative and informed Federal decision making." (*Id.*) The handbook also recognizes that "Indian tribes are knowledgeable sources and experts concerning their own cultures," and that "[t]hey can provide unique insight and explanation of tribal history and land uses. When provided with such information, the BLM will take this into account when making decisions related to the identification, evaluation, treatment, and management of natural and heritage resources." (*Id.*) This consultation responsibility is also affirmed by Executive Order No.13175 (Consultation and Coordination with Indian Tribal Governments dated November 6, 2000, which requires all agencies, bureaus, and offices within the Federal Government to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications). In addition, Presidential Memorandum for the Heads of Executive Departments and Agencies on Tribal Consultation dated November 5, 2009 (74 Fed. Reg. 57881), Presidential Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships dated January 26, 2021 (86 Fed. Reg. 7491), and Joint Secretarial Order on Fulfilling the Trust Responsibility to Indian Tribes in the Stewardship of Federal Lands and Waters No. 3403 dated November 15, 2021 serve to strengthen and supplement Executive Order No. 13175. Collectively, these policies require that management decisions fulfill the "United States' unique trust obligation to federally recognized Indian Tribes and their citizens" (DOI 2021). The U.N. Declaration on the Rights of Indigenous Peoples (UNDRIP), to which the United States is a signatory, requires States to consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free, prior and informed consent before adopting and implementing legislative or administrative measures that may affect them (article 19). States must have consent as the objective of consultation before any of the following actions are taken: The adoption of legislation or administrative policies that affect indigenous peoples (article 19); The undertaking of projects that affect indigenous peoples' rights to land, territory and resources, including mining and other utilization or exploitation of resources (article 32). In certain circumstances, there is an obligation to obtain the consent of the indigenous peoples concerned, beyond the general obligation to have consent as the objective of consultations. For example, the Declaration explicitly requires States to obtain consent of indigenous peoples in cases of: The relocation of indigenous peoples from their lands or territories (article 10); The storage or disposal of hazardous materials on indigenous peoples' lands or territories (article 29). Finally, pursuant to Section 106 of the National Historic Preservation Act, federal agencies are required to consult with any Tribe that attaches religious and cultural significance to historic properties that may be affected by an undertaking. 36 C.F.R. § 800.2(c)(2)(ii). At a minimum, the consultation shall provide Tribes a reasonable opportunity to: (1) identify their concerns about historic properties; (2) advise on identification and evaluation of historic properties, including those of traditional religious and cultural importance; (3) articulate their views on the undertaking's effects on such properties; and (4) participate in the resolution of adverse effects. 36 C.F.R. § 800.1(c). The Section 106 consultation process must respect Tribal sovereignty and represent the government-to-government relationship between Tribes and the federal government. 36 C.F.R. § 800.2(c)(2)(ii).	The Project is consistent with NHPA and applicable Executive Orders (EOs). Section 4.8 of the EIS contains the analysis as related to Native American Traditional Values. Government-to-government consultation and coordination for the Project was initiated in 2020 and is described in Section 5.0 of the Final EIS. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process. During consultation, the Project was redesigned to avoid impacts to culturally significant areas. Tribal consultation is ongoing and will continue through the life of the Project. If avoidance of areas of tribal concern is not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected Tribes to reduce or eliminate impacts. While the United States government supports UNDRIP, the declaration is not legally binding but is an inspirational international instrument that includes a broad range of provisions regarding the relationship between nations, organizations and indigenous peoples and individuals. The DOE loan program has no effect on environmental impacts associated with the Proposed Action and alternatives and is not considered in the EIS.

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		Here, by the BLM's own admission, the planning process for the Rhyolite Ridge project has been carried out at an unusually rushed timeline. This has precluded meaningful government-togovernment consultation with affected Tribal communities. BLM's arbitrarily compressed timeline is insufficient for affected Tribes to become fully educated about the project, identify concerns and potential impacts, and engage in consultation with the BLM such that those concerns could inform the DEIS prior to publication. Tribes hold certain values and knowledge regarding the Project Site that should be considered and incorporated into the decision-making process, as is required by the BLM's own governing documents. Unfortunately, BLM has failed to adhere to its Tribal consultation duties due to its insistence on a rushed and ultimately unrealistic permitting schedule. **B. Due Diligence Regarding DOE Financing** In January of 2023 the DOE's Advanced Technology Vehicles Manufacturing (ATVM) loan program announced a conditional agreement to provide a loan of $700 million to Ioneer for the development of the Rhyolite Ridge Mine. The DOE reports that the loan comes with due diligence including environmental review, finances, and technical due diligence. DOE as a cooperating agency should conduct Tribal consultation as part of their due diligence process. This mine would destroy Cave Springs, a nearby sacred site, and impact other cultural land values such as potentially denying water to pinyon trees. Pine nuts are an essential Indigenous food source and denying water to a local recovering Bighorn Sheep population. The project is sited with Western Shoshone treaty lands. DOE was one of 17 agencies at Biden's second Tribal Nations Summit in November 2022 to approve new best practices of integrating treaty rights into decision making (United States 2022). Accordingly, DOE should incorporate Western Shoshone Treaty Rights as enshrined in the Treaty of Ruby Valley 1863 into decision making relating to due diligence. To meet expected due diligence standards the DOE should follow the UN Guiding Principles (UNGP's) on due diligence. The inclusion of Indigenous Human Rights in due diligence is required to meet the UNGPs and OECD guidance which say companies should commit to respecting Human Rights. In the context of Rhyolite Ridge, it is within the Western Shoshone treaty lands detailed in the Treaty of Ruby Valley 1863. The United Nations CERD committee found in 2006 that Western Shoshone treaty rights and thus human rights were being violated by the US federal government. This was upheld in 2022 through inclusion in the concluding observations of CERD's August convening. DOE should follow these international due diligence standards, and communicate through due diligence how the violation of treaty rights will be considered and mitigated through this due diligence process. Additional due diligence requirements to meet the standards set in UNGP and OECD are that the process is ongoing, and that there is public transparency. Finally, should the current Plan of Operations, dated May 2020, be found to provide undue risks to the Tiehm's Buckwheat or otherwise require updates to further avoid the endangered species, will DOE revisit due diligence in respect to the new plan or will the current conditional agreement carry over without additional approvals?	
108 and 183	108.30 and 183.29	**VI. CONCLUSION** Thank you for the opportunity to comment on this important project. Please include all of the undersigned groups and representatives in all correspondences and public notices, etc. These comments fully incorporate the following appendices: **Appendix A:** Naomi S. Fraga PhD, Assessment of the Buckwheat Protection Plan for the Draft Environmental Impact Statement of the Rhyolite Ridge Lithium-Boron Mine, Esmeralda County, Nevada (May 30, 2024). **Appendix B:** Steven H. Emerman, Assessment of the Operating and Post-Closure Stability of the Open Pit at the Proposed Ioneer Rhyolite Ridge Lithium-Boron Mine, Esmeralda County, Southwestern Nevada (May 29, 2024). **Appendix C:** Michael C. McCarthy, PhD, Review of Dust Deposition and Suppression Impacts on Tiehm's Buckwheat from the Rhyolite Ridge Lithium-Boron Project (May 31, 2024). **Appendix D:** Tom Myers, PhD, Technical Memorandum: Review of Rhyolite Ridge Draft Environmental Impact Statement (June 1, 2024). **Appendix E:** Tom Myers, PhD, Technical Memorandum: Review of Rhyolite Ridge Hydrogeology and Quarry Lake (April 23, 2021). Sincerely, */s/ Patrick Donnelly* Patrick Donnelly Great Basin Director Center for Biological Diversity pdonnelly@biologicaldiversity.org */s/ John Hadder* John Hadder Director Great Basin Resource Watch P.O. Box 207 Reno, NV 89504 john@gbrw.org */s/ Fermina Stevens* Fermina Stevens	Comment noted.

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		Western Shoshone Defense Project defenseprojectwesternshoshone@gmail.com */s/ Ian Bigley* Ian Bigley Earthworks ibigley@earthworksaction.org */s/ Linda Stout* Linda Stout Conservation Committee Chair lindasuestout@icloud.com Sierra Club Toiyabe Chapter */s/ Kevin Emmerich* Kevin Emmerich Basin and Range Watch atomicquailranch@gmail.com */s/ Laura Cunningham* Laura Cunningham Western Watersheds Project PO Box 70 Beatty NV 89003 lcunningham@westernwatersheds.org	
108 and 183	108.31 and 183.30	**References** Acme Lithium, Inc. 2023. Fish Lake Valley Claims: Project Highlights, available at: https://acmelithium.com/projects Albano, C.M. et al. 2021. Baseline Assessment of Groundwater Dependent Vegetation in relation to Climate and Groundwater Levels in select Hydrographic Basins of Nevada Pueblo, Continental Lake, Mud Meadow, Dixie, Railroad-North, Steptoe, Goshute, and Independence Valleys. Division of Hydrologic Sciences, Desert Research Institute. Publication No. 41283. ANCOLD (Australian National Committee on Large Dams), 2012. Guidelines on tailings dams— Planning, design, construction, operation and closure, 84 p. Available online at: https://www.resolutionmineeis.us/sites/default/files/references/ancold-2012.pdf Bayer, P. et al. 2015. Geothermal Power. In: Green Energy Choices: The Benefits, Risks, and Trade-Offs of Low-Carbon Technologies for Electricity Production. BLM. 2008. Special Status Species Handbook § 6840. BLM. 2014. Haile Gold Mine Final EIS Chapter 4. BLM. 2016. BLM Manual § 1780 – Tribal Relations. BLM. 2018. Final Environmental Impact Statement, Donlin Gold Project, Chapter 3.6: Groundwater Hydrology. BLM. 2019. Copper Flat Copper Mine Final EIS. Vol. 1. BLM. 2022. Decision and Letter to Control Technology, Inc. re: N-101255 (Dec. 13, 2022). BLM. 2023. Email from Scott Distel, BLM, to Doug Furtado, BLM re: Rhyolite Ridge permitting schedule (December 21, 2023). BLM. 2023. Lone Mountain and Pearl Projects Environmental Assessment. DOI-BLM-NV-B020-2022-0038-EA. BLM. 2024. Email from Doug Furtado, BLM to Scott Lake, Center for Biological Diversity re: Rhyolite Ridge Project (May 20, 2024). BLM. 2024. Email from Scott Distel, BLM to Patrick Donnelly, Center for Biological Diversity, re: GIS information for Rhyolite Ridge (May 20, 2024). Center for Biological Diversity. 2021. Petition to List The Fish Lake Valley Tui Chub (*Siphateles bicolor* ssp. 4) as a Threatened Or Endangered Species Under The Endangered Species Act (March 9, 2021). Center for Biological Diversity. 2023. Petition to the U.S. Fish And Wildlife Service to List The Tecopa Bird's Beak (*Chloropyron Tecopense*) Under The Endangered Species Act as a Threatened Or Endangered Species And To Concurrently Designate Critical Habitat. Coates, P.S., et al. 2023. Geothermal energy production adversely affects a sensitive indicator species within sagebrush ecosystems in western North America. Bio. Cons. 280. Coates, P.S., Ricca, M.A., Prochazka, B.G., O'Neil, S,T., Severson, J.P., Mathews, S.R., Espinosa, S., Gardner, S., Lisius, S., and Delehanty, D.J., 2020, Population and habitat analyses for greater sage-grouse (Centrocercus urophasianus) in the bi-state distinct population segment—2018 update: U.S. Geological Survey Open-File Report 2019–1149, 122 p., https://doi.org/10.3133/ofr20191149. Eakin, T.E. 1950. Preliminary Report on Ground Water in Fish Lake Valley, Nevada and California. State of Nevada, Office of the State Engineer, Water Resources Bulletin No. 11. Esmeralda County, NV. 2022. Esmeralda County Water Resource Plan. Executive Order No.13175: Consultation and Coordination with Indian Tribal Governments (November 6, 2000), available at: https://www.govinfo.gov/content/pkg/FR-2000-11-09/pdf/00-29003.pdf Harju, S.M. et al. 2010. Thresholds and Time Lags in Effects of Energy Development on Greater Sage-Grouse Populations. Journal of Wildlife Management 74(3):437–448; 2010; DOI: 10.2193/2008-289 Henderson, M. and K.F. Morrison, 2022. Chapter 10—Stage-gate process: In Morrison, K.F. (Ed.), Tailings management handbook—A life-cycle approach (pp. 143-152), Society for Mining, Metallurgy and Exploration, Englewood, Colorado, 1004 p. Hunt, T.M. 2000. Five Lectures on Environmental Effects of Geothermal Utilization. The United Nations University Geothermal Training Program, Report 2000, No. 1. Huntington, J.M., Garcia, C.A., and Rosen, M.R., 2014, Hydrogeologic framework and occurrence, movement, and chemical characterization of groundwater in Dixie Valley, west-central Nevada: U.S. Geological Survey Scientific Investigations Report 2014–5152, 60 p., http://dx.doi.org/10.3133/sir20145152.	References noted.

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108 and 183	108.31 and 183.30	**Appendix A** Naomi S. Fraga PhD, Assessment of the Buckwheat Protection Plan for the Draft Environmental Impact Statement of the Rhyolite Ridge Lithium-Boron Mine, Esmeralda County, Nevada (May 30, 2024). Assessment of the Buckwheat Protection Plan for the Draft Environmental Impact Statement of the Rhyolite Ridge Lithium-Boron Mine, Esmeralda County, Nevada. Prepared by: Naomi S. Fraga PhD, Director of Conservation Programs, California Botanic Garden. 1500 North College Avenue, Claremont, CA 91711 nfraga@calbg.org Prepared for the Center for Biological Diversity. Submitted: May 30, 2024	Comment noted.

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108 and 183	108.32 and 183.31	**Executive Summary** *Eriogonum tiehmii* (Tiehm's buckwheat) is a low-growing, mat-forming perennial in the Polygonaceae (buckwheat family). Research has identified it as a soil specialist, indicating that plants are specifically adapted to their native soil type (McClinton et al. 2022a p 19). On December 16, 2022, the U.S. Fish and Wildlife Service (Service) listed Tiehm's buckwheat as endangered under the U.S. Endangered Species Act (ESA). Concurrently, the Service designated 910 acres of critical habitat, encompassing its entire range, as well as a 500 meter buffer surrounding the population (USFWS 2022b). The primary threat identified to Tiehm's buckwheat is the curtailment of its habitat and range from mineral exploration and development due to the Rhyolite Ridge Lithium-Boron Project (USFWS 2022b p. 77368). Tiehm's buckwheat's entire range is located within the proposed Rhyolite Ridge Lithium-Boron Project boundary, including 100% of the 910 acres that are designated as critical habitat (BLM 2024a Figure 2-11). Due to the extremely narrow global range of Tiehm's buckwheat and the scale of the proposed project, the agency preferred alternative, North and South OSF Alternative, described in the Draft Environmental Impact Statement (DEIS), continues to pose existential threats to the species. These include significantly altering subpopulations connectivity, habitat integrity, pollinator communities, and other ecosystem processes. The direct and indirect impacts of mining are of such magnitude, and taken in combination with other documented threats (e.g. competition with invasive species, dust deposition, impact to pollinator communities and co-occurring native plant species), that the Project leaves Tiehm's buckwheat in danger of extinction throughout all of its range. This report found the following: 1. Avoidance measures do not sufficiently protect Tiehm's buckwheat and critical habitat due to its highly specific habitat requirements and narrow range. 2. Mining restoration plans such as the pollinator habitat reclamation and invasive species treatment plans are not developed or inadequate and cannot sufficiently mitigate proposed impacts to Tiehm's buckwheat. 3. The Buckwheat Protection Plan does not rely on the best available science. 4. The North and South OSF Alternative poses an existential threat to the species.	The Buckwheat Protection Plans referenced in the Draft EIS were dated July 2022 for the Proposed Action and December 2023 for the North and South OSF Alternative. The Buckwheat Protection Plan was updated in July 2024 for the North and South OSF Alternative and incorporated into the Final EIS. 1) The July 2024 Buckwheat Protection Plan was revised in coordination with the BLM and USFWS and includes applicant committed conservation measures including: • APCM-1: Avoidance of Tiehm's Buckwheat and Designated Critical Habitat. • APCM-2: Geotechnical Design of the Quarry Walls to Provide Appropriate Margins of Safety. • APCM-3: Geotechnical Monitoring. • APCM-4: Establish Fencing and Signage to Protect Tiehm's Buckwheat and Critical Habitat Designated for Tiehm's Buckwheat. • APCM-5: Restrict Public Access to the County Road. • APCM-6: Pollinator Habitat Reclamation within Critical Habitat. • APCM-7: Control of Nonnative, Invasive, and Noxious Species. • APCM-8: Light Management to Minimize Adverse Impacts to Pollinators. • APCM-9: Dust Control and Monitoring of Fugitive Dust Emissions within Tiehm's Buckwheat Subpopulations. • APCM-10: Remove Fencing and Debris from the three UNR Transplant Experimental Sites that are Located within Tiehm's Buckwheat Critical Habitat. • APCM-11: Utilize Blasting Mats When any Blasting is to Occur in Proximate to Tiehm's Buckwheat Subpopulations and Trims Blasting Techniques and Charge Delays. • APCM-12: Demographic and Recruitment Monitoring. • APCM-13: Develop an ERTI-Specific Environmental Awareness Program for Project Employees, Contractors, and Guests. • APCM-14: Monitor Stormwater Control Measures for Project Activities Located in or with the Potential to Discharge. • APCM-15: Critical Habitat Subpopulation Monitoring. • APCM-16: Monitor Insect Visitor and Pollinator Diversity and Abundance. • APCM-17: Monitor Noise Proximate to Tiehm's Buckwheat Subpopulations. • APCM-18: Develop an Ex-Situ Conservation Program in Cooperation with the USFWS and BLM.

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			2) APCM-6: Pollinator Habitat Reclamation within Critical Habitat was included in the July 2024 Buckwheat Protection Plan, which outlines the planning and design, implementation, and performance criteria, monitoring, and reporting for pollinator habitat reclamation. 3) The July 2024 Buckwheat Protection Plan was revised in coordination with the BLM and USFWS, including incorporating recent studies and reports (i.e. best available science). 4) Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS for the North and South OSF Alternative.
108 and 183	108.33 and 183.32	**Introduction** *Eriogonum tiehmii* (Tiehm's buckwheat) is a low-growing, mat-forming perennial in the Polygonaceae (buckwheat family). It blooms from May to June with cream to pale yellow flower clusters that age red as the seeds develop (Fig. 1). The species is known from one global population in the Silver Peak Range in Esmeralda County, NV, which is composed of eight subpopulations that occupy just 10 acres, across 3 square miles (USFWS 2022a). Tiehm's buckwheat occurs entirely on federal public lands managed by the Bureau of Land Management (BLM) in the Tonopah Field Office of the Battle Mountain District (BLM 2024a). It has specific habitat requirements, occurring in relatively sparsely vegetated, light colored clay soils that are derived from interbedded claystones, shales, tuffaceous sandstones, and limestones (Morefield 1995). Research has identified it as a soil specialist, indicating that plants are specifically adapted to their native soil type (McClinton et al. 2022a p 19). On December 16, 2022, the U.S. Fish and Wildlife Service (Service) listed Tiehm's buckwheat as endangered under the U.S. Endangered Species Act. Concurrently, the Service designated 910 acres of critical habitat, encompassing its entire range, as well as a 500 meter buffer surrounding the population (USFWS 2022b). The primary threat identified to Tiehm's buckwheat is the curtailment of its habitat and range from mineral exploration and development due to the Rhyolite Ridge Lithium-Boron Project (USFWS 2022b p. 77368). Other threats identified as affecting Tiehm's buckwheat and its habitat include road development and off-highway vehicle (OHV) use, livestock grazing, non-native and invasive species, herbivory, and climate change (USFWS 2022b p.77368). The activities proposed for the Rhyolite Ridge Lithium-Boron Project (Project) are linked to three of the six major threats identified at the time of listing, including mining exploration and development, road development, and the spread of non-native, invasive plant species (BLM 2024b; USFWS 2022a). As such, the Project represents the single greatest threat to the species. Tiehm's buckwheat's entire range is located within the proposed Project boundary, including 100% of the 910 acres that are designated as critical habitat (BLM 2024a Figure 2-11). The preferred alternative (North and South OSF Alternative) described in the Draft Environmental Impact Report (DEIS) outlines a large, industrial-scale mine that would create 2,271 acres of total surface disturbance on public lands, including a 960 ft deep open pit that spans more than 200 acres, more than 1,300 acres of mine waste dump piles that are stacked over 250 ft high, 106 acres of access and haul roads, and over 200 acres of industrial facilities such as a sulfuric acid plant, septic leach fields, and explosive storage area (BLM 2024a p. 44). The over 200 acre open pit would be located just 44 ft from occupied habitat and 114 ft away from the largest known subpopulation (Fraga 2021a; BLM 2024b Attachment A, Tiehm's Buckwheat Population Count Status Report p. 2; Table 1). Due to the magnitude and scale of the proposed Project and its geographic scope that encompasses the global range of Tiehm's buckwheat, it remains an existential threat to the species and its habitat. This document provides comments on the preferred North and South OSF Alternative and "conservation" measures proposed by Ioneer in the "Buckwheat Protection Plan" (Plan) and its associated supporting attachments.  **Fig. 1.** Tiehm's buckwheat in flower. Photo taken on May 23, 2023.	Comment noted.
108 and 183	108.34 and 183.33	**Avoidance Measures Do Not Sufficiently Protect Tiehm's Buckwheat and Critical Habitat.** The Plan identifies direct avoidance of individual plants as its primary protective measure (APCM1 in BLM 2024b p. 17), however "direct avoidance" fails to mitigate the magnitude, scale, and duration of a 2,271 acre industrial-scale mining project that would encompasses the entire global range of the species (Fig. 2). The numerous proposed activities would occur within and adjacent to occupied and critical habitat and would have a cumulative effect across the 23 years of proposed mine life (BLM 2024a p. 2-1). This magnitude of impact would fundamentally alter habitat integrity, pollination, and dispersal. It would also exacerbate the effects of limited habitat availability (e.g. suitable soil) and the species' inherently poor dispersal capabilities (USFWS 2022a p. 50), ultimately affecting its long-term survival.	The EIS contains detailed effects analysis for Tiehm's buckwheat and designated critical habitat in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER. The effects analysis includes impacts from disturbance in critical habitat, dust, and impacts to pollinators. Different avoidance areas were considered as alternatives and are discussed in detail in the SIR.

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		Habitat-altering activities would include a 960 ft deep mining pit located just 44 ft and 114 ft from subpopulations 3 and 6 respectively (BLM 2024b p. 46). Construction of new haul and access roads would be approximately 50 m from subpopulation 3 and less than 300 m from subpopulation 1 which is the second largest subpopulation for the species (USFWS 2022a; Fraga 2021a; BLM 2024b; Table 1). The haul and access roads would transport 150-ton trucks traveling 35 mph, up to 1050 times daily (BLM 2024b p. 164). This scale of disturbance would not only impact individual plants from the deposition of dust (see more below in Impacts from Dust Deposition), but it would also contribute to further habitat fragmentation and degradation, compounding the isolation of small subpopulations and increasing the likelihood that they will be threatened more strongly by stochastic processes in the future (Matties et al. 2004 p. 481). The Project would permanently destroy 197 acres or 22% of the 910 acres of designated critical habitat deemed essential for Tiehm's buckwheat conservation (BLM 2024b p. 18; USFWS 2022a). In particular it would have a major impact on the southern subpopulations (3, 4, 5, 6, 7) which together constitute 60-68% of the global population and approximately 4 of the almost 10 acres of occupied habitat (Table 1, USFWS 2022a p. 23). Subpopulation 6 would be only 114 away from the 960 ft deep mining pit. Subpopulation 6 alone constitutes a significant portion of the species range with 7,784-19,871 individuals, or 45-50% of the known global population occurring there (Fraga 2021a p. 6; USFWS 2024b p. 23, Table 1). **Table 1**. Summary of Tiehm's buckwheat subpopulation estimates (aUSFWSa 2022, bFraga 2021a, cBLM 2024b Appendix A). | Subpopulation	Area (acres)[a]	2019[b]	2021[c]	2023[c]
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1	4.81	9,240	4,420	5,600
2	1.36	4,541	1,719	4,190
3	0.63	1,860	1,165	1,943
4	1.04	8,159	649	1,888
5	0.04	199	3	11
6	1.88	19,871	7,787	7,784
7	0.00	50	14	3,476
8	1 plant	1	NA	4
Total	9.96	43,921	15,757	24,912
southern subpopulation total	*8*	*28,139*	*9,618*	*13,122*
southern subpopulation percent of total	*36.07%*	*64.07%*	*61.04%*	*60.70%*	  **Fig. 2**. Map of North and South OSF Alternative showing Tiehm's buckwheat subpopulations and critical habitat relative to the North and South OSF Alternative presented in the DEIS. *Single-site endemics are inherently vulnerable to extinction* As a single-site endemic, Tiehm's buckwheat occupies only 10 acres globally (Table 1), making it an extremely narrow range species that is inherently vulnerable to extinction (Chichorro et al. 2019 p. 225; Fahrig, 2001, p. 65; Knapp et al. 2021, p. 362; Purvis et al. 2000 p. 1949, Staude et al. 2019, p. 21). Extinction risk and rarity have been extensively studied (Chichorro et al. 2019; Enquist et al. 2019; Pimm et al. 2014; Knapp et al. 2020; Matties et al. 2004; Purvis et al. 2000; Rabinowitz 1981; Staude et al. 2019) and are frequently examined in relation to a species geographic range size, habitat specificity, and population size (Rabinowitz 1981). Species with both narrow geographic ranges and narrow habitat specificity are considered among the most vulnerable to extinction risk (Chichorro et al. 2019 p. 225, Rabinowitz 1981 p. 210). Range size is related to dispersal ability and determines a species potential to escape pressures and occupy new areas, whereas habitat specificity relates to a species ability to adapt to habitat modification or loss (Chichorro et al. 2019 p. 225). Studies have found that geographic range size may play an outsized role in determining extinction risk, suggesting that reductions in geographic range size and available habitat can lead to pronounced increases in extinction risk even if local populations are relatively large (Chichorro et al. 2019 p. 225; Staude et al. 2019 p. 21). Another study found that of the 65 extinctions documented in the United States and Canada, 42 of them (or 64%), were single-site endemics, with the majority of known extinctions resulting from habitat loss (Knapp et al. 2021, p. 365). This highlights that narrow-range species subject to habitat-altering modifications such as development, invasion of non-native species, energy production and mining and other major threats, are at extreme risk of endangerment and extinction (Lughada et al. 2020 p. 397). Tiehm's buckwheat has already experienced habitat loss and degradation due to historic and recent mining exploration activities (USFWS 2022a). The Project's exploration activities altered 15 acres of native habitat, or 0.7% of the land disturbance that is proposed in the preferred alternative (BLM 2024a 4-83). Authorized mining exploration activities included road grading, test-well drilling, borehole drilling, and pit-digging. The 15 acres of existing exploration disturbance has had a profound impact on Tiehm's buckwheat subpopulations and has led to degradation of critical habitat including the loss of native vegetation cover, proliferation of invasive species, altered soil structure, and the creation of pathways that resulted in OHV incursion into occupied habitat (Fraga 2021a, p. 7; USFWS 2022a p. 30).	The July 2024 Buckwheat Protection Plan was revised in coordination with the BLM and USFWS and includes applicant committed conservation measures including: • APCM-1: Avoidance of Tiehm's Buckwheat and Designated Critical Habitat. • APCM-2: Geotechnical Design of the Quarry Walls to Provide Appropriate Margins of Safety. • APCM-3: Geotechnical Monitoring. • APCM-4: Establish Fencing and Signage to Protect Tiehm's Buckwheat and Critical Habitat Designated for Tiehm's Buckwheat. • APCM-5: Restrict Public Access to the County Road. • APCM-6: Pollinator Habitat Reclamation within Critical Habitat. • APCM-7: Control of Nonnative, Invasive, and Noxious Species. • APCM-8: Light Management to Minimize Adverse Impacts to Pollinators. • APCM-9: Dust Control and Monitoring of Fugitive Dust Emissions within Tiehm's Buckwheat Subpopulations. • APCM-10: Remove Fencing and Debris from the three UNR Transplant Experimental Sites that are Located within Tiehm's Buckwheat Critical Habitat. • APCM-11: Utilize Blasting Mats When any Blasting is to Occur in Proximate to Tiehm's Buckwheat Subpopulations and Trims Blasting Techniques and Charge Delays. • APCM-12: Demographic and Recruitment Monitoring. • APCM-13: Develop an ERTI-Specific Environmental Awareness Program for Project Employees, Contractors, and Guests. • APCM-14: Monitor Stormwater Control Measures for Project Activities Located in or with the Potential to Discharge. • APCM-15: Critical Habitat Subpopulation Monitoring. • APCM-16: Monitor Insect Visitor and Pollinator Diversity and Abundance. • APCM-17: Monitor Noise Proximate to Tiehm's Buckwheat Subpopulations. • APCM-18: Develop an Ex-Situ Conservation Program in Cooperation with the USFWS and BLM.

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Figure 3. Disturbances from exploration activities conducted by Ioneer in 2019 (top, A.) and 2024 (bottom, C.). Saltlover was not yet established in 2019 (C), but became established subsequent to exploration activities (A.). The exploration disturbance served as a vector for the spread of saltlover into occupied habitat (B & D). Photos taken at the north edge of subpopulation 6B looking northeast.

Efforts to re-establish plant cover and mitigate impacts from mining exploration have not been effective to date, leading to continued degradation of critical habitat including the integrity of pollinator communities and native vegetation. For example, the exploration activities near subpopulation 6B created a zone of disturbance that has facilitated the spread of *Halogeton glomeratus* (salt lover) into occupied habitat (Fig. 3, Fraga 2021b). The North and South OSF Alternative outlined in the DEIS would be 151 times larger than the 15 acres of existing disturbance, and operations would be more than 20 years longer in duration (23 years of total mine life). The magnitude of the proposed daily operations relative to the exploratory activity is difficult to quantify but it would likely be orders of magnitude larger with pit blasting, increased haul road traffic including over 1,000 truck trips daily, air pollution, and the creation of 250 ft tall mining waste piles, among the many disturbances that would present adverse effects.

The proposed reclamation measures outlined in the Plan are either wholly untested, known to be challenging and largely unsuccessful, or are inappropriate for an arid-lands ecosystem which is well known for high levels of difficulty in restoration, especially within mining sites (Svejcar et al. 2017 p. 82; Sheoran et a. 2010 p. 2). More discussion on the inadequacies of the proposed restoration measures can be found below in Pollinator Habitat Reclamation is Unproven and Impacts of Invasive Species in Critical Habitat.

Impacts from dust deposition within the critical habitat

Dust deposition is known to have a significant impact on plant health by limiting reproduction, reducing light availability, CO2 uptake, and thus reducing photosynthetic capacity (Wijayratne et al. 2009, Lewis et al. 2017, Waser et al. 2017). It can also reduce transpiration leading to higher leaf temperatures and reduced water use efficiency (Sharifi et al. 1997, p. 844). Particulate matter deposited directly to the soil can influence soil chemistry and nutrient cycling, potentially having effects on the soil microbiome near the rhizosphere (Grantz et al. 2003 p. 228). A prior study found plants growing within 1 km of unprotected mining stockpiles were in degraded habitats and highly impacted by dust deposition (Padgett et al. 2007). Another study examined plants 100 to 700 meters from heavily used roads used for oil and gas development in the Uinta Basin, Utah and found dust impacts to fruit set across all distances examined (Lewis et al. 2017 p. 436).

The Project has the potential to greatly increase the quantity and rates of dust deposition on plants of Tiehm's buckwheat from the construction of new facilities, use of access and haul roads, and blasting a 960 ft mere feet away from occupied habitat (Fig. 2). The new haul and access roads would transport 150-ton trucks traveling 35 mph, up to 1,050 times daily and would be less than 60 m from subpopulation 3 and less than 300 m from subpopulation 1 (Fig. 2). The open pit would be closest to the southern subpopulations, and blasted just 44 ft and 114 ft from subpopulations 3 and 6 respectively.

To examine the potential effects of dust deposition on Tiehm's buckwheat, the Plan references several studies including a study on *Astragalus jaegerianus* (Lane Mountain milkvetch), a rare and federally listed herbaceous perennial in the pea family (Fabaceae; BLM 2024b p. 59). That study found that shoot growth declined, but that plants recovered from experimental dusting one year after application and following heavy winter rains (Wijayratne et al. 2009). The Plan notes that "As a perennial herb we suspect Tiehm's buckwheat will have the same resilience." (BLM 2024b p. 60). However, Lane Mountain milkvetch is a herbaceous perennial that twines up through shrubs and dies back completely to the ground during the hot summer months (USFWS 2008 p. 5; Fig. 4). In contrast, Tiehm's buckwheat is a low growing cushion buckwheat that remains above ground, and it is photosynthetically active throughout much of the calendar year (Fig. 4), going dormant in the late fall and winter months (USFWS 2022a p. 15). It would be an erroneous assumption to imply that these two species, with different life history strategies, would respond similarly to dust deposition. Tiehm's buckwheat occurs in sparsely vegetated habitats with no overstory, whereas Lane Mountain milkvetch occurs within other host shrubs that provide structural support and some cover (USFWS 2008 p. 5; Fig. 4). As such, dust deposition could have a more significant impact on the physiology and reproduction of Tiehm's buckwheat plants compared to Lane Mountain milkvetch.

Figure 4. A. Tiehm's buckwheat in flower on September 11, 2021 and B. Lane Mountain milkvetch in fruit on April 29, 2010.

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		The primary method proposed in the DEIS to mitigate fugitive dust is to irrigate roads (BLM 2024b). The DEIS specifies a goal to achieve 95% control efficiency as part of the overall Air Quality Impact Assessment (BLM 2024b p. 59) which would require an application of 0.8 L/m2 of water every 35 minutes in the winter and 26 minutes in the summer during peak years of haul road traffic (BLM 2024 p. 58). This amount of water has the potential to significantly increase the spread of invasive plant species across the project area, including *Lepidium draba* (tall whitetop), which is a class C noxious weed and is known to occur at Cave Spring (see Impacts of Invasive Plant Species to Critical Habitat below). The frequent use of water trucks would also increase truck traffic on roads near Tiehm's buckwheat populations, thereby increasing particulate pollution such as nitrogen deposition. Nitrogen deposition is well known to exacerbate the spread of invasive plants (Valliere et al. 2017). The potential effects of nitrogen deposition on Tiehm's buckwheat and its habitat has not been analyzed in the DEIS, including the amount of nitrogen per hectare that would be estimated to be deposited within critical habitat during peak traffic years. No mitigation measures specific to nitrogen deposition were outlined in the Plan (BLM 2024b). *Impacts to pollinators within the critical habitat* The genus *Eriogonum* (wild buckwheat) is one of the most species-rich genera in North America, yet little is known about pollination biology across the group (James et a. 2014). . Self-compatibility has been documented in some species of wild buckwheat, although rare species of *Eriogonum* are known to be primarily outcrossing, and several species are known to attract a large diversity of pollinators, including beneficial insects (Neel et a. 2001, James et al. 2014). Habitat loss, modification, and fragmentation have severe consequences not only for rare plant populations, but also for their pollinators. Fragmentation of habitat can further impact plant reproduction, including seed set and recruitment by reducing pollinator communities and limiting pollinator service (Tepedino et al. 2011, Neel et al. 2001). Reduction and limitation of pollinator service can be detrimental to rare plant populations that rely on cross pollination for successful reproduction and recruitment of fit offspring. For example, a change in pollinator availability and behavior could lower outcrossing rates in self-compatible species. Decline of rare plant populations can also be further exacerbated by the number and kinds of pollinators that are available to pollinate flowers. A study investigating arthropod and pollinator diversity and abundance in Tiehm's buckwheat was initiated in 2020 (McClinton 2022a). Sampling for arthropod diversity and abundance and observations of flower visitation were documented at two Tiehm's buckwheat subpopulations and compared with two adjacent sites where Tiehm's buckwheat does not occur. In addition, flowers were bagged to test for the ability of Tiehm's buckwheat to produce seed via self-pollination (self-compatibility). The study found that Tiehm's buckwheat receives a relatively large number of insect visitors when flowers are open in May and June. Like many other species of Eriogonum, Tiehm's buckwheat appears to be pollinated by a diversity of generalist species, with 12 orders, 73 families and 130 species documented at Tiehm's buckwheat sites in just one season of sampling. Temporal variation in arthropod composition and abundance was also documented indicating that there could also be interannual variation of the arthropod community. Generalist pollinators are important in pollinator communities because they are known to increase pollinator network connectivity and contribute to the overall structure and stability of pollinator networks (Cusser and Goodell 2013). Abundance and diversity of arthropods was similar between the occupied and unoccupied Tiehm's buckwheat sites. This is significant because the Tiehm's buckwheat habitat is largely dominated by Tiehm's buckwheat itself, and plant species that co-occur and form any significant cover are primarily wind pollinated and are not insect pollinated (e.g *Atriplex confertifolia*, *Hilaria jamesii*, *Sporobolus airoides*, and the exotic invasive *Halogeton glomeratus*). The adjacent sites have higher species richness and cover of other insect pollinated species, indicating that Tiehm's buckwheat disproportionately supports arthropods within its habitat. In addition, the report notes that the diversity of insects at Tiehm's buckwheat sites was remarkably high when compared to studies of other wild buckwheats, including *E. crosbyae* and a study of beneficial insects in *Eriogonum* in Washington (McClinton et al. 2022a, James et al. 2014). Open pollinated flowers of Tiehm's buckwheat produced a higher seed set than those flowers that were bagged and excluded from pollinators, indicating that it is self-compatible, but that pollinators greatly increase seed production. Thus, pollinator diversity and abundance is essential to facilitate outcrossing and is critical to reproduction in Tiehm's buckwheat. A recent study detected negative effects to pollinator communities in the Mojave Desert due to anthropogenic disturbance including habitat fragmentation and modification (Grodsky S.M. et al. 2021). Significantly lower species richness and counts in non-bee insect flower visitors were detected within disturbed areas when compared to non-disturbed areas. Further, the study found that disturbance of desert soils such as compaction and erosion and removal of vegetation during site preparation affected the cover of desert plant species as much as seven years post-construction (Grodsky et al. 2021). Pollinator abundance and species richness are tightly associated with abundance and diversity of plants, and decrease with distance from high quality habitat (Cusser and Goodell 2013). Thus, establishing a buffer that is large enough to maintain high quality habitat is essential to maintain diverse pollinator communities. Habitat protection and protection of areas surrounding the Tiehm's buckwheat sub-populations will be important to encourage insect diversity and abundance, to promote outcrossing within and between subpopulations, and to reduce self-pollination Tepedino et al. 2011, Neel et al. 2001). Pollinators are highly sensitive to disturbance (Borchardt et al. 2021). Designating a sufficient buffer to ensure ecological security, including maintenance of the pollinator communities will be essential to maintain genetic diversity within and between populations. Considering the flight distance of potential floral visitors is an important factor to evaluate the potential impacts of disturbance, especially with regard to establishing an appropriate buffer size that is sufficient to maintain pollinator communities. Distances as short as 100 m to disturbed areas have been documented to serve as a filter, reducing pollinator diversity by eliminating nesting habitat or other essential resources. Plant-pollinator networks have also been shown to be temporally dynamic and thus protecting areas of sufficient size will increase stability of generalist pollinator networks through space and time. *Cumulative impacts within the critical habitat* Due to the extremely narrow global range of Tiehm's buckwheat and the scale of the proposed project, the North and South OSF Alternative continues to pose existential threats to the species including significantly altering subpopulations connectivity, habitat integrity, pollinator communities, and other ecosystem processes. The direct and indirect impacts of mining are of such magnitude, and taken in combination with other documented threats (e.g. competition with invasive species, dust deposition, impact to pollinator communities and co-occurring native plant species), the Project leaves Tiehm's buckwheat in danger of extinction throughout all of its range. To date, surveys of potential habitat have not yielded newly documented populations, and the known range remains essentially the same as reported in the 1993 surveys. Based on past and present surveys of potential habitat, it is unlikely that additional populations will be documented outside of the known range. The narrow range of the species combined with the external anthropogenic threats such as the proposed Project makes this species highly vulnerable to extinction. Therefore, protection of the entire 910 acres of critical habitat is essential to conserve sufficient habitat to support pollinator communities, potential future migration, and large enough populations to prevent inbreeding and genetic drift, thus supporting viable populations into the future.	

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		In order to avoid the worst impacts of mining from the Project or other future mining proposals, a one mile buffer of protection around Tiehm's buckwheat was proposed (CBD and Fraga 2021) in 2021. This would provide 4,015 acres of protected area surrounding the extant buckwheat populations. Tiehm's buckwheat is an extremely limited range plant species at risk of extinction, and occurs only on BLM-managed public lands in the Silver Peak Range. The proposed Rhyolite Ridge Area of Critical Environmental Concern would protect the species and a one-mile buffer, providing essential protection to help prevent its extinction.	
108 and 183	108.35 and 183.34	**Plan to Control Non-Native, Invasive, and Noxious Species Treatment Plan is Not Developed** Applicant Proposed Conservation Measure (APCM)-7 specifies the control of nonnative, invasive, and noxious species as a protection measure for Tiehm's buckwheat. However, a plan is not available for review in the DEIS. Instead the protection measure states that "*a weed monitoring and control plan will be developed prior to the implementation of the Project construction in coordination with the Weeds Coordinator at BLM NVSO and USFWS* (BLM 2024b p. 35)". The spread of invasive species has been identified as a major threat to Tiehm's buckwheat (Fraga 2021b; USFWS 2022a) and is a known as a major threat to rare plant species in Nevada and globally (Dangermond et al. 2010 p. 2266; Heintz et al. 2019 p.180; Lughadha et al. 2020 p. 397; McClinton et al. 2022b p. 10). Invasive plant species can interfere with plant reproduction, decrease establishment of native plant species, change disturbance regimes and or soil chemistry, and compete for resources and space (Dangermond et al. 2010 p. 2266 ; Heintz et al. 2019 p.180; McClinton et al. 2022 p. 5). Prior surveys have established that mining exploration conducted by Ioneer has facilitated the spread of non-native and invasive plant species within occupied and critical habitat for Tiehm's buckwheat (Fraga 2021b). An implementation and weed management plan is needed to ensure Tiehm's buckwheat is protected from further spread of invasive species, including possible new invasions from mining activities, while simultaneously protecting the species from treatment methods. With no plan to review, we find the DEIS to be insufficient as it does not adequately account for protection measures that need to be in place and reviewed prior to project approval. Further, because a plan has not been included the public do not have an opportunity to fully comment on the proposed use of chemical herbicides in an environmentally sensitive area. *Impacts from the spread of invasive species within critical habitat* Exploration has already significantly increased the spread and cover of invasive plant species within Tiehm's buckwheat critical habitat including *Halogeton glomeratus*, *Salsola australis*, and *Amaranthus albus* (Fraga 2021b; Fig. 5). *Halogeton glomeratus* (saltlover) in the Chenopodiaceae, is an invasive plant species that currently occurs across all subpopulations of Tiehm's buckwheat (BLM 2024b p. 8). Salt lover is well established in mining exploration sites including drill sites, well pads, graded roads, and other disturbance areas within the Project boundary (Fraga 2021b; BLM 2024b Attachment D, Cedar Creek Plant Cover Memoranda, Table 1). *Salsola australis* (tumbleweed) in the Chenopodiaceae has been documented spreading from exploration disturbance into subpopulation 6B and subpopulation 1 (Fraga 2021b). *Amaranthus albus* (pigweed amaranth) in the Amaranthaceae was documented spreading from disturbed exploration areas near subpopulations 1 and 2 (Fraga 2021b). Overall non-native plant cover has increased in areas where exploration activities took place in 2019, especially at the north end of subpopulation 6 near test wells, on the exploration road between subpopulations 4 and 5, and along the access road in between subpopulations 1 and 2 (Fraga 2021b, Fig. 3). Morefield (1995, p. 13) did not document these invasive plant species in Tiehm's buckwheat subpopulations, but salt lover is now known across all subpopulations (BLM 2024b).  **Figure 5**. *Eriogonum tiehmii* (Tiehm's buckwheat) surrounded by *Halogeton glomeratus* (saltlover) on May 21, 2020. A study examining leachate of saltlover mulch found significant soil alteration including: increases in pH, exchangeable sodium, potassium, magnesium, electrical conductivity, and decreases in water percolation (Kinsinger and Eckert1960). High salts are known to inhibit micro-organisms aiding nitrification, which depresses plant growth. Salt lover does not form mycorrhizal associations and does well in mine waste (e.g. overburden) with diminished or eliminated vesicular-arbuscular mycorrhizae present in overburden soils (Paveck 1992). While research has been conducted on soil texture and mineral composition of occupied and unoccupied soils for Tiehm's buckwheat, very little is known regarding the soil microbiome that supports Tiehm's buckwheat which is likely to provide key insights into plant health and its distribution. At least four additional non-native plant species are known to occur within the Project area: *Chlorispora tenella* (crossflower, Brassicaceae), *Descurania sophia* (flixweed), *Lepidium draba* (tall whitetop), and *Rumex crispus* (curly dock) (https://www.inaturalist.org/observations?project_id=129835). *Lepidium draba* (synonym: *Cardaria draba*) is rated as a Noxious Category C Weed in Nevada indicating that it is already established and widespread in many areas and it is subject to active eradication (NDA 2024). The non-native plant species listed above appear to be currently limited to the vicinity of Cave Spring within the Project boundary. However, under the preferred alternative they are likely to spread, especially along haul roads, due to the large amounts and high frequency of water application that is proposed to occur to reduce fugitive dust (BLM 2024b p. 58). Ioneer proposes to achieve 95% control efficiency as part of the overall Air Quality Impact Assessment (BLM 2024b p. 59) which would require an application of 0.8 L/m2 every 35 minutes in the winter and 26 minutes in the summer during peak years of haul road traffic (BLM 2024b p. 58). This amount of water is significant and would increase the spread of invasive plant species across the Project area that might otherwise be limited to Cave Spring.	The Buckwheat Protection Plan: Applicant Proposed Conservation Measures for Tiehm's Buckwheat and its Critical Habitat (July 2024) provides specific details on noxious and invasive weed control regarding pollinator habitat reclamation. The EIS contains detailed effects analysis of the spread of invasive species on Tiehm's buckwheat and designated critical habitat in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER.
108 and 183	108.36 and 183.35	**Construction of Fencing and Restriction of Public Access Threatens Independent Research and Monitoring of Tiehm's Buckwheat** The North and South OSF Alternative identifies 19,342 linear feet of fencing in the area of planned disturbance and 22,400 linear feet of fencing in otherwise undisturbed areas for a total of 41,742 linear feet of fencing or 8.4 total miles of fence (BLM 2024b p. 19). In addition to fences, locked gates would restrict public access and limit independent monitoring, research, and assessment from conservationists and researchers. Environmental advocates and independent researchers have played an essential role in identifying threats, conducting surveys, documenting invasive species, and pursuing legal frameworks for protection and long-term conservation of Tiehm's buckwheat. This includes successfully petitioning the species for Endangered Species Act listing, pursuing legal remedies to terminate harmful mining exploration activities, on-the-ground threats assessment including identifying and documenting cattle trespass, OHV trespass, invasive species (Fraga 2021b), and mining exploration misconduct (CBD 2023), and establishing the first total census of Tiehm's buckwheat after a major disturbance event (Fraga 2021 a, USFWS 2022a).	Impacts to access are described in EIS Section 4.13. The public will continue to be able to access the Tiehm's buckwheat and critical habitat. Because the area is adjacent to the proposed active quarry, coordination with Ioneer should occur for safety and to comply with MSHA regulations. Any studies on the Tiehm's buckwheat would be required to be coordinated through the USFWS, under the ESA.

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		Public access is essential for efficient population assessment and for independent long-term monitoring, and identification of new and emerging threats. The Project proponent was found to be out of compliance during exploration activities in 2023, when they conducted unauthorized activities within critical habitat.(CBD 2023). Having controlled gated access would limit transparency and erode public confidence and efficient access of subpopulations towards gathering knowledge of the status of a federally protected species on public lands. It is well established that an increase in transparency helps improve the public's trust in government (U.S. Office of Government Ethics 2024). Ultimately limiting access to the proposed Project area will lead to adverse impacts to Tiehm's buckwheat and its long-term conservation.	
108 and 183	108.37 and 183.36	**Pollinator Habitat Reclamation is Unproven.** In the Plan, APCM-6 focuses on the development of a pollinator habitat reclamation program with the stated goal to support the restoration of ecosystem processes and function. The Plan indicates that "*the reclaimed ecosystem is not expected to be similar to the undisturbed native ecosystem in critical habitat*" (BLM 2024b p. 20). At best the restoration methods outlined in the Plan lack feasibility, and at worst they are wholly inappropriate for arid lands ecosystem reclamation, especially for sensitive rare plant habitat. Specifically, the use of dozers to track in seeds, the use of hydroseeding which is frequently found to be ineffective (Abella et al. 2012, Clemente et al. 2016), and the use of excessive amounts of mulch which are at suggested levels for agricultural application are wholly inappropriate for desert ecosystem restoration (NRCS 2002). It is well documented that arid land ecosystem restoration is challenging with high rates of failure due to the difficulty of treating non-native species and low native plant establishment (Jonas et al 2018 p. 177; Svejcar et al. 2017 p. 81). Given the lack of a pilot study or any proof of concept, it is a highly speculative proposition to initiate disturbance prior to establishing effective restoration activities in a highly sensitive habitat. Comments from the agencies indicate that this is a concern and after careful review of the Plan, it appears that many of these concerns have yet to be addressed. For example, a comment from USFWS in comment matrix for the Draft Buckwheat Protection Plan issued June 16, 2023 (BLM 2024c) states: *"We recommend a substantially earlier phasing of reclamation in the project plan. Vegetation establishment techniques should be explored* ***now****. Seed collection of common species should be happening this year and multiple subsequent years from now. This seed should be cleaned, and either sent to agricultural increase (grasses and forbs) or plug* *establishment in a greenhouse setting (shrubs). Validation and effectiveness should not wait until damage has be done to determine if techniques are successful or not."* The DEIS indicates that reclamation efforts would be initiated in **year 3 to 18** of mine operations or after the initiation of habitat alering disturbance (BLM 2024b p. 24) without assurances of feasibility, metrics for success, or ground-tested methods. Further, review of the pollinator habitat reclamation plan identifies several issues with the proposed methods outlined below. 1. Growth media used for pollinator habitat reclamation within critical habitat will consist of salvaged and stockpiled materials (BLM 2024b p. 24). Alternative growth media is identified as material removed from the quarry footprint and is essentially mine waste. Soil reclamation is a complex process and the existing Plan lacks details on methods to adequately review effectiveness (Sheoran et a. 2010 p. 14). 2. The plan to create a living topsoil stockpile is extremely vague, with a lack of detail on methods for minimizing weed establishment and the purpose of seeding while it is stockpiled. Stockpiling of topsoil in mounds during mineral extraction has been shown to affect the biological, chemical and physical properties of soil (Sheroan et. al. 2010 p. 12). There are no citations referencing existing studies where these methods have been piloted and are successful. The feasibility of the topsoil and stockpile preparation is dubious, lacks scientific credibility, and is not a well-established procedure. 3. The target plant species list (BLM 2024b p. 29) for reseeding is based in part by vegetation surveys conducted at the site and recommendations made by the Service, however there are no explicit plans as to how to ensure that appropriate seed will be procured including a seed collection plan. While the majority of the species listed are known to be native to the region, a non-native *Penstemon* is still listed. *Penstemon laevis* which is native to northern Arizona and southern Utah is inappropriate for the list given the number of native *Penstemon* species at the site and their propensity to hybridize (BLM 2024b p. 29). 4. Broadcast seeding is proposed and widely known to be ineffective. Abella (2012) found that when comparing seeding to containerized planting that seeding efforts failed to establish new plants, despite protecting seeds from granivory, and irrigating. In addition some of the methods for seeding may be inappropriate, for example "Broadcast-seeded areas may be dozer-tracked perpendicular to the slope to cover the seed" (BLM 2024b p. 28). There is no evidence that this is effective and will cause soil compaction and increased erosion. 5. The levels of mulch suggested for use in hydroseeding are similar to levels recommended for agricultural fields at 2 tons per acre and are inappropriate for restoration in arid land ecosystems to support native plants (BLM 2024b p. 29). In a technical guide developed by the National Resource Conservation Service (NRCS 2002), criteria for mulching for grass and legumes crops include adding "*approximately 1-1/2 to 2 tons of dry material (straw, hay, etc.) to the surface after fertilizing and seeding. (Eight tons of manure will have about the same effect as two tons of straw.)*". This was identified in a comment by the BLM in the comment matrix but was not addressed in the DEIS (BLM 2024c p. 5). 6. The Plan suggests that when hydroseeding is used "*seed, fertilizer (if the analytical data support its use) and mulch (about 250 pounds per acre) will be sprayed in one application. A second application will be required to spray the remainder of the cellulose fiber mulch (to achieve a total of about one ton per acre) and a tackifier (at the manufacturer's recommended application rates*" (BLM 2024b p. 28). In addition "*Strawmulch will be applied at a rate of up to two tons per acre on steeper slopes where conventional broadcast methods are used*." (BLM 2024b p. 29). The BLM comment on the proposed quantity of mulch states that "*The seeding methods listed are not entirely appropriate for the environment and are unlikely to be successful as written. For instance, drill seeding would likely be more successful, hydroseeding has demonstrated very low success in wild environments (likely due to the unnecessary mulch and fertilizer), mulching at this high rate is an unusual practice in the deser* *t, and harrowing* *would likely be more successful*." (BLM 2024c p. 5). These comments were not resolved in the DEIS. 7. The Plan cites a study by McCormick et al. (2019) as a model for containerized planting to support pollinators. The study investigates invertebrate floral visitor response to floral richness, floral abundance and distance between floral patches within newly planted pollinator restoration habitat in an arid ecosystem. A key finding from the study was that restoration plantings in support of pollinators must contain sufficient floral resources to support resident communities of pollinators over the season which is achieved by establishing patches within habitat instead of uniformly	The effects analysis for Tiehm's buckwheat presented in the EIS considers the proposed pollinator habitat reclamation program and its impacts to Tiehm's buckwheat critical habitat. APCM-6: Pollinator Habitat Reclamation within Critical Habitat was included in the July 2024 Buckwheat Protection Plan, which outlines the planning and design, implementation, and performance criteria, monitoring, and reporting for pollinator habitat reclamation.

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		distributed plantings across the habitat (McCormick et al. 2019 p. 1282). The planting design consists of concentric rings around a densely planted central garden (McCormick et al. 2019 p. 1283). Each 1 meter plot contained a density of 17 plants. The Plan in the DEIS proposes to use a density of 125 shrubs per acre for revegetation efforts (BLM 2024b p. 30), which is relatively low when compared to the densities used in the experiment, even when considering isolated patches. A density of 125 plants per acre would allow for approximately seven patches of similar density compared to the experiment, but does not factor in mortality which would need to be considered when scaling up an experiment. In addition the McCormick et al. (2019) study included insect pollinated annuals and perennials, which are important resources for pollinators but the proposed species list in the Plan includes only two annuals (BLM 2024b p. 29). A comment by the BLM states "*Perennial shrubs per acre is only one component of successful reclamation. Successful reclamation should be based on achieving similar vegetative cover, species richness and diversity as pre mining activities. The Cedar creek evaluation of vegetation in critical habitat could be used to establish baseline conditions and criteria for successful reclamation.*" (BLM 2024c p. 5). Ioneer responded with a comment that the primary purpose of the reclamation is to support pollinators, however incorporating annual and perennial herbaceous plants would be important to support pollinators (McCormick et al. 2019). 8. Specific timelines and plans to achieve desired vegetation cover (14.7 percent) are non-specific, vague, and unrealistic (BLM 2024b p 33). Given the issues cited above there is no indication that this level of plant cover for "final success" could be met and no timeline for "success" is given. Overall the Pollinator Habitat Reclamation Plan lacks clear methods, does not cite literature that would indicate feasibility at a landscape scale, and uses methods that are inappropriate for desert ecosystem restoration.	
108 and 183	108.38 and 183.37	**Buckwheat Protection Plan Relies on Unpublished Reports and Memos and Discounts the Best Available Science.** Industry funded research presents a potential conflict of interest, as it provides an opportunity for the sponsoring company to influence scientific results in favor of their proposed projects (Hall and Scott 2001, Nature 2001). If research outcomes do not align with desired results, corporate funders may seek to discredit, or suppress findings (Holzman 2021). Ioneer has gone to great lengths in an attempt to dispute and discredit the only available published scientific study focusing on Tiehm's buckwheat which they funded. The McClinton et al. (2022a) study identified Tiehm's buckwheat as a soil specialist that supports a relatively diverse assemblage of Arthropods. In comment matrix for the Draft Buckwheat Protection Plan issued June 16, 2023, the Service and the BLM identified that the Plan relied heavily on unpublished and non-peer reviewed reports and technical memos in an effort to discredit and counter the McClinton et al. (2022a) study. Comment from the Service: "*Much of the background evidence section of the report relies on internal reports and personal communications, while simultaneously dismissing the few peer-reviewed articles available on E. tiehmii or simply hand-picking tidbits from the McClinton report. This weakens the overall findings and conclusions of the plan.*" (BLM 2024c p. 2) "*USFWS is required to use the best available science. While the research, reviews, reports, and memos that have been commissioned by Ioneer over the past few years can contribute to our collective understanding of Tiehm's buckwheat, many documents referenced in the Protection Plan have not been provided to USFWS or BLM, do not provide detailed methods or locations of the studies, and/or are not peer reviewed.*" (BLM 2024c p. 2) Comment from the BLM: "*Overall, there is a lot of effort in this document to try to counter the SSA and McClinton et al study. The document often refutes the McClinton study but then cites the report in other locations. The full McClinton report is also not included. BLM must take into consideration all available information. USFWS provided a Draft Tiehm's buckwheat conservation measures for the proposed Rhyolite Ridge Project. This document does not incorporate several of these recommendations…*" (BLM 2024c p. 2) The emphasis on producing technical reports and research commissioned by Ioneer to counter the McClinton et al. (2022a) study fails recognize that the resolving the conflict between the proposed Project and efforts to conserve of Tiehm's buckwheat does not hinge on its status as a soil specialist or a species that supports a disproportionate level of arthropods. But instead the conflict centers on the magnitude of the proposed disturbance surrounding the global range of a single-site endemic, creating a scenario in which the proposed Project would cause extinction of Tiehm's buckwheat.	The July 2024 Buckwheat Protection Plan was revised in coordination with the BLM and USFWS, including incorporating recent studies and reports (i.e. best available science). Consideration of the BLM and USFWS comments were incorporated into the July 2024 Buckwheat Protection Plan.
108 and 183	108.39 and 183.38	**Translocation Efforts, Living Collections and Seed Collections Cannot Replace In Situ Conservation** Decades of scientific research support the need to protect plants in their native habitat as the best means of protection and long-term conservation, especially for single-site endemics (Harrison et al. 2008; Knapp et al. 2020). Further the Endangered Species Act states in Section 2(b) that its purpose is, "*to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved.*". While ex-situ or offsite conservation programs such as seed banking and greenhouse propagation are important tools necessary to support in-situ or onsite conservation, they should never be used to replace habitat or as an excuse to destroy habitat. Unfortunately, Ioneer continues to promote its propagation measures as a substitute for onsite conservation despite conservation best practices that call for protecting Tiehm's buckwheat in its native habitat (Guerrant et al. 2004). This raises the question of whether proposed plant translocation research can undermine protection strategies and the highest priority conservation outcomes (Fraga 2020). The Project fails to address onsite conservation and threatens to erode the reputation and effectiveness of conservation seed banks and propagation programs which are vital components to enhancing a species persistence in the wild. The Center for Plant Conservation (2019) provides guidelines regarding justification for rare plant reintroductions; pertinent guidelines as they relate to conservation from Tiehm's buckwheat. Plant translocation (moving plants to an alternative site) is never a substitute for conserving plant populations in their native habitat. This is well established in the plant conservation literature and it is stressed as a guiding principle in a plant reintroduction best practices manual compiled by the Center for Plant Conservation (page 152 section 4-4). See excerpt below. https://saveplants.org/wp-content/uploads/2020/12/CPC-Best-Practices-5.22.2019.pdf "*CPC does not support or promote reintroduction as an alternative to in situ ecosystem protection. All those working in plant conservation firmly agree that the priority is to conserve species in situ and to preserve wild populations in natural habitats in as many locations as possible. Reintroduction is never the first action to take for a critically endangered species, even when crisis is imminent. First steps for species in dire straits must be ex situ collection, threat control, and habitat management (Guerrant et al. 2004).*"	The Proposed Action and North and South OSF Alternative Tiehm's Buckwheat Protection Plans incorporate in situ conservation of the species.

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108 and 183	108.40 and 183.39	**DEIS has Inconsistencies and Errors Indicating a Flawed Analysis** There are several errors throughout the Plan that identify inconsistencies, poor quality of work, indicating a flawed analysis. Here are some of the errors I was able to find during my review of the DEIS and Plan. 1. The distance of the mining pit to occupied subpopulations is not consistent with GIS files provided for our evaluation by the BLM. The DEIS identifies distances of 44 ft and 114 ft to subpopulations 3 and 6 respectively, whereas an independent analysis identifies the open pit being as close as 15 ft to subpopulation 3 and 177 ft to subpopulation 6. 2. Communications with BLM indicated that " the haul road location is currently being adjusted by Ioneer based on the consultation process between the BLM and the U.S. Fish & Wildlife Service." during the public comment period for the DEIS. Plan revisions during the comment period indicate that perhaps the DEIS was rushed and released too early. 3. One page 4 of the Plan there is a citation with an empty bracket. It is unclear if a federal register number should have been included. 4. PBF is never defined in the Plan (BLM 2024b p. 46). If one was not familiar with terms frequently used by the Service, it would be impossible to know it refers to "Essential Physical and Biological Features of Critical Habitat." 5. The monitoring methods outlined in the census summary (BLM 2024b, Attachment A) are not fully described. The results of the population estimate were compared to the direct count as an evaluation of the accuracy of the method, but this was not described in the methods of the census survey. This was identified by the USFWS (BLM 2024c p. 6) and is said to have been addressed by Ioneer, but the methods are still vague and lacking in detail. 6. Several comments relating to the Pollinator Habitat Reclamation are still outstanding and have not been fully addressed, despite the fact that these comments were responding to a draft of the plan issued June 16, 2023 (BLM 2024c).	1) The distance of proposed disturbance to the nearest subpopulation has been updated to 15 feet. 2) Ioneer has continued to coordinate with the BLM and USFWS to minimize effects to Tiehm's buckwheat and designated critical habitat. Any changes committed to have been included in the Final EIS analysis. 3) The Buckwheat Protection Plan was updated in July 2024 and the empty bracket has been resolved to include 86 FR 29975. 4) PBF is the acronym for physical and biological features. This is defined in the July 2024 Buckwheat Protection Plan. 5) The Buckwheat Protection Plan was updated in July 2024 and includes monitoring methods for the census summary. 6) APCM-6: Pollinator Habitat Reclamation within Critical Habitat was included in the July 2024 Buckwheat Protection Plan, which outlines the planning and design, implementation, and performance criteria, monitoring, and reporting for pollinator habitat reclamation.
108 and 183	108.41 and 183.40	**Conclusions** Tiehm's buckwheat was listed as endangered under the ESA on December 16, 2022; concurrently, the Service designated 910 acres of critical habitat, which included a 500 meter buffer surrounding the entire global range (USFWS 2022a). Importantly, the ESA not only conserves species, but also the habitats upon which they rely, recognizing the interdependency of a species and its ecosystem. Specifically, section 7(a)(1) of the ESA charges Federal agencies to aid in the conservation of listed species, and section 7(a)(2) requires the agencies to ensure that their activities will not jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat (50 CFR §402). The best available science demonstrates that the North and South OSF Alternative described in the DEIS will both jeopardize the continued existence of Tiehm's buckwheat and adversely modify its critical habitat. As a single site endemic, Tiehm's buckwheat is inherently vulnerable to extinction (Chichorro et al. 2019 p. 225; Fahrig, 2001, p. 65; Knapp et al. 2021, p. 362; Purvis et al. 2000 p. 1949, Staude et al. 2019, p. 21). The Project would encompass the entire range of the species, irreparably harming 22% of the habitat deemed critical to its survival and causing adverse effects to the remaining 78% , ultimately having a major adverse impact on 100% of the global range of the species. The North and South OSF Alternative would place Tiehm's buckwheat on a direct path towards extinction. As currently proposed the Project would violate the ESA and contribute to our global extinction crisis. I urge the BLM to use the best available science and to select the **No Action Alternative**. The Project should not move forward as proposed to ensure the long term survival and conservation of Tiehm's buckwheat. In 2021, a petition to establish the Rhyolite Ridge Area of Critical Environmental Concern (ACEC) on BLM managed public land in the Tonopah Field Office was submitted (CBD and Fraga 2021). The proposed Rhyolite Ridge ACEC boundary includes all six subpopulations of Tiehm's buckwheat, and a one-mile buffer surrounding them, for a total of 4,015 acres. This proposal would be consistent with the No Action Alternative, as it would provide the opportunity to reclaim any roads or other disturbances from mining exploration that have already occurred. We also request that BLM should also deny any future requests to develop or extract locatable minerals within the proposed ACEC. This would be consistent with the purpose of the ACEC designation, BLM's special status species policy, and BLM's statutory mandate to prevent "unnecessary and undue degradation" of the public lands. (The Federal Land Policy and Management Act, 43 U.S.C § 1732(b).) In addition to prohibiting future mining development, BLM should take steps to re-acquire any interests in mineral rights within the proposed ACEC that may have already vested. The ACEC designation should also include management direction to reclaim any roads or other disturbances from mining exploration that have already occurred. Motorized travel, including OHV use, should be limited to existing, designated routes within the ACEC. Finally, BLM should develop appropriate and effective conservation and recovery measures for Tiehm's buckwheat.	In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS for the North and South OSF Alternative. Consideration of Area of Critical Environmental Concern (ACEC) designation is outside the scope of this analysis. Avoidance of all Tiehm's buckwheat critical habitat was considered as an alternative and is discussed in the SIR.
108 and 183	108.42 and 183.41	**Literature Cited** Abella,S.R. Donovan J Craig, Alexis A Suazo. 2012. Outplanting but not seeding establishes native desert perennials Native Plants Journal, 13 (2) 81-90; DOI: 10.3368/npj.13.2.81 Bureau of Land Management [BLM]. 2024a. Draft Environmental Impact Statement for the Rhyolite Ridge Lithium Boron Project. DOI-BLM-NV-B020-2021-0020-EIS. Bureau of Land Management [BLM]. 2024b. Supplemental Environmental Report 17: Threatened and Endangered Species. Appended to the Draft Environmental Impact. Statement for the Rhyolite Ridge Lithium Boron Project. DOI-BLM-NV-B020-2021-0020-EIS. Bureau of Land Management [BLM]. 2024c. USFWS & BLM Comment Matrix and Ioneer Response June 16, 2023Draft of the Buckwheat Protection Plan: Applicant Proposed ConservationMeasure. Appended to the Draft Environmental Impact. Statement for the Rhyolite Ridge Lithium Boron Project. DOI-BLM-NV-B020-2021-0020-EIS. Borchardt KE, Morales CL, Aizen MA, Toth AL. 2021. Plant-pollinator conservation from the perspective of systems-ecology. Curr Opin Insect Sci. ;47:154-161. doi: 10.1016/j.cois.2021.07.003. Center for Biological Diversity [CBD]. 2023. Re: Unauthorized Use and Occupation of Bureau of Land Management Lands; Adverse Modification of Critical Habitat; and Unlawful Use of a Categorical Exclusion from the National Environmental Policy Act. Submitted to BLM. Available at: https://www.biologicaldiversity.org/species/plants/pdfs/Tiehms-exploration-BLM-letter-011223.pdf	Comment noted.

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108 and 183	108.43 and 183.42	**Appendix B** Steven H. Emerman, Assessment of the Operating and Post-Closure Stability of the Open Pit at the Proposed Ioneer Rhyolite Ridge Lithium-Boron Mine, Esmeralda County, Southwestern Nevada (May 29, 2024). **Assessment of the Operating and Post-Closure Stability of the Open Pit at the Proposed Ioneer Rhyolite Ridge Lithium-Boron Mine, Esmeralda County, Southwestern Nevada** Steven H. Emerman, Malach Consulting, 785 N 200 W, Spanish Fork, Utah 84660, USA, Email: SHEmerman@gmail.com, Tel: 1-801-921-1228 Report prepared at the request of the Center for Biological Diversity Submitted May 29, 2024	Comment noted.
108 and 183	108.44 and 183.43	**ABSTRACT** The Draft Environmental Impact Statement (DEIS) for the proposed Ioneer Rhyolite Ridge lithium-boron mine in Esmeralda County, southwestern Nevada, would involve an open pit only 15 feet from the only population of Tiehm's buckwheat. The stability analyses in the DEIS argue that the Tiehm's buckwheat could not be impacted by slope instability neither during mine operation nor after mine closure (when buttresses would be constructed for additional pit slope stability). The calculated factors of safety cannot be regarded as reliable. Although the raw data that were used to develop the geotechnical parameters show considerable scatter, the geotechnical parameters and factors of safety are stated with no uncertainties and there is no sensitivity analysis. No source has been identified for the buttress material, so that the geotechnical parameters for the buttress are purely hypothetical. The DEIS chose a minimum factor of safety of 1.2 for both the operational and the post-closure periods. However, according to the Guidelines for Open Pit Slope Design (published by the Large Open Pit Project) and the SME Surface Mining Handbook (published by the Society for Mining, Metallurgy and Exploration), based upon the data uncertainty and the consequences of slope failure, the minimum factor of safety should be 1.5 and the maximum probability of failure should be 5% during the operational period (prior to buttress construction). Moreover, according to the Guidelines for Mine Closure (published by the Large Open Pit Project), based upon the same considerations, the minimum factor of safety should be 2.0 during the post-closure period (after buttress construction). Based upon the guidelines for calculating the Zone of Instability by the Western Australian Department of Industry and Resources, the minimum separation distance between the quarry and the Tiehm's buckwheat population ought to be 450 feet before buttress construction and 240 feet after buttress construction along the profile where the proposed quarry would be only 15 feet from the population. The assumption in the DEIS that the slope materials will remain unsaturated indefinitely does not consider the hydrogeological and meteorological processes by which the current state of saturation and over-pressurization was achieved, nor the time period over which re-saturation and re-pressurization could occur. The Adaptive Management plan lacks any specifics or details, and states the mine could be closed in response to an indication of slope instability, although without any apparent commitment on the part of the mining company. The recommendation of this report is that the geotechnical sections of the DEIS should be completely re-written.	Comment noted.
108 and 183	108.45 and 183.44	**EXECUTIVE SUMMARY** The Australian mining company Ioneer has proposed the Rhyolite Ridge Lithium-Boron Project in Esmeralda County, southwestern Nevada. The open-pit mine would operate for 26 years with average annual production of 22,340 metric tons of lithium carbonate in the first three years, 21,951 metric tons per year of lithium hydroxide over the remaining mine life, and 174,378 metric tons per year of boric acid over the entire lifespan. The proven and probable mineral reserves have been estimated at 60.2 million metric tons with average grades of 0.1797% lithium and 1.5418% boron. The Draft Environmental Impact Statement (DEIS) for the project was released by the Bureau of Land Management (BLM) on April 19, 2024. Although the DEIS refers to the open pit as a "quarry," its maximum depth would be 960 feet and "quarry" typically refers to a shallow excavation for the extraction of aggregate. Since this report compares the DEIS with mining industry guidelines, the words "quarry" and "open pit" are used interchangeably. A central issue regarding the potential environmental impact is the presence of the world's only population of Tiehm's buckwheat only 15 feet from the edge of the proposed quarry on the northern side. Thus, the DEIS includes geotechnical analyses that argue that the Tiehm's buckwheat could not be affected by instability of the mine pit slopes. The DEIS chose a value of 1.2 as the minimum factor of safety for both the operational and post-closure periods. The factor of safety is the ratio of the resistance to the load, so that a factor of safety of 1.0 indicates a slope at the cusp of failure, equivalent to 50% probability of failure. A report by Geo-Logic Associates, which was an attachment in the DEIS, updated previous stability analyses by considering six sections across the quarry, including TR02E-11, which is close to the population of Tiehm's buckwheat that has a separation distance of 15 feet from the quarry. The limit equilibrium method was used to show factors of safety for the operational period ranging from 1.20 to 1.26, thus satisfying the minimum value set by the DEIS. By adding buttresses to promote slope stability for the post-closure period, the factors of safety increased to the range 1.25 to 1.57. The stability analyses assumed that, after depressurization and dewatering, the slope materials would remain unsaturated indefinitely. The Adaptive Management plan called for the cessation of mining activity if monitoring indicated instability near Tiehm's buckwheat habitat. The objective of this report was to answer the following questions regarding the geotechnical analysis in the DEIS: 1) Are the calculated factors of safety reliable? 2) Was the choice of 1.2 for the minimum factor of safety appropriate for the operational period? 3) Was the choice of 1.2 for the minimum factor of safety appropriate for the post-closure period? 4) Was the Zone of Instability for open pits as specified in Western Australian guidelines properly taken into account?	A conservative approach was used for estimation of geotechnical parameters based on the materials encountered on site. Material properties are listed on Figure 3-5 of the GLA report. The material properties utilized in the analyses were derived from the EnviroMine (2019) report. The material parameters incorporated are conservative values based on the results of various laboratory tests. These conservative values provide a reliable foundation for the stability analyses, reducing the need for additional sensitivity analyses regarding the material properties. Materials Properties are listed on Figure 3-5 (GLA 2022). This conservative approach ensures that the safety factors used are robust and account for any potential variability in the material properties. Material properties are listed on Figure 3-5 of the GLA report. For the report completed by GLA, no new drilling and geotechnical tests were conducted. Instead, the geotechnical data were sourced from previous investigations and other available resources. Specifically, they relied on the geotechnical report prepared by EnviroMine in 2019 to obtain the necessary geotechnical parameters and details of the cross sections required for stability analyses. This existing report provided a set of data, eliminating the need for additional fieldwork or testing by GLA. The GLA report from 2022

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		5) Was the assumption that slope materials will remain unsaturated justified? 6) Is the proposed Adaptive Management plan adequate? To facilitate reading by non-specialists, this report includes a tutorial on key geotechnical concepts, including the limit equilibrium method, factor of safety, and probability of failure. Some information in the DEIS is inconsistent with information in other sources and the BLM has indicated that other information is already out of date. For example, the Tiehm's buckwheat population map in the DEIS, which was created by Ioneer, is not the same as the map used by the Center for Biological Diversity (CBD). In particular, the CBD map shows the closest separation distance between the Tiehm's buckwheat and the quarry to be 17 feet. According to the CBD map, subpopulations of Tiehm's buckwheat are found 380 feet, 332 feet, 283 feet, and 177 feet from the quarry on the western side. The Ioneer map places those same subpopulations 208 feet, 329 feet, 281 feet, and 165 feet, respectively, from the edge of the quarry. From a geotechnical standpoint, a critical issue is that BLM has stated that the position of the haul road is going to change, although the quarry as mapped has the exact dimensions to accommodate the haul road as currently mapped. Thus, if the position of the haul road changes, then the location of the quarry will also change, even though the location as shown in the DEIS was the basis for the stability analyses in the DEIS. No attempt was made in this report to document all inconsistencies or outdated information in the DEIS. The factors of safety that are calculated in the DEIS cannot be regarded as reliable. The geotechnical parameters for each geologic unit that are the input data for the stability analysis are stated with ultra-precision, sometimes with five significant digits, and with no range of uncertainty. Some of the geotechnical parameters were obtained from another consulting report that is not available for public review, while other parameters were simply the judgment of Geo- Logic Associates. The DEIS does not specify which parameters were developed from data and which were based on "judgment." The DEIS presents some of the raw data that were used to develop the geotechnical parameters, which show a very small number of measurements for each rock sample with a high degree of scatter. The calculated factors of safety are also stated as single values with no range of uncertainty. In particular, there is no sensitivity analysis that would show the range of possible factors of safety that could result from reasonably possible alternative values for the geotechnical parameters and there is no distribution of possible values for the factor of safety that would make it possible to estimate the probability of failure. In the same way, there is no sensitivity analysis that would show the range of possible locations of the critical failure surface that could result from reasonably possible alternative values for the geotechnical parameters. The DEIS does not identify any source or type of material for the buttress, so that the geotechnical parameters of the buttress should be regarded as strictly hypothetical. Failures of mine pit slopes are incredibly common in comparison with other types of industrial accidents. The mean annual probability of failure of a mine pit slope is about 6% with a range of 2-20%. The high failure frequency of mine pit slopes was part of the motivation for the writing of the Guidelines for Open Pit Slope Design by the Large Open Pit Project. According to the Guidelines for Open Pit Slope Design, for mine pit slopes with High consequences of failure, the minimum factor of safety should be in the range 1.3-1.5 and the maximum probability of failure over the entire design life (as opposed to an annual probability) should be 5%. Since the Adaptive Management plan calls for the cessation of mining activity as a response to slope instability affecting sensitive habitat, the consequences of slope failure at the Rhyolite Ridge mine should be placed into the High category (on a three-level scale of Low, Medium, and High). Another five-level scale for consequences of slope failure places closure of pit production for a significant period as Major consequences and permanent closure as Catastrophic consequences. The SME Surface Mining Handbook (published by the Society for Mining, Metallurgy and Exploration) has confirmed the recommendations of the Large Open Pit Project. The range of 1.3-1.5 for the minimum factor of safety depends upon the uncertainty in the input data with the upper end corresponding to high uncertainty. Based upon both the high data uncertainty and lack of attention to data uncertainty addressed above, the appropriate minimum factor of safety during the operational phase should be 1.5, which is significantly greater than the value of 1.2 that was chosen in the DEIS. The appropriate minimum factor of safety should increase in the transition from the operational to the post-closure period. Some industry publications have argued that the postclosure factor of safety should be greater than 2.0 or as high as credible with the probability of failure reduced to the ALARP (As Low as Reasonably Practicable) level. There are two principal reasons for the need to increase the minimum acceptable factor of safety. After pit closure, there will be a long-term degradation in the strength of the adjacent rock masses due to rewetting of the pit and the time-delayed responses to blasting and the radical changes in topography and stress levels that accompanied construction of the pit. For example, the removal of the weight of overlying rock could result in the slow opening of joints (cracks). Thus, the first reason is that there is considerable uncertainty as to the rate or degree to which the rock masses will degrade. There is even considerable theoretical uncertainty regarding the coupled interactions of erosion and slope instability and how those interactions are coupled with climate change. The second reason is that the post-closure period will see a reduction in or a complete lack of slope monitoring and trained on-site personnel, thus limiting the ability to detect and respond to changes in slope stability. It should be noted that, in addition to raising the minimum value of the factor of safety for the post-closure period, the factor of safety should be calculated based upon the anticipated future reduced rock strength, not the rock strength that exists during the operational period. In response to the above concerns, the Large Open Pit Project published the Guidelines for Mine Closure, which describe a procedure for determination of the appropriate minimum factor of safety for the post-closure period. The procedure involves the calculation of a Relative Stability Guideline (RSG), which is the product of the score for the Pit Wall Condition Class (on a scale of 1 to 7 with lower scores indicating more competent slopes), the Adjacent Impact Consequence (on a scale of 1 to 5 with higher scores indicating more severe consequences), and the Existing Design Confidence (on a scale of 1 to 5 with higher scores indicating less design confidence or greater data uncertainty). Since the pit slopes at the Rhyolite Ridge mine would have factors of safety slightly greater than 1.2 (although those calculations are highly unreliable, as explained above), the pit slopes would be placed into Pit Wall Condition Class C, corresponding to a score of 5. Pit Wall Condition Class C is described in the Guidelines for Mine Closure as "unvegetated slopes with uncontrolled rockfall risk and undesirable risk of failure" with a "high level of concern." In terms of failure consequences, the Guidelines for Mine Closure do not address the irreplaceable loss of biological resources, but other five-level consequence classifications, such as the Global Industry Standard for Tailings Management place accidents with "catastrophic loss of critical habitat or rare and endangered species" into the most severe category of Extreme consequences. Thus, a score of 5 for Adjacent Impact Consequences, corresponding to Very High consequences would yield an RSG score of 25 multiplied by the score for Existing Design Confidence. The Guidelines for Mine Closure require a minimum factor of safety greater than 1.5 for RSG in the range 20 to 50 and a minimum factor of safety greater than 2.0 for RSG in the range 50 to 100. On that basis, the minimum post-closure factor of safety of 1.2, which was assumed by the DEIS, would not be appropriate even if the Existing Design Confidence could be raised to the level of Very High (corresponding to a score of 1). The Existing Design Confidence is certainly not at the level of Very High, based on the low-quality geotechnical data that are currently available. If the Existing Design Confidence could be raised to a level of Medium with a score of 3, then the RSG score would be 75, which would demand a post-closure factor of safety greater than 2.0. In summary, the appropriate minimum factor of safety for the postclosure period would be 2.0 with the factor of safety calculated based on the anticipated future degraded rock strengths. The Department of Industry and Resources (Western Australia) has detailed guidelines for calculating the post-closure Zone of Instability. There is no application of these or similar guidelines or any corresponding discussion of the width of the unstable zone anywhere in the DEIS. The Western Australian guidelines specify that a safety bund wall with a width of 5 meters should be constructed at least 10 meters outside of the Zone of Instability, so that the safe region begins 15 meters (roughly 50 feet) beyond the Zone of Instability. The calculation involves connecting a line from the toe of the pit to the surface with an angle of 45° for unweathered (strong) rocks and an angle of 25° with respect to the horizontal for weathered (weak) rocks. Some studies have shown the calculation procedure to be insufficiently conservative (insufficiently protective) because some pit slope failures have resulted in breakback angles significantly less than 25°. In the application of the Western Australian guidelines to the Rhyolite Ridge mine, all rock units at the stratigraphic level of geologic unit B5 of the Cave Spring Formation or higher were regarded as weak based on the description of the units in the DEIS. In the absence of any information, the unknown buttress material was also regarded as weak or weathered. The widths of the Zones of Instability were calculated for the same six sections for which stability analyses were updated in the DEIS. All widths were reduced when a buttress was added to the section, except in the single section in which there was no Zone of Instability even without a buttress. Thus, the widths ranged from 0 to 450 feet without a buttress and from 0 to 225 feet with a buttress. Adding 50 feet to establish a safe region resulted in safe regions ranging from 50 to 500 feet upslope from the edge of the quarry without a buttress and 50 to 275 feet upslope from the	incorporates the test results from the EnviroMine (2019) report, which includes a variety of tests such as direct shear tests, uniaxial compressive strength tests, triaxial tests, and Brazilian tensile strength tests, among others. These tests provide a thorough characterization of the material properties, ensuring that there is no uncertainty regarding the material properties used in the stability analyses. The availability of these detailed test results and laboratory reports means that the data used are robust and reliable, thus supporting the conclusions drawn in the GLA report. To address the uncertainty in material properties, GLA utilized the values provided in the previous report by EnviroMine for their initial analyses. These values offer a baseline for understanding the geotechnical characteristics of the site. The effect of watering the surface for dust control purposes is not significant and does not warrant analysis in the slope stability assessments for mine closure. This means that the water used to control dust on the mine surface does not appreciably affect the stability of the mine slopes. Therefore, including this factor in the slope stability analysis is unnecessary. The primary concern of dust control is to minimize airborne particulates for environmental and health reasons, which has minimal impact on the geotechnical stability of the slopes. GLA undertook a full assessment by examining various cross-sections throughout the mine site. They conducted multiple stability analyses on different walls to ensure a thorough evaluation of the mine's stability. These analyses are detailed in the geotechnical report by GLA (2022). The report includes stability assessments for 19 distinct sections of the mine walls, the results are documented in the report. Also, the details and outcomes of these analyses are presented in Appendix G of the report. This extensive examination of multiple cross-sections ensures that all critical areas of the mine are evaluated, providing an understanding of the overall stability and safety of the mine site during and after closure. GLA did not use Guidelines for Mine Closure published by the LOPP, which is mentioned here in the comments as the reference. Geo-Logic Associate used Chapter 9 of "Guidelines for Open Pit Slope Design" (Read & Stacey, 2009) for design criteria, which is one of the sources typically used in US. The "Guidelines for Open Pit Slope Design" by Read and Stacey (2009) does not explicitly provide a fixed minimum Factor of Safety for mine closure and post-closure periods. Instead, it emphasizes that the acceptable Factor of Safety should be determined based on specific site conditions, the nature of the materials, and the risk associated with potential slope failures. Typically, the guidelines suggest a more conservative Factor of Safety for the post-closure period compared to the operational period, acknowledging the long-term stability requirements and potential consequences of failure. This level of safety is deemed sufficient based on geological assessments and historical data, making it a practical and economically viable choice for mine closure operations. It allows for the allocation of resources towards other critical areas of the closure plan, ensuring a comprehensive and financially sustainable approach. Furthermore, the effectiveness of a 1.2 Factor of Safety is reinforced by GLA's proposed methodologies for slope monitoring. Continuous and advanced monitoring techniques are integral to detecting any potential instabilities in real-time, thereby preventing slope failures during and after the mine closure process. These monitoring strategies include the use of instruments like inclinometers, piezometers, and radar systems, which provide precise and timely data on slope movements and groundwater conditions. With proactive monitoring in place, a Factor of Safety of 1.2 can ensure the long-term stability of mine slopes, as any signs of potential failure can be addressed promptly, thereby maintaining safety and structural integrity throughout the closure phase.

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		edge of the quarry with a buttress. It is most important that Section TR02E-11, which is closest to the population of Tiehm's buckwheat that has separation distance of 15 feet from the quarry, has a Zone of Instability of 400 feet, with the safe region beginning 450 feet from the edge of the quarry. In other words, the Zone of Instability at Section TR02E-11 would extend far into the population of Tiehm's buckwheat. It should be noted that, according to the Western Australian guidelines, the Tiehm's buckwheat population that has a separation distance of 15 feet from the quarry could not be in the safe region even if there were no Zone of Instability (setting the safe region at 50 feet beyond the edge of the quarry). The mining plan involves the depressurization and the dewatering of the geologic units prior to construction of the quarry. The DEIS expresses the opinion that the slope materials will not be rewetted even by extreme precipitation or snowmelt events because the water will infiltrate to a very shallow depth and then evaporate. The preceding is only an opinion because it is not accompanied by any data, calculations or modeling. In particular, there is no consideration as to the hydrogeological and meteorological processes by which the geologic units became saturated and then pressurized in the first place. Thus, it should be assumed that the relevant geologic units will eventually become re-saturated and re-pressurized and there should be some consideration as to the time period over which this will occur. In addition, there should be some consideration as to the localized impact of the large volume of water that will be applied to the haul roads for dust suppression. Along the same lines, there should be some consideration as to the impact of the weight of vehicular traffic on the haul roads on slope stability. At the present time, nearly all large-scale mining projects involve the application of an Adaptive Management plan (also called the Observational Method). For complex projects, not all actions can be planned in advance. Instead, a monitoring program is set up together with a set of pre-planned actions ready for execution as a response to every possible adverse observation. The DEIS does describe a plan for monitoring slope instability, but only in terms of the particular instruments that will be used. The description of pre-planned responses to indications of instability consists of a single sentence that states that the mining activity could cease in response to any evidence of slope instability that could affect sensitive habitat. It is difficult to determine whether the assertion is meant to be taken literally, since it is found in a report by Geo-Logic Associates that is an attachment to the DEIS, and certainly does not represent a binding commitment by the mining company. The recommendation of this report is that the geotechnical sections of the DEIS be completely rewritten with special attention to the following: 1) A specific source should be identified for the buttress material with estimation of the geotechnical parameters for that particular source. 2) All of the raw geotechnical data should be presented with a complete explanation as to how those data were used to develop the geotechnical parameters. 3) The DEIS should specify which parameters were developed from data and which were based on judgment. Parameters that were based on judgment should be rigorously defended. 4) The discussion of the geotechnical parameters should include the uncertainty in the parameters. 5) The calculated factors of safety should include the uncertainty, such as the standard deviation. 6) A sensitivity analysis should be carried out in which the factor of safety for each section is re-calculated based on the entire range of reasonable values for the geotechnical parameters, such as the lowest reasonable values for cohesion and friction angle. If the factors of safety vary significantly for the reasonable range of input data, the results should be used with great caution. 7) A sensitivity analysis should be carried out in which the critical failure surface for each section is re-calculated based on the entire range of reasonable values for the geotechnical parameters, such as the lowest reasonable values for cohesion and friction angle. If the positions of the critical failure surfaces vary significantly for the reasonable range of input data, the results should be used with great caution. 8) It should not be assumed that all slope materials will remain unsaturated. The factors of safety should be re-calculated for a range of possible pore pressures and water tables, including the eventual possibility that pore pressures and the water table will return to premining levels. If the factors of safety are strongly dependent upon the assumption that all slope materials will be unsaturated, then the results for unsaturated materials should be used with great caution. 9) The localized re-saturation of slope materials that could result from the surface application of water for dust suppression on the haul roads should be calculated and the potential impact on slope stability should be assessed. 10) The weight of vehicular traffic on the haul roads should be taken into consideration for analyses of slope stability. 11) The distribution of possible values of the factor of safety should be developed for each section, so that the probability of failure can be calculated. 12) The stability analyses should be carried out in accordance with the most up-to-date map for the intended quarry. 13) The DEIS should adhere to the recommendations of Guidelines for Open Pit Slope Design (published by the Large Open Pit Project) and the SME Surface Mining Handbook (published by the Society for Mining, Metallurgy and Exploration) that the minimum factor of safety should be 1.5 and the maximum probability of failure should be 5% during the operational period (prior to buttress construction). 14) The DEIS should adhere to the recommendations of the Guidelines for Mine Closure (published by the Large Open Pit Project) that the minimum factor of safety should be 2.0 during the post-closure period (after buttress construction). 15) The factors of safety and the critical failure surfaces for the post-closure period should be calculated based on reasonable expectations for the rock mass degradation that will occur during the post-closure period. 16) For each section, the Zone of Instability should be calculated according to the guidelines of the Western Australian Department of Industry and Resources. The connecting lines for the geologic units that are at the stratigraphic level of Unit B5 of the Cave Spring Formation or higher should have an angle of 25° with respect to the horizontal. Local and regional outcrops should be investigated to determine whether some geologic units show breakback angles less than 25°, in which case, the connecting lines should be assigned the lower angle for those units. 17) Unless it can be convincingly argued to the contrary, the quarry should be designed so that the Tiehm's buckwheat population is at least 50 feet beyond the Zone of Instability, as specified in Western Australian regulations. 18) The Adaptive Management plan for the response to indications of slope instability should be specific and detailed with intermediate steps that would occur prior to a cessation of mining activity. Any claims that the mine will be closed in response to evidence of slope instability should be supported by a binding commitment from the mining company.	The geotechnical report from GLA adhered to the methodologies and standards outlined in the "Guidelines for Open Pit Slope Design" by Read & Stacey (2009). These guidelines are internationally recognized and provide comprehensive criteria for assessing the stability of open pit slopes. Consequently, the report did not incorporate the Zone of Instability guidelines specified by the Western Australian Department of Industry and Resources, as it focuses primarily on ensuring compliance with the Factor of Safety requirements specified in the Read & Stacey guidelines. The stability of the slopes, as shown in the GLA report, is fundamentally dependent on the thorough slope stability analyses conducted in accordance with these established guidelines. The current geotechnical report details the location of the Tiehm's buckwheat plants on Figure 12. The report did not account for the presence or location of these plants in their stability analysis as an external load as it was determined to be lightweight and not be a significant load factor. Of the 19 cross-sections used in the analysis, the general location of the plants and their habitat were captured in the study (GLA 2023 Figure 12). The buckwheat protection plan provides more detail regarding the location of the plants and the habitat and discusses the monitoring required for slope stability. Monitoring and management measures are detailed in the GLA report as well as the Buckwheat Protection Plan that was made available to the public within the Threatened and Endangered Species SER. Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS. The Biological Opinion will, in part, assess impacts from pit stability.
108 and 183	108.46 and 183.45	TABLE OF CONTENTS ABSTRACT 1 EXECUTIVE SUMMARY 2 OVERVIEW 9 TUTORIAL ON KEY GEOTECHNICAL CONCEPTS 20 *Limit Equilibrium Method and Factor of Safety* 20 *Probability of Failure* 21 SUMMARY OF STABILITY ANALYSIS FOR RHYOLITE RIDGE OPEN PIT 33 METHODOLOGY 32 RESPONSES 40 *The Calculation of the Factor of Safety is Unreliable* 40 *The Choice of the Minimum Operating Factor of Safety is too Low* 43 *The Choice of the Minimum Post-Closure Factor of Safety is too Low* 49 *The Post-Closure Zone of Instability has not been Taken into Account* 56 *The Assumption that Slope Materials will remain Unsaturated is Unjustified* 70 *The Adaptive Management Plan is Inadequate* 71 SUMMARY CONCLUSIONS 72 RECOMMENDATIONS 73 ABOUT THE AUTHOR 74 REFERENCES 75	Comment noted.

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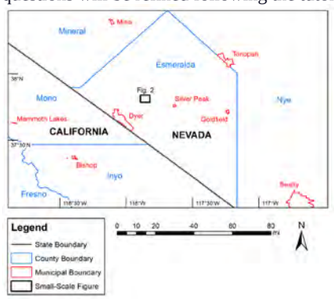
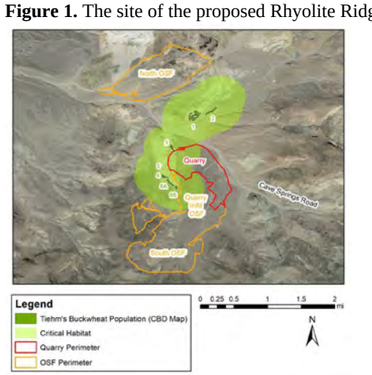
108 and 183	108.47 and 183.46	**OVERVIEW** The Australian mining company Ioneer has proposed the Rhyolite Ridge Lithium-Boron Project in Esmeralda County, southwestern Nevada (see Fig. 1). The open-pit mine would operate for 26 years with average annual production of 22,340 metric tons of lithium carbonate in the first three years, 21,951 metric tons per year of lithium hydroxide over the remaining mine life, and 174,378 metric tons per year of boric acid over the entire lifespan. The proven and probable mineral reserves have been estimated at 60.2 million metric tons with average grades of 0.1797% lithium and 1.5418% boron (Mining Technology, 2024). The Draft Environmental Impact Statement (DEIS) for the project was released by the Bureau of Land Management (BLM) on April 19, 2024 (Bureau of Land Management, 2024a). A portion of the open pit would be left permanently open after the closure of the mine, while the remainder would be backfilled with overburden and referred to as the "Quarry Infill OSF [Overburden Storage Facility]" (see Fig. 2). Additional Overburden Storage Facilities, called the North OSF and South OSF would be constructed to the north and southwest, respectively, of the open pit (see Fig. 2). Although the DEIS refers to the open pit as a "quarry," its maximum depth would be 960 feet (Bureau of Land Management, 2024b) and "quarry" typically refers to a shallow excavation for the extraction of aggregate. Since this report compares the DEIS with mining industry guidelines, the words "quarry" and "open pit" are used interchangeably. A central issue regarding the potential environmental impact of the Rhyolite Ridge mine is the presence of the world's only population of Tiehm's buckwheat only 15 feet from the edge of the proposed quarry on the northern side (see Figs. 2 and 3a-b). A subpopulation of Tiehm's buckwheat also occurs 208 feet from the western edge of the proposed quarry, while three subpopulations are found 329 feet, 281 feet, and 165 feet from the western edge of the Quarry Infill OSF (see Figs. 4a-b). The critical habitat for Tiehm's buckwheat (based on a 500-meter buffer) occurs well within both the quarry and the Quarry Infill OSF (see Fig. 2). The preceding distances were measured from the population map created by Ioneer and used in the DEIS, and for which the GIS shapefile was provided to the Center for Biological Diversity by the BLM. The Ioneer map is not identical to the map that has been in use by the Center for Biological Diversity (compare Figs. 3a and 4a with Figs. 3b and 4b). The issues of information in the DEIS that is inconsistent with information in other sources and of information in the DEIS that has already been acknowledged to be out-of-date will be discussed in the "Methodology" section. Based on the close proximity of the proposed quarry to Tiehm's buckwheat, the DEIS includes two attachments by the consulting company Geo-Logic Associates (2022, 2023) that argue that the Tiehm's buckwheat could not be impacted by instability of the mine pit slopes. The purpose of this report is to review the conclusions in the attachments and to address the following questions with regard to the Rhyolite Ridge mine: 1) Will the mine pit slopes be stable during the period of operation of the mine? 2) Will the mine pit slopes be stable after the closure of the mine? To facilitate reading by non-specialists, this report includes a tutorial on key geotechnical concepts, including the limit equilibrium method, factor of safety and probability of failure. The preceding questions will be refined following the tutorial and a summary of the stability analyses by Geo-Logic Associates (2022, 2023).  **Figure 1.** The site of the proposed Rhyolite Ridge Lithium-Boron Project is located in Esmeralda County in southwestern Nevada, close to the border between California and Nevada.  **Figure 2.** The quarry for the Proposed Ioneer Rhyolite Ridge Lithium-Boron Project would be constructed in close vicinity to the only existing population of Tiehm's buckwheat. The purpose of this report is to evaluate geotechnical analyses by Geo-Logic Associates (2022, 2023) that argue that instability of the quarry walls could not impact the Tiehm's buckwheat population either during mine operation or after mine closure. Maps of Tiehm's buckwheat population and critical habitat were provided by the Center for Biological Diversity. Maps of the quarry and Overburden Storage Facilities (OSF) were provided to the Center for Biological Diversity by the Bureau of Land Management. The green numbers refer to the Tiehm's buckwheat subpopulations. Figs. 3a-b and 4a-b show smallerscale views. Background is Google Earth imagery from August 9, 2013. The map is projected onto the WGS84 coordinate system.	A conservative approach was used for estimation of geotechnical parameters based on the materials encountered on site. Material properties are listed on Figure 3-5 of the GLA report. The material properties utilized in the analyses were derived from the EnviroMine (2019) report. The material parameters incorporated are conservative values based on the results of various laboratory tests. These conservative values provide a reliable foundation for the stability analyses, reducing the need for additional sensitivity analyses regarding the material properties. Materials Properties are listed on Figure 3-5 (GLA 2022). This conservative approach ensures that the safety factors used are robust and account for any potential variability in the material properties. Material properties are listed on Figure 3-5 of the GLA report. For the report completed by GLA, no new drilling and geotechnical tests were conducted. Instead, the geotechnical data were sourced from previous investigations and other available resources. Specifically, they relied on the geotechnical report prepared by EnviroMine in 2019 to obtain the necessary geotechnical parameters and details of the cross sections required for stability analyses. This existing report provided a set of data, eliminating the need for additional fieldwork or testing by GLA. The GLA report from 2022 incorporates the test results from the EnviroMine (2019) report, which includes a variety of tests such as direct shear tests, uniaxial compressive strength tests, triaxial tests, and Brazilian tensile strength tests, among others. These tests provide a thorough characterization of the material properties, ensuring that there is no uncertainty regarding the material properties used in the stability analyses. The availability of these detailed test results and laboratory reports means that the data used are robust and reliable, thus supporting the conclusions drawn in the GLA report. To address the uncertainty in material properties, GLA utilized the values provided in the previous report by EnviroMine for their initial analyses. These values offer a baseline for understanding the geotechnical characteristics of the site. The effect of watering the surface for dust control purposes is not significant and does not warrant analysis in the slope stability assessments for mine closure. This means that the water used to control dust on the mine surface does not appreciably affect the stability of the mine slopes. Therefore, including this factor in the slope stability analysis is unnecessary. The primary concern of dust control is to minimize airborne particulates for environmental and health reasons, which has minimal impact on the geotechnical stability of the slopes. GLA undertook a full assessment by examining various cross-sections throughout the mine site. They conducted multiple stability analyses on different walls to ensure a thorough evaluation of the mine's stability. These analyses are detailed in the geotechnical report by GLA (2022). The report includes stability assessments for 19 distinct sections of the mine walls, the results are documented in the report. Also, the details and outcomes of these analyses are presented in Appendix G of the report. This extensive examination of multiple cross-sections ensures that all critical areas of the mine are evaluated, providing an understanding of the overall stability and safety of the mine site during and after closure. GLA did not use Guidelines for Mine Closure published by the, which is mentioned here in the comments as the reference. Geo-Logic Associate used Chapter 9 of "Guidelines for Open Pit Slope Design" (Read & Stacey, 2009) for design criteria, which is one of the sources typically used in US. The "Guidelines for Open Pit Slope Design" by Read and Stacey (2009) does not explicitly provide a fixed minimum Factor of Safety for mine closure and post-closure periods. Instead, it emphasizes that the acceptable Factor of Safety should be determined based on specific site conditions, the nature of the materials, and the risk associated with potential slope failures. Typically, the

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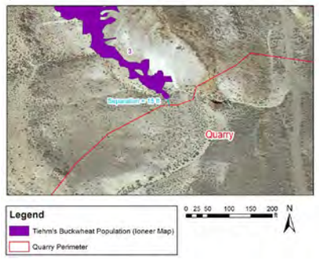
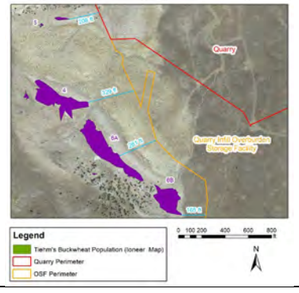
		 **Figure 3a.** According to the map of Tiehm's buckwheat that is used by the Center for Biological Diversity (CBD), the edge of the quarry would be 17 feet from the Tiehm's buckwheat population (see Figs. 3b and 16a for a different map that is used by Ioneer). The quarry map was provided to the Center for Biological Diversity by the Bureau of Land Management. The green number refers to the subpopulation. Fig. 2 shows a larger-scale view with labeled subpopulations. Background is Google Earth imagery from August 9, 2013. The map is projected onto the WGS84 coordinate system.  **Figure 3b.** According to the map of Tiehm's buckwheat that is used by Ioneer, the edge of the quarry would be 15 feet from the Tiehm's buckwheat population (see Figs. 3a and 16a for a different map that is used by the Center for Biological Diversity). The quarry map was provided to the Center for Biological Diversity by the Bureau of Land Management. The purple number refers to the subpopulation. Fig. 2 shows a larger-scale view with labeled subpopulations. Background is Google Earth imagery from August 9, 2013. The map is projected onto the WGS84 coordinate system.  **Figure 4a.** According to the map of Tiehm's buckwheat that is used by the Center for Biological Diversity (CBD), subpopulations 5, 4, 6A, and 6B would be 380 feet, 332 feet, 283 feet, and 177 feet, respectively, from the edge of the quarry (see Figs. 4b and 16b for a different map that is used by Ioneer). The perimeters of the quarry and Overburden Storage Facility (OSF) were provided to the Center for Biological Diversity by the Bureau of Land Management. The green number refers to the subpopulation. Fig. 2 shows a larger-scale view with labeled subpopulations. Background is Google Earth imagery from August 9, 2013. The map is projected onto the WGS84 coordinate system. 	guidelines suggest a more conservative Factor of Safety for the post-closure period compared to the operational period, acknowledging the long-term stability requirements and potential consequences of failure. This level of safety is deemed sufficient based on geological assessments and historical data, making it a practical and economically viable choice for mine closure operations. It allows for the allocation of resources towards other critical areas of the closure plan, ensuring a comprehensive and financially sustainable approach. Furthermore, the effectiveness of a 1.2 Factor of Safety is reinforced by GLA's proposed methodologies for slope monitoring. Continuous and advanced monitoring techniques are integral to detecting any potential instabilities in real-time, thereby preventing slope failures during and after the mine closure process. These monitoring strategies include the use of instruments like inclinometers, piezometers, and radar systems, which provide precise and timely data on slope movements and groundwater conditions. With proactive monitoring in place, a Factor of Safety of 1.2 can ensure the long-term stability of mine slopes, as any signs of potential failure can be addressed promptly, thereby maintaining safety and structural integrity throughout the closure phase (Geo-Logic Associates, Inc. 2023. Supplemental Geotechnical Report. Rhyolite Ridge Lithium-Boron Project. Esmeralda County, Nevada. March 2023. Revised June 14, 2023). The geotechnical report from GLA adhered to the methodologies and standards outlined in the "Guidelines for Open Pit Slope Design" by Read & Stacey (2009). These guidelines are internationally recognized and provide comprehensive criteria for assessing the stability of open pit slopes. Consequently, the report did not incorporate the Zone of Instability guidelines specified by the Western Australian Department of Industry and Resources, as it focuses primarily on ensuring compliance with the Factor of Safety requirements specified in the Read & Stacey guidelines. The stability of the slopes, as shown in the GLA report, is fundamentally dependent on the thorough slope stability analyses conducted in accordance with these established guidelines. The current geotechnical report details the location of the Tiehm's buckwheat plants on Figure 12. The report did not account for the presence or location of these plants in their stability analysis as an external load as it was determined to be lightweight and not be a significant load factor. Of the 19 cross-sections used in the analysis, the general location of the plants and their habitat were captured in the study (GLA 2023 Figure 12). The buckwheat protection plan provides more detail regarding the location of the plants and the habitat and discusses the monitoring required for slope stability. Monitoring and management measures are detailed in the GLA report as well as the Buckwheat Protection Plan that was made available to the public within the Threatened and Endangered Species SER. Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS. The Biological Opinion will, in part, assess impacts from pit stability.

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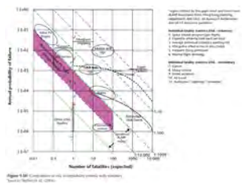
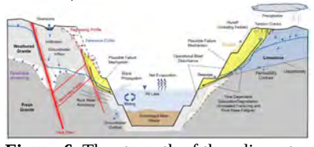
		Figure 4b. According to the map of Tiehm's buckwheat that is used by Ioneer, subpopulations 5, 4, 6A, and 6B would be 208 feet, 329 feet, 281 feet, and 165 feet, respectively from the edge of the quarry (see Figs. 4a and 16b for a different map that is used by the Center for Biological Diversity). The perimeters of the quarry and Overburden Storage Facility (OSF) were provided to the Center for Biological Diversity by the Bureau of Land Management. The purple number refers to the subpopulation. Fig. 2 shows a larger-scale view with labeled subpopulations. Background is Google Earth imagery from August 9, 2013. The map is projected onto the WGS84 coordinate system. It is important to consider the different issues that arise regarding pit slope stability during mine operation and after closure of the mine. During mine operation, the key issue is that failures of mine pit slopes are incredibly common, especially in comparison with other types of industrial accidents (Steffen et al., 2006; Wesseloo and Read, 2009; see Fig. 5). The mean annual probability of failure of a mine pit slope is about 6% with a range of 2-20%, which is considerably more common than failure rates of critical infrastructure in such high-risk industries as merchant shipping and offshore drilling (see Fig. 5). Steffen et al. (2006) pointed out that one would need to look at an ultrahigh-risk enterprise such as the Space Shuttle program to see a comparable failure rate (see Fig. 5). According to Steffen et al. (2006), in order to bring the failure rate of mine pit slopes into line with other types of industrial accidents, the annual probability of failure ought to be 1-10% for failure of a pit slope with a probability of one fatality of 1% and 0.1-1% for failure of a pit slope with a probability of one fatality of 10% (see Fig. 5). The high failure rate of mine pit slopes was part of the motivation for the creation of the industry-funded Large Open Pit Project in 2005 (LOP, 2024) and the subsequent publication of the Guidelines for Open Pit Slope Design (Read and Stacey, 2009). Some of the key recommendations of the Guidelines for Open Pit Slope Design have been incorporated into other mining industry guidance documents, such as the SME Surface Mining Handbook (Darling, 2023), which was published by the US-based Society for Mining, Metallurgy and Exploration in March 2023. Therefore, part of the approach of this report will be the comparison of the safety criteria selected by Geo-Logic Associates (2022, 2023) with the recommendations of the preceding and other mining industry standards. It should be noted that there is no information as to whether adherence to the preceding standards has reduced the failure rate of mine pit slopes over the past 15 years. A discussion of the comparative definition and significance of "failure" among different high-risk industries goes beyond the scope of this report and has been reviewed elsewhere (e.g., Whitham, 1984; Steffen et al., 2006; Wesseloo and Read, 2009). However, it is essential to respond to the assertion by Geo-Logic Associates (2023) that weaker safety criteria should be applied to open pit slope design in comparison to other industries. According to Geo-Logic Associates (2023), "The design criteria applied to mine pit slopes is complex and can vary depending on circumstances and consequences. Criteria applied to civil engineering structures are poor surrogates for mining applications." Geo-Logic Associates (2023) then quotes from Guidelines for Open Pit Slope Design in writing, "In open pit mining slope failure is not easily defined. Whereas in some engineering systems failure occurs immediately and is not reversible (e.g. the buckling of a structural column or the failure of a dam), in an open pit mine slope failure may take place gradually so that determining the stage at which the pit wall ceases to perform adequately may be highly subjective" (Wesseloo and Read, 2009). The statement is correct and it is fortunate that the vast majority of mine pit slope failures are sufficiently minor or sufficiently slow that they do not result in mineworker fatalities. However, it is still the case that the probability of an expected fatality resulting from a mine pit slope failure is about 4% (see Fig. 5), which would certainly correspond to a major, rapid and irreversible failure. At this point, it suffices to point out that Geo-Logic Associates (2023) and the Guidelines for Open Pit Slope Design reach very different conclusions, although relying on the same interpretation of a mine pit slope failure.  **Figure 5.** Failures of mine pit slopes are incredibly common in comparison with other types of industrial accidents. The mean annual probability of failure of a mine pit slope is about 6% with a range of 2-20%. Note that other figures related to probability of failure in this report refer not to the annual probability, but the probability of failure over the entire design life. The high failure frequency of mine pit slopes was part of the motivation for the writing of the Guidelines for Open Pit Slope Design (Read and Stacey, 2009) by the Large Open Pit Project (LOP, 2024). According to Steffen et al. (2006), in order to bring the failure rate of mine pit slopes into line other types of industrial accidents, the annual probability of failure ought to be 1-10% for failure of a pit slope with a probability of one fatality of 1% and 0.1-1% for failure of a pit slope with a probability of one fatality of 10%. There is no available data as to whether the annual probability of failure of a mine pit slope has changed since the release of the Guidelines for Open Pit Slope Design. Figure from Wesseloo and Read (2009). After closure of an open-pit mine, the key issues become the reduction in or complete lack of slope monitoring and on-site trained personnel who could detect and respond to signs of slope instability, as well as the typical long-term degradation of the strength of the rock masses adjacent to the open pit (see Figs. 6-7). Strength reduction can result from the rewetting of rock masses that eventually takes place after the cessation of dewatering and depressurization that accompanies open-pit mining. Other causes of long-term strength degradation are weathering of newly exposed slope materials and time-delayed responses to blasting and the radical changes in topography and stress levels that resulted from pit excavation. For example, the loss of the weight of overlying rocks and the loss of confinement by the rocks that were extracted from the open pit could allow the opening of vertical and horizontal joints (cracks), which could then lead to rockfalls (de Bruyn et al., 2019).  **Figure 6.** The strength of the adjacent rock mass typically decreases after closure of an open pit. This decrease results from time-delayed responses to blasting and the radical changes in topography and stress levels that accompanied the excavation of the open pit, as well as the eventual rewetting of the pit. For example, the removal of the weight of overlying rock could promote the opening of pre-existing joints (cracks) and there could be a slow creep of the adjacent rock faces toward the open pit. Figure from de Graaf et al. (2024).	

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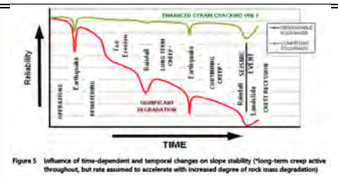
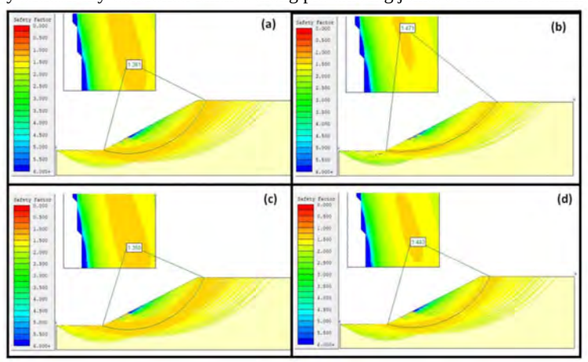
		 Figure 5 Influence of time-dependent and temporal changes on slope stability (*long-term creep active throughout, but rate assumed to accelerate with increased degree of rock mass degradation) **Figure 7.** The decrease in the strength of the adjacent rock mass can be moderate for a competent rock mass, but can be profound for a degradable rock mass. In any event, the strength (called the "reliability" on the y-axis) of the adjacent rock mass tends to decrease with time since pit closure. Figure from Carter et al. (2022). 8) and how the erosion-slope stability interaction is then driven by climate change. According to de Graaf (2024), "There is no tool for assessing the interdependency between erosion and slope stability: where progressive undercutting can destabilise local and overall slope stability. Typical erosion modelling assumes ongoing denudation and deposition of material (until equilibrium is achieved), but doesn't consider slope instability (which might accelerate the process to reaching a long term equilibrium profile – but could be very different from the 'erosion only' model). There currently isn't a process to integrate this feedback loop into the erosion and stability models … This is of most significance for highly erodible materials and for quasi stable longterm slopes … Future research should consider a coupled erosion-stability-climate analysis tool with quantification of time-dependent material strength degradation."  Figure 9. Coupled erosion/stability models with consideration for extreme weather impacts. **Figure 8.** At the present time, there is a lack of conceptual or theoretical knowledge regarding the coupled processes of erosion, slope instability and climate change that will drive a long-term reduction in the strength of the rock masses adjacent to open mining pits during the post-closure period (see Figs. 6-7). Figure from de Graaf et al. (2024). In light of the additional issues that occur for mine pit slopes in the post-closure period, the Large Open Pit Project has prepared the Guidelines for Mine Closure, which is scheduled for release in 2024 (LOP, 2024). Although the full guidelines have not yet been released as of the date of this report, the key recommendations are already present in a series of conference proceeding papers by the principal authors (de Graaf et al., 2021, 2024; Carter et al., 2022). Just as this report compares the safety criteria selected by Geo-Logic Associates (2022, 2023) with the recommendations of the Guidelines for Open Pit Slope Design for the operational period, it also compares the safety criteria selected by Geo-Logic Associates (2022, 2023) for the postclosure period with the recommendations of the Guidelines for Mine Closure. In terms of the revision of the DEIS or the preparation of a Supplemental Environmental Impact Statement (SEIS) or Final Environmental Impact Statement (FEIS), it would certainly be appropriate for the BLM to either wait for the release of Guidelines for Mine Closure or to consult with the authors of that volume.	
108 and 183	108.48 and 183.47	**TUTORIAL ON KEY GEOTECHNICAL CONCEPTS** ***Limit Equilibrium Method and Factor of Safety*** The limit equilibrium method evaluates the stability of a mass of rock or soil by assessing the tendency of a slope or structure to fail by one rigid block sliding over another (see Fig. 9). The output of the limit equilibrium method is the factor of safety, which is the ratio of the resistance to the load, or the ratio of the shear strength to the shear stress. Thus, a factor of safety equal to 1.0 indicates a slope on the cusp of failure, while higher factors of safety indicate slopes with increasing stability. The limitation of the limit equilibrium method is that not all failures involve the sliding of one rigid block over another. For example, the limit equilibrium method does not assess the tendency of a slope to fail by slow creep that could accelerate into more rapid motion, by rockfall, or by structurally-controlled failures along pre-existing joints or faults. In summary, the limit equilibrium method is a useful starting point, but should not be the totality of a slope stability analysis.  **Figure 9.** The factor of safety is the ratio of the shear strength to the shear stress (ratio of the resistance to the load) at some point within a slope, embankment or other type of earthen structure. The limit equilibrium method uses the unit weight, the shear strength parameters (cohesion and friction angle), pore water pressure, and position of the water table to calculate the factor of safety as averaged along every possible failure surface. The failure surface with the minimum factor of safety is called the critical failure surface. The factor of safety of the critical failure surface is regarded as the factor of safety of the structure. A factor of safety equal to 1.0 indicates that a structure is on the cusp of failure or, more precisely, that the probability of failure is 50% (see Fig. 10). It should	A conservative approach was used for estimation of geotechnical parameters based on the materials encountered on site. Material properties are listed on Figure 3-5 of the GLA report. The material properties utilized in the analyses were derived from the EnviroMine (2019) report. The material parameters incorporated are conservative values based on the results of various laboratory tests. These conservative values provide a reliable foundation for the stability analyses, reducing the need for additional sensitivity analyses regarding the material properties. Materials Properties are listed on Figure 3-5 (GLA 2022). This conservative approach ensures that the safety factors used are robust and account for any potential variability in the material properties. Material properties are listed on Figure 3-5 of the GLA report. For the report completed by GLA, no new drilling and geotechnical tests were conducted. Instead, the geotechnical data were sourced from previous investigations and other available resources. Specifically, they relied on the geotechnical report prepared by EnviroMine in 2019 to obtain the necessary geotechnical parameters and details of the cross sections required for stability analyses. This existing report provided a set of data, eliminating the need for additional fieldwork or testing by GLA. The GLA report from 2022 incorporates the test results from the EnviroMine (2019) report, which includes a variety of tests such as direct shear tests, uniaxial compressive strength tests, triaxial tests, and Brazilian tensile strength tests, among others. These tests provide a thorough characterization of the material properties, ensuring that there is no uncertainty regarding the material properties used in the stability analyses. The availability of these detailed test results and laboratory reports means that the data used are robust and reliable, thus supporting the conclusions drawn in the GLA report.

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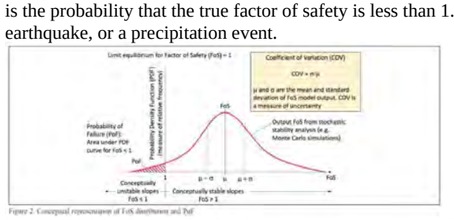
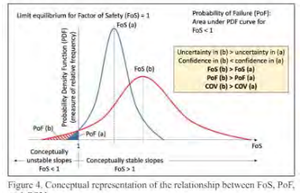
		be noted that the limit equilibrium method does not address all possible modes of failure, such as rockfall or structurally-controlled failures (movement along joints, faults, or other pre-existing planes of weakness). Figure from Sengani and Allopi (2022). The input data for the limit equilibrium method are the topography (geometry), the unit weights (densities), shear stress parameters (cohesion and friction angle), and pore water pressures throughout the slope or structure and its foundation, as well as the position of the water table. The precise meanings of cohesion and friction angle are not necessary for this report, except that higher cohesion and higher friction angle correspond to greater shear strength. Materials that are saturated (below the water table) have lower shear strength and materials that are over-pressurized with water have even lower shear strengths. The limit equilibrium method considers all possible failure surfaces and calculates the factor of safety at each point along a possible failure surface (see Fig. 9). The factor of safety of a failure surface is the average of the factors of safety along every point of a surface. The failure surface with the lowest factor of safety is called the critical failure surface and the factor of safety of the critical failure surface is regarded as the factor of safety of the slope or structure (see Fig. 9). It cannot be overemphasized that a factor of safety is not a measurement that is made, but the outcome of a model that depends upon a wide range of measurements, estimates and assumptions. There can be considerable uncertainty in the factor of safety as a result of uncertainty in the measurements of the input data and the incomplete sampling of structures for which the geotechnical parameters can have considerable spatial variability. There are also multiple computational methods for carrying out the limit equilibrium method for a given set of input data, each with its advantages and disadvantages, so that there is uncertainty as to whether the correct computational method has been used (Fell et al., 2015). As a consequence of the uncertainty in the data and the computational method, the calculated factor of safety cannot be assumed to be the same as the true factor of safety. A slope should be stable as long as the true factor of safety is greater than 1.0, although it should be kept in mind that the limit equilibrium method and its resulting factor of safety are evaluating only a narrow class of types of slope failures. However, because of the uncertainty in the calculated factor of safety, the engineering practice is to require a calculated factor of safety significantly greater than 1.0 in order to ensure that the true factor of safety (which could be less than the calculated factor of safety) is actually greater than 1.0. There are numerous publications, industry guidance documents, and regulations regarding the appropriate minimum factor of safety. These minimum factors of safety depend upon the application and the context, but a minimum factor of safety of 1.5 is common for many geotechnical applications (ANCOLD, 2012, 2019; Fell et al., 2015). ***Probability of Failure*** Based on the preceding subsection, the factor of safety should not be understood as a single value, but as the mean of a distribution of possible values, each of which corresponds to a possible set of input data (see Fig. 10). The area under the distribution curve is then the probability that the true factor of safety is less than 1.0, that is, the probability of slope failure (see Fig. 10). This probability of failure is the probability over the entire design life of the slope or structure, which is different from the annual probability of failure that was discussed in the “Overview” section (see Fig. 5). For example, an annual probability of failure of 0.1% corresponds to a probability of failure of 5% in at least one year over a 50-year period. In other words, a mine pit slope with a probability of failure of 5% over a 50-year life of active operation would have a stability that was quite close to the annual probability of failure of 0.1% that has been recommended to bring the safety of mine pit slopes into line with other types of industrial infrastructure (Steffen et al., 2006; Wesseloo and Read, 2009; see Fig. 5). From another perspective, the annual probability of failure is the probability that the true factor of safety is less than 1.0 (see Fig. 10) multiplied by the annual probability of an event that could trigger slope failure, such as blasting, vehicular traffic, an earthquake, or a precipitation event.  Figure 2. Conceptual representation of FoS distribution and PoF **Figure 10.** The factor of safety is not a measurement, but the outcome of an model that involves input data of unit weight, shear strength parameters (cohesion and friction angle), pore water pressure, and position of the water table, together with a computational method, such as one of the computational variations on the limit equilibrium method (see Fig. 9). For that reason, the factor of safety should not be regarded as a single value, but as the mean of a distribution of values that reflects the uncertainty in the input data. The area under the distribution curve for which the calculated factor of safety is less than 1.0 is the probability of failure, that is, the probability that the true value of the factor of safety is less than 1.0. Thus, a calculated factor of safety equal to 1.0 indicates that the probability of failure is 50%. The standard deviation is a measure of the spread of the distribution curve or the uncertainty in the input data. The coefficient of variation (COV) is the ratio of the mean to the standard deviation, so that a high COV indicates a high level of data uncertainty, and a high probability of failure for a given factor of safety (see Figs. 11 - 12). Figure from Macciotta et al. (2020). For a given mean factor of safety, the probability that the true factor of safety is less than 1.0 depends upon the spread in the distribution of possible values of the factor of the safety (see Fig. 10). One measure of the spread is the standard deviation, in which the range between one standard deviation less than the mean and one standard deviation greater than the mean includes 67% of the possible values of the factor of safety, assuming that the distribution follows a bellshaped or normal curve (see Fig. 10). The ratio of the standard deviation to the mean is called the coefficient of variation (COV) (see Fig. 10). The important point is that a slope or structure with a large mean factor of safety and large standard deviation can have a greater probability of failure than a slope or structure with a small mean factor of safety and small standard deviation (see Fig. 11). The preceding point emphasizes the danger of an excessive reliance on achieving a target factor of safety without regard for the standard deviation, which reflects the uncertainty in the data that were used to calculate the factor of safety. Fig. 12 illustrates the same point, in which, for a given mean factor of safety greater than 1.0, the probability of failure increases as the standard deviation increases (left-hand side), while, for a given COV, the probability of failure increases as the factor of safety decreases (right-hand side).  Figure 4. Conceptual representation of the relationship between FoS, PoF, and COV	To address the uncertainty in material properties, GLA utilized the values provided in the previous report by EnviroMine for their initial analyses. These values offer a baseline for understanding the geotechnical characteristics of the site. The effect of watering the surface for dust control purposes is not significant and does not warrant analysis in the slope stability assessments for mine closure. This means that the water used to control dust on the mine surface does not appreciably affect the stability of the mine slopes. Therefore, including this factor in the slope stability analysis is unnecessary. The primary concern of dust control is to minimize airborne particulates for environmental and health reasons, which has minimal impact on the geotechnical stability of the slopes. GLA undertook a full assessment by examining various cross-sections throughout the mine site. They conducted multiple stability analyses on different walls to ensure a thorough evaluation of the mine's stability. These analyses are detailed in the geotechnical report by GLA (2022). The report includes stability assessments for 19 distinct sections of the mine walls, the results are documented in the report. Also, the details and outcomes of these analyses are presented in Appendix G of the report. This extensive examination of multiple cross-sections ensures that all critical areas of the mine are evaluated, providing an understanding of the overall stability and safety of the mine site during and after closure. GLA did not use Guidelines for Mine Closure published by the LOPP, which is mentioned here in the comments as the reference. Geo-Logic Associate used Chapter 9 of “Guidelines for Open Pit Slope Design” (Read & Stacey, 2009) for design criteria, which is one of the sources typically used in US. The "Guidelines for Open Pit Slope Design" by Read and Stacey (2009) does not explicitly provide a fixed minimum Factor of Safety for mine closure and post-closure periods. Instead, it emphasizes that the acceptable Factor of Safety should be determined based on specific site conditions, the nature of the materials, and the risk associated with potential slope failures. Typically, the guidelines suggest a more conservative Factor of Safety for the post-closure period compared to the operational period, acknowledging the long-term stability requirements and potential consequences of failure. This level of safety is deemed sufficient based on geological assessments and historical data, making it a practical and economically viable choice for mine closure operations. It allows for the allocation of resources towards other critical areas of the closure plan, ensuring a comprehensive and financially sustainable approach. Furthermore, the effectiveness of a 1.2 Factor of Safety is reinforced by GLA’s proposed methodologies for slope monitoring. Continuous and advanced monitoring techniques are integral to detecting any potential instabilities in real-time, thereby preventing slope failures during and after the mine closure process. These monitoring strategies include the use of instruments like inclinometers, piezometers, and radar systems, which provide precise and timely data on slope movements and groundwater conditions. With proactive monitoring in place, a Factor of Safety of 1.2 can ensure the long-term stability of mine slopes, as any signs of potential failure can be addressed promptly, thereby maintaining safety and structural integrity throughout the closure phase. The geotechnical report from GLA adhered to the methodologies and standards outlined in the "Guidelines for Open Pit Slope Design" by Read & Stacey (2009). These guidelines are internationally recognized and provide comprehensive criteria for assessing the stability of open pit slopes. Consequently, the report did not incorporate the Zone of Instability guidelines specified by the Western Australian Department of Industry and Resources, as it focuses primarily on ensuring compliance with the Factor of Safety requirements specified in the Read & Stacey guidelines. The stability of the slopes, as shown in the GLA report, is fundamentally dependent on the thorough slope stability analyses conducted in accordance with these established guidelines.

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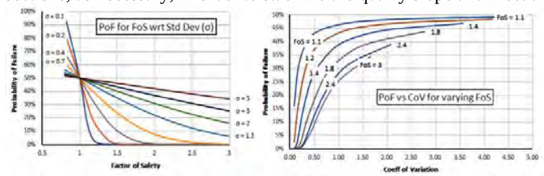
		Figure 11. The blue curve (a) represents a structure or slope with a low factor of safety and low data uncertainty, equivalent to low coefficient of variation (COV) (see definition of COV in Fig. 10). The red curve (b) represents a structure or slope with a high factor of safety and high data uncertainty, equivalent to high COV. The structure or slope corresponding to the red curve has a greater probability of failure, that is, a greater area under the distribution curve in the region for which the factor of safety is less than 1.0 (see a different way to show the same concept in Fig. 12). The diagram indicates the danger of excessive reliance on meeting a minimum factor of safety without giving due consideration to the uncertainty in the factor of safety. Thus, modern guidelines on open pit design require meeting requirements for both a minimum factor of safety and maximum probability of failure (see Figs. 20a-b and 22) or on basing the required minimum factor of safety on the uncertainty in the input data (see Figs. 23a and 26a-c). Figure from Macciotta et al. (2020).	The current geotechnical report details the location of the Tiehm's buckwheat plants on Figure 12. The report did not account for the presence or location of these plants in their stability analysis as an external load as it was determined to be lightweight and not be a significant load factor. Of the 19 cross-sections used in the analysis, the general location of the plants and their habitat were captured in the study (GLA 2023 Figure 12). The buckwheat protection plan provides more detail regarding the location of the plants and the habitat and discusses the monitoring required for slope stability. Monitoring and management measures are detailed in the GLA report as well as the Buckwheat Protection Plan that was made available to the public within the Threatened and Endangered Species SER. Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS. The Biological Opinion will, in part, assess impacts from pit stability.
108 and 183	108.49 and 183.48	**SUMMARY OF STABILITY ANALYSIS FOR RHYOLITE RIDGE OPEN PIT** The mine pit slopes at the proposed Rhyolite Ridge mine have been designed to achieve a minimum factor of safety of 1.2. According to Geo-Logic Associates (2022), "Cross sections that did not meet the project minimum factor of safety criteria of 1.2 or greater were reconfigured by stepping the quarry wall in or out, adjusting bench heights, and/or implementing a system of ground anchors in an iterative process until the slope was stabilized (i.e. until a minimum factor of safety of 1.2 or greater was attained for each cross section)." The justification for the selection of a minimum factor of safety of 1.2 was only that the minimum factor of safety of 1.2 had been set by the client. According to Geo-Logic Associates (2022), "The following scope of services was performed: … ▪ Performed static stability analysis for 19 cross sections around the proposed Quarry TR02- E provided by Ioneers's subcontractor NewFields. ▪ Developed conceptual recommendations for cross sections, as necessary, in order to stabilize the quarry slope and meet the project's minimum factor of safety criteria of 1.2 … "  Figure 4 Characteristic relationships between Probability of Failure and Factor of Safety for differing analysis confidences (reliability) **Figure 12.** On the left-hand side, for a given mean value of the factor of safety greater than 1.0, the probability of failure (area under the distribution curve for which the value of the factor of safety is less than 1.0) increases for increasing values of the standard deviation, which is a measure of the uncertainty in the input data (see Fig. 10 for a definition of standard deviation). On the right-hand side, for a given value of the coefficient of variation (COV), which is the ratio of the standard deviation to the mean (see Fig. 10), the probability of failure increases as the factor of safety decreases. See a different way to illustrate the same concept in Fig. 11. Figure from Carter et al. (2022). In a critique of the slope stability analysis, U.S. Fish and Wildlife Service (2022) wrote in an email to BLM, "What has changed to allow for support and stability structures to be developed in the quarry? For years we have heard because of the geology/soils of this area, there was no way to avoid the Tiehm's subpopulations. The geology and soils haven't changed, so what engineering wise makes this structurally sound? The quarry analysis is in Appendix N [Geo- Logic Associates (2022)] and was done by GLA (Geo-Logic Associates Inc.). This is downslope of the Tiehm area. There are no calculations shown or PE (Professional Engineer) stamps on the documents; these items will make the analysis more reliable as they will better fix the responsibility and liability of the engineers involved … One item that stood out to me was the Factor of Safety (FS) being used of 1.2. This is very low. Typically a FS of 1.5 is the minimum for most engineering work, and sometimes much higher depending on the risk. It could be that previous analyses used a higher FS and could not justify the stability; when the FS was lowered, it could be justified." The response of Geo-Logic Associates (2023) was simply that the minimum factor of safety of 1.2 was appropriate without reference to any guidance documents. According to Geo-Logic Associates (2023), "The assignment of a design criteria to any given quarry slope sector is typically a function of the potential consequences of failure and for these analyses is a FOS [Factor of Safety] of 1.20 or greater." **Table 1. Lithology of open pit1** **Unit Code** / **Formation** / **Lithologic Description** Q1 / Quaternary Alluvium / Young alluvium; unconsolidated coarse gravels, rounded to subangular clasts, dominant volcanic composition S3 / Cave Spring Fm. / Siltstone, medium bedded, occasional thin sandstone or gritstone, compact, some silicic zones, gray, green-gray and yellow-gray G4 / Cave Spring Fm. / Gritstone; lapilli tuff, fine to coarse, massive to poorly bedded, locally pumice rich, gray to orange, grades upward into siltstone M4 / Cave Spring Fm. / Carbonate and marl, dominant white massive limestone or tufa, some zones laminated stromatolite, dense to porous, minor thin siltstone or gritstone interbeds, irregular silicic zones, white, beige G5 / Cave Spring Fm. / Gritstone, coarse lapilli tuff, often vuggy and very porous from leached pumice, very rough texture, much friable, angular volcanic fragments in lower portion; dominantly orange to yellow oxidized, some leisegang banding, gray when unaltered M5 / Cave Spring Fm. / Claystone and marl, some upper swelling clay locally waxy and friable, thin to medium bedded marl, distinct zone of medium banded gray and white marl, toward base increasing possibility of calcite pseudomorphs after borates; off-white, light gray, beige to tan	A conservative approach was used for estimation of geotechnical parameters based on the materials encountered on site. Material properties are listed on Figure 3-5 of the GLA report. The material properties utilized in the analyses were derived from the EnviroMine (2019) report. The material parameters incorporated are conservative values based on the results of various laboratory tests. These conservative values provide a reliable foundation for the stability analyses, reducing the need for additional sensitivity analyses regarding the material properties. Materials Properties are listed in figure 3-5 (GLA 2022). This conservative approach ensures that the safety factors used are robust and account for any potential variability in the material properties. Material properties are listed on Figure 3-5 of the GLA report. For the report completed by GLA, no new drilling and geotechnical tests were conducted. Instead, the geotechnical data were sourced from previous investigations and other available resources. Specifically, they relied on the geotechnical report prepared by EnviroMine in 2019 to obtain the necessary geotechnical parameters and details of the cross sections required for stability analyses. This existing report provided a set of data, eliminating the need for additional fieldwork or testing by GLA. The GLA report from 2022 incorporates the test results from the EnviroMine (2019) report, which includes a variety of tests such as direct shear tests, uniaxial compressive strength tests, triaxial tests, and Brazilian tensile strength tests, among others. These tests provide a thorough characterization of the material properties, ensuring that there is no uncertainty regarding the material properties used in the stability analyses. The availability of these detailed test results and laboratory reports means that the data used are robust and reliable, thus supporting the conclusions drawn in the GLA report. To address the uncertainty in material properties, GLA utilized the values provided in the previous report by EnviroMine for their initial analyses. These values offer a baseline for understanding the geotechnical characteristics of the site. The effect of watering the surface for dust control purposes is not significant and does not warrant analysis in the slope stability assessments for mine closure. This means that the water used to control dust on the mine surface does not appreciably affect the stability of the mine slopes. Therefore, including this factor in the slope stability analysis is unnecessary. The primary concern of dust control is to minimize airborne particulates for environmental and health reasons, which has minimal impact on the geotechnical stability of the slopes. GLA undertook a full assessment by examining various cross-sections throughout the mine site. They conducted multiple stability analyses on

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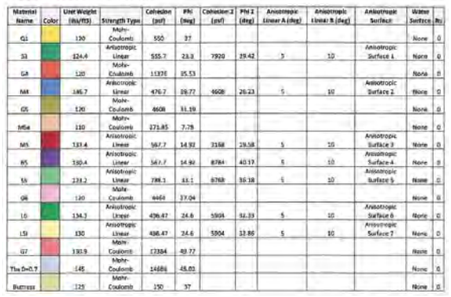
B5	Cave Spring Fm.	Marl, minor claystone and siltstone, thin to medium bedded, all very fine grained, dense where dominated by searlesite, occasional calcite pseudomorphs after borate, rare ulexite, sedimentary breccia near base; gray to bluish-gray to white
S5	Cave Spring Fm.	Siltstone, locally interbedded thin marl, sandstone, medium bedded, some pebbly beds bearing ostracods, brown and tan at top, some thin green layers, rest gray to gray-brown
G6	Cave Spring Fm.	Gritstone, sandstone, mostly massive, lapilli tuff and diamictite, locally coarse pumiceous, gray; grades upward into siltstone
L6	Cave Spring Fm.	Marl, minor siltstone and claystone, often finely banded, much medium wavy bedded, locally silicic beds, gray, tan, brown, beige, cream; may include sections of gritstone or diamictite
Lsi	Cave Spring Fm.	Marl, carbonate with abundant silica, medium bedded, siliceous knobs or lenses, gray, white, tan or brown
G7	Cave Spring Fm.	Diamictite, massive, some crude bedded sandstone, mixed angular volcanic clasts of all sizes but mostly coarse, occasional carbonate, dark gray to gray
Tlv	Argentite Canyon Volcanics	Porphyritic latite, massive, dense, commonly large feldspar phenocrysts, often brecciated, may grade into diamictite: gray to dark gray
Tbx	Rhyolite Ridge Tuff	Tuff breccia, massive, lithic angular volcanic fragments in fine tuffaceous matrix, some crystal fragments, cream, pink, light gray; occasional zones welded tuff to vitrophyre
Z	Silver Peak Fm.	Sandstone, siltstone, mostly unsorted, pebbly sandstone or conglomerate, massive to faintly bedded, subrounded clasts, possibly volcanic, brown or gray-brown

1Redrawn from Geo-Logic Associates (2023)

Table 1 - Material Properties



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Cohesion 2 (psf)	Phi 2 (deg)	Anisotropic Linear A (deg)	Anisotropic Linear B (deg)	Anisotropic Surface	Water Surface
GU		130	Mohr-Coulomb	550	37						None
SU		124.4	Anisotropic Linear	555.7	23.3	7920	29.42	5	10	Anisotropic Surface 1	None
GR		120	Mohr-Coulomb	11370	35.53						None
MR		146.7	Anisotropic Linear	476.7	28.77	6608	26.23	5	10	Anisotropic Surface 2	None
GL		130	Mohr-Coulomb	6608	31.19						None
MSa		110	Mohr-Coulomb	271.85	7.78						None
MS		133.4	Anisotropic Linear	367.7	14.92	3168	29.58	5	10	Anisotropic Surface 3	None
BS		130.4	Anisotropic Linear	347.7	14.92	8784	40.17	5	10	Anisotropic Surface 4	None
SS		133.2	Anisotropic Linear	798.1	33.1	8768	35.18	5	10	Anisotropic Surface 5	None
QR		120	Mohr-Coulomb	4464	37.04						None
LG		134.3	Anisotropic Linear	496.67	24.6	5904	32.33	5	10	Anisotropic Surface 6	None
LSI		130	Anisotropic Linear	498.47	24.6	5904	32.86	5	10	Anisotropic Surface 7	None
GJ		130.9	Mohr-Coulomb	12384	43.77						None
Tlv 0=0.7		145	Mohr-Coulomb	14886	45.83						None
Buttress		125	Mohr-Coulomb	150	37						None

Figure 13. The geotechnical analysis by Geo-Logic Associates (2022, 2023) states the unit weights and shear stress parameters (cohesion and friction angle (“Phi”) for each geologic unit with ultra-precision, sometimes with five significant digits. Geo-Logic Associates (2022, 2023) does not provide any information on the uncertainty in the input data that would justify such a high degree of precision. In addition, the factors of safety that are calculated from the unit weights and shear stress parameters are stated as single values with no range of uncertainty (see Fig. 15). In particular, there is no sensitivity analysis that would show the range of possible factors of safety that could result from reasonably possible alternative values for the geotechnical parameters and there is no distribution of possible values for the factor of safety that would make it possible to estimate the probability of failure (see Figs. 10-11). The low degree of uncertainty and high precision that is implied in the above table is quite unlikely in light
of the raw data in Geo-Logic Associates (2022) that show a very small number of measurements for each sample with a high degree of scatter (see Fig. 19). Geo-Logic Associates (2022) states that some of the material properties were obtained from a report by the consulting company EnviroMine (2019) that is not available for public review, while other material properties were simply the judgment of Geo-Logic Associates. Geo-Logic Associates (2022, 2023) does not identify any source or type of material for the buttress, so that the geotechnical parameters of the buttress should be regarded as strictly hypothetical. Finally, it was assumed that all geologic units would be unsaturated (see column second from right-hand side) both during mine operation and indefinitely through the postclosure period. Table from Geo-Logic Associates (2022).

Geo-Logic Associates (2023) used the geotechnical properties that were provided by EnviroMine (2019) (see Table 1 and Fig. 13) to update the stability analyses for six sections across the proposed quarry, including TR02E-5, TR02E-6, TR02E-7, TR02E-8, TR02E-9, and TR02E-11 (see Fig. 14). The last five sections are of special interest for this report since they intersect subpopulations of Tiehm’s buckwheat. In particular, section TR02E-11 intersects the population of Tiehm’s buckwheat that would occur only 15 feet from the edge of the quarry (see Fig. 14 and compare with Figs. 2 and 3a-b). The stability analyses were updated for the slopes without buttresses, corresponding to the pit slopes as they would exist during the operational period (see column “Final Slope Configuration” in Fig. 15), and for the slopes with buttresses, corresponding to the pit slopes as they would exist during the post-closure period (see column “Condition 1” in Fig. 15). The difference between “Condition 1” and “Condition 2” in Fig. 15 is that “Condition 1” includes ground anchors. While there is a plan to construct buttresses for Sections TR02E-5 and TR02E-8, there is no plan to install ground anchors at those sections (see Figs. 14 and 15).

The factors of safety during the operational period (without a buttress) range from 1.20 to 1.26 (see Fig. 15), or just barely above the minimum factor of safety that was selected by Geo-Logic Associates (2022, 2023). The section of greatest concern (TR02E-11) because it would intersect the population of Tiehm’s buckwheat that would be only 15 feet from the edge of the quarry, would have a factor of safety of only 1.21 (see Figs. 14-15). The addition of a buttress increases the factor of safety from 1.21 to 1.52, from 1.24 to 1.31, from 1.26 to 1.45, from 1.20 to 1.57, from 1.22 to 1.25, and from 1.21 to 1.33 for Sections TR02E-5, TR02E-6, TR02E-7, TR02E-8, TR02E-9, and TR02E-11, respectively (see Fig. 15). The installation of ground anchors does not appear to have any impact on the factors of safety (see Fig. 15).

“Condition 3” in Fig. 15 refers to the factor of safety that would occur after buttress construction along the critical failure surface that would have existed prior to buttress construction (see Fig. 15). It is not surprising that these factors of safety greatly increase, since failure is no longer predicted to occur along these surfaces. The point is presumably that the addition of a buttress advances the critical failure surface inward toward the quarry, so that failure occurs within the buttress, as opposed to within the pit walls (such as, beneath the population of Tiehm’s buckwheat). However, there is no consideration as to how the pit walls will continue to evolve after failure of the buttress. By contrast, the possibility of progressive failure of the buttress followed by failure of the pit walls was taken into account in the postclosure recommendations of de Bruyn et al. (2019). Under the assumption that pit slope buttresses would be constructed out of waste rock (the rock

different walls to ensure a thorough evaluation of the mine's stability. These analyses are detailed in the geotechnical report by GLA (2022). The report includes stability assessments for 19 distinct sections of the mine walls, the results are documented in the report. Also, the details and outcomes of these analyses are presented in Appendix G of the report. This extensive examination of multiple cross-sections ensures that all critical areas of the mine are evaluated, providing an understanding of the overall stability and safety of the mine site during and after closure.

GLA did not use Guidelines for Mine Closure published by the LOPP, which is mentioned here in the comments as the reference. Geo-Logic Associate used Chapter 9 of “Guidelines for Open Pit Slope Design” (Read & Stacey, 2009) for design criteria, which is one of the sources typically used in US. The "Guidelines for Open Pit Slope Design" by Read and Stacey (2009) does not explicitly provide a fixed minimum Factor of Safety for mine closure and post-closure periods. Instead, it emphasizes that the acceptable Factor of Safety should be determined based on specific site conditions, the nature of the materials, and the risk associated with potential slope failures. Typically, the guidelines suggest a more conservative Factor of Safety for the post-closure period compared to the operational period, acknowledging the long-term stability requirements and potential consequences of failure.

This level of safety is deemed sufficient based on geological assessments and historical data, making it a practical and economically viable choice for mine closure operations. It allows for the allocation of resources towards other critical areas of the closure plan, ensuring a comprehensive and financially sustainable approach. Furthermore, the effectiveness of a 1.2 Factor of Safety is reinforced by GLA’s proposed methodologies for slope monitoring. Continuous and advanced monitoring techniques are integral to detecting any potential instabilities in real-time, thereby preventing slope failures during and after the mine closure process. These monitoring strategies include the use of instruments like inclinometers, piezometers, and radar systems, which provide precise and timely data on slope movements and groundwater conditions. With proactive monitoring in place, a Factor of Safety of 1.2 can ensure the long-term stability of mine slopes, as any signs of potential failure can be addressed promptly, thereby maintaining safety and structural integrity throughout the closure phase.

The geotechnical report from GLA adhered to the methodologies and standards outlined in the "Guidelines for Open Pit Slope Design" by Read & Stacey (2009). These guidelines are internationally recognized and provide comprehensive criteria for assessing the stability of open pit slopes. Consequently, the report did not incorporate the Zone of Instability guidelines specified by the Western Australian Department of Industry and Resources, as it focuses primarily on ensuring compliance with the Factor of Safety requirements specified in the Read & Stacey guidelines. The stability of the slopes, as shown in the GLA report, is fundamentally dependent on the thorough slope stability analyses conducted in accordance with these established guidelines.

The current geotechnical report details the location of the Tiehm’s buckwheat plants on Figure 12. The report did not account for the presence or location of these plants in their stability analysis as an external load as it was determined to be lightweight and not be a significant load factor. Of the 19 cross-sections used in the analysis, the general location of the plants and their habitat were captured in the study (GLA 2023 Figure 12).

The buckwheat protection plan provides more detail regarding the location of the plants and the habitat and discusses the monitoring required for slope stability.

Monitoring and management measures are detailed in the GLA report as well as the Buckwheat Protection Plan that was made available to the public within the

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		that must be removed to reach the ore body), de Bruyn et al. (2019) wrote, “Consider the stability of the waste rock buttress in the long-term. Although the material used for the buttress will likely be dumped at its current angle of repose, it is possible that this angle will reduce in the long-term as the properties of the waste rock deteriorate. Any significant failure (not merely surficial ravelling) or erosion of the waste buttress in the long-term, reducing its effective width/volume, will reduce its effectiveness as a support measure. This could conceivably result in an increase in the risk of failure of the original slope it is meant to support, such that the acceptance criteria for the closure plan are no longer met.”	Threatened and Endangered Species SER. Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS. The Biological Opinion will, in part, assess impacts from pit stability.

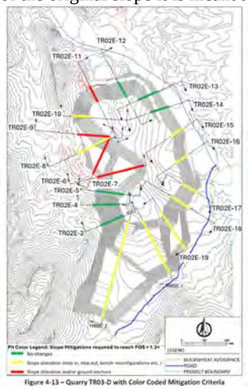

Figure 4-13 – Quarry TR03-D with Color Coded Mitigation Criteria

Figure 14. Geo-Logic Associates (2023) updated the design of Sections TR02E-05, TR02E-6, TR02E-7, TR02E-8, TR02E-9, and TR02E-11 with a goal of increasing the factor of safety (see Fig. 15). Figure from Geo-Logic Associates (2022) with overlay of larger labels for ease of reading.

Table 2 - Buttress Slope Stability Results

Section	Ground anchors included in section (yes/no)	Final Slope Configuration FOS (Prior to buttress implementation)	FOS for Condition 1*	FOS for Condition 2**	FOS for Condition 3***
TR02E-5	No	1.21	-	1.52	1.91
TR02E-6	Yes	1.24	1.31	1.31	2.71
TR02E-7	Yes	1.26	1.45	1.45	1.81
TR02E-8	No	1.20	-	1.57	1.84
TR02E-9	Yes	1.22	1.25	1.25	2.15
TR02E-11	Yes	1.21	1.33	1.33	2.45

*Condition 1 – Post-mining buttress is in place covering ground anchors and the critical failure surface is located entirely within the buttress.
**Condition 2 – The same post-mining buttress from Condition 1 is in place and ground anchors are either absent or have become passive (unloaded).
***Condition 3 –The same post-mining buttress configuration from Conditions 1 and 2 is analyzed with the exact same minimum slip surface from the Final Slope Configuration FOS. This result shows how the buttress increases the factor of safety along the Final Slope Configuration slip surface below buckwheat areas.

Figure 15. Without a buttress, the factors of safety for Sections TR02E-5, TR02E-6, TR02E-7, TR02E-8, TR02E-9, and TR02E-11 (see Fig. 14) range from 1.20 to 1.26. The stability analyses for the sections without an added buttress correspond to the operating period of the quarry, since a buttress is constructed as a part of pit closure. Thus, even without a buttress, the factors of safety fulfill the minimum factor of safety of 1.2 that was set by Geo-Logic Associates (2022, 2023), but not the minimum factor of safety of 1.3-1.5 that is recommended by the Guidelines for Open Pit Slope Design and the SME Surface Mining Handbook. The upper range of 1.5 would be preferred for the Rhyolite Ridge mine due to the high degree of uncertainty in the geotechnical data (see Fig. 19). The addition of buttresses for pit closure (Condition 1) increases the factors of safety to the range 1.25-1.57. This again fulfills the minimum factor of safety of 1.2 that was set by Geo-Logic Associates (2022, 2023), but not the minimum factor of
safety of 2.0 that would be recommended by the Guidelines for Mine Closure (see Fig. 26a-c) for the pit wall condition, failure consequences, and design confidence of the quarry at the Rhyolite Ridge mine. The right-hand column (Condition 3) states the factor of safety for a surface that is not the critical failure surface, so that its significance is not apparent. Figure from Geo-Logic Associates (2023).

The recommendations by de Bruyn et al. (2019) further considered the need for the buttress to reduce the width of the Zone of Instability as defined in Western Australian guidelines (Department of Industry and Resources, 1997). According to de Bruyn et al. (2019), “These guidelines provide generic design criteria to determine the likely zone of instability (ZoI) for long-term post-mining instability; i.e. the area designated as the potentially unstable pit edge zone … Using the identified critical failure mode(s), determine the position and level of waste material that will need to be dumped against the pit wall to maintain its stability in the long-term (i.e. which will meet the required design acceptance criteria) such that the reduced ZoI allows the abandonment bund to be located at the position required. Verify the stability of the pit slope and dumped in-pit waste material in the long-term to allow for the ZoI to be reduced as necessary.” The significance of the Zone of Instability will be further considered in the “Methodology and “Responses” sections.

An additional assumption made in Geo-Logic Associates (2022, 2023) is that, after dewatering and de-pressurization to allow construction of the open pit, all of the relevant geologic units would be above the water table both during mine operation and during the postclosure period (see Fig. 13). According to Geo-Logic Associates (2022), “For stability calculations performed herein, GLA [Geo-Logic Associates] has assumed that the quarry slopes will be dry as a result of dewatering performed during mine operations and pit development.” Geo-Logic Associates (2022, 2023) both stated, “Slopes are considered to be dewatered with no excess pore pressures as indicated by Ioneer and their consultant HydroGeoLogica.” In other words, as with the assumption of a minimum factor of safety of 1.2, the permanently low position of the water table was an assumption that was supplied to Geo-Logic Associates by their clients.

Geo-Logic Associates (2023) recognized that it was not obvious to everyone that geologic units that had been dewatered for pit construction would remain permanently dewatered. According to Geo-Logic Associates (2023), “The U.S. Fish and Wildlife Service has expressed concerns about the potential effectiveness of the proposed program for dewatering/ depressurization

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		of the quarry at Rhyolite Ridge and the potential impact of surface water infiltration during extreme snowmelt events and/or precipitation events on pore pressures and stability." In an email to the Bureau of Land Management, U.S. Fish and Wildlife Service (2022) expressed in their own words, "Stability calculations were done assuming quarry slopes were dry. What if dewatering the slopes fail or there is an intense rain or snow storm? This page also says that this area because of the type of clay it is, may be challenging to dewater. Why weren't stability calculations done for extreme weather events if there is so much concern about slope stability? … I would request slope stability analyses for wet or saturated soils and whether there is still any FS or whether the slopes will fail." The response by Geo-Logic Associates (2023) was that, even for extreme precipitation and snowmelt events, the excess water would either become surface runoff or would infiltrate to a shallow depth and then evaporate, but would not reach the geologic units that could result in slope instability. According to Geo-Logic Associates (2023), "As regards the impact of infiltration during snowmelt or precipitation events, as difficult as it may be to depressurize and remove water from these low permeability clays, it is even more difficult to put it back in. The vast majority of the water applied to the surface will simply become surface runoff. The small fraction that does infiltrate will initially form a shallow saturated wetting front at the surface that will continue to grow as long as the source of water at the surface persists and will exhibit small positive pore water pressures. As soon as the surface water source goes away, the water in the wetting front will continue to redistribute at depth, but now as an unsaturated wetting front with negative pore water pressures (soil suction). The depth of penetration in these low permeability soils will remain very near the surface and the effects of potential evaporation at the surface will eventually remove most if not all of the water in the wetting front as long as it remains above the 'extinction depth' (the depth below which potential evaporation at the surface is no longer effective). In summary, there is no risk of any significant volume of water from surface infiltration reaching the deep critical failure planes associated with the weak anisotropic clays that present the most serious stability risk in the quarry." The final item of particular interest in Geo-Logic Associates (2023) is the Adaptive Management plan for slope stability. Adaptive Management is also called the Observational Method and is the approach used by nearly all large-scale mining and other engineering projects at the present time. For complex projects, it is not possible to determine all actions in advance because some later actions will depend on the unknown outcomes of earlier actions. Instead, a monitoring plan is created together with a set of preplanned actions ready for execution in response to every possible adverse observation. According to the Global Industry Standard on Tailings Management (GISTM), the Observational Method is "a continuous, managed, integrated, process of design, construction control, monitoring and review that enables previously defined modifications to be incorporated during or after construction as appropriate … The key element of the Observational Method is the proactive assessment at the design stage of every possible unfavourable situation that might be disclosed by the monitoring programme and the development of an action plan or mitigative measure to reduce risk in case the unfavourable situation is observed" (ICMM-UNEP-PRI, 2020). The GISTM continues, "Full implementation of the Observational Method shall be adopted for non-brittle failure modes" (ICMM-UNEP-PRI, 2020), referring to failure modes that occur with some warning or precursors, so that there is sufficient time for observations and pre-planned responses. The GISTM would be strictly applicable only to tailings facilities, not mine pits. Thus, the GISTM should be applicable to the proposed Spent Ore Storage Facility (SOSF) for the Rhyolite Ridge mine (Bureau of Land Management, 2024a), which is not reviewed in this report. The potential relevance of the GISTM to the proposed quarry will be discussed in the "Responses" section. At this point, it suffices to point out that Company Members of the International Council on Mining and Metals (ICMM) have been obligated to fully comply with the requirements of the GISTM since August 5, 2023 (ICMM, 2021). Ioneer is not a Company Member of ICMM, but it is noteworthy that Association Members of ICMM include the Australasian Institute of Mining and Metallurgy (AusIMM), the International Lithium Association (ILiA), the Minerals Council of Australia (MCA), the US-based National Mining Association (NMA), and the US-based Society for Mining, Metallurgy and Exploration (SME) (ICMM, 2024). It is not clear to what industry guidelines Ioneer adheres, since the company is not a member of either the Minerals Council of Australia (MCA, 2024), nor the International Lithium Association (ILA, 2024). The Adaptive Management plan (Observational Method) in Geo-Logic Associates (2023) consists largely of descriptions and photographs of types of instruments that could be used to monitor slope stability, but without any specific plan as to how those instruments would be used. The set of preplanned actions then consists of the single sentence stating, "Preliminary concepts for adaptive management actions include suspending mining activity, stopping mining activity and implementing mitigation measures in an area if detrimental instability near sensitive habitat is identified, based on monitoring" (Geo-Logic Associates, 2023). There is no clarification as to how or whether "suspending mining activity" and "stopping mining activity" are different concepts. It is most important that the mining company Ioneer has made no apparent commitment to close the mine if there is indication that slope instability could be affecting Tiehm's buckwheat habitat. Nevertheless, the preceding quote does help to clarify that a slope failure that could impact the Tiehm's buckwheat population would be an accident with very high consequences. The implied consequences of slope failure will form the context in this report for evaluating the statement by Geo-Logic Associates (2023) in the same document that "the assignment of a design criteria to any given quarry slope sector is typically a function of the potential consequences of failure and for these analyses is a FOS of 1.20 or greater." **METHODOLOGY** Based on the preceding sections, the objectives of this report can be subdivided into the following questions regarding the geotechnical analysis in the DEIS: 1) Are the calculated factors of safety reliable? 2) Was the choice of 1.2 for the minimum factor of safety appropriate for the operational period? 3) Was the choice of 1.2 for the minimum factor of safety appropriate for the post-closure period? 4) Was the Zone of Instability for open pits as specified in Western Australian guidelines properly taken into account? 5) Was the assumption that slope materials will remain unsaturated justified? 6) Is the proposed Adaptive Management plan adequate? Before addressing the methodology for answering the preceding questions, it is appropriate to return to the issues raised in the "Overview" section that some information in the DEIS is inconsistent with information in other sources and that some information in the DEIS has already been acknowledged by the Bureau of Land Management to be out-of-date. The maps of the Tiehm's buckwheat populations prepared by Ioneer for the DEIS and in use by the Center for Biological Diversity are compared in Figs. 16a-b. On the northern side of the quarry, the Ioneer version of the population is shifted toward the east and the south, although not in a consistent manner (see Fig. 16a). On the western side of the quarry, the Ioneer version of the population appears more generalized and may show additional subpopulations or clusters to the northeast of subpopulation 5, to the west of subpopulation 4, and to the southwest of subpopulation 6A (see Fig. 16b). The correct location of the quarry is of critical importance, since that is the basis for the slope stability analyses. Without a correct location for the quarry, due to the very complex geology of faulted and folded geologic units, there is no way of knowing which geologic units will be intersected by the quarry walls, at what depths the units will be intersected, and what will be the inclinations (dips) of the units at those depths. Shapefiles for both the quarry perimeter and the haul roads were provided to the Center for Biological Diversity by the Bureau of Land Management. The quarry perimeter shows an indentation that would exactly accommodate the planned haul road (compare Figs. 17a-b). With regard to the haul road shapefile that was provided, the Bureau of Land Management (2024c) wrote, "The haul road location is currently being adjusted by Ioneer based on the consultation process between the BLM and the U.S. Fish & Wildlife Service. As such, the current shapefiles for the haul road location would provide no valuable information." Thus, if the haul road map (see Fig. 17b) does not show the haul road that would actually be constructed, then the quarry map (see Fig. 17a) is not the quarry that would actually be constructed, although the quarry map was the basis for the stability analyses in Geo- Logic Associates (2022, 2023). In the absence of any other workable procedure, the stability analyses contained in Geo-Logic Associates (2022, 2023) were evaluated in this report, even though it is clear that they must already be out-of-date. No attempt was made in this report to document all inconsistencies or outdated information in the DEIS.	

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		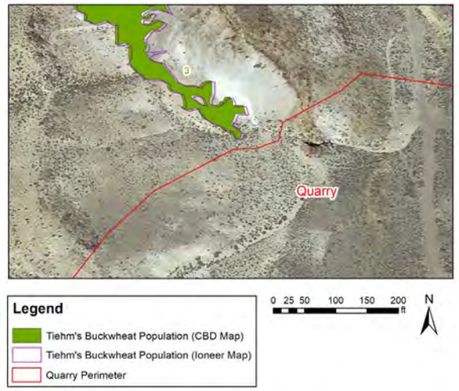 **Figure 16a.** The Tiehm's buckwheat population maps that are used by the Center for Biological Diversity (CBD) and Ioneer are not identical. According to the CBD map, the edge of the quarry would be 17 feet from the Tiehm's buckwheat population (see Fig. 3a), while the separation distance would be 15 feet according to the Ioneer map (see Fig. 3b). The Ioneer map was provided to the Center for Biological Diversity by the Bureau of Land Management and is the map that was used in preparation of the Draft Environmental Impact Statement. The quarry map was also provided to the Center for Biological Diversity by the Bureau of Land Management. The green number refers to the subpopulation. Background is Google Earth imagery from August 9, 2013. The map is projected onto the WGS84 coordinate system. **Figure 16b.** The Tiehm's buckwheat population maps that are used by the Center for Biological Diversity (CBD) and Ioneer are not identical. According to the CBD map, subpopulations 5, 4, 6A, and 6B would be 380 feet, 332 feet, 283 feet, and 177 feet, respectively from the edge of the quarry (see Fig. 4a). According to the Ioneer map, subpopulations 5, 4, 6A, and 6B would be 208 feet, 329 feet, 281 feet, and 165 feet, respectively from the edge of the quarry (see Fig. 4b). On the west side of the quarry, in comparison with the CBD map, the Ioneer map appears more generalized and may show additional subpopulations or clusters to the northeast of subpopulation 5, to the west of subpopulation 4, and to the southwest of subpopulation 6A. The Ioneer map was provided to the Center for Biological Diversity by the Bureau of Land Management and is the map that was used in preparation of the Draft Environmental Impact Statement. The quarry map was also provided to the Center for Biological Diversity by the Bureau of Land Management. The green number refers to the subpopulation. Background is Google Earth imagery from August 9, 2013. The map is projected onto the WGS84 coordinate system.  **Figure 17a.** The quarry perimeter shows an indentation that would exactly accommodate the planned haul road (compare with Fig. 17b). The quarry and haul road maps were provided to the Center for Biological Diversity by the Bureau of Land Management. With regard to the map that was provided, the Bureau of Land Management (2024c) wrote, "The haul road location is currently being adjusted by Ioneer based on the consultation process between the BLM and the U.S. Fish & Wildlife Service. As such, the current shapefiles for the haul road location would provide no valuable information." Thus, if the haul road map (see Fig. 17b) does not show the haul road that would actually be constructed, then the quarry map shown above is not the quarry that would actually be constructed, although the quarry map was the basis for the stability analyses in Geo-Logic Associates (2022, 2023). The green number refers to the Tiehm's buckwheat subpopulation. Background is Google Earth imagery from August 9, 2013. The map is projected onto the WGS84 coordinate system.	

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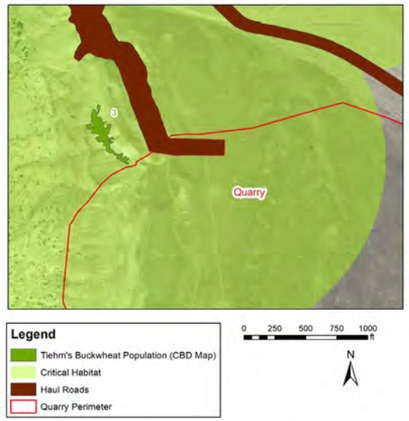


Figure 17b. The quarry perimeter shows an indentation that would exactly accommodate the planned haul road (compare with Fig. 17a). The quarry and haul road maps were provided to the Center for Biological Diversity by the Bureau of Land Management. With regard to the map that was provided, the Bureau of Land Management (2024c) wrote, "The haul road location is currently being adjusted by Ioneer based on the consultation process between the BLM and the U.S. Fish & Wildlife Service. As such, the current shapefiles for the haul road location would provide no valuable information." Thus, if the haul road map does not show the haul road that would actually be constructed, then the quarry map (see Fig. 17a) is not the quarry that would actually be constructed, although the quarry map was the basis for the stability analyses in Geo-Logic Associates (2022, 2023). The green number refers to the Tiehm's buckwheat subpopulation. Background is Google Earth imagery from August 9, 2013. The map is projected onto the WGS84 coordinate system.

The first question regarding the reliability of the calculated factor of safety was addressed based on basic scientific principles. The second question regarding the appropriate minimum factor of safety for the operational period was addressed based on the Guidelines for Open Pit Slope Design, as well as both earlier and later industry publications, and taking into account the consequences of slope failure, as discussed in the previous section. The third question regarding the appropriate minimum factor of safety for the post-closure period was addressed based on the soon to be released Guidelines for Mining Closure, as outlined in recent summaries by the principal authors. For the post-closure period, the consequences of slope failure were developed with comparison to the Global Industry Standard for Tailings Management, in addition to other industry guidance documents that relate to consequences of failure.

The fourth question regarding the Zone of Instability as specified in Western Australian guidelines was addressed by reference to Safety Bund Walls around Abandoned Open Pit Mines—Guideline (Department of Industry and Resources, 1997). Although the Western Australian governmental agency is now called the Department of Energy, Mines, Industry Regulation and Safety, recent publications on mine closure in Australia clarify that the guidelines are still in active use (Wright, 2016; de Bruyn et al, 2019; de Graaf et al., 2019). To the knowledge of the author, the only other governmental guideline or regulation regarding the unstable zone or the safe zone around a closed mining pit is Ontario Regulation 240/00—Mine Development and Closure (Government of Ontario, 2000). According to the Ontario regulations, "If boulder fencing [to indicate the boundary between the unstable zone and the safe zone] is used, the boulders … where no geotechnical study exists, shall be set back from the toe of the pit at least a distance equivalent to the pit depth so as to locate the boulder fence beyond any area of potential pit instability" (Government of Ontario, 2020). The same regulation is re-stated for the conditions "If berming is used" and "If fencing is used" (Government of Ontario, 2000). The Ontario regulation is equivalent to defining the unstable zone as the zone within a line drawn from the toe of the pit to the ground surface at a 45° angle.

According to the Western Australian guidelines, the Zone of Instability for the exterior of open pits is calculated by constructing a line from the toe of the pit to the surface. For unweathered (unoxidized) rock, the slope of the line is 45°, while the slope is 25° with respect to the horizontal for weathered (oxidized) rock. The slope of the connecting line (also called the breakback angle) changes as it passes from weathered to unweathered rock (see Fig. 18a). In pits with more complex geometry, the connecting line might intersect an interior surface before reaching the upper ground surface. In those cases, the line re-begins at the next toe (inter-ramp section) in the upward direction (see Fig. 18b). The guidelines require the construction of a safety bund wall (with a width of 5 meters) at a minimum distance of 10 meters upslope from the Zone of Instability (as measured in the horizontal direction away from the pit) (see Fig. 18a). Thus, the safe zone is regarded as 15 meters (roughly 50 feet) upslope from the Zone of Instability in the horizontal direction (see Fig. 18a). Even when there is no Zone of Instability, for example, when an open pit is constructed in unweathered rock in which the pit walls have angles shallower than 45°, the safe region still begins no closer than 50 feet from the edge of the pit. Thus, a population of Tiehm's buckwheat at a distance of 15 feet from the quarry could not be regarded as living in a safe or stable zone according to the Western Australian guidelines.

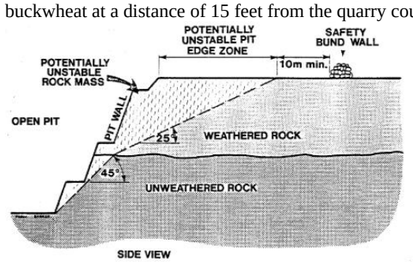
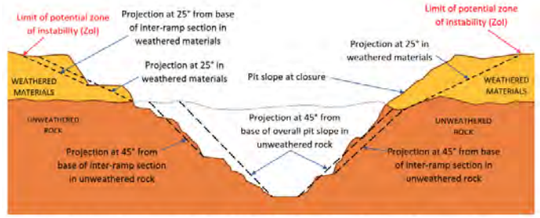


Figure 4
CASE 3: PIT WALL IN WEATHERED AND UNWEATHERED ROCK.

Comment Letter No.	Comment Number	Comment	Response
		Figure 18a. According to the guidelines of Department of Industry and Resources (Western Australia), the Zone of Instability for the exterior of open pits is calculated by constructing a line from the toe of the pit to the surface. For unweathered (strong) rock, the slope of the line is 45°, while the slope is 25° with respect to the horizontal for weathered (soft) rock. The slope of the connecting line changes as it passes from weathered to unweathered rock. The guidelines require the construction of a safety bund wall (with a width of 5 meters) at a minimum distance of 10 meters upslope from the Zone of Instability (as measured in the horizontal direction away from the pit). Thus, the safe zone is regarded as 15 meters (roughly 50 feet) upslope from the Zone of Instability in the horizontal direction. Fig. 18b shows the guidelines for a more complex pit geometry. Figure from Department of Industry and Resources (Western Australia) (1997).  Figure 2 Sectional view through the final pit showing the projected position of the potentially unstable edge zone (zone of instability – ZoI) surrounding the pit at surface **Figure 18b.** According to the guidelines of Department of Industry and Resources (Western Australia), the Zone of Instability for the exterior of open pits is calculated by constructing a line from the toe of the pit to the surface. For unweathered (strong) rock, the slope of the line is 45°, while the slope is 25° with respect to the horizontal for weathered (soft) rock. The slope of the connecting line changes as it passes from weathered to unweathered rock (see Fig. 18a). In pits with more complex geometry, the connecting line might intersect an interior surface before reaching the upper ground surface. In those cases, the line re-begins at the next toe (inter-ramp section) in the upward direction. Figure from de Bruyn et al. (2019). The Western Australian guidelines have been applied in other countries and, in some cases, have been more conservative. For example, prior to the closure of the pit at the Voorspoed diamond mine in South Africa, four slope failures had already occurred with breakback angles ranging from 13° to 20° with respect to the horizontal (de Graaf et al., 2019). Therefore, for the purpose of defining the Zone of Instability, the connecting lines were drawn at angles of 13° with respect to the horizontal. In fact, the Western Australian guidelines allow for the use of shallower angles for the connecting lines if such shallow breakback angles or zones of weakness are observed in the pit walls or in local or regional rock exposures. According to the guidelines, "The use of these design criteria is based on the assumption that no major unfavourably oriented geological features are present within the pit walls, which could induce failure at flatter slope angles" (Department of Industry and Resources, 1997). The Zone of Instability was not taken into account by Geo-Logic Associates (2022, 2023), so that this report represents the first attempt to calculate the Zone of Instability and the safe region for the quarry at the proposed Rhyolite Ridge mine. Since the DEIS does not explicitly describe any of the geologic units as weathered or unweathered, this report follows de Graaf et al. (2019) in setting the breakback angle at 25° for weak rock units and 45° for strong rock units, since the difference in shear strength is the reason for the difference in breakback angles (see Figs. 18a-b). The B5 Unit of the Cave Spring Formation (see Table 1 and Fig. 13) is the host of the ore body and has been described as very weak. The overlying units have also been described as very weak, especially the M5 Unit of the Cave Spring Formation, which immediately overlies the B5 Unit (see Table 1 and Fig. 13). According to Geo-Logic Associates (2022), "The proposed Rhyolite Ridge Lithium-Boron Project quarry encounters problematic adversely oriented bedding conditions where very low strength materials (i.e. layers M5a, M5, and B5) daylight on the proposed slope faces … The most important stratigraphic unit for the purposes of slope stability is the Cave Spring Formation M5 unit. The top 5-10 feet of the M5 unit [called M5a] contains swelling clays that are the weakest material within the deposit." According to Bureau of Land Management (2024b), "Within the Cave Springs Formation, the various geologic units have varying degrees of rock competence or strength (the ability for the rock to withstand pressure put upon it). The M5 unit has the lowest rock strength and tends to move or flow under pressure. The ore zone (Unit B5), which is in one of the more competent units, is in outcrop on the western part of the deposit, and dips easterly to depths greater than 700 feet below ground surface (bgs)." Thus, despite the low strength of the B5 Unit, it is still one of the more competent rock units. Geo-Logic Associates (2023) even pointed out that blasting would not be required for some of the geologic units overlying the ore body. According to Geo- Logic Associates (2023), "Some of the materials to be mined within the quarry are expected to be excavated without the need for blasting. This is particularly true of the greater than 100-foot thickness of the surficial alluvium [see Unit Q1 in Table 1 and Fig. 13] and portions of the M5 lithology." Based on the preceding discussion, for the purpose of determining the breakback angle for application of the Western Australian guidelines (see Figs. 18a-b), all geologic units at the stratigraphic level of B5 or higher (see Table 1 and Fig. 13) were regarded as weak (weathered), while geologic units stratigraphically lower than B5 were regarded as strong (unweathered). After calculating the Zone of Instability, the beginning of the safe zone was set as 50 feet farther away from the edge of the quarry in accordance with the Western Australian guidelines (see Fig. 18a). For the calculation of the Zone of Instability for the post-closure period, a critical rock body is the buttress. The DEIS does not identify any source of material for the buttress, so that its shear strength is entirely unknown. In the absence of any other information, for the purpose of choosing the breakback angle, the buttress material was regarded as weathered (oxidized). The fifth question regarding the assumption that the water table will not recover after dewatering and de-pressurization was addressed based on basic scientific principles, as was the first question. The sixth question regarding the adequacy of the Adaptive Management plan was addressed by reference to industry guidance documents and failure investigation reports. In this report, all maps were created and measurements were made using ESRI ArcMap v. 10.8.2. All maps are projected onto the WGS84 coordinate system.	
108 and 183	108.50 and 183.49	**RESPONSES** ***The Calculation of the Factor of Safety is Unreliable*** There are multiple grounds for concluding that the calculations of the factor of safety by Geo-Logic Associates (2022, 2023; see Fig. 15) are unreliable. Whether the minimum factor of safety of 1.2 was the correct choice is a different matter, which is discussed in the following two subsections. The geotechnical parameters for each geologic unit that were the input data for the calculation of the factor of safety are stated with ultra-precision, sometimes with as many as five significant digits (see Fig. 13). Geo-Logic Associates (2022, 2023) does not provide any information on the uncertainty in the input data that would justify such a high degree of precision. As mentioned earlier, the DEIS does not identify any source of construction material for the buttress, so the material properties of the buttress must be regarded as purely hypothetical (see Fig. 13). Geo-Logic Associates (2022) states that some of the material properties were obtained from a consulting report by EnviroMine (2019) that is not available for public review. In the report by EnviroMine (2019), some of the geotechnical parameters were developed from laboratory data, but the final values were based partly on the "judgment" of EnviroMine (2019). Other parameters were selected by Geo-Logic Associates (2022) without basis in documented measurements of the geologic units at the site of the proposed Rhyolite Ridge mine, so that they were presumably also based on "judgment." According to Geo-Logic Associates (2022), "Shear strength characteristics and material properties were taken from EnviroMine (2019) and used for GLA's analyses documented herein. Laboratory test results from EnviroMine (2019) … The final strength values utilized for each lithology within the limit equilibrium analyses was derived from the lab testing data	A conservative approach was used for estimation of geotechnical parameters based on the materials encountered on site. Material properties are listed on Figure 3-5 of the GLA report. The material properties utilized in the analyses were derived from the EnviroMine (2019) report. The material parameters incorporated are conservative values based on the results of various laboratory tests. These conservative values provide a reliable foundation for the stability analyses, reducing the need for additional sensitivity analyses regarding the material properties. Materials Properties are listed on Figure 3-5 (GLA 2022). This conservative approach ensures that the safety factors used are robust and account for any potential variability in the material properties. Material properties are listed on Figure 3-5 of the GLA report.

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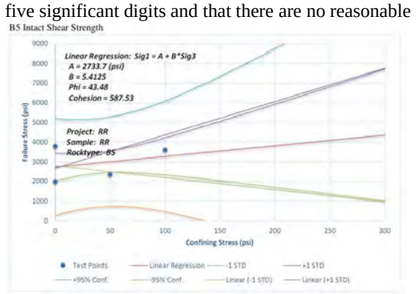
		and selected based on analyses and engineering judgment by EnviroMine. Some materials noted on the cross sections provided by NewFields do not have material parameters developed by EnviroMine. For these cases, GLA utilized conservative material parameters consistent with the described properties of other materials." Geo-Logic Associates (2022) does not clarify which parameters were obtained from EnviroMine (2019) and which were chosen by Geo-Logic Associates, nor does Geo-Logic Associates (2022) explain the procedures by which material properties were derived from laboratory data by EnviroMine (2019). There is also no explanation as to the bases for the "engineering judgments" by EnviroMine (2019) nor the choices of "conservative material parameters consistent with the described properties of other materials" by Geo-Logic Associates (2022). Geo-Logic Associates (2022) does present a portion of the raw geotechnical data that were used by EnviroMine (2019) to develop the material properties (see Fig. 13). These raw data do not provide confidence in the lack of uncertainty and ultra-precision that is shown in the list of material properties (see Fig. 13). Many of the raw data involve only three or four measurements on a single rock sample. For example, Fig. 19 shows four measurements of the failure stress as a function of the confining stress on a sample from Unit B5. The four measurements are widely scattered and do not in any way appear to fall along a straight line (see Fig. 19). Of course, it is always possible to construct a best-fit straight line to any four points and to state the slope and intercept of the line to five significant digits, as was done in Fig. 19. However, for this rock sample, the correct procedure would have been to observe that the failure stress was independent of the confining stress, to compute the intercept by averaging the four values of failure stress, and to set the slope of the line at zero. Such a procedure would have been more consistent with the "engineering judgment" that was claimed by Geo-Logic Associates (2022) to have been used by EnviroMine (2019). In the same way that the geotechnical parameters are stated with no uncertainty (see Fig. 13), the calculated values for the factor of safety are also stated as single values with no uncertainty (see Fig. 15). There is no discussion of the standard deviations of the factors of safety and no presentations of the distributions of possible values of the factor of safety (compare Fig. 15 with Fig. 10) that would make it possible to calculate the probability of failure. In this respect, the danger of excessive reliance on the mean value of the factor of safety without consideration of the width of the distribution of values (such as the standard deviation) should be recalled (see Fig. 11). It is most important that there is no sensitivity analysis that would show the range of possible factors of safety that could result from reasonably possible alternative values for the geotechnical parameters. If a calculated factor of safety would fall below the selected minimum factor of safety for some reasonable choice of geotechnical parameters, then results such are shown in Fig. 15 should be used with great caution. The possibility that the material properties are actually known to five significant digits and that there are no reasonable alternative values is simply absurd, especially in light of the large scatter in the raw geotechnical data (see Fig. 19).  **Figure 19.** Geo-Logic Associates (2022) presented some of the raw laboratory data that was used to derive the material properties of the geologic units (see Fig. 13). The raw data show a small number of measurements (3 or 4) for each rock sample with a high degree of scatter. Although a straight line can be fit to the four scattered points in the above graph, the slope and intercept of the line should be regarded as highly uncertain. The high degree of uncertainty in the raw data does not justify the ultraprecision with which the slope and intercept are written on the graph nor the ultraprecision and lack of any uncertainty in the material properties (see Fig. 13). The high degree of data uncertainty should be taken into account in the determination of the minimum factor of safety and the maximum probability of failure for both the operating (see Figs. 22 and 23a) and post-closure (see Figs. 26a-c) periods. Figure from Geo-Logic Associates (2022). At the present time, a sensitivity analysis is a standard feature of evaluations of slope stability. According to the textbook Geotechnical Engineering of Dams, "In any slope stability analysis it is good practice to check the calculated factor of safety for a range of strengths, e.g. lower quartile and lower bound, to determine the sensitivity of the factor of safety to the assumed strength" (Fell et al., 2015). According to a guidance document by the Australian National Committee on Large Dams, "It is good practice that analyses are carried out to assess the sensitivity of the factor of safety to assumptions on shear strength, pore pressures and geometry of sliding, and that the embankment is designed to be stable within a range of assumptions" (ANCOLD, 2012, 2019). It is noteworthy that the DEIS carries out sensitivity analyses for dust generation and for the chemical risk to wildlife from the quarry lake, but not for stability of the quarry slopes. According to the DEIS, "The North OSF, Quarry Infill OSF, and West OSF were modeled for PM10 [particulate matter smaller than 10 microns] under the Proposed Action. The first and sixth highest concentrations were determined (7.03 and 8.20 µg/m3). For the sensitivity analysis, the stockpiles were shifted to reflect the new geographic locations for the North and South OSF Alternative. Based on a sensitivity analysis that assessed the alternative's proposed locations of the OSFs, the highest impact areas were increased by 2.0 to 3.5 µg/m3 (8.98 and 11.91 µg/m3) … The purpose of the ERA [Ecological Risk Assessment] was to evaluate the potential for chemical risk to wildlife from exposure or ingestion of the water in the quarry lake. The ERA evaluated two scenarios: a base case scenario (Proposed Action) and twelve sensitivity analyses in which climatic input, groundwater inflow rate, and quarry wall runoff was manipulated within the model" (Bureau of Land Management, 2024a).	For the report completed by GLA, no new drilling and geotechnical tests were conducted. Instead, the geotechnical data were sourced from previous investigations and other available resources. Specifically, they relied on the geotechnical report prepared by EnviroMine in 2019 to obtain the necessary geotechnical parameters and details of the cross sections required for stability analyses. This existing report provided a set of data, eliminating the need for additional fieldwork or testing by GLA. The GLA report from 2022 incorporates the test results from the EnviroMine (2019) report, which includes a variety of tests such as direct shear tests, uniaxial compressive strength tests, triaxial tests, and Brazilian tensile strength tests, among others. These tests provide a thorough characterization of the material properties, ensuring that there is no uncertainty regarding the material properties used in the stability analyses. The availability of these detailed test results and laboratory reports means that the data used are robust and reliable, thus supporting the conclusions drawn in the GLA report. To address the uncertainty in material properties, GLA utilized the values provided in the previous report by EnviroMine for their initial analyses. These values offer a baseline for understanding the geotechnical characteristics of the site. The effect of watering the surface for dust control purposes is not significant and does not warrant analysis in the slope stability assessments for mine closure. This means that the water used to control dust on the mine surface does not appreciably affect the stability of the mine slopes. Therefore, including this factor in the slope stability analysis is unnecessary. The primary concern of dust control is to minimize airborne particulates for environmental and health reasons, which has minimal impact on the geotechnical stability of the slopes. GLA undertook a full assessment by examining various cross-sections throughout the mine site. They conducted multiple stability analyses on different walls to ensure a thorough evaluation of the mine's stability. These analyses are detailed in the geotechnical report by GLA (2022). The report includes stability assessments for 19 distinct sections of the mine walls, the results are documented in the report. Also, the details and outcomes of these analyses are presented in Appendix G of the report. This extensive examination of multiple cross-sections ensures that all critical areas of the mine are evaluated, providing an understanding of the overall stability and safety of the mine site during and after closure. GLA did not use Guidelines for Mine Closure published by the LOPP, which is mentioned here in the comments as the reference. Geo-Logic Associate used Chapter 9 of "Guidelines for Open Pit Slope Design" (Read & Stacey, 2009) for design criteria, which is one of the sources typically used in US. The "Guidelines for Open Pit Slope Design" by Read and Stacey (2009) does not explicitly provide a fixed minimum Factor of Safety for mine closure and post-closure periods. Instead, it emphasizes that the acceptable Factor of Safety should be determined based on specific site conditions, the nature of the materials, and the risk associated with potential slope failures. Typically, the guidelines suggest a more conservative Factor of Safety for the post-closure period compared to the operational period, acknowledging the long-term stability requirements and potential consequences of failure. This level of safety is deemed sufficient based on geological assessments and historical data, making it a practical and economically viable choice for mine closure operations. It allows for the allocation of resources towards other critical areas of the closure plan, ensuring a comprehensive and financially sustainable approach. Furthermore, the effectiveness of a 1.2 Factor of Safety is reinforced by GLA's proposed methodologies for slope monitoring. Continuous and advanced monitoring techniques are integral to detecting any potential instabilities in real-time, thereby preventing slope failures during and after the mine closure process. These monitoring strategies include the use of instruments

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			like inclinometers, piezometers, and radar systems, which provide precise and timely data on slope movements and groundwater conditions. With proactive monitoring in place, a Factor of Safety of 1.2 can ensure the long-term stability of mine slopes, as any signs of potential failure can be addressed promptly, thereby maintaining safety and structural integrity throughout the closure phase. The geotechnical report from GLA adhered to the methodologies and standards outlined in the "Guidelines for Open Pit Slope Design" by Read & Stacey (2009). These guidelines are internationally recognized and provide comprehensive criteria for assessing the stability of open pit slopes. Consequently, the report did not incorporate the Zone of Instability guidelines specified by the Western Australian Department of Industry and Resources, as it focuses primarily on ensuring compliance with the Factor of Safety requirements specified in the Read & Stacey guidelines. The stability of the slopes, as shown in the GLA report, is fundamentally dependent on the thorough slope stability analyses conducted in accordance with these established guidelines. The current geotechnical report details the location of the Tiehm's buckwheat plants on Figure 12. The report did not account for the presence or location of these plants in their stability analysis as an external load as it was determined to be lightweight and not be a significant load factor. Of the 19 cross-sections used in the analysis, the general location of the plants and their habitat were captured in the study (GLA 2023 Figure 12). The buckwheat protection plan provides more detail regarding the location of the plants and the habitat and discusses the monitoring required for slope stability. Monitoring and management measures are detailed in the GLA report as well as the Buckwheat Protection Plan that was made available to the public within the Threatened and Endangered Species SER. Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS. The Biological Opinion will, in part, assess impacts from pit stability.
108 and 183	108.51 and 183.50	***The Choice of the Minimum Operating Factor of Safety is too Low*** The choice of a minimum factor of safety of 1.2 for the operating period is now compared with mining industry standards. Wesseloo and Read (2009) reviewed the history of minimum factors of safety for mine pit slopes prior to stating the recommendations that were made in Guidelines for Open Pit Slope Design (Read and Stacey, 2009). For consequences of failure in the Very Serious category, Priest and Brown (1983) recommended a minimum factor of safety of 2.0 with a maximum probability of failure of 0.30% and a maximum probability of 5% that the true factor of safety is less than 1.5 (see Fig. 20a). Even for the Moderately Serious category, Priest and Brown (1983) recommended a minimum factor of safety of 1.6 with a maximum probability of failure of 1% and a maximum probability of 10% that the true factor of safety is less than 1.5 (see Fig. 20a). Wesseloo and Read (2009) clarified that the intention of Priest and Brown (1983) was that a stable slope was a slope that satisfied all three of the design acceptance criteria (factor of safety, probability that the true factor of safety is less than 1.0, probability that the true factor of safety is less than 1.5) (see Figs. 20a-b). Since Geo-Logic Associates (2023) has stated that the cessation of mining activity would be an appropriate response to slope instability that affected Tiehm's buckwheat habitat, the consequences of slope failure should certainly fall into the Very Serious category. According to Swan and Sepulveda (2000), for the final (outer) wall of an open pit, the minimum factor of safety against slope failure should be 1.30-1.60 with maximum probabilities of failure of 8-12%, depending upon the volume of material that would be involved in the landslide (see Fig. 21). The recommendation of the Guidelines for Open Pit Slope Design was that, for High consequences of failure, the minimum factor of safety should be in the range 1.3-1.5 with maximum probability of failure of 5% (see Fig. 22). The recommendations state explicitly that the minimum factor of safety plus the maximum probability of failure must both be satisfied (in addition to a minimum factor of safety of 1.1 during seismic loading) (see Fig. 22). Thus, the recommendation of the Guidelines for Open Pit Slope Design cannot be fulfilled without a consideration of the standard deviation and the distribution of possible values of the factor of safety (see Fig. 10). As mentioned above, the cessation of mining activity in response to slope instability would certainly constitute a High consequence of failure. The range of 1.3-1.5 depends upon the uncertainty in the factor of safety, which reflects the uncertainty in the input data, with the upper end of the range corresponding to high uncertainty. Based on the preceding subsection, the uncertainty is high, so that the appropriate minimum factor of safety against slope failure during pit operation should be 1.5 plus a maximum probability of failure of 5%. Therefore, the minimum factor of safety of 1.2 that was chosen by Geo-Logic Associates (2022, 2023) for the operational period is far too low. **Table 9.3:** FoS and PoF guidelines Acceptable values Consequence of failure | Examples | Mean FoS | Minimum P[FoS < 1.0] | Maximum P[FoS < 1.5] Not serious | Individual benches; small (< 50 m), temporary slopes, not adjacent to haulage roads | 1.3 | 10% | 20% Moderately serious | Any slope of a permanent or semi-permanent nature | 1.6 | 1% | 10% Very serious | Medium-sized (50–100 m) and high slopes (<150 m) carrying major haulage roads or underlying permanent mine installations | 2.0 | 0.30% | 5% Source: Priest & Brown (1983) **Figure 20a.** According to Priest and Brown (1983), the factor of safety against failure for mine pit slopes should be 1.3, 1.6, and 2.0 during mine operation for consequences of failure that are Not Serious, Moderately Serious, and Very Serious, respectively. Moreover, the maximum probability of failure (probability that the true factor of safety is less than 1.0) should be 10%, 1% and 0.3% for consequences of failure that are Not Serious, Moderately Serious, and Very Serious, respectively. Compared with the guidelines by Priest and Brown (1983), the minimum factor of safety of 1.2	A conservative approach was used for estimation of geotechnical parameters based on the materials encountered on site. Material properties are listed on Figure 3-5 of the GLA report. The material properties utilized in the analyses were derived from the EnviroMine (2019) report. The material parameters incorporated are conservative values based on the results of various laboratory tests. These conservative values provide a reliable foundation for the stability analyses, reducing the need for additional sensitivity analyses regarding the material properties. Materials Properties are listed on Figure 3-5 (GLA 2022). This conservative approach ensures that the safety factors used are robust and account for any potential variability in the material properties. Material properties are listed on Figure 3-5 of the GLA report. For the report completed by GLA, no new drilling and geotechnical tests were conducted. Instead, the geotechnical data were sourced from previous investigations and other available resources. Specifically, they relied on the geotechnical report prepared by EnviroMine in 2019 to obtain the necessary geotechnical parameters and details of the cross sections required for stability analyses. This existing report provided a set of data, eliminating the need for additional fieldwork or testing by GLA. The GLA report from 2022 incorporates the test results from the EnviroMine (2019) report, which includes a variety of tests such as direct shear tests, uniaxial compressive strength tests, triaxial tests, and Brazilian tensile strength tests, among others. These tests provide a thorough characterization of the material properties, ensuring that there is no uncertainty regarding the material properties used in the stability analyses. The availability of these detailed test results and laboratory reports

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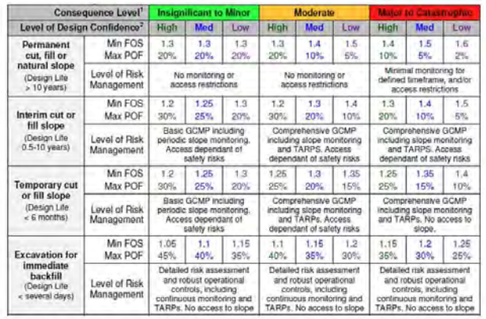
		during mine operation that was assumed by Geo-Logic Associates (2022, 2023) is completely inadequate. Since Geo-Logic Associates (2023) has identified the suspension or cessation of mining activity as an appropriate response if there is slope instability near sensitive habitat, the consequences of slope failure at the proposed Rhyolite Ridge mine should be regarded as Very Serious. The significance of specifying both a minimum factor of safety and maximum probabilities of failure is clarified in Fig. 20b. The heading "Mean FoS" in the above table should be understood as the mean of the distribution of all possible values of the factor of safety (see Fig. 10). Table from Wesseloo and Read (2009). **Table 9.4:** Interpretation of Priest & Brown (1983) FoS and PoF guidelines **Performance of slope with respect to Table 9.3** / **Interpretation** Satisfies all three criteria / Stable slope Exceeds minimum mean FoS but violates one or both probabilistic criteria / Operation of slope presents risk that may or may not be acceptable; level of risk can be reduced by comprehensive monitoring program Falls below minimum mean FoS but satisfies both probabilistic criteria / Marginal slope: minor modifications of slope geometry required to raise mean FoS to satisfactory level Falls below minimum mean FoS and violates one or both probabilistic criteria / Unstable slope: major modifications of slope geometry required; rock improvement and slope monitoring may be necessary **Figure 20b.** The above table clarifies the significance of the guidelines for mine pit slopes in Priest and Brown (1983) that require a minimum factor of safety, a maximum probability of failure (probability that the true factor of safety is less than 1.0) and a maximum probability that the true factor safety is less than 1.5. In particular, a stable slope should satisfy all three criteria. Table from Wesseloo and Read (2009).  **Figure 21.** According to Swan and Sepulveda (2000), for the final wall of an open pit, the minimum factor of safety against slope failure should be 1.30-1.60 with maximum probabilities of failure of 8-12%, depending upon the volume of material that would be involved in the landslide. Compared with the guidelines by Swan and Sepulveda (2000), the minimum factor of safety of 1.2 during mine operation that was assumed by Geo-Logic Associates (2022, 2023) is completely inadequate. Table from Wesseloo and Read (2009). **Table 9.9:** Typical FoS and PoF acceptance criteria values Acceptance criteria[a] Slope scale / Consequences of failure[b] / FoS (min) (static) / FoS (min) (dynamic) / PoF (max) P[FoS ≤ 1] Bench / Low–High / 1.1 / NA / 25–50% Inter-ramp / Low / 1.15–1.2 / 1.0 / 25% Medium / 1.2 / 1.0 / 20% High / 1.2–1.3 / 1.1 / 10% Overall / Low / 1.2–1.3 / 1.0 / 15–20% Medium / 1.3 / 1.05 / 5–10% High / 1.3–1.5 / 1.1 / ≤5% a: Needs to meet all acceptance criteria b: Semi-quantitatively evaluated (see Figure 13.9) **Figure 22.** The above table shows the recommendations of the industry guidance book Guidelines for Open Pit Slope Design (Read and Stacey, 2009), which have been confirmed by the SME Surface Mining Handbook (Mohanty et al., 2023) (see Table 2). For High consequences of failure, the minimum overall factor of safety against slope failure should be 1.3-1.5 during static (non-seismic) loading and 1.1 during dynamic (seismic) loading, with a maximum probability of failure of 5%. The table clarifies that all three criteria must be satisfied. Since Geo-Logic Associates (2023) has identified the suspension or cessation of mining activity as an appropriate response if there is instability near sensitive habitat, the consequences of slope failure at the proposed Rhyolite Ridge mine should be regarded as High. The range of 1.3-1.5 depends upon the uncertainty in the input data, with high certainty corresponding to the upper end of the range. Thus, based on the high uncertainty in the geotechnical data for the Rhyolite Ridge mine (see, for example, Fig. 19), a minimum static factor of safety of 1.5 and maximum probability of failure of 5% would be appropriate during mine operation. Compared with the recommendations of the Guidelines for Open Pit Slope Design and the SME Surface Mining Handbook, the minimum factor of safety of 1.2 during mine operation that was assumed by Geo-Logic Associates (2022, 2023) is completely inadequate. Table from Wesseloo and Read (2009). Mohanty et al. (2023) repeat the recommendations of the Guidelines for Open Pit Slope Design (Read and Stacey, 2009) in the SME Surface Mining Handbook (Darling, 2023) (see Table 2), thus, constituting confirmation of the guidelines by the US-based Society for Mining, Metallurgy and Exploration. Additional industry publications have clarified and, in some ways, strengthened the recommendations of the Guidelines for Open Pit Slope Design. According to Adams (2015), for a permanent pit slope with a design life longer than ten years, and with Major to Catastrophic consequences of failure, the minimum factor of safety should be 1.5 and the maximum probability of failure should be 5% if the Level of Design Confidence (data certainty) is Medium (see Fig. 23a), which is the same as the recommendations of the Guidelines for Open Pit Slope Design. However, if the Level of Design Confidence drops to Low, then the minimum factor of safety should be 1.6 and the maximum probability of failure should be 2%. Based upon the discussion in the preceding subsection, at the present time, the Level of Design Confidence for the quarry at the proposed Rhyolite Ridge mine should be regarded as Low.	means that the data used are robust and reliable, thus supporting the conclusions drawn in the GLA report. To address the uncertainty in material properties, GLA utilized the values provided in the previous report by EnviroMine for their initial analyses. These values offer a baseline for understanding the geotechnical characteristics of the site. The effect of watering the surface for dust control purposes is not significant and does not warrant analysis in the slope stability assessments for mine closure. This means that the water used to control dust on the mine surface does not appreciably affect the stability of the mine slopes. Therefore, including this factor in the slope stability analysis is unnecessary. The primary concern of dust control is to minimize airborne particulates for environmental and health reasons, which has minimal impact on the geotechnical stability of the slopes. GLA undertook a full assessment by examining various cross-sections throughout the mine site. They conducted multiple stability analyses on different walls to ensure a thorough evaluation of the mine's stability. These analyses are detailed in the geotechnical report by GLA (2022). The report includes stability assessments for 19 distinct sections of the mine walls, the results are documented in the report. Also, the details and outcomes of these analyses are presented in Appendix G of the report. This extensive examination of multiple cross-sections ensures that all critical areas of the mine are evaluated, providing an understanding of the overall stability and safety of the mine site during and after closure. GLA did not use Guidelines for Mine Closure published by the LOPP, which is mentioned here in the comments as the reference. Geo-Logic Associate used Chapter 9 of "Guidelines for Open Pit Slope Design" (Read & Stacey, 2009) for design criteria, which is one of the sources typically used in US. The "Guidelines for Open Pit Slope Design" by Read and Stacey (2009) does not explicitly provide a fixed minimum Factor of Safety for mine closure and post-closure periods. Instead, it emphasizes that the acceptable Factor of Safety should be determined based on specific site conditions, the nature of the materials, and the risk associated with potential slope failures. Typically, the guidelines suggest a more conservative Factor of Safety for the post-closure period compared to the operational period, acknowledging the long-term stability requirements and potential consequences of failure. This level of safety is deemed sufficient based on geological assessments and historical data, making it a practical and economically viable choice for mine closure operations. It allows for the allocation of resources towards other critical areas of the closure plan, ensuring a comprehensive and financially sustainable approach. Furthermore, the effectiveness of a 1.2 Factor of Safety is reinforced by GLA's proposed methodologies for slope monitoring. Continuous and advanced monitoring techniques are integral to detecting any potential instabilities in real-time, thereby preventing slope failures during and after the mine closure process. These monitoring strategies include the use of instruments like inclinometers, piezometers, and radar systems, which provide precise and timely data on slope movements and groundwater conditions. With proactive monitoring in place, a Factor of Safety of 1.2 can ensure the long-term stability of mine slopes, as any signs of potential failure can be addressed promptly, thereby maintaining safety and structural integrity throughout the closure phase. The geotechnical report from GLA adhered to the methodologies and standards outlined in the "Guidelines for Open Pit Slope Design" by Read & Stacey (2009). These guidelines are internationally recognized and provide comprehensive criteria for assessing the stability of open pit slopes. Consequently, the report did not incorporate the Zone of Instability guidelines specified by the Western Australian Department of Industry and Resources, as it focuses primarily on ensuring compliance with the Factor of Safety

Comment Letter No.	Comment Number	Comment	Response
		Table 2. Acceptance criteria for factor of safety and probability of failure for open pits: Recommendations of Society for Mining, Metallurgy and Exploration (SME)1	requirements specified in the Read & Stacey guidelines. The stability of the slopes, as shown in the GLA report, is fundamentally dependent on the thorough slope stability analyses conducted in accordance with these established guidelines. The current geotechnical report details the location of the Tiehm's buckwheat plants on Figure 12. The report did not account for the presence or location of these plants in their stability analysis as an external load as it was determined to be lightweight and not be a significant load factor. Of the 19 cross-sections used in the analysis, the general location of the plants and their habitat were captured in the study (GLA 2023 Figure 12). The buckwheat protection plan provides more detail regarding the location of the plants and the habitat and discusses the monitoring required for slope stability. Monitoring and management measures are detailed in the GLA report as well as the Buckwheat Protection Plan that was made available to the public within the Threatened and Endangered Species SER. Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS. The Biological Opinion will, in part, assess impacts from pit stability.

Consequence of Failure	Factor of Safety	Probability of Failure (%)
Low (operating highwall)	.2-1.3	115-20
Moderate (operating highwall)	1.3	10
High (ultimate highwall)	1.3-1.5	5
1Redrawn from Mohanty et al. (2023)		

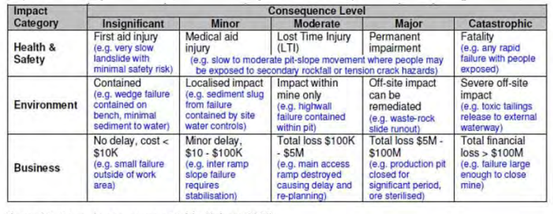


Consequence Level[1]		Insignificant to Minor			Moderate			Major to Catastrophic		
Level of Design Confidence[2]		High	Med	Low	High	Med	Low	High	Med	Low
Permanent cut, fill or natural slope (Design Life > 10 years)	Min FOS	1.3	1.3	1.3	1.3	1.4	1.5	1.4	1.5	1.6
	Max POF	20%	20%	20%	20%	10%	5%	10%	5%	2%
	Level of Risk Management	No monitoring or access restrictions			No monitoring or access restrictions			Minimal monitoring for defined timeframe, and/or access restrictions		
Interim cut or fill slope (Design Life 0.5-10 years)	Min FOS	1.2	1.25	1.3	1.2	1.3	1.4	1.3	1.4	1.5
	Max POF	30%	25%	20%	30%	20%	10%	20%	10%	5%
	Level of Risk Management	Basic GCMP including periodic slope monitoring. Access dependant of safety risks			Comprehensive GCMP including slope monitoring and TARPs. Access dependant of safety risks			Comprehensive GCMP including slope monitoring and TARPs. Access dependant of safety risks		
Temporary cut or fill slope (Design Life < 6 months)	Min FOS	1.2	1.25	1.3	1.25	1.3	1.35	1.25	1.35	1.4
	Max POF	30%	25%	20%	25%	20%	15%	25%	15%	10%
	Level of Risk Management	Basic GCMP including periodic slope monitoring. Access dependant of safety risks			Comprehensive GCMP including slope monitoring and TARPs. Access dependant of safety risks			Comprehensive GCMP including slope monitoring and TARPs. No access to slope.		
Excavation for immediate backfill (Design Life < several days)	Min FOS	1.05	1.1	1.15	1.1	1.15	1.2	1.15	1.2	1.25
	Max POF	45%	40%	35%	40%	35%	30%	35%	30%	25%
	Level of Risk Management	Detailed risk assessment and robust operational controls, including continuous monitoring and TARPs. No access to slope			Detailed risk assessment and robust operational controls, including continuous monitoring and TARPs. No access to slope			Detailed risk assessment and robust operational controls, including continuous monitoring and TARPs. No access to slope		

Figure 15 Example Factor of Safety (FoS)-Probability of Failure (PoF) selection matrix (Adams 2015). [1] Consequence level from business risk assessment, see Figure 14. [2] Design confidence subjective rating. [3] PoF calculated for the slope sector analyses, not the global PoF

Figure 23a. According to Adams (2015), for permanent slopes in open pits, during mine operation, for Major to Catastrophic consequences of failure, the minimum factor of safety against slope failure should be 1.4-1.6 and the maximum probabilities of failure should be 2-10%. The ranges depend upon the uncertainty in the input data (or "Level of Design Confidence"), with high certainty corresponding to the upper end of the range for minimum factor of safety and the lower end of the range for maximum probability of failure. Since Geo-Logic Associates (2023) has identified the suspension or cessation of mining activity as an appropriate response if there is instability near sensitive habitat, the consequences of slope failure at the proposed Rhyolite Ridge mine should be regarded as Major to Catastrophic (see further information in Fig. 23b). Thus, based on the recommendations of Adams (2015) and the high uncertainty in the geotechnical data for the Rhyolite Ridge mine (see, for example, Fig. 19), a minimum static factor of safety of 1.6 and maximum probability of failure of 2% would be appropriate for slope failure at the Rhyolite Ridge mine. Compared with the guidelines by Adams (2015), the minimum factor of safety of 1.2 during mine operation that was assumed by Geo-Logic Associates (2022, 2023) is completely inadequate. Table from de Graaf et al. (2019).

Adams (2015) provides further information regarding the meaning of consequences of failure. Adams (2015) clarifies that the Consequence Level that is used to set the design acceptance criteria is a "business risk assessment" (as opposed to an environmental or a health and safety assessment) (see Fig. 23a). Adams (2015) then states that an example of a Major consequence level would be "production pit closed for significant period" and an example of a Catastrophic consequence level would be "failure large enough to close mine" (see Fig. 23b). On that basis, the proposed responses by Geo-Logic Associates (2023) to indications of slope instability of "suspending mining activity" or "stopping mining activity" would certainly place the consequences of quarry slope failure at the Rhyolite Ridge mine into the categories of Major or Catastrophic.



Impact Category	Consequence Level				
	Insignificant	Minor	Moderate	Major	Catastrophic
Health & Safety	First aid injury (e.g. very slow landslide with minimal safety risk)	Medical aid injury (e.g. slow to moderate pit-slope movement where people may be exposed to secondary rockfall or tension crack hazards)	Lost Time Injury (LTI)	Permanent impairment	Fatality (e.g. any rapid failure with people exposed)
Environment	Contained (e.g. wedge failure contained on bench, minimal sediment to water)	Localised impact (e.g. sediment slug from failure contained by site water controls)	Impact within mine only (e.g. highwall failure contained within pit)	Off-site impact can be remediated (e.g. waste-rock slide runout)	Severe off-site impact (e.g. toxic tailings release to external waterway)
Business	No delay, cost < $10K (e.g. small failure outside of work area)	Minor delay, $10 - $100K (e.g. inter ramp slope failure requires stabilisation)	Total loss $100K - $5M (e.g. main access ramp destroyed causing delay and re-planning)	Total loss $5M - $100M (e.g. production pit closed for significant period, ore sterilised)	Total financial loss > $100M (e.g. failure large enough to close mine)

Figure 14 Example consequence table (Adams 2015)

Figure 23b. According to Adams (2015), examples of Major consequences of failure include "production pit closed for significant period", while examples of Catastrophic consequences of failure include "failure large enough to close mine." Since Geo-Logic Associates (2023) has identified the suspension or cessation of mining activity as an appropriate response if there is instability near sensitive habitat, the consequences of slope failure at the proposed Rhyolite Ridge mine should be regarded as Major to Catastrophic (see application of this conclusion in Fig. 23a). Table from de Graaf et al. (2019).

108 and 183	108.52 and 183.51	***The Choice of the Minimum Post-Closure Factor of Safety is too Low*** There are two main reasons as to why the minimum factor of safety must increase in the transition from the operational to the post-closure period. First, any data uncertainty during the operational period is amplified into the post-closure period. Even if there is excellent knowledge of the geotechnical properties during pit operation, there is much less certainty about the rate and extent of the degradation over time of the strength of the rock masses adjacent to the pit walls (de Bruyn et al., 2019; Carter et al., 2022; de Graaf et al., 2024). In addition, it has already been mentioned that there are still gaps in theoretical knowledge regarding the processes that drive rock strength degradation (de Graaf et al., 2024; see Fig. 8). Therefore, keeping the factor of safety fixed even as the data uncertainty increases has the potential to greatly increase the probability of failure during the post-closure period (see Fig. 24). The second reason as to why the minimum factor of safety must increase is that the post-closure period will see a reduction in or complete cessation of monitoring, as well as a reduction in or the complete absence of an onsite trained workforce. Thus, the reduced ability to detect instability or to respond to instability in a timely manner means that the probability of failure must be greatly reduced.	A conservative approach was used for estimation of geotechnical parameters based on the materials encountered on site. Material properties are listed on Figure 3-5 of the GLA report. The material properties utilized in the analyses were derived from the EnviroMine (2019) report. The material parameters incorporated are conservative values based on the results of various laboratory tests. These conservative values provide a reliable foundation for the stability analyses, reducing the need for additional sensitivity analyses regarding the material properties. Materials Properties are listed on Figure 3-5 (GLA 2022). This

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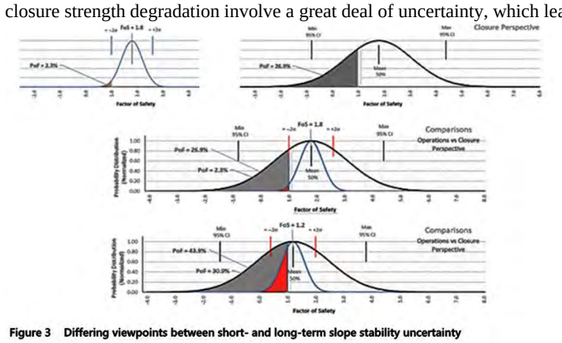
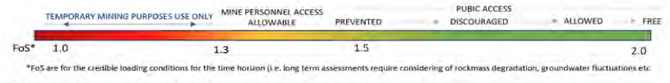
		Carter et al. (2022) has proposed a minimum factor of safety even greater than 2.0 during the post-closure period (see Fig. 25a). Carter et al. (2022) has also emphasized that the calculation of factor of safety for the post-closure period must be based upon the strength of the rock masses and the groundwater levels that will exist in the post-closure period, not the greater strength and lower water table of the operational period (see Fig. 25a). There are case studies and recommendations for estimating post-closure shear strengths (de Bruyn et al., 2019). These estimates of post-closure strength degradation involve a great deal of uncertainty, which leads precisely to the point that there must be an increase in the minimum factor of safety.  Figure 3 Differing viewpoints between short- and long-term slope stability uncertainty **Figure 24.** If the factor of safety against slope failure remains unchanged as the mine transitions from operating (short-term) to post-closure (long-term), then the probability of failure increases. As a result, the post-closure factor of safety should be greater than the operating factor of safety. For a given factor of safety, the probability of failure increases after closure because of the greater uncertainty in the input data that are used to calculate the factor of safety. The uncertainty in input data for the post-closure condition include uncertainty in the long-term degradation of the rock mass due to the time-delayed impacts of blasting and changes in topography and stress levels (see Figs. 6-7) and the lack of current theoretical knowledge regarding the long-term interactions among erosional processes, slope instability, and climatic change (see Fig. 8). The upper row compares typical probabilities of failure (shaded areas) for the operating condition (left-hand side) and the post-closure condition (right-hand side) for a given factor of safety of 1.8. The middle row superimposes the two distributions of factor of safety for the operating and postclosure conditions for a mean factor of safety of 1.8. The bottom row superimposes the two distributions of factor of safety for the operating and post-closure conditions for a mean factor of safety of 1.2. Figure from Carter et al. (2022). Macciotta et al. (2020) has recommended that mine closure plans should “aim for the highest credible FoS [Factor of Safety]”, especially at the point of relinquishment of the open pit (see Fig. 25b). At the same time, the probability of failure should be lowered to the ALARP (As Low as Reasonably Practicable) level (see Fig. 25b). The word “credible” and the expression “ALARP” require clarification. “Credible” should be understood in the sense of “believable” or “reliable.” A non-credible claim that the post-closure factor of safety will be 3.0 does not benefit anyone. The issue is that, for very large factors of safety, the probability of failure is controlled not by the bulk properties of materials, but the presence of thin discontinuities or zones of weakness, which would not be revealed without extensive geotechnical field testing. According to Silva et al. (2008), “Increasing the safety factor well beyond the typical values used for earth structures provides little benefit with respect to the corresponding probability of failure. Discontinuities, weak zones, wet zones, high or low permeability zones, and other features that can elude a geotechnical investigation control the level of safety for grossly overdesigned facilities.” According to the Global Industry Standard for Tailings Management, “ALARP requires that all reasonable measures be taken with respect to ‘tolerable’ or acceptable risks to reduce them even further until the cost and other impacts of additional risk reduction are grossly disproportionate to the benefit” (ICMM-UNEP-PRI, 2020). By this point, it should be clear that the selection of the minimum factor of safety of 1.2 for the post-closure period at the proposed Rhyolite Ridge mine is grossly out-of-line with contemporary guidance.  Figure 7 Comparative scale of Factor of Safety in operations versus closure **Figure 25a.** The above color scale shows how the appropriate minimum factor of safety against slope failure might increase from less than 1.3 during mine operation to even greater than 2.0 during post-closure. There are two reasons for the increase in the appropriate minimum factor of safety in the transition from the operating state to the postclosure state. First, there is greater uncertainty in the input data that are used to calculate the factor of safety (see Fig. 24). The uncertainty in input data for the post-closure condition include uncertainty in the long-term degradation of the rock mass due to the time-delayed impacts of blasting and changes in topography and stress levels (see Figs. 6-7) and the lack of current theoretical knowledge regarding the long-term interactions among erosional processes, slope instability, and climatic change (see Fig. 8). Second, there will be a decrease in or a complete lack of monitoring and on-site trained personnel during the post-closure period and, thus, a decreased inability to respond to any indication of slope instability. The figure clarifies that, for the post-closure state, the factor of safety should be calculated based on the degraded rock mass strength that will evolve in the post-closure state, not for the greater rock mass strength that would have prevailed prior to and during open pit operation. Figure from Carter et al. (2022).	conservative approach ensures that the safety factors used are robust and account for any potential variability in the material properties. Material properties are listed on Figure 3-5 of the GLA report. For the report completed by GLA, no new drilling and geotechnical tests were conducted. Instead, the geotechnical data were sourced from previous investigations and other available resources. Specifically, they relied on the geotechnical report prepared by EnviroMine in 2019 to obtain the necessary geotechnical parameters and details of the cross sections required for stability analyses. This existing report provided a set of data, eliminating the need for additional fieldwork or testing by GLA. The GLA report from 2022 incorporates the test results from the EnviroMine (2019) report, which includes a variety of tests such as direct shear tests, uniaxial compressive strength tests, triaxial tests, and Brazilian tensile strength tests, among others. These tests provide a thorough characterization of the material properties, ensuring that there is no uncertainty regarding the material properties used in the stability analyses. The availability of these detailed test results and laboratory reports means that the data used are robust and reliable, thus supporting the conclusions drawn in the GLA report. To address the uncertainty in material properties, GLA utilized the values provided in the previous report by EnviroMine for their initial analyses. These values offer a baseline for understanding the geotechnical characteristics of the site. The effect of watering the surface for dust control purposes is not significant and does not warrant analysis in the slope stability assessments for mine closure. This means that the water used to control dust on the mine surface does not appreciably affect the stability of the mine slopes. Therefore, including this factor in the slope stability analysis is unnecessary. The primary concern of dust control is to minimize airborne particulates for environmental and health reasons, which has minimal impact on the geotechnical stability of the slopes. GLA undertook a full assessment by examining various cross-sections throughout the mine site. They conducted multiple stability analyses on different walls to ensure a thorough evaluation of the mine's stability. These analyses are detailed in the geotechnical report by GLA (2022). The report includes stability assessments for 19 distinct sections of the mine walls, the results are documented in the report. Also, the details and outcomes of these analyses are presented in Appendix G of the report. This extensive examination of multiple cross-sections ensures that all critical areas of the mine are evaluated, providing an understanding of the overall stability and safety of the mine site during and after closure. GLA did not use Guidelines for Mine Closure published by the LOPP, which is mentioned here in the comments as the reference. Geo-Logic Associate used Chapter 9 of “Guidelines for Open Pit Slope Design” (Read & Stacey, 2009) for design criteria, which is one of the sources typically used in US. The "Guidelines for Open Pit Slope Design" by Read and Stacey (2009) does not explicitly provide a fixed minimum Factor of Safety for mine closure and post-closure periods. Instead, it emphasizes that the acceptable Factor of Safety should be determined based on specific site conditions, the nature of the materials, and the risk associated with potential slope failures. Typically, the guidelines suggest a more conservative Factor of Safety for the post-closure period compared to the operational period, acknowledging the long-term stability requirements and potential consequences of failure. This level of safety is deemed sufficient based on geological assessments and historical data, making it a practical and economically viable choice for mine closure operations. It allows for the allocation of resources towards other critical areas of the closure plan, ensuring a comprehensive and financially sustainable approach. Furthermore, the effectiveness of a 1.2 Factor of Safety is reinforced

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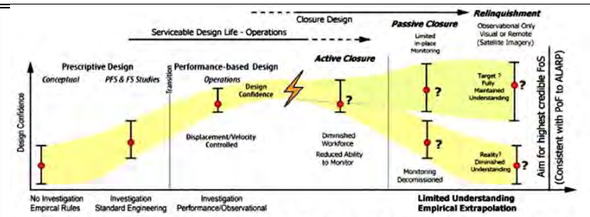
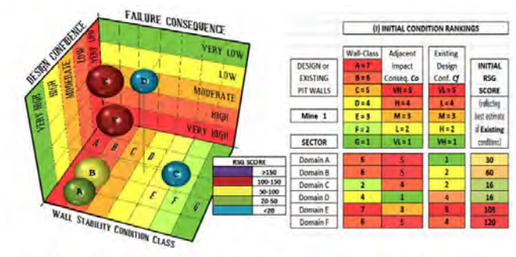
		 **Figure 2 Conceptual level of mine life geotechnical understanding with indications for possible range of understanding at relinquishment, based on slope behaviour in post-operations close-down and decommissioning, as well as long timeline forecasting into passive closure (adapted from Macciotta et al. 2020); Lightning bolt symbolises change in focus: operations to closure)** **Figure 25b.** According to the above diagram, the minimum factor of safety against slope failure during the postclosure period (or certainly by the time of the relinquishment of the open pit) should aim for the highest credible value, while the maximum probability of failure should be reduced to the ALARP (As Low as Reasonably Practicable) level. There are two reasons for the increase in the appropriate minimum factor of safety in the transition from the operating state to the post-closure state. First, there is greater uncertainty in the input data that are used to calculate the factor of safety (see Fig. 24). The uncertainty in input data for the post-closure condition include uncertainty in the long-term degradation of the rock mass due to the time-delayed impacts of blasting and changes in topography and stress levels (see Figs. 6-7) and the lack of current theoretical knowledge regarding the long-term interactions among erosional processes, slope instability, and climatic change (see Fig. 8). Second, there will be a decrease in or a complete lack of monitoring and on-site trained personnel during the post-closure period and, thus, a decreased inability to respond to any indication of slope instability. Figure from Carter et al. (2022). Carter et al. (2022) includes an excellent step-by-step summary of the procedures for recommending an appropriate minimum factor of safety for the post-closure period that will be found in the upcoming Guidelines for Mine Closure (LOP, 2024). The minimum factor of safety against slope failure during the post-closure period should be determined based upon the Relative Stability Guideline (RSG) for each slope. The RSG is the product of the score for the Pit Wall Condition Class (on a scale of 1 to 7 with lower scores indicating more competent slopes), the Adjacent Impact Consequence (on a scale of 1 to 5 with higher scores indicating more severe consequences), and the Existing Design Confidence (on a scale of 1 to 5 with higher scores indicating less confidence or greater data uncertainty). Fig. 26a shows an example for a particular open pit. For Domain F in the pit, the product of a score of 6 for Pit Wall Condition Class B, a score of 5 for Very High consequences, and a score of 4 for Low Existing Design Confidence yields an RSG of 120. This would be a very dangerous situation and the recommendation is for “avoidance of any slopes with RSGs > 100” (Carter et al., 2022). By contrast, the goal is “targeting slope geometries to achieve RSG scores of less than 20” (Carter et al., 2022). Note that the design confidence could be increased (reducing the score) by the acquisition of more high-quality data, while the failure consequences could be reduced (also reducing the score) by changing the location of the pit wall with respect to populated areas, civil infrastructure, or cultural and biological resources. The Wall Condition Class is more difficult to change and really just reflects the geotechnical materials of the pit walls, although it can be affected by changing the geometry of the pit walls or by constructing buttresses.  **Figure 9 Conceptual results of relative stability guideline assessments for hypothetical example open pit configuration and sector geometry shown in Figure 8** **Figure 26a.** According to the mining industry guidance book Guidelines for Mine Closure (de Graaf et al., 2021, 2024; LOP, 2024), the minimum factor of safety against slope failure during the post-closure period should be determined based upon the Relative Stability Guideline (RSG) for each slope. The RSG is the product of the score for the Pit Wall Condition Class (on a scale of 1 to 7 with lower scores indicating more competent slopes), the Adjacent Impact Consequence (on a scale of 1 to 5 with higher scores indicating more severe consequences), and the Existing Design Confidence (on a scale of 1 to 5 with higher scores indicating less confidence or greater data uncertainty). The figure shows an example for a particular open pit. For Domain F in the pit, the product of a score of 6 for Pit Wall Condition Class B, a score of 5 for Very High consequences, and a score of 4 for Low Existing Design Confidence yields an RSG of 120. Note that the design confidence could be increased (reducing the score) by the acquisition of more high-quality data, while the failure consequences could be reduced (also reducing the score) by changing the location of the pit wall with respect to populated areas, civil infrastructure, or cultural and biological resources. See further information regarding Guidelines for Mine Closure in Figs. 26b-c. Figure from Carter et al. (2022). The procedures in Guidelines for Mine Closure can now be applied to the quarry at the proposed Rhyolite Ridge mine. Fig. 26b shows a rough equivalence (at the screening level) between the Pit Wall Condition Class and the calculated factor of safety. The only relevant Pit Wall Condition Classes would be C (corresponding to a factor of safety of 1.2) and D (corresponding to a factor of safety of 1.5 (see Fig. 26b). Although the lack of reliability of the calculated factors of safety has already been discussed, the post-closure factors of safety (after buttress construction) are closer to 1.2 for Sections TR02E-6, TR02E-9, and TR02E-11 and closer to 1.5 for Sections TR02E-5, TR02E-7, and TR02E-8 (see Fig. 15). Pit Wall Condition C is described as “unvegetated slopes with uncontrolled rockfall risk and undesirable risk of failure” and with “high level of concern,” while Pit Wall Condition D is described as “standard design reliability, slopes with rockfall control” and with “moderate level of concern” (Carter et al., 2022; see Fig. 26b). Pit Wall Condition is assigned a score of 5, while Pit Wall Condition D is assigned a score of 4 (see Fig. 26a).	by GLA’s proposed methodologies for slope monitoring. Continuous and advanced monitoring techniques are integral to detecting any potential instabilities in real-time, thereby preventing slope failures during and after the mine closure process. These monitoring strategies include the use of instruments like inclinometers, piezometers, and radar systems, which provide precise and timely data on slope movements and groundwater conditions. With proactive monitoring in place, a Factor of Safety of 1.2 can ensure the long-term stability of mine slopes, as any signs of potential failure can be addressed promptly, thereby maintaining safety and structural integrity throughout the closure phase. The geotechnical report from GLA adhered to the methodologies and standards outlined in the "Guidelines for Open Pit Slope Design" by Read & Stacey (2009). These guidelines are internationally recognized and provide comprehensive criteria for assessing the stability of open pit slopes. Consequently, the report did not incorporate the Zone of Instability guidelines specified by the Western Australian Department of Industry and Resources, as it focuses primarily on ensuring compliance with the Factor of Safety requirements specified in the Read & Stacey guidelines. The stability of the slopes, as shown in the GLA report, is fundamentally dependent on the thorough slope stability analyses conducted in accordance with these established guidelines. The current geotechnical report details the location of the Tiehm’s buckwheat plants on Figure 12. The report did not account for the presence or location of these plants in their stability analysis as an external load as it was determined to be lightweight and not be a significant load factor. Of the 19 cross-sections used in the analysis, the general location of the plants and their habitat were captured in the study (GLA 2023 Figure 12). The buckwheat protection plan provides more detail regarding the location of the plants and the habitat and discusses the monitoring required for slope stability. Monitoring and management measures are detailed in the GLA report as well as the Buckwheat Protection Plan that was made available to the public within the Threatened and Endangered Species Supplemental Environmental Report. Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS. The Biological Opinion will, in part, assess impacts from pit stability.

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		(see below)	

Table 3 **Suggested screening classification table for benchmarking open pit slope wall conditions and probable significance for slope failure risk (modified from Carter & Miller 1995; McCracken & Jones 1986; Kirsten & Moss 1985; Priest & Brown 1983; Pine 1992; Cole 1993)**

Existing pit wall condition class	Existing pit wall likely Probability of Failure %	Existing pit wall likely Factor of Safety*	Assessed existing wall reliability index*, ß)	Existing pit wall likely long-term reliability*	Indicative stakeholder position on closure strategy	Suggested Controls	
						Public Access	Operating Surveillance
A	50 – 100	<1	<0.1	Effectively zero	Totally Unacceptable	Forbidden	Ineffective
B	20 – 50	1.0	0.5	Quasi-stable Slopes	Not acceptable	Forcibly Prevented	Continuous sophisticated monitoring
C	10 – 20	1.2	1.0	Unvegetated slopes with uncontrolled rockfall risk and undesirable risk of failure	High level of concern	Actively prevented	Continuous monitoring with instruments
D	5 – 10	1.5	1.2	Standard design reliability, slopes w/rockfall control	Moderate level of concern	Prevented	Continuous simple monitoring
E	1.5 – 5	1.8	1.5	Good design reliability, unvegetated slopes, but w/rockfall protection	Low to moderate level of concern	Discouraged	Conscious superficial monitoring
F	0.5 – 1.5	2.0	2.5	Design reliability to routine civil design standards, incl. rockfall protection & berm drainage	Of limited concern	Allowed	Incidental superficial monitoring
G	<0.5	>>2	>3	Extremely high reliability, controls far exceed credible hazards (vegetated slope to full highway design standards)	Of no concern	Free	No monitoring required

*For closure loading conditions considering material degradation & longevity events

Note $\beta = \log_{10}(PoF)$, where $PoF = p(FoS<1.0) = p(SM<0) = 10^{\beta}$ (after Pine 1992).

Figure 26b. According to the mining industry guidance book Guidelines for Mine Closure (de Graaf et al., 2021, 2024; LOP, 2024), the assumption of a minimum factor of safety against slope failure of 1.2 by Geo-Logic Associates (2022, 2023) would put the pit slopes at the Rhyolite Ridge mine into Pit Wall Condition Class C, corresponding to a score of 5 (see Fig. 26a). Note that Pit Wall Condition Class D (more competent slopes) would require a calculated factor of safety of 1.5. The above table describes Pit Wall Condition Class C as "unvegetated slopes with uncontrolled rockfall risk and undesirable risk of failure," together with "high level of concern" and the need for "continuous monitoring with instruments." Figure from Carter et al. (2022).

In the post-closure period, the slope failure consequence of the cessation of mining activity is no longer relevant, since mining activity will already have ceased. Carter et al. (2022) do not discuss the loss of irreplaceable biological resources in terms of a failure consequence category, so recourse must be sought in other types of mining industry guidance documents. The Global Industry Standard on Tailings Management has a five-level consequence scale (Low, Significant, High, Very High, Extreme) for failure of tailings facilities. Extreme failure consequences include "catastrophic loss of critical habitat or rare and endangered species" (ICMM-UNEP-PRI, 2020), which would be analogous to the irreplaceable loss of Tiehm's buckwheat habitat. The International Commission on Large Dams (ICOLD) also has a five-level scale for consequences of failure for tailings dams. For this scale, Extreme consequences include "catastrophic loss of critical environmental values including rare and endangered species of high significance" (ICOLD, 2022). Finally, the Canadian Dam Association has a five-level scale for consequences of failure of both water-retention and tailings dams. In this case, Extreme consequences include "major loss of critical fish or wildlife habitat" (Canadian Dam Association, 2013). By comparison with the three preceding industry guidance documents, in the terms of the five-level scale of Guidelines for Mine Closure, the loss of Tiehm's buckwheat habitat should have an Adjacent Impact Consequence of Very High, corresponding to a score of 5 (see Fig. 26a).

At this point, the discussion will be temporarily restricted to Sections TR02E-6, TR02E-9, and TR02E-11 (see Figs. 14-15), which have been assigned to Pit Wall Condition Class C with a score of 5 (see Figs. 26a-b). All three sections intersect Tiehm's buckwheat population (see Fig. 14). In this regard, Section TR02E-11 is the most critical since it intersects the Tiehm's buckwheat population that occurs only 15 feet from the proposed quarry (compare Fig. 14 with Figs. 2 and 3a-b). The multiplication of a Wall-Class Condition score of 5 and an Adjacent Impact Consequence score of 5 yields 25, which still needs to be multiplied by the score for Existing Design Confidence to obtain the RSG. The RSG score would need to be less than 20 for a minimum post-closure factor of safety in the range 1.2-1.5 (see Fig. 26c). Note that, according to Fig. 26c, a minimum post-closure factor of safety of 1.2 would not be acceptable under any circumstances, no matter how low the RSG score was. In the case of Sections TR02E-6, TR02E-9, and TR02E-11, an RSG score of 25 would result from an Existing Design Confidence of Very High with a score of 1 (see Fig. 26a). At the present time, the Existing Design Confidence must be quite low, but it could be imagined that it might eventually be brought up to Medium with a score of 3 (see Fig. 26a). Scores for the Wall-Class Condition, Adjacent Impact Consequence, and Existing Design Confidence of 5, 5, and 3, respectively, would yield an RSG score of 75, which would imply a minimum post-closure factor of safety greater than 2.0 (see Fig. 2c). Note that, even an Existing Design Confidence of High (score of 2) would yield an RSG score of 50, which would still imply a minimum post-closure factor of safety greater than 2.0 (see Fig. 26c).

The less critical Sections TR02E-5, TR02E-7, and TR02E-8 with Pit Wall Condition D (score of 4) can now be considered. The Adjacent Impact Consequence should still be Very High with a score of 5 (see Fig. 26a). If the Existing Design Confidence could be raised to Medium (score of 3), then the RSG score would be 60, which would again imply a minimum post-closure factor of safety greater than 2.0 (see Fig. 26c). However, if the Existing Design Confidence could be raised to High (score of 2), then the RSG score would be reduced to 40, which would imply a minimum post-closure factor of safety in the range 1.5-2.0 (see Fig. 26c). In summary, a minimum post-closure factor of safety of 2.0 seems to be reasonable, which is far greater than the minimum post-closure factor of safety of 1.2 that was selected by Geo-Logic Associates (2022, 2023).

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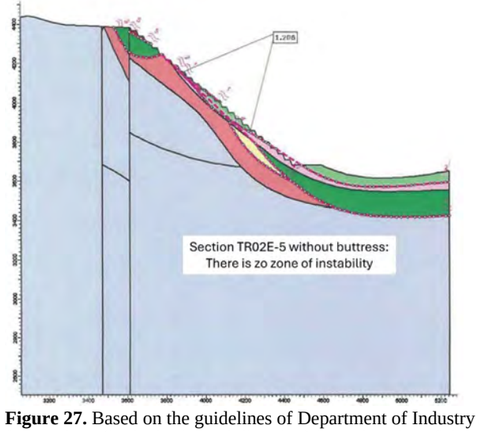
		Table 4 Suggested actions, dependent on RSG score RSG score / RSG level / Appropriate action RSG>100 — Extreme — Comprehensive and extremely rigorous analysis required, based likely on additional data acquisition so that deep understanding of failure mechanisms and behaviour can be gained to allow extremely robust controls to be implemented. Very high design reliability required. **FoS >> 2 needed unless quantitative risk analysis (QRA) undertaken** 50≤RSG≤100 — High — Rigorous analysis necessary, so that thorough understanding of mechanisms is gained, so robust controls can be implemented. High design reliability required. **FoS > 2** 20≤RSG≤50 — Moderate — Standard analysis sufficient, good understanding needed of scenario so that appropriate controls can be implemented. Good design reliability required. **FoS > 1.5** RSG<20 — Low — Apply good practice, guidance and hierarchy of controls. Fair design reliability required **FoS > 1.2** **Figure 26c.** The RSG score for the pit slopes at the Rhyolite Ridge mine can be calculated by multiplying the score of 5 for Pit Wall Condition Class C (see Fig. 26b) by the scores for Existing Design Confidence and Adjacent Impact Consequence (see Fig. 26b). The Guidelines for Mine Closure do not address the irreplaceable loss of biological resources, but other five-level consequence classifications, such as the Global Industry Standard for Tailings Management place accidents with "catastrophic loss of critical habitat or rare and endangered species" (ICMMUNEP-PRI, 2020) into the most severe category of Extreme consequences. Thus, a score of 5 for Adjacent Impact Consequences, corresponding to Very High consequences (see Fig. 26a), would yield an RSG score of 25 multiplied by the score for Existing Design Confidence. On that basis, the minimum post-closure factor of safety of 1.2, which was assumed by Geo-Logic Associates (2022, 2023) would not be appropriate even if the Existing Design Confidence could be raised to the level of Very High (corresponding to a score of 1) (see Fig. 26a). The Existing Design Confidence is certainly not at the level of Very High, based on the low-quality geotechnical data that are currently available (see, for example, Fig. 19). If the Existing Design Confidence could be raised to a level of Medium with a score of 3 (see Fig. 26a), then the RSG score would be 75, which would demand a post-closure factor of safety greater than 2.0. The best that could be hoped for would be to raise the Existing Design Confidence to High (score of 2) or Very High (score of 1), yielding RSG scores of 50 and 25, respectively, both of which would demand minimum post-closure factors of safety greater than 1.5.	
108 and 183	108.52 and 183.51	***The Post-Closure Zone of Instability has not been Taken into Account*** From a superficial standpoint, Geo-Logic Associates (2022, 2023) appears to have calculated some version of a "Zone of Instability" through using the limit equilibrium method to calculate the location of the critical failure surfaces, which are the curved lines labeled with a boxed number indicating the factor of safety in Figs. 27, 28a-b, 29a-b, 30a-b, 31a-b, and 32a-b (compare with list of calculated factors of safety in Fig. 15). For example, the shifting of the critical failure surface inward toward the quarry after construction of a buttress would seem to reduce or eliminate any unstable zone outside of the quarry after closure. The standpoint is superficial for three reasons. First, just as there has been no sensitivity analysis as to how the factor of safety would change in response to reasonably possible alternative values of the geotechnical parameters, there has been no analysis as to how the location of the critical failure surface might change. If the location of the critical failure surface could change significantly, especially if it did not shift in an inward direction after construction of a buttress, then any predictions regarding the elimination of an unstable zone should be viewed with great caution.  **Figure 27.** Based on the guidelines of Department of Industry and Resources (Western Australia) (1997), Section TR02E-5 (see Fig. 14) has no Zone of Instability, so that the region more than 50 feet upslope (in the horizontal direction) from the edge of the quarry could be regarded as a safe zone (see Fig. 18a and Table 3). Since the entire section consists of rock units stratigraphically lower than B5 (see Fig. 13 and Table 1), all of the rocks were assumed to be unweathered (strong), so the line connecting the toe of the pit with the surface should have a 45° angle (see Fig. 18a). The lack of a Zone of Instability results from the slope of the pit being shallower than 45°. Figure is portion of figure from Geo-Logic Associates (2023) with addition of a label.	A conservative approach was used for estimation of geotechnical parameters based on the materials encountered on site. Material properties are listed on Figure 3-5 of the GLA report. The material properties utilized in the analyses were derived from the EnviroMine (2019) report. The material parameters incorporated are conservative values based on the results of various laboratory tests. These conservative values provide a reliable foundation for the stability analyses, reducing the need for additional sensitivity analyses regarding the material properties. Materials Properties are listed on Figure 3-5 (GLA 2022). This conservative approach ensures that the safety factors used are robust and account for any potential variability in the material properties. Material properties are listed on Figure 3-5 of the GLA report. For the report completed by GLA, no new drilling and geotechnical tests were conducted. Instead, the geotechnical data were sourced from previous investigations and other available resources. Specifically, they relied on the geotechnical report prepared by EnviroMine in 2019 to obtain the necessary geotechnical parameters and details of the cross sections required for stability analyses. This existing report provided a set of data, eliminating the need for additional fieldwork or testing by GLA. The GLA report from 2022 incorporates the test results from the EnviroMine (2019) report, which includes a variety of tests such as direct shear tests, uniaxial compressive strength tests, triaxial tests, and Brazilian tensile strength tests, among others. These tests provide a thorough characterization of the material properties, ensuring that there is no uncertainty regarding the material properties used in the stability analyses. The availability of these detailed test results and laboratory reports means that the data used are robust and reliable, thus supporting the conclusions drawn in the GLA report. To address the uncertainty in material properties, GLA utilized the values provided in the previous report by EnviroMine for their initial analyses. These values offer a baseline for understanding the geotechnical characteristics of the site. .

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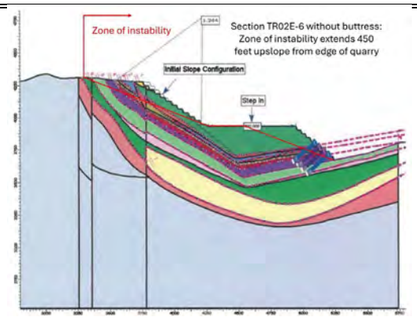
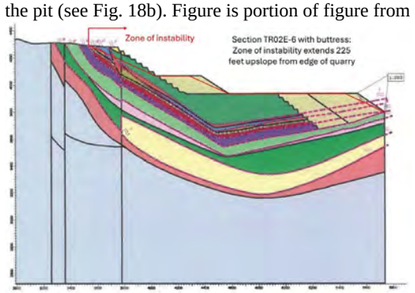
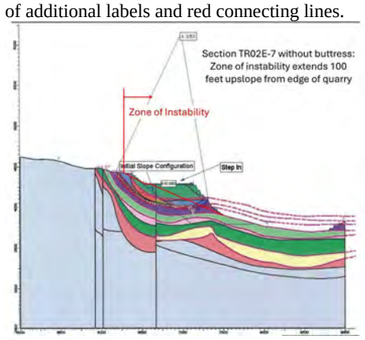
		 **Figure 28a.** Based on the guidelines of Department of Industry and Resources (Western Australia) (1997), the Zone of Instability for Section TR02E-6 (see Fig. 14), without a buttress, extends 450 feet upslope from the edge of the quarry, so that the region more than 500 feet upslope (in the horizontal direction) from the edge of the quarry could be regarded as a safe zone (see Fig. 18a and Table 3). Since all of the rocks above the toe of the pit are at the stratigraphic level of Unit B5 or higher (see Fig. 13 and Table 1), all rocks are regarded as weathered (weak) and the red connecting lines are drawn with slopes of 25° with respect to the horizontal. The above diagram follows the guidelines for complex pit geometries in which the connecting line intersects an interior surface of the pit (see Fig. 18b). Figure is portion of figure from Geo-Logic Associates (2023) with overlay of additional labels and red connecting lines.  **Figure 28b.** Based on the guidelines of Department of Industry and Resources (Western Australia) (1997), the Zone of Instability for Section TR02E-6 (see Fig. 14), with a buttress, extends 225 feet upslope from the edge of the quarry, so that the region more than 275 feet upslope (in the horizontal direction) from the edge of the quarry could be regarded as a safe zone (see Fig. 18a and Table 3). Thus, the addition of a buttress reduced the width of the Zone of Instability from 450 feet (compare with Fig. 28a and Table 3), but did not eliminate the Zone of Instability. Since all of the rocks above the toe of the pit are at the stratigraphic level of Unit B5 or higher (see Fig. 13 and Table 1), all rocks are regarded as weathered (weak) and the red connecting lines are drawn with slopes of 25° with respect to the horizontal. In the absence of any further information, it is assumed that the buttress will be constructed out of weathered or oxidized material. The above diagram follows the guidelines for complex pit geometries in which the connecting line intersects an interior surface of the pit (see Fig. 18b). Figure is portion of figure from Geo-Logic Associates (2023) with overlay of additional labels and red connecting lines.  **Figure 29a.** Based on the guidelines of Department of Industry and Resources (Western Australia) (1997), the Zone of Instability for Section TR02E-7 (see Fig. 14), without a buttress, extends 100 feet upslope from the edge of the quarry, so that the region more than 150 feet upslope (in the horizontal direction) from the edge of the quarry could be regarded as a safe zone (see Fig. 18a and Table 3). Since all of the rocks above the toe of the pit are at the stratigraphic level of Unit B5 or higher (see Fig. 13 and Table 1), all rocks are regarded as weathered (weak) and the red connecting lines are drawn with slopes of 25° with respect to the horizontal. The above diagram follows the guidelines for complex pit geometries in which the connecting line intersects an interior surface of the pit (see Fig. 18b). Figure is portion of figure from Geo-Logic Associates (2023) with overlay of additional labels and red connecting lines.	The effect of watering the surface for dust control purposes is not significant and does not warrant analysis in the slope stability assessments for mine closure. This means that the water used to control dust on the mine surface does not appreciably affect the stability of the mine slopes. Therefore, including this factor in the slope stability analysis is unnecessary. The primary concern of dust control is to minimize airborne particulates for environmental and health reasons, which has minimal impact on the geotechnical stability of the slopes. GLA undertook a full assessment by examining various cross-sections throughout the mine site. They conducted multiple stability analyses on different walls to ensure a thorough evaluation of the mine's stability. These analyses are detailed in the geotechnical report by GLA (2022). The report includes stability assessments for 19 distinct sections of the mine walls, the results are documented in the report. Also, the details and outcomes of these analyses are presented in Appendix G of the report. This extensive examination of multiple cross-sections ensures that all critical areas of the mine are evaluated, providing an understanding of the overall stability and safety of the mine site during and after closure. GLA did not use Guidelines for Mine Closure published by the LOPP, which is mentioned here in the comments as the reference. Geo-Logic Associate used Chapter 9 of “Guidelines for Open Pit Slope Design” (Read & Stacey, 2009) for design criteria, which is one of the sources typically used in US. The "Guidelines for Open Pit Slope Design" by Read and Stacey (2009) does not explicitly provide a fixed minimum Factor of Safety for mine closure and post-closure periods. Instead, it emphasizes that the acceptable Factor of Safety should be determined based on specific site conditions, the nature of the materials, and the risk associated with potential slope failures. Typically, the guidelines suggest a more conservative Factor of Safety for the post-closure period compared to the operational period, acknowledging the long-term stability requirements and potential consequences of failure. This level of safety is deemed sufficient based on geological assessments and historical data, making it a practical and economically viable choice for mine closure operations. It allows for the allocation of resources towards other critical areas of the closure plan, ensuring a comprehensive and financially sustainable approach. Furthermore, the effectiveness of a 1.2 Factor of Safety is reinforced by GLA’s proposed methodologies for slope monitoring. Continuous and advanced monitoring techniques are integral to detecting any potential instabilities in real-time, thereby preventing slope failures during and after the mine closure process. These monitoring strategies include the use of instruments like inclinometers, piezometers, and radar systems, which provide precise and timely data on slope movements and groundwater conditions. With proactive monitoring in place, a Factor of Safety of 1.2 can ensure the long-term stability of mine slopes, as any signs of potential failure can be addressed promptly, thereby maintaining safety and structural integrity throughout the closure phase. The geotechnical report from GLA adhered to the methodologies and standards outlined in the "Guidelines for Open Pit Slope Design" by Read & Stacey (2009). These guidelines are internationally recognized and provide comprehensive criteria for assessing the stability of open pit slopes. Consequently, the report did not incorporate the Zone of Instability guidelines specified by the Western Australian Department of Industry and Resources, as it focuses primarily on ensuring compliance with the Factor of Safety requirements specified in the Read & Stacey guidelines. The stability of the slopes, as shown in the GLA report, is fundamentally dependent on the thorough slope stability analyses conducted in accordance with these established guidelines. The current geotechnical report details the location of the Tiehm’s buckwheat plants on Figure 12. The report did not account for the presence or location of these plants in their stability analysis as an external load as it was determined to

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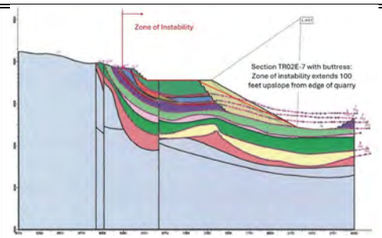
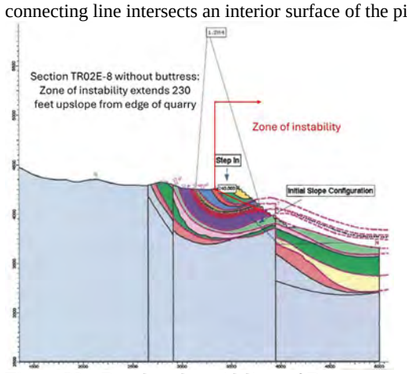
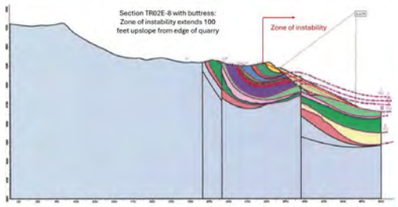
		 **Figure 29b.** Based on the guidelines of Department of Industry and Resources (Western Australia) (1997), the Zone of Instability for Section TR02E-7 (see Fig. 14), with a buttress, extends 100 feet upslope from the edge of the quarry, so that the region more than 150 feet upslope (in the horizontal direction) from the edge of the quarry could be regarded as a safe zone (see Fig. 18a and Table 3). Thus, the addition of a buttress did not change the width of the Zone of Instability (compare with Fig. 28a and Table 3). Since all of the rocks above the toe of the pit are at the stratigraphic level of Unit B5 or higher (see Fig. 13 and Table 1), all rocks are regarded as weathered (weak) and the red connecting lines are drawn with slopes of 25° with respect to the horizontal. In the absence of any further information, it is assumed that the buttress will be constructed out of weathered or oxidized material. The above diagram follows the guidelines for complex pit geometries in which the connecting line intersects an interior surface of the pit (see Fig. 18b). Figure is portion of figure from Geo-Logic Associates (2023) with overlay of additional labels and red connecting lines.  **Figure 30a.** Based on the guidelines of Department of Industry and Resources (Western Australia) (1997), the Zone of Instability for Section TR02E-8 (see Fig. 14), without a buttress, extends 230 feet upslope from the edge of the quarry, so that the region more than 280 feet upslope (in the horizontal direction) from the edge of the quarry could be regarded as a safe zone (see Fig. 18a and Table 3). Since all of the rocks above the toe of the pit are at the stratigraphic level of Unit B5 or higher (see Fig. 13 and Table 1), all rocks are regarded as weathered (weak) and the red connecting lines are drawn with slopes of 25° with respect to the horizontal. The above diagram follows the guidelines for complex pit geometries in which the connecting line intersects an interior surface of the pit (see Fig. 18b). Figure is portion of figure from Geo-Logic Associates (2023) with overlay of additional labels and red connecting lines.  **Figure 30b.** Based on the guidelines of Department of Industry and Resources (Western Australia) (1997), the Zone of Instability for Section TR02E-8 (see Fig. 14), with a buttress, extends 100 feet upslope from the edge of the quarry, so that the region more than 150 feet upslope (in the horizontal direction) from the edge of the quarry could be regarded as a safe zone (see Fig. 18a and Table 3). Thus, the addition of a buttress reduced the width of the Zone of Instability from 230 feet (compare with Fig. 30a and Table 3), but did not eliminate the Zone of Instability. Since all of the rocks above the toe of the pit are at the stratigraphic level of Unit B5 or higher (see Fig. 13 and Table 1), all rocks are regarded as weathered (weak) and the red connecting lines are drawn with slopes of 25° with respect to the horizontal. In the absence of any further information, it is assumed that the buttress will be constructed out of weathered or oxidized material. The above diagram follows the guidelines for complex pit geometries in which the connecting line intersects an interior surface of the pit (see Fig. 18b). Figure is portion of figure from Geo-Logic Associates (2023) with overlay of additional labels and red connecting lines.	be lightweight and not be a significant load factor. Of the 19 cross-sections used in the analysis, the general location of the plants and their habitat were captured in the study (GLA 2023 Figure 12). The buckwheat protection plan provides more detail regarding the location of the plants and the habitat and discusses the monitoring required for slope stability. Monitoring and management measures are detailed in the GLA report as well as the Buckwheat Protection Plan that was made available to the public within the Threatened and Endangered Species Supplemental Environmental Report. Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS. The Biological Opinion will, in part, assess impacts from pit stability.

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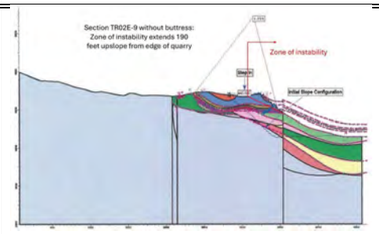
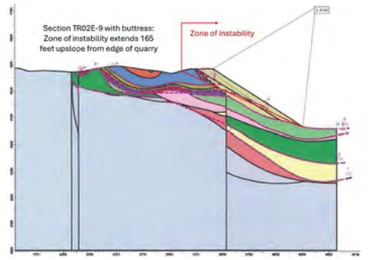
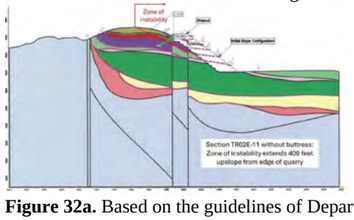
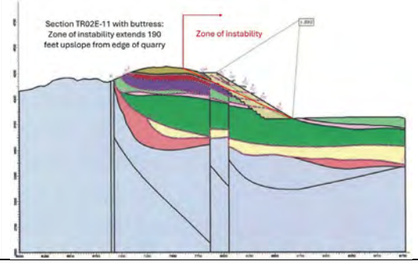
		 **Figure 31a.** Based on the guidelines of Department of Industry and Resources (Western Australia) (1997), the Zone of Instability for Section TR02E-9 (see Fig. 14), without a buttress, extends 190 feet upslope from the edge of the quarry, so that the region more than 240 feet upslope (in the horizontal direction) from the edge of the quarry could be regarded as a safe zone (see Fig. 18a and Table 3). Since all of the rocks above the toe of the pit are at the stratigraphic level of Unit B5 or higher (see Fig. 13 and Table 1), all rocks are regarded as weathered (weak) and the red connecting lines are drawn with slopes of 25° with respect to the horizontal. The above diagram follows the guidelines for complex pit geometries in which the connecting line intersects an interior surface of the pit (see Fig. 18b). Figure is portion of figure from Geo-Logic Associates (2023) with overlay of additional labels and red connecting lines.  **Figure 31b.** Based on the guidelines of Department of Industry and Resources (Western Australia) (1997), the Zone of Instability for Section TR02E-9 (see Fig. 14), with a buttress, extends 165 feet upslope from the edge of the quarry, so that the region more than 215 feet upslope (in the horizontal direction) from the edge of the quarry could be regarded as a safe zone (see Fig. 18a and Table 3). Thus, the addition of a buttress reduced the width of the Zone of Instability from 190 feet (compare with Fig. 31a and Table 3), but did not eliminate the Zone of Instability. Since all of the rocks above the toe of the pit are at the stratigraphic level of Unit B5 or higher (see Fig. 13 and Table 1), all rocks are regarded as weathered (weak) and the red connecting lines are drawn with slopes of 25° with respect to the horizontal. In the absence of any further information, it is assumed that the buttress will be constructed out of weathered or oxidized material. The above diagram follows the guidelines for complex pit geometries in which the connecting line intersects an interior surface of the pit (see Fig. 18b). Figure is portion of figure from Geo-Logic Associates (2023) with overlay of additional labels and red connecting lines.  **Figure 32a.** Based on the guidelines of Department of Industry and Resources (Western Australia) (1997), the Zone of Instability for Section TR02E-11 (see Fig. 14), without a buttress, extends 400 feet upslope from the edge of the quarry, so that the region more than 450 feet upslope (in the horizontal direction) from the edge of the quarry could be regarded as a safe zone (see Fig. 18a and Table 3). Since all of the rocks above the toe of the pit are at the stratigraphic level of Unit B5 or higher (see Fig. 13 and Table 1), all rocks are regarded as weathered (weak) and the red connecting lines are drawn with slopes of 25° with respect to the horizontal. The above diagram follows the guidelines for complex pit geometries in which the connecting line intersects an interior surface of the pit (see Fig. 18b). Figure is portion of figure from Geo-Logic Associates (2023) with overlay of additional labels and red connecting lines. 	

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Figure 32b. Based on the guidelines of Department of Industry and Resources (Western Australia) (1997), the Zone of Instability for Section TR02E-11 (see Fig. 14), with a buttress, extends 190 feet upslope from the edge of the quarry, so that the region more than 240 feet upslope (in the horizontal direction) from the edge of the quarry could be regarded as a safe zone (see Fig. 18a and Table 3). Thus, the addition of a buttress reduced the width of the Zone of Instability from 400 feet (compare with Fig. 32a and Table 3), but did not eliminate the Zone of Instability. Since all of the rocks above the toe of the pit are at the stratigraphic level of Unit B5 or higher (see Fig. 13 and Table 1), all rocks are regarded as weathered (weak) and the red connecting lines are drawn with slopes of 25° with respect to the horizontal. In the absence of any further information, it is assumed that the buttress will be constructed out of weathered or oxidized material. The above diagram follows the guidelines for complex pit geometries in which the connecting line intersects an interior surface of the pit (see Fig. 18b). Figure is portion of figure from Geo-Logic Associates (2023) with overlay of additional labels and red connecting lines.

The second reason as to why Geo-Logic Associates (2022, 2023) has not really calculated the extent of the post-closure unstable zone is that the critical failure surface has been calculated based on the existing geotechnical parameters, and not based on the degraded rock strengths that could exist after pit closure (see Figs. 6-7). Of course, there is always a great deal of uncertainty in the future degraded rock strengths, which again underscores the importance of a complete sensitivity analysis. The third reason is that the application of the limit equilibrium method is the beginning of a stability analysis and not the end. The limit equilibrium method considers only the initiation of failure through one rigid block sliding over another. The method does not consider how failure might progress after initiation. For example, it does not consider how the sliding along one surface could initiate sliding along another surface in the backward direction (away from the center of the quarry). It is most important that the method does not consider rockfall or structurally-controlled failure along joints or faults. The latter could be especially important because of the opening and weathering of joints that occurs during the post-closure period.

The Western Australian guidelines are not foolproof and not the final word in a stability analysis, but they are the culmination of years of experience with the typical widths of unstable zones in arid climates. According to the Western Australian guidelines, “Whilst it is recognized that the controls on the stability of pit walls will be site specific, the design criteria provided represent a generalised, conservative approach for determining the location of long-term abandonment bunds in all open pits. The design information provided in this document is based on field measurements of failures and tension cracks around pit edges in operating and abandoned open pit gold mines in Western Australia … The long-term stability of the open pit edge is dependent on a number of geotechnical factors … This guideline provides generic design criteria that allow for the normal variation of all these factors” (Department of Industry and Resources, 1997). Therefore, the Western Australian guidelines ought to be followed, unless it can be convincingly argued that the guidelines are excessively conservative for a particular mining pit, which is exactly what is stated in the guidelines. According to the Western Australian guidelines, “In cases where the mine owner wishes to locate the abandonment bund closer to the edge of the open pit than specified by this guideline, it must be demonstrated that the stability of the ground mass between the pit edge and the abandonment bund can be ensured for the very long term” (Department of Industry and Resources, 1997).

Out of the six sections for which the stability analyses were updated by Geo-Logic Associates (2023), only Section TR02E-5 has no Zone of Instability outside of the quarry even without a buttress (see Fig. 27). The lack of a Zone of Instability results from all of the exposed geologic units being stratigraphically lower than Unit B5 (compare Fig. 27 with Table 1 and Fig. 13) and from the pit slope being shallower than 45°. For each of the other five sections, either all of the exposed geologic units are at the stratigraphic level of Unit B5 or higher or the Zone of Instability begins at the base of Unit B5 (see Figs. 28a-b, 29a-b, 30a-b, 31a-b, 32a-b). In the absence of a Zone of Instability for Section TR02E-5, the safe region begins 50 feet from the edge of the quarry (see Table 3). It should be noted that Section TR02E-5 is the least critical of the six sections, since it is the only one that does not intersect a population of Tiehm’s buckwheat (see Fig. 14).

Table 3. Widths of post-closure zones of instability and safe regions1

Cross-Section2	Width of Zone of Instability (feet)		Safe Region (feet)3	
	Without Buttress	With Buttress	Without Buttress	With Buttress
TR02E-5	0	0	50	50
TR02E-6	450	225	500	275
TR02E-7	100	100	150	150
TR02E-8	230	100	280	150
TR02E-9	190	165	240	215
TR02E-11	400	190	450	240

1Zones of instability and safe regions were calculated using procedures described in Department of Industry and Resources (Western Australia) (1997) (see Figs. 18a-b).
2See Figs. 14, 27, 28a-b, 29a-b, 30a-b, 31a-b, and 32a-b.
3The safe region is the region more than 50 feet upslope (in the horizontal direction) from the outer edge of the Zone of Instability.

For Section TR02E-6, without a buttress, the Zone of Instability encompasses a portion of the “Step In” plus a portion of the region upslope from the “Step In” and the “Initial Slope Configuration” (see Fig. 28a). The width of the Zone of Instability is 450 feet, as measured from the edge of the quarry, so that the safe region begins 500 feet from the edge of the quarry (see Table 3). After the addition of two buttresses, the Zone of Instability encompasses a portion of the inner buttress, a portion of the outer buttress, and a portion of the region upslope from the outer buttress (see Fig. 28b). The width of the Zone of Instability is reduced to 225 feet and the distance of the beginning of the safe region from the edge of the quarry is reduced to 275 feet (see Table 3).

For Section TR02E-7, without a buttress, the Zone of Instability again encompasses a portion of the “Step In” plus a portion of the region upslope from the “Step In” and the “Initial Slope Configuration” (see Fig. 29a). The width of the Zone of Instability is 100 feet, as measured from the edge of the quarry, so that the safe region begins 150 feet from the edge of the quarry (see Table 3). After the addition of a buttress, the Zone of Instability encompasses a portion of the buttress plus a portion of the region upslope from the “Initial Slope Configuration” (see Fig. 29b and compare with Fig. 29a). Since the addition of a buttress does not change the unstable portion of the region upslope from the “Initial Slope Configuration,” (see Figs. 29a-b) the width of the Zone of Instability is still 100 feet with the safe region beginning 150 feet from the edge of the quarry (see Table 3).

For Section TR02E-8, without a buttress, the Zone of Instability encompasses a portion of the “Step In” plus a very small portion of the region upslope from the “Initial Slope Configuration” (see Fig. 30a). The width of the Zone of Instability is 230 feet, as measured from the edge of the quarry, with the safe region beginning 280 feet from the edge of the quarry (see Table 3). After the addition of a buttress, the Zone of Instability encompasses a portion of the buttress plus a portion of the region upslope from the “Step In” (see Fig. 30b and compare with Fig. 30a). The width of the Zone of Instability is reduced to 100 feet and the distance of the beginning of the safe region from the edge of the quarry is reduced to 150 feet (see Table 3).

For Section TR02E-9, without a buttress, the Zone of Instability encompasses only a portion of the “Step In” (see Fig. 31a). The width of the Zone of Instability is 190 feet, as measured from the edge of the quarry, with the safe region beginning 240 feet from the edge of the quarry (see Table 3). After the addition of a buttress, the Zone of Instability encompasses most of the buttress plus a portion of the “Step In” (see Fig. 31b and compare with Fig. 31a). The width of the Zone of Instability is reduced to 165 feet and the distance of the beginning of the safe region from the edge of the quarry is reduced to 215 feet (see Table 3).

Section TR02E-11 is the most critical, since it would intersect the population of Tiehm’s buckwheat that would be only 15 feet from the edge of the quarry (see Fig. 14 and compare with Figs. 2 and 3a-b). For this section, without a buttress, the Zone of Instability begins at the base of Unit B5 on the side of the quarry and extends to the crest of a hill upslope from both the “Initial

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		Slope Configuration" and the "Stepout" (see Fig. 32a). The width of the Zone of Instability is 400 feet, as measured from the edge of the quarry, with the safe region beginning 450 feet from the edge of the quarry (see Table 3). After the addition of a buttress, the Zone of Instability encompasses about half of the buttress and does not extend all the way to the crest of the hill (see Fig. 32b). The addition of a buttress reduces the width of the Zone of Instability to 190 feet and the distance of the beginning of the safe region from the edge of the quarry to 240 feet (see Table 3). In summary, even with a buttress, the Zone of Instability would extend far into the population of Tiehm's buckwheat.	
108 and 183	108.53 and 183.52	***The Assumption that Slope Materials will remain Unsaturated is Unjustified*** The argument by Geo-Logic Associates (2023) as to why the quarry slope materials could not become re-saturated or re-pressurized even in response to extreme snowmelt or precipitation events was quoted at length in the section "Summary of Stability Analysis for Rhyolite Ridge Open Pit." The argument expresses the opinion that any snowmelt or precipitation would either become surface runoff or would infiltrate to a shallow depth and then evaporate. It should be noted that the argument is only a qualitative opinion and is not accompanied by any empirical data, calculations, or modeling. In the absence of any quantitative reasoning, at the present time, it is impossible to determine whether extreme snowmelt or precipitation events could or could not re-saturate the slope materials and thus, affect the stability of the quarry walls. It is important to consider not only whether the slope materials could become saturated during the operational period when, presumably, quarry dewatering could be an ongoing process, but also during the indefinitely long post-closure period when ongoing quarry dewatering is no longer possible. According to Geo-Logic Associates (2023), "As difficult as it may be to depressurize and remove water from these low permeability clays, it is even more difficult to put it back in." However, there has been no consideration of the meteorological and hydrogeological processes that resulted in the saturation and pressurization of the clay-rich units (M5 and B5) in the first place. Based on the available information, it cannot be said whether the water in Units M5 and B5 is formation water (trapped when the clay was first deposited) or meteoric water (originating in precipitation). Thus, it is not known whether the clay-rich units will recharge over decades or over geologic time, or how the recharge rate could be affected by climate change. In the absence of any of these types of quantitative studies, it should be imperative that the postclosure factors of safety be evaluated not only in light of the reduced rock strengths that develop during the post-closure period, but also for the wide range of water tables and pore pressures that might develop during the post-closure period. An issue that has not been considered in any documents is the possible localized impact on slope stability of watering the haul roads for dust suppression. In this respect, it should be noted that, based on the design in the DEIS, the main haul road that leaves the quarry would come to within 140 feet of the Tiehm's buckwheat population (see Fig. 17b), which would be very close to Section TR02E-11 (see Fig. 14) with a calculated factor of safety of only 1.21 under the assumption that the quarry slope materials will be unsaturated (see Fig. 15). McCarthy (2024) has estimated that, at the control efficiency level of 95%, dust suppression will require the application of 50,000 gallons of water per hour on the haul roads continuously for the lifetime of the mine. Thus, there needs to be a quantitative analysis of the impact of the water application and not simply the expression of an opinion. On the subject of haul roads, the U.S. Fish and Wildlife Service (2022) has expressed concern as to how the vehicular traffic on the roads could affect the stability of the quarry walls in the context of concern as to whether the quarry walls would be stable under any circumstances. According to U.S. Fish and Wildlife Service (2022), "Then there is a statement in here [document not available to author] that says, 'It is not feasible to reclaim the slopes of the Quarry wall due to instability and other geologic factors.' If they are stating this slope is unstable, why is there no concern for Tiehm's sliding off into a hole?" U.S. Fish and Wildlife Service (2022) continued, "The actual stability analyses should also show whether surcharge loads from the heavy trucks are being included. Since there are haul roads along this slope, it is assumed they will have included surcharge loads but that should be verified." However, the slope stability analyses by Geo-Logic Associates (2022, 2023) do not consider the additional weight of vehicular traffic on the haul roads, which could be especially important for Section TR02E-11 (compare Fig. 14 with Fig. 17b). In fact, Geo-Logic Associates emphasized the assumed irrelevance of vehicular weight on slope stability. According to Geo-Logic Associates (2022), "It is recommended that the required minimum static factor of safety of 1.2 be used for slopes with or without haul road access."	A conservative approach was used for estimation of geotechnical parameters based on the materials encountered on site. Material properties are listed on Figure 3-5 of the GLA report. The material properties utilized in the analyses were derived from the EnviroMine (2019) report. The material parameters incorporated are conservative values based on the results of various laboratory tests. These conservative values provide a reliable foundation for the stability analyses, reducing the need for additional sensitivity analyses regarding the material properties. Materials Properties are listed on Figure 3-5 (GLA 2022). This conservative approach ensures that the safety factors used are robust and account for any potential variability in the material properties. Material properties are listed on Figure 3-5 of the GLA report. For the report completed by GLA, no new drilling and geotechnical tests were conducted. Instead, the geotechnical data were sourced from previous investigations and other available resources. Specifically, they relied on the geotechnical report prepared by EnviroMine in 2019 to obtain the necessary geotechnical parameters and details of the cross sections required for stability analyses. This existing report provided a set of data, eliminating the need for additional fieldwork or testing by GLA. The GLA report from 2022 incorporates the test results from the EnviroMine (2019) report, which includes a variety of tests such as direct shear tests, uniaxial compressive strength tests, triaxial tests, and Brazilian tensile strength tests, among others. These tests provide a thorough characterization of the material properties, ensuring that there is no uncertainty regarding the material properties used in the stability analyses. The availability of these detailed test results and laboratory reports means that the data used are robust and reliable, thus supporting the conclusions drawn in the GLA report. To address the uncertainty in material properties, GLA utilized the values provided in the previous report by EnviroMine for their initial analyses. These values offer a baseline for understanding the geotechnical characteristics of the site. The effect of watering the surface for dust control purposes is not significant and does not warrant analysis in the slope stability assessments for mine closure. This means that the water used to control dust on the mine surface does not appreciably affect the stability of the mine slopes. Therefore, including this factor in the slope stability analysis is unnecessary. The primary concern of dust control is to minimize airborne particulates for environmental and health reasons, which has minimal impact on the geotechnical stability of the slopes. GLA undertook a full assessment by examining various cross-sections throughout the mine site. They conducted multiple stability analyses on different walls to ensure a thorough evaluation of the mine's stability. These analyses are detailed in the geotechnical report by GLA (2022). The report includes stability assessments for 19 distinct sections of the mine walls, the results are documented in the report. Also, the details and outcomes of these analyses are presented in Appendix G of the report. This extensive examination of multiple cross-sections ensures that all critical areas of the mine are evaluated, providing an understanding of the overall stability and safety of the mine site during and after closure. GLA did not use Guidelines for Mine Closure published by the LOPP, which is mentioned here in the comments as the reference. Geo-Logic Associate used Chapter 9 of "Guidelines for Open Pit Slope Design" (Read & Stacey, 2009) for design criteria, which is one of the sources typically used in US. The

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			"Guidelines for Open Pit Slope Design" by Read and Stacey (2009) does not explicitly provide a fixed minimum Factor of Safety for mine closure and post-closure periods. Instead, it emphasizes that the acceptable Factor of Safety should be determined based on specific site conditions, the nature of the materials, and the risk associated with potential slope failures. Typically, the guidelines suggest a more conservative Factor of Safety for the post-closure period compared to the operational period, acknowledging the long-term stability requirements and potential consequences of failure. This level of safety is deemed sufficient based on geological assessments and historical data, making it a practical and economically viable choice for mine closure operations. It allows for the allocation of resources towards other critical areas of the closure plan, ensuring a comprehensive and financially sustainable approach. Furthermore, the effectiveness of a 1.2 Factor of Safety is reinforced by GLA's proposed methodologies for slope monitoring. Continuous and advanced monitoring techniques are integral to detecting any potential instabilities in real-time, thereby preventing slope failures during and after the mine closure process. These monitoring strategies include the use of instruments like inclinometers, piezometers, and radar systems, which provide precise and timely data on slope movements and groundwater conditions. With proactive monitoring in place, a Factor of Safety of 1.2 can ensure the long-term stability of mine slopes, as any signs of potential failure can be addressed promptly, thereby maintaining safety and structural integrity throughout the closure phase. The geotechnical report from GLA adhered to the methodologies and standards outlined in the "Guidelines for Open Pit Slope Design" by Read & Stacey (2009). These guidelines are internationally recognized and provide comprehensive criteria for assessing the stability of open pit slopes. Consequently, the report did not incorporate the Zone of Instability guidelines specified by the Western Australian Department of Industry and Resources, as it focuses primarily on ensuring compliance with the Factor of Safety requirements specified in the Read & Stacey guidelines. The stability of the slopes, as shown in the GLA report, is fundamentally dependent on the thorough slope stability analyses conducted in accordance with these established guidelines. The current geotechnical report details the location of the Tiehm's buckwheat plants on Figure 12. The report did not account for the presence or location of these plants in their stability analysis as an external load as it was determined to be lightweight and not be a significant load factor. Of the 19 cross-sections used in the analysis, the general location of the plants and their habitat were captured in the study (GLA 2023 Figure 12). The buckwheat protection plan provides more detail regarding the location of the plants and the habitat and discusses the monitoring required for slope stability. Monitoring and management measures are detailed in the GLA report as well as the Buckwheat Protection Plan that was made available to the public within the Threatened and Endangered Species Supplemental Environmental Report. Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS. The Biological Opinion will, in part, assess impacts from pit stability.
108 and 183	108.54 and 183.53	***The Adaptive Management Plan is Inadequate*** As discussed in the section "Summary of Stability Analysis for Rhyolite Ridge Open Pit," the set of preplanned actions ready for execution in response to adverse observations of slope stability consists of the single sentence: "Preliminary concepts for adaptive management actions include suspending mining activity, stopping mining activity and implementing mitigation measures in an area if detrimental instability near sensitive habitat is identified, based on monitoring" (Geo-Logic Associates, 2023). The first concern is the lack of detail in the preplanned actions and the lack of connecting specific actions to particular observations. The need for specific preplanned actions in an Adaptive Management plan (also called the Observational Method) cannot be overemphasized. According to the investigation report on the catastrophic failure at the Mount Polley mine in British Columbia in 2014, "The Observational Method is useless without a way to respond to the observations" (Independent Expert Engineering Investigation and Review Panel, 2015). According to Safety First: Guidelines for Responsible Mine Tailings Management, "There must be a system in place to respond to the observations" (Morrill et al., 2022). The SME (Society for Mining, Metallurgy and Exploration) Tailings Management Handbook warned, "The	A conservative approach was used for estimation of geotechnical parameters based on the materials encountered on site. Material properties are listed on Figure 3-5 of the GLA report. The material properties utilized in the analyses were derived from the EnviroMine (2019) report. The material parameters incorporated are conservative values based on the results of various laboratory tests. These conservative values provide a reliable foundation for the stability analyses, reducing the need for additional sensitivity analyses regarding the material

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		observational method, since its inception, has experienced definitional and applicational drift, gradually being misused and redefined in a transition from planned change management to a 'make it up as you go' process. This is the paradox. The observational method is intended to leave nothing to uncertainty" (Hatton and van Zyl, 2022). The same handbook reviewed the original formulation of the Observational Method by Peck (1969) with the critical step: "Selection in advance of a course of action or modification of design for every foreseeable significant deviation of the observational findings from those predicted on the basis of the working hypothesis" (Hatton and van Zyl, 2022). There are implications in Geo-Logic Associates (2023) that specific actions in response to adverse observations will be developed later. Geo-Logic Associates (2023) states, "The majority of the adaptive management plan will be implemented once mining commences to allow for applicable monitoring threshold values and conditions to be established based on the understanding of the quarry stability," which seems to confuse the formulation of the Adaptive Management plan with the implementation of the plan. Geo-Logic Associates (2023) continues, "Responses at Rhyolite Ridge will be developed as experience is gained and a trigger action response plan (TARP) will be developed. This TARP will be developed by the Rhyolite Ridge Technical service group with the support of third-party geotechnical experts (EnviroMine, Dec 2019)." The problem with the later development of the Adaptive Management plan is the lack of a later opportunity for the public to review or to even have knowledge of the contents of the Adaptive Management plan. The lack of an opportunity for public review of the Adaptive Management plan leads to the second concern, which is the apocalyptic nature of the preliminary plan. The plan as expressed above calls for the cessation of mining activity, either temporarily or permanently, if there is indication of slope instability that could affect sensitive habitat, without any consideration of intermediate steps. At this stage, it is difficult for the public to determine whether the threat or the promise to close the Rhyolite Ridge mine to save the Tiehm's buckwheat is supposed to be taken literally. This threat or promise is found only in an attachment to the DEIS that was written by consultants for Ioneer. The mining company has not stated that they will close the mine to save the Tiehm's buckwheat population. The Bureau of Land Management has not stated they will rescind the mining permit to save the Tiehm's buckwheat population. It is not even clear that Ioneer can close the mine, even temporarily, considering the commitments that have been made or will have been made to other companies. Thus, the public is left in the position of needing to evaluate the status of a claim by a consulting company that there will be a cessation of mining activity in response to an indication of slope instability, but without any corresponding commitment on the part of the mining company.	properties. Materials Properties are listed on Figure 3-5 (GLA 2022). This conservative approach ensures that the safety factors used are robust and account for any potential variability in the material properties. Material properties are listed on Figure 3-5 of the GLA report. For the report completed by GLA, no new drilling and geotechnical tests were conducted. Instead, the geotechnical data were sourced from previous investigations and other available resources. Specifically, they relied on the geotechnical report prepared by EnviroMine in 2019 to obtain the necessary geotechnical parameters and details of the cross sections required for stability analyses. This existing report provided a set of data, eliminating the need for additional fieldwork or testing by GLA. The GLA report from 2022 incorporates the test results from the EnviroMine (2019) report, which includes a variety of tests such as direct shear tests, uniaxial compressive strength tests, triaxial tests, and Brazilian tensile strength tests, among others. These tests provide a thorough characterization of the material properties, ensuring that there is no uncertainty regarding the material properties used in the stability analyses. The availability of these detailed test results and laboratory reports means that the data used are robust and reliable, thus supporting the conclusions drawn in the GLA report. To address the uncertainty in material properties, GLA utilized the values provided in the previous report by EnviroMine for their initial analyses. These values offer a baseline for understanding the geotechnical characteristics of the site. The effect of watering the surface for dust control purposes is not significant and does not warrant analysis in the slope stability assessments for mine closure. This means that the water used to control dust on the mine surface does not appreciably affect the stability of the mine slopes. Therefore, including this factor in the slope stability analysis is unnecessary. The primary concern of dust control is to minimize airborne particulates for environmental and health reasons, which has minimal impact on the geotechnical stability of the slopes. GLA undertook a full assessment by examining various cross-sections throughout the mine site. They conducted multiple stability analyses on different walls to ensure a thorough evaluation of the mine's stability. These analyses are detailed in the geotechnical report by GLA (2022). The report includes stability assessments for 19 distinct sections of the mine walls, the results are documented in the report. Also, the details and outcomes of these analyses are presented in Appendix G of the report. This extensive examination of multiple cross-sections ensures that all critical areas of the mine are evaluated, providing an understanding of the overall stability and safety of the mine site during and after closure. GLA did not use Guidelines for Mine Closure published by the LOPP, which is mentioned here in the comments as the reference. Geo-Logic Associate used Chapter 9 of "Guidelines for Open Pit Slope Design" (Read & Stacey, 2009) for design criteria, which is one of the sources typically used in US. The "Guidelines for Open Pit Slope Design" by Read and Stacey (2009) does not explicitly provide a fixed minimum Factor of Safety for mine closure and post-closure periods. Instead, it emphasizes that the acceptable Factor of Safety should be determined based on specific site conditions, the nature of the materials, and the risk associated with potential slope failures. Typically, the guidelines suggest a more conservative Factor of Safety for the post-closure period compared to the operational period, acknowledging the long-term stability requirements and potential consequences of failure. This level of safety is deemed sufficient based on geological assessments and historical data, making it a practical and economically viable choice for mine closure operations. It allows for the allocation of resources towards other critical areas of the closure plan, ensuring a comprehensive and financially sustainable

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			approach. Furthermore, the effectiveness of a 1.2 Factor of Safety is reinforced by GLA's proposed methodologies for slope monitoring. Continuous and advanced monitoring techniques are integral to detecting any potential instabilities in real-time, thereby preventing slope failures during and after the mine closure process. These monitoring strategies include the use of instruments like inclinometers, piezometers, and radar systems, which provide precise and timely data on slope movements and groundwater conditions. With proactive monitoring in place, a Factor of Safety of 1.2 can ensure the long-term stability of mine slopes, as any signs of potential failure can be addressed promptly, thereby maintaining safety and structural integrity throughout the closure phase. The geotechnical report from GLA adhered to the methodologies and standards outlined in the "Guidelines for Open Pit Slope Design" by Read & Stacey (2009). These guidelines are internationally recognized and provide comprehensive criteria for assessing the stability of open pit slopes. Consequently, the report did not incorporate the Zone of Instability guidelines specified by the Western Australian Department of Industry and Resources, as it focuses primarily on ensuring compliance with the Factor of Safety requirements specified in the Read & Stacey guidelines. The stability of the slopes, as shown in the GLA report, is fundamentally dependent on the thorough slope stability analyses conducted in accordance with these established guidelines. The current geotechnical report details the location of the Tiehm's buckwheat plants on Figure 12. The report did not account for the presence or location of these plants in their stability analysis as an external load as it was determined to be lightweight and not be a significant load factor. Of the 19 cross-sections used in the analysis, the general location of the plants and their habitat were captured in the study (GLA 2023 Figure 12). The buckwheat protection plan provides more detail regarding the location of the plants and the habitat and discusses the monitoring required for slope stability. Monitoring and management measures are detailed in the GLA report as well as the Buckwheat Protection Plan that was made available to the public within the Threatened and Endangered Species Supplemental Environmental Report. Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS. The Biological Opinion will, in part, assess impacts from pit stability.
108 and 183	108.55 and 183.54	**SUMMARY CONCLUSIONS** The six questions posed in the "Methodology" section are repeated below, followed by very brief responses. More complete responses can be found in the "Responses" section. ***1) Are the calculated factors of safety reliable?*** No, the calculated factors of safety are not reliable. Although the raw data that were used to develop the geotechnical parameters show considerable scatter, the geotechnical parameters and factors of safety are stated with no uncertainties and there is no sensitivity analysis. No source has been identified for the buttress material, so that the geotechnical parameters for the buttress are purely hypothetical. ***2) Was the choice of 1.2 for the minimum factor of safety appropriate for the operational period?*** No, according to the Guidelines for Open Pit Slope Design (published by the Large Open Pit Project) and the SME Surface Mining Handbook (published by the Society for Mining, Metallurgy and Exploration), based upon the data uncertainty and the consequences of slope failure, the minimum factor of safety should be 1.5 and the maximum probability of failure should be 5% during the operational period (prior to buttress construction). ***3) Was the choice of 1.2 for the minimum factor of safety appropriate for the post-closure period?*** No, according to the Guidelines for Mine Closure (published by the Large Open Pit Project), based upon the data uncertainty, the consequences of slope failure, and the pit wall condition, the minimum factor of safety should be 2.0 during the post-closure period (after buttress construction). ***4) Was the Zone of Instability for open pits as specified in Western Australian guidelines properly taken into account?*** No, the concept of the Zone of Instability was not taken into account at all. Application of the guidelines shows that the minimum separation distance between the quarry and the Tiehm's buckwheat population ought to be 450 feet before buttress construction and 240 feet after buttress construction along the profile where the proposed quarry would be only 15 feet from the Tiehm's buckwheat population ***5) Was the assumption that slope materials will remain unsaturated justified?***	A conservative approach was used for estimation of geotechnical parameters based on the materials encountered on site. Material properties are listed on Figure 3-5 of the GLA report. The material properties utilized in the analyses were derived from the EnviroMine (2019) report. The material parameters incorporated are conservative values based on the results of various laboratory tests. These conservative values provide a reliable foundation for the stability analyses, reducing the need for additional sensitivity analyses regarding the material properties. Materials Properties are listed on Figure 3-5 (GLA 2022). This conservative approach ensures that the safety factors used are robust and account for any potential variability in the material properties. Material properties are listed on Figure 3-5 of the GLA report. For the report completed by GLA, no new drilling and geotechnical tests were conducted. Instead, the geotechnical data were sourced from previous investigations and other available resources. Specifically, they relied on the geotechnical report prepared by EnviroMine in 2019 to obtain the necessary geotechnical parameters and details of the cross sections required for stability analyses. This existing report provided a set of data, eliminating the need for additional fieldwork or testing by GLA. The GLA report from 2022 incorporates the test results from the EnviroMine (2019) report, which includes

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		No, the assumption is not justified. The stability analysis does not consider the hydrogeological and meteorological processes by which the current state of saturation and over-pressurization was achieved, nor does it consider the time period over which re-saturation and re-pressurization could occur. ***6) Is the proposed Adaptive Management plan adequate?*** No, the Adaptive Management plan lacks any specifics or details. The plan states the mine could be closed in response to an indication of slope instability, although without any apparent commitment on the part of the mining company.	a variety of tests such as direct shear tests, uniaxial compressive strength tests, triaxial tests, and Brazilian tensile strength tests, among others. These tests provide a thorough characterization of the material properties, ensuring that there is no uncertainty regarding the material properties used in the stability analyses. The availability of these detailed test results and laboratory reports means that the data used are robust and reliable, thus supporting the conclusions drawn in the GLA report. To address the uncertainty in material properties, GLA utilized the values provided in the previous report by EnviroMine for their initial analyses. These values offer a baseline for understanding the geotechnical characteristics of the site. The effect of watering the surface for dust control purposes is not significant and does not warrant analysis in the slope stability assessments for mine closure. This means that the water used to control dust on the mine surface does not appreciably affect the stability of the mine slopes. Therefore, including this factor in the slope stability analysis is unnecessary. The primary concern of dust control is to minimize airborne particulates for environmental and health reasons, which has minimal impact on the geotechnical stability of the slopes. GLA undertook a full assessment by examining various cross-sections throughout the mine site. They conducted multiple stability analyses on different walls to ensure a thorough evaluation of the mine's stability. These analyses are detailed in the geotechnical report by GLA (2022). The report includes stability assessments for 19 distinct sections of the mine walls, the results are documented in the report. Also, the details and outcomes of these analyses are presented in Appendix G of the report. This extensive examination of multiple cross-sections ensures that all critical areas of the mine are evaluated, providing an understanding of the overall stability and safety of the mine site during and after closure. GLA did not use Guidelines for Mine Closure published by the LOPP, which is mentioned here in the comments as the reference. Geo-Logic Associate used Chapter 9 of “Guidelines for Open Pit Slope Design” (Read & Stacey, 2009) for design criteria, which is one of the sources typically used in US. The "Guidelines for Open Pit Slope Design" by Read and Stacey (2009) does not explicitly provide a fixed minimum Factor of Safety for mine closure and post-closure periods. Instead, it emphasizes that the acceptable Factor of Safety should be determined based on specific site conditions, the nature of the materials, and the risk associated with potential slope failures. Typically, the guidelines suggest a more conservative Factor of Safety for the post-closure period compared to the operational period, acknowledging the long-term stability requirements and potential consequences of failure. This level of safety is deemed sufficient based on geological assessments and historical data, making it a practical and economically viable choice for mine closure operations. It allows for the allocation of resources towards other critical areas of the closure plan, ensuring a comprehensive and financially sustainable approach. Furthermore, the effectiveness of a 1.2 Factor of Safety is reinforced by GLA’s proposed methodologies for slope monitoring. Continuous and advanced monitoring techniques are integral to detecting any potential instabilities in real-time, thereby preventing slope failures during and after the mine closure process. These monitoring strategies include the use of instruments like inclinometers, piezometers, and radar systems, which provide precise and timely data on slope movements and groundwater conditions. With proactive monitoring in place, a Factor of Safety of 1.2 can ensure the long-term stability of mine slopes, as any signs of potential failure can be addressed promptly, thereby maintaining safety and structural integrity throughout the closure phase. The geotechnical report from GLA adhered to the methodologies and standards outlined in the "Guidelines for Open Pit Slope Design" by Read & Stacey

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			(2009). These guidelines are internationally recognized and provide comprehensive criteria for assessing the stability of open pit slopes. Consequently, the report did not incorporate the Zone of Instability guidelines specified by the Western Australian Department of Industry and Resources, as it focuses primarily on ensuring compliance with the Factor of Safety requirements specified in the Read & Stacey guidelines. The stability of the slopes, as shown in the GLA report, is fundamentally dependent on the thorough slope stability analyses conducted in accordance with these established guidelines. The current geotechnical report details the location of the Tiehm's buckwheat plants on Figure 12. The report did not account for the presence or location of these plants in their stability analysis as an external load as it was determined to be lightweight and not be a significant load factor. Of the 19 cross-sections used in the analysis, the general location of the plants and their habitat were captured in the study (GLA 2023 Figure 12). The buckwheat protection plan provides more detail regarding the location of the plants and the habitat and discusses the monitoring required for slope stability. Monitoring and management measures are detailed in the GLA report as well as the Buckwheat Protection Plan that was made available to the public within the Threatened and Endangered Species Supplemental Environmental Report. Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS. The Biological Opinion will, in part, assess impacts from pit stability.
108 and 183	108.56 and 183.55	**RECOMMENDATIONS** The recommendation of this report is that the geotechnical sections of the Draft Environmental Impact Statement be completely rewritten with special attention to the following: 1) A specific source should be identified for the buttress material with estimation of the geotechnical parameters for that particular source. 2) All of the raw geotechnical data should be presented with a complete explanation as to how those data were used to develop the geotechnical parameters. 3) The Draft Environmental Impact Statement should specify which parameters were developed from data and which were based on judgment. Parameters that were based on judgment should be rigorously defended. 4) The discussion of the geotechnical parameters should include the uncertainty in the parameters. 5) The calculated factors of safety should include the uncertainty, such as the standard deviation. 6) A sensitivity analysis should be carried out in which the factor of safety for each section is re-calculated based on the entire range of reasonable values for the geotechnical parameters, such as the lowest reasonable values for cohesion and friction angle. If the factors of safety vary significantly for the reasonable range of input data, the results should be used with great caution. 7) A sensitivity analysis should be carried out in which the critical failure surface for each section is re-calculated based on the entire range of reasonable values for the geotechnical parameters, such as the lowest reasonable values for cohesion and friction angle. If the positions of the critical failure surfaces vary significantly for the reasonable range of input data, the results should be used with great caution. 8) It should not be assumed that all slope materials will be unsaturated. The factors of safety should be re-calculated for a range of possible pore pressures and water tables, including the eventual possibility that pore pressures and the water table will return to pre-mining levels. If the factors of safety are strongly dependent upon the assumption that all slope materials will be unsaturated, then the results for unsaturated materials should be used with great caution. 9) The localized re-saturation of slope materials that could result from the surface application of water for dust suppression on the haul roads should be calculated and the potential impact on slope stability should be assessed. 10) The weight of vehicular traffic on the haul roads should be taken into consideration for analyses of slope stability. 11) The distribution of possible values of the factor of safety should be developed for each section, so that the probability of failure can be calculated. 12) The stability analyses should be carried out in accordance with the most up-to-date map for the intended quarry. 13) The Draft Environmental Impact Statement should adhere to the recommendations of Guidelines for Open Pit Slope Design (published by the Large Open Pit Project) and the SME Surface Mining Handbook (published by the Society for Mining, Metallurgy and Exploration) that the minimum factor of safety should be 1.5 and the maximum probability of failure should be 5% during the operational period (prior to buttress construction). 14) The Draft Environmental Impact Statement should adhere to the recommendations of the Guidelines for Mine Closure (published by the Large Open Pit Project) that the minimum factor of safety should be 2.0 during the post-closure period (after buttress construction). 15) The factors of safety and the critical failure surfaces for the post-closure period should be calculated based on reasonable expectations for the rock mass degradation that will occur during the post-closure period. 16) For each section, the Zone of Instability should be calculated according to the guidelines of the Western Australian Department of Industry and Resources. The connecting lines for the geologic units that are at the stratigraphic level of Unit B5 of the Cave Spring Formation or higher should have an angle of 25° with respect to the horizontal. Local and regional outcrops should be investigated to determine whether some geologic units show breakback angles less than 25°, in which case, the connecting lines should be assigned the lower angle for those units. 17) Unless it can be convincingly argued to the contrary, the quarry should be designed so that the Tiehm's buckwheat population is at least 50 feet beyond the Zone of Instability, as specified in Western Australian regulations.	A conservative approach was used for estimation of geotechnical parameters based on the materials encountered on site. Material properties are listed on Figure 3-5 of the GLA report. The material properties utilized in the analyses were derived from the EnviroMine (2019) report. The material parameters incorporated are conservative values based on the results of various laboratory tests. These conservative values provide a reliable foundation for the stability analyses, reducing the need for additional sensitivity analyses regarding the material properties. Materials Properties are listed on Figure 3-5 (GLA 2022). This conservative approach ensures that the safety factors used are robust and account for any potential variability in the material properties. Material properties are listed on Figure 3-5 of the GLA report. For the report completed by GLA, no new drilling and geotechnical tests were conducted. Instead, the geotechnical data were sourced from previous investigations and other available resources. Specifically, they relied on the geotechnical report prepared by EnviroMine in 2019 to obtain the necessary geotechnical parameters and details of the cross sections required for stability analyses. This existing report provided a set of data, eliminating the need for additional fieldwork or testing by GLA. The GLA report from 2022 incorporates the test results from the EnviroMine (2019) report, which includes a variety of tests such as direct shear tests, uniaxial compressive strength tests, triaxial tests, and Brazilian tensile strength tests, among others. These tests provide a thorough characterization of the material properties, ensuring that there is no uncertainty regarding the material properties used in the stability analyses. The availability of these detailed test results and laboratory reports means that the data used are robust and reliable, thus supporting the conclusions drawn in the GLA report. To address the uncertainty in material properties, GLA utilized the values provided in the previous report by EnviroMine for their initial analyses. These values offer a baseline for understanding the geotechnical characteristics of the site.

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		18) The Adaptive Management plan for the response to indications of slope instability should be specific and detailed with intermediate steps that would occur prior to a cessation of mining activity. Any claims that the mine will be closed in response to evidence of slope instability should be supported by a binding commitment from the mining company.	The effect of watering the surface for dust control purposes is not significant and does not warrant analysis in the slope stability assessments for mine closure. This means that the water used to control dust on the mine surface does not appreciably affect the stability of the mine slopes. Therefore, including this factor in the slope stability analysis is unnecessary. The primary concern of dust control is to minimize airborne particulates for environmental and health reasons, which has minimal impact on the geotechnical stability of the slopes. GLA undertook a full assessment by examining various cross-sections throughout the mine site. They conducted multiple stability analyses on different walls to ensure a thorough evaluation of the mine's stability. These analyses are detailed in the geotechnical report by GLA (2022). The report includes stability assessments for 19 distinct sections of the mine walls, the results are documented in the report. Also, the details and outcomes of these analyses are presented in Appendix G of the report. This extensive examination of multiple cross-sections ensures that all critical areas of the mine are evaluated, providing an understanding of the overall stability and safety of the mine site during and after closure. GLA did not use Guidelines for Mine Closure published by the LOPP, which is mentioned here in the comments as the reference. Geo-Logic Associate used Chapter 9 of “Guidelines for Open Pit Slope Design” (Read & Stacey, 2009) for design criteria, which is one of the sources typically used in US. The "Guidelines for Open Pit Slope Design" by Read and Stacey (2009) does not explicitly provide a fixed minimum Factor of Safety for mine closure and post-closure periods. Instead, it emphasizes that the acceptable Factor of Safety should be determined based on specific site conditions, the nature of the materials, and the risk associated with potential slope failures. Typically, the guidelines suggest a more conservative Factor of Safety for the post-closure period compared to the operational period, acknowledging the long-term stability requirements and potential consequences of failure. This level of safety is deemed sufficient based on geological assessments and historical data, making it a practical and economically viable choice for mine closure operations. It allows for the allocation of resources towards other critical areas of the closure plan, ensuring a comprehensive and financially sustainable approach. Furthermore, the effectiveness of a 1.2 Factor of Safety is reinforced by GLA’s proposed methodologies for slope monitoring. Continuous and advanced monitoring techniques are integral to detecting any potential instabilities in real-time, thereby preventing slope failures during and after the mine closure process. These monitoring strategies include the use of instruments like inclinometers, piezometers, and radar systems, which provide precise and timely data on slope movements and groundwater conditions. With proactive monitoring in place, a Factor of Safety of 1.2 can ensure the long-term stability of mine slopes, as any signs of potential failure can be addressed promptly, thereby maintaining safety and structural integrity throughout the closure phase. The geotechnical report from GLA adhered to the methodologies and standards outlined in the "Guidelines for Open Pit Slope Design" by Read & Stacey (2009). These guidelines are internationally recognized and provide comprehensive criteria for assessing the stability of open pit slopes. Consequently, the report did not incorporate the Zone of Instability guidelines specified by the Western Australian Department of Industry and Resources, as it focuses primarily on ensuring compliance with the Factor of Safety requirements specified in the Read & Stacey guidelines. The stability of the slopes, as shown in the GLA report, is fundamentally dependent on the thorough slope stability analyses conducted in accordance with these established guidelines. The current geotechnical report details the location of the Tiehm’s buckwheat plants on Figure 12. The report did not account for the presence or location of these plants in their stability analysis as an external load as it was determined to be lightweight and not be a significant load factor. Of the 19 cross-sections used

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			in the analysis, the general location of the plants and their habitat were captured in the study (GLA 2023 Figure 12). The buckwheat protection plan provides more detail regarding the location of the plants and the habitat and discusses the monitoring required for slope stability. Monitoring and management measures are detailed in the GLA report as well as the Buckwheat Protection Plan that was made available to the public within the Threatened and Endangered Species Supplemental Environmental Report. Section 7 consultation is ongoing, and a Biological Opinion will be issued by the USFWS. The Biological Opinion will, in part, assess impacts from pit stability.
108 and 183	108.57 and 183.56	**ABOUT THE AUTHOR** Dr. Steven H. Emerman has a B.S. in Mathematics from The Ohio State University, M.A in Geophysics from Princeton University, and Ph.D. in Geophysics from Cornell University. Dr. Emerman has 31 years of experience teaching hydrology and geophysics, including teaching as a Fulbright Professor in Ecuador and Nepal, and has over 70 peer-reviewed publications in these areas. Since 2018 Dr. Emerman has been the owner of Malach Consulting, which specializes in evaluating the environmental impacts of mining for mining companies, as well as governmental and nongovernmental organizations. Dr. Emerman has evaluated proposed and existing mining projects in North America, South America, Europe, Africa, Asia and Oceania, and has testified on issues of mining and water before the U.S. House of Representatives Subcommittee on Indigenous Peoples of the United States, the European Parliament, the United Nations Permanent Forum on Indigenous Issues, the United Nations Environment Assembly, the Permanent Commission on Human Rights of the Chamber of Deputies of the Dominican Republic, and the Minnesota Senate Environment, Climate and Legacy Committee. Dr. Emerman is the former Chair of the Body of Knowledge Subcommittee of the U.S. Society on Dams and one of the authors of Safety First: Guidelines for Responsible Mine Tailings Management.	Comment noted.
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108 and 183	108.59 and 183.58	**Appendix C** Michael C. McCarthy, PhD, Review of Dust Deposition and Suppression Impacts on Tiehm's Buckwheat from the Rhyolite Ridge Lithium-Boron Project (May 31, 2024). Review of Dust Deposition and Suppression Impacts on Tiehm's Buckwheat from the Rhyolite Ridge Lithium-Boron Project Technical Memorandum prepared for Center for Biological Diversity Michael C. McCarthy, PhD – Radical Research LLC – Riverside, CA 92508 – mikem@radicalresearch.llc - http://radicalresearch.llc/ May 31, 2024 Background and Executive Summary The Rhyolite Ridge Lithium-Boron Project ('Project') would involve the construction and operation of an open-pit mine to extract lithium and boron ore in the Rhyolite Ridge area of Esmeralda County, NV. The proposed quarry, overburden storage, haul road, and service road intersects existing critical habitat for Tiehm's Buckwheat *Eriogonum tiehmii* (F.R., 2022). Operation of the quarry, haul road, overburden storage, service roads, and general mine operations will create significant and unavoidable dust impacts. Dust suppression methods include water trucks, in-place watering, and potential chemical dust suppressants (if approved).	An air quality impact analysis was prepared for the Project, which was reviewed by the BLM and cooperating agencies, and was approved for use in the NEPA. The air quality impacts analysis demonstrates compliance with both secondary and primary NAAQS, including for particulate matter. The Clean Air Act identifies two types of NAAQS, which are primary standards and secondary standards. Primary standards, which are what is assessed in the Air Quality Impact Analysis, provides public health protection, including sensitive human populations. Primary standards are more stringent than the secondary standards. The secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Under the North and South OSF Alternative, a substantial portion of the haul road was moved further away from the Tiehm's buckwheat subpopulations to reduce dust impacts to the buckwheat. The comments provided on dust impacts are based on an earlier configuration of the haul road. A particulate matter impact analysis was prepared as part of the Buckwheat Protection Plan for the

Comment Letter No.	Comment Number	Comment	Response
		This technical memorandum evaluates the Draft Environmental Impact Statement (DEIS) – DOI-BLM-NVB020-2021-0020-EIS and associated environmental documentation and appendices for dust deposition direct and indirect impacts on the critical habitat areas – specifically focused on domain specific air quality emissions, modeling, and deposition impacts for the 'Proposed Action' and the 'North and South OSF Alternative'. Executive Summary **Fugitive dust emissions are underestimated.** Fugitive dust emissions from quarry blasting, quarry excavation operations, overburden loading/unloading, service roads, watering trucks, and overburden wind erosion are not included in the fugitive dust dispersion modeling impacts on critical habitat. **Model inputs are systematically biased low.** Multiple dispersion model or emission inputs systematically bias the results to lower fugitive dust emissions. Silt fraction, meteorology, and water truck emissions activity are inadequate. Minor and major sources of fugitive dust are not included in critical habitat deposition modeling. **Resuspended herbicide and/or chemical suppressants will affect critical habitat**. Indirect effects of dust deposition and dust suppression on critical habitat are not considered at all. Resuspension of particles and dust deposition of mine dust with adsorbed/absorbed herbicides or chemical dust suppressants is not considered. **Water truck emissions and water requirements are inadequate.** Dust suppression activities from Water Trucks are inadequately modeled for emissions activity and water management. **Model documentation is insufficient.** DEIS documents, supplemental reports, appendices, and attachments are insufficient for evaluation of model domain and model results for critical habitat dust deposition. Dispersion modeling was not performed for the North and South OSF alternative.	North and South OSF Alternative. This particulate matter impact analysis was used to assess particulate matter deposition from haul trucks in proximity to designated critical habitat and Tiehm's buckwheat subpopulations and was used in the Buckwheat Protection Plan for the North and South OSF Alternative in assessing Project particulate matter deposition impacts relative to the particulate matter threshold that was established using the best available science. The results showed the Project is below the established threshold, and the Buckwheat Protection Plan includes measures to monitor particulate matter deposition within designated critical habitat and provides protocols and procedures to assess the established threshold during the life of the Project. This will allow for appropriate management implementation if data from monitoring shows the need to modify the threshold or implement other management requirements to meet the intent of the conservation measure detailed in the Buckwheat Protection Plan for the North and South OSF Alternative. Impacts to Tiehm's buckwheat from dust are disclosed in EIS Section 4.12 and additional clarification was added to Section 3.3.3 of the Threatened and Endangered Species SER. This additional clarification was added to the SER but was available to the public during the comment period as Appendix B of the Threatened and Endangered Species SER.

108 and 183	108.60 and 183.59	Detailed Discussion
		Documents Reviewed and DEIS Description of Impacts and Mitigation Measures
		This technical memorandum evaluates the Draft Environmental Impact Statement (DEIS) – DOI-BLM-NVB020-2021-0020-EIS and associated environmental documentation and appendices for dust deposition direct and indirect impacts on the critical habitat areas. My comments reflect documents available publicly or through public records requests which are the most recent available. These documents reviewed include:
		
		• Rhyolite Ridge Lithium-Boron Project DEIS – Project DOI-BLM-NV-B020-2021-0020-EIS; (BLM, 2024)
		  o Air Quality Including Climate Change Supplemental Environmental Report
		  o Transportation and Access Supplemental Environmental Report
		  o Vegetation Resources, Including Noxious Weeds, and Special Status Plant Species Supplemental Environmental Report
		  o Threatened and Endangered Species Supplemental Environmental Report
		• Air Quality Impact Analysis – Trinity Consultants (September 2022, and revised October 2023 v5.6)
		• Work Plan for Air Quality Impact Analysis (August 2023)
		• Attachment H – Particulate Matter Impact Analysis on Tiehm's Buckwheat – Trinity Consultants June 2023 and September 2023
		• Geospatial files on critical habitat, Tiehm's buckwheat populations, haul road location, and quarry/overburden storage locations.
		
		The DEIS acknowledges that project activities will generate dust that can deposit on the critical habitat and adversely impact Tiehm's Buckwheat populations. Adverse impacts are described In Section 4.12.1.3 of the DEIS. The Proposed Action would disturb approximately 354 acres of designated critical habitat. Surface disturbance will reduce the habitat available for pollinator species, will lead to establishment and spread of non-native species (both plant and animal), and increase dust deposition on critical habitat areas. The Proposed Action includes mitigation measures for dust suppression on some portions of the mining operation (watering trucks, chemical dust suppressants), noxious species herbicide application, and a dust monitoring plan. In my review of the DEIS and accompanying documentation, there were multiple critical areas of concern that should be addressed. These areas must meet NEPA requirements that decision-makers and the public are fully informed of the environmental, social, and economic effects of the Proposed Action and the North-South OSF Alternate.
		
		Section 2.1.13.2 describes Applicant-Committed Environmental Protection Measures, including protections for Tiehm's Buckwheat, Air Quality, and Noxious Weeds. Key measures reviewed for this report include the disturbance buffers around subpopulations, a Buckwheat Exclusion Area, fugitive dust controls including in-place water sprays, water trucks or chemical dust suppressants, and physical weeding or herbicide application.
		
		Section 2.2.2 identifies additional plans for Tiehm's Buckwheat in the North and South OSF Alternative Action.
		
		Table 2-6 Compares effects by actions. For Fugitive Particulate Emissions, the Proposed Action and North and South OSF Alternative are 'Similar.' The surface disturbance differential is 35 acres fewer for the alternative action out of 2,306 – or less than 2%. Critical Habit disturbance is 354 acres in the proposed action and 197 acres in the Alternate; 559 acres of critical habitat would be fenced in the Proposed Action and 714 Acres would be fenced in the Alternative. The 'Dust' category asserts that Fugitive Dust would impact the critical habitat in the Proposed Action and is the 'Same as the Proposed Action, but less impacts from less disturbance in designated critical habitat.' It is not at all clear how Fugitive Dust can be **the same** but also less impact, as this claim is based on no dispersion modeling or emissions dust modeling. There is no air quality document that supports this assertion.
		
		The DEIS reports on emissions and dispersion modeling of air quality impacts and dust deposition of the proposed Project Action. Dispersion modeling was not conducted for the North and South OSF Alternative (DEIS, p. 4-2). Total fugitive dust emissions from the Proposed Action are presented as 2,625 tons per year of particulate matter (PM), non-fugitive emissions are 76 tons per year, and mobile emissions are 199 tons per year, for a total of 2,900 tons per year. Fugitive emissions are the bulk of emissions in the DEIS.
		
		The DEIS describes mitigation measures which include implementing a dust deposition monitoring program and verifying the effectiveness of dust suppressant measures on unpaved roads, construction areas, and stockpiles. The adaptive management program sets a limit of 4 g/m2/day based on a trailing 12-month average. Based on this approach, they claim the 'impacts to Tiehm's buckwheat from fugitive dust would be minor, long-term, and localized.' This assertion is unsupported and relies on multiple untested assumptions and modeling underestimates.
			An air quality impact analysis was prepared for the Project, which was reviewed by the BLM and cooperating agencies, and was approved for use in the NEPA. The air quality impacts analysis demonstrates compliance with both secondary and primary NAAQS, including for particulate matter. The Clean Air Act identifies two types of NAAQS which are primary standards and secondary standards.
			
			Primary standards, which are what is assessed in the Air Quality Impact Analysis, provides public health protection, including sensitive human populations. Primary standards are more stringent than the secondary standards. The secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.
			
			A particulate matter impact analysis was prepared as part of the Buckwheat Protection Plan for the North and South OSF Alternative. This particulate matter impact analysis was used to assess particulate matter deposition from haul trucks in proximity to designated critical habitat and Tiehm's buckwheat subpopulations and was used in the Buckwheat Protection Plan for the North and South OSF Alternative in assessing Project particulate matter deposition impacts relative to the particulate matter threshold that was established using the best available science. The results showed the Project is below the established threshold, and the Buckwheat Protection Plan includes measures to monitor particulate matter deposition within designated critical habitat and provides protocols and procedures to assess the established threshold during the life of the Project. This will allow for appropriate management implementation if data from monitoring shows the need to modify the threshold or implement other management requirements to meet the intent of the conservation measure detailed in the Buckwheat Protection Plan for the North and South OSF Alternative.
			
			Impacts to Tiehm's buckwheat from dust are disclosed in EIS Section 4.12 and additional clarification was added to Section 3.3.3 of the Threatened and Endangered Species SER. This additional clarification was added to the SER but was available to the public during the comment period as Appendix B of the Threatened and Endangered Species SER.

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108 and 183	108.61 and 183.60	Fugitive dust emissions are underestimated Critical sources of fugitive dust are identified and documented outside of the DEIS and Supplemental Environmental Reports in the Trinity Consultants Air Quality Impacts Analysis (AQIA 2023, v5.6). There are multiple iterations of these reports, but we believe this is the most recent available. A single modeling simulation was used to assess all facility impacts based on 'mining throughputs, VMT, source locations, and reasonably foreseeable maximum emissions year.' In Attachment H – Trinity Consultants (September 2023) provided a determination of potential deposition of PM from a haul road proximate to the Tiehm's Buckwheat populations 3 and 6. In it, they explicitly note that they only model haul truck traffic trips. This is not a credible cumulative assessment of fugitive dust deposition as it omits dozens of sources large and small that will contribute to fugitive dust emissions in the operational project area. As noted in the Air Quality Impacts Analysis based on the broader emissions analysis, total emissions from Haul Trucks are not the only sources of fugitive dust emissions. Other significant sources include the overburden stockpiles in Table 13a which emit 2,906 lbs/day for the North stockpile, 4,690 lbs/day for the West overburden stockpile, and 3,650 lbs/day for the Infill stockpile of fugitive dust emissions. Total on-site road emissions are 3,333 lbs/day, with most of that being in haul road segment 1, 22, or in-pit, so it is unclear how the determination was made to exclude wind erosion from overburden storage from a dust deposition analysis. It is also unclear how the water truck dust emissions were allocated based on Table 16b – since all the emissions were allocated identically to the mine-pit and to Segment 1, with zero dust suppression on road Segments 2-22. Water trucks contribute at least 470 lbs/day of PM and the allocation does not appear to be included in the Attachment H dust deposition modeling of haul road impacts. Additionally, the 100+ ton water trucks (CAT 777) are too large to go on service roads and no other water trucks are specified for dust suppression on those roads. Those appear to have not been modeled or to have been omitted from the analysis. Cumulatively, there are more fugitive dust emissions that have not been modeled for critical habitat dust deposition impacts than have been modeled. Given the variable location of overburden storage across the alternate scenarios – a transparent and reproducible dust deposition modeling simulation with multiple mine layout scenarios needs to be performed to assess maximum dust deposition impacts. The existing work is neither reproducible nor inclusive enough to be credible for estimating maximum dust deposition impacts based on the limited haul road modeling performed. Lastly, silt content is parameterized at 6.4% for haul road and service road emissions calculations based on Arizona Department of Environmental Quality, State Implementation Plan Revision: Regional Haze Program (2018-2028) – (2022). In that report, it describes its silt content assumptions for achieving 6.4%. *Application and maintenance of surface gravel on the unpaved non-haul roads is technically feasible. However, the rubber tire rigs would still degrade the gravel over time at a rate faster than normal vehicle traffic, due to the weight of the rubber tire rigs. This would necessitate periodic replacement of the gravel. Per AP-42 Section 13.2.2 Equation 1(a), surface material silt content (%) is one of the key variables for estimating PM10 emission factor. Asarco currently utilizes a silt content of 6.9% in its emission inventories for the unpaved roads. A silt content of 6.4% could be achieved by adding more gravel to the unpaved roads. A decrease in the silt content from 6.9% to 6.4% would reduce the PM10 emission by 5.1 tpy. (ADEQ, 2022)* The description characterizes how a single facility can lower its silt content by regularly applying gravel to its non-haul road. First, I note that this is for non-haul roads and is not a reasonable assumption for a haul road which has far heavier vehicles mechanically grinding down material into silt and dust that is resuspended. Secondly, it requires period application of a gravel layer which would also create dust through application – this has not been modeled or included in any documentation in the DEIS or appendices. Finally, this silt content value is far lower than observed silt content on site, which ranges from 12% to 32%. Moreover, it is lower than the 13% silt content of the ore stockpile ore in Table 13a of appendix B (AQIA 2023, v5.6). The assumption that the silt content of the mining overburden and ore will be more than twice as high as the road is based entirely on the combination of water treatment or chemical dust suppressant applications and gravel applications. The haul road is continuously utilized by 200+ ton trucks which will pulverize the haul road into silt at a rapid rate. It is not a conservative or realistic estimate to assume silt content levels less than half of the silt content of the ore and surrounding overburden material based on a non-haul road application.	The 2024 AQIA for the North and South OSF Alternative was completed after the publication of the DEIS. Data from the 2024 AQIA has been incorporated into the Final EIS. The 2024 AQIA for the North and South OSF Alternative, and the assessment in the EIS, considers all dust emitting sources including truck emissions, quarry activities, storage wind erosion emissions, etc. The modeled concentrations from these emissions are below primary and secondary NAAQS. As noted in Appendix H, "Worst Case Year Memorandum" of the 2023 AQIA for the Proposed Action, these emissions were generated for the operation year that is expected to generate the highest level of emissions, and consequently, the highest potential impacts. Furthermore, because of the short-term emissions associated with the dust models, the water truck activity emissions were placed on the road segments closest to the critical habitat and the off-site receptors to maximize dust impacts at these locations. Pursuant to the requirements of 40 CFR Part 51 Appendix W, the AQIA considers locations of "Ambient air". Pursuant to 40 CFR 50.1(e), "Ambient air" means that portion of the atmosphere, external to buildings, to which the general public has access. The critical habitat area is not available for general public access, not considered "ambient air", and was thus excluded from the AQIA analysis, consistent with the requirements of 40 CFR Part 51 Appendix W. Because of these considerations, a separate modeling evaluation was completed to evaluate dust impacts to critical habitat and specifically potential impacts to subpopulations Tiehm's buckwheat. This analysis is summarized in the BPP & APCM and provided as in Attachment H in the BPP & APCM, and has been included in the Section 7 consultation process and the applicable NEPA documents. The Attachment H evaluations only included the haul trucks and haul road traffic, based on the AQIA evaluation, which demonstrates that the haul trucks contribute to 96% of the maximum dust impacts and because the haul road was the single source of dust with the greatest potential to impact Tiehm's buckwheat. This consideration mirrored FWS concerns with the potential for dust deposition from the haul road and their request to move the haul road 300 feet, 91 meters, away from Tiehm's buckwheat subpopulations. This analysis considered particulate matter equal to or less than PM30 to better understand the potential risks from dust deposition. With respect to Attachment H, the years and truck traffic modeled were Year 3 with 2 haul truck round trips per day, and Year 11 with 525 haul truck round trips per day. These years were selected to evaluate the lowest mining activity year (Year 3) and the highest mining activity year (Year 11). As summarized in Table 5 of Attachment H, the model impacts for Year 11 (i.e., highest mining activity year) are several orders of magnitude higher than the model impacts for Year 3 (i.e., lowest mining activity year) and are still protective of the critical habitat. To further understand potential risks from dust, Figure 17 of Rev 4 of the BPP & APCM included dust impacts from sources other than the haul roads and these effects for the worst-case emissions year. This analysis demonstrates that the location and magnitude of the dust impacts from all sources are not anticipated to cause any detrimental effects on the critical habitat. This analysis has been included in the Section 7 consultation process and Section 4.12.2.3 of the Final EIS. Since publication of the DEIS, Ioneer has agreed to move the haul road from over 300 meters up to 870 meters east of the haul road location in the Proposed Action and the North and South OSF Alternative considered in the DEIS. Modeled 24-Hour average PM10 dust impacts for the North and South OSF to Tiehm's buckwheat subpopulations after movement of the haul road range from 7 to 26 percent of NAAQS primary and secondary standards. Haul trucks and traffic on the haul road are modeled to be substantially lower than the threshold identified in the BPP & APCM. The risk of larger dust particles impacting Tiehm's buckwheat has been substantially reduced by relocation of the haul road. This

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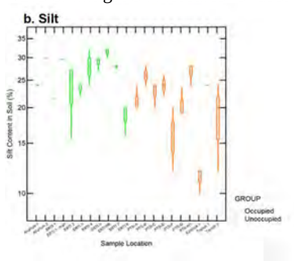
			data has been included in the Section 7 consultation process and the applicable NEPA documents. CAT-777 water truck is too large for smaller service roads. In addition to the CAT-777, the project will utilize two smaller water trucks to maintain adequate water on all project roads for dust control. Note that the 2024 model demonstrations are based on the utilization of three water trucks with greater assumed dust emissions than a CAT 777. This maximized dust emissions and dust impacts from this source. The haul roads will be constructed from mined competent overburden, not from surficial alluvial materials. Therefore, the use of a silt content value of 6.4% is an appropriate assumed value based on the type of material used. The commentors cited silt content values of 12% to 32%, but these materials do not represent the materials that will be used for the haul road construction. In addition, the reference to the 13% silt content value for the ore stockpiles is also not applicable. Ore will not be used to construct the haul roads and the ore is a geologically different material than the competent overburden that will be used for the haul road construction.
108 and 183	108.62 and 183.61	Model inputs are systematically biased low. Multiple key dispersion model and emission inputs systematically bias the results to lower fugitive dust emissions. Silt fraction, meteorology, and water truck emissions activity are inadequate. As discussed in the previous section, silt fraction values for the haul road ranged from 1.7% to 6.4% which is at least a factor of 3 lower than observed silt values within the critical habitat (~12% to ~32%, with an average silt content of 25.7%) (Threatened and Endangered Species SER, 2024 – see Figure 5b below), and a factor of 2 lower than the content of the ore stockpile in Table 13 of Appendix B (AQIA 2023, v5.6). Silt content is a key factor in dust deposition. Moreover, the silt fraction of 6.4% requires routine gravel application which has not been described as part of the DEIS or mitigation measures for dust suppression.  **Figure 5b** - Threatened and Endangered Species SER (2024) Silt Content in Critical Habitat Occupied and Unoccupied areas. Meteorological observations used by the Project Applicant from the Tonopah Airport site are unlikely to be representative of the topographically complex Rhyolite Ridge project area. While the Tonopah Airport site is the closest ASOS site with processed AERMET data, it is more than 40 miles to the northeast of the project site in a flat basin; multiple mountain peaks are barriers to air movement between the project site and the Tonopah Airport. Additionally, the project site area is topographically complex due to the surrounding mountains within the Rhyolite Ridge project area. The Tonopah Airport Wind Rose is shown in **Figure 1.** Winds are predominantly on a north-south axis, originating from the north most of the time. Winds from the northwest are slightly higher wind speeds. This wind rose is extremely unlikely to represent the winds at Rhyolite Ridge along the haul road, which is in a canyon at approximately 6,000 foot elevation with ridges rising well over 1,000 feet above the canyon floor to the north and south of Cave Springs Rd.	The modelled concentrations from these emissions are below primary and secondary NAAQS standards. As noted in Appendix H, "Worst Case Year Memorandum" of the 2023 AQIA for the Proposed Action, these emissions were generated for the operation year that is expected to generate the highest level of emissions, and consequently, the highest potential impacts. Furthermore, because of the short-term emissions associated with the dust models, the water truck activity emissions were placed on the road segments closest to the critical habitat and the off-site receptors to maximize dust impacts at these locations. Pursuant to the requirements of 40 CFR Part 51 Appendix W, the AQIA considers locations of "Ambient air". Pursuant to 40 CFR 50.1(e), "Ambient air" means that portion of the atmosphere, external to buildings, to which the general public has access. The critical habitat area is not available for general public access, not considered "ambient air", and was thus excluded from the AQIA analysis, consistent with the requirements of 40 CFR Part 51 Appendix W. Because of these considerations, a separate modeling evaluation was completed to evaluate dust impacts to critical habitat and specifically potential impacts to subpopulations Tiehm's buckwheat. This analysis is summarized in the BPP & APCM and provided as in Attachment H in the BPP & APCM, and has been included in the Section 7 consultation process and the applicable NEPA documents. The Attachment H evaluations only included the haul trucks and haul road traffic, based on the AQIA evaluation, which demonstrates that the haul trucks contribute to 96% of the maximum dust impacts and because the haul road was the single source of dust with the greatest potential to impact Tiehm's buckwheat. This consideration mirrored FWS concerns with the potential for dust deposition from the haul road and their request to move the haul road 300 feet, 91 meters, away from Tiehm's buckwheat subpopulations. This analysis considered particulate matter equal to or less than PM30 to better understand the potential risks from dust deposition. With respect to Attachment H, the years and truck traffic modeled were Year 3 with 2 haul truck round trips per day, and Year 11 with 525 haul truck round trips per day. These years were selected to evaluate the lowest mining activity year (Year 3) and the highest mining activity year (Year 11). As summarized in Table 5 of Attachment H, the model impacts for Year 11 (i.e., highest mining activity year) are several orders of magnitude higher than the model impacts for Year 3 (i.e., lowest mining activity year) and are still protective of the critical habitat. To further understand potential risks from dust Figure 17 of Rev 4 of the BPP & APCM included dust impacts from sources other than the haul roads and these effects for the worst-case emissions year. This analysis demonstrates that the

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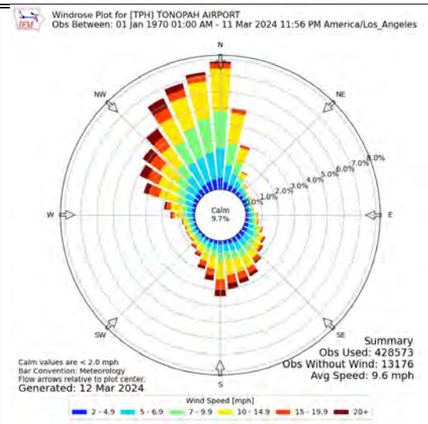

Figure 1. Tonopah Airport Wind Rose from Iowa Environmental Mesonet ASOS network1 – based on hourly wind observations from 1970 through 2024.

In an area with multiple high ridges, it is likely that the topography channels the wind along Cave Springs Rd on a path of least resistance through the mountainous terrain. Therefore, it is unlikely that the Tonopah airport meteorology will be the same directionally (due to mountainous terrain to the north of the project area).

In addition, areas with high ridges can experience upslope and downslope flow. Upslope flow is orographic lifting and is often associated with precipitation although that is unlikely in this area due to the rain shadow from the Sierras to the west of the project. Downslope flow is associated with strong warm winds. While the ridges may not be tall enough to generate strong topographical flows, it is important for deposition measurements to have accurate meteorological measurements as inputs. Higher wind speeds will cause greater turbulence, greater wind erosion, and additional dust deposition on disturbed silty habitat. Ioneer or BLM should collect onsite meteorology for at least three months to validate if the Tonopah airport meteorology is representative and a portable wind sensor can be acquired for these measurements for a nominal cost.

Lastly, the model emissions calculations for dust critically depend on the number of days with greater than 0.1 inches of precipitation for wind erosion and haul road dust deposition estimates. AQIA used a value of 60 in their calculations, based on the isopleths of rainfall days with greater than 0.1 inches of precipitation in AP-42 Section 13.2.2, Figure 13.2.2-1 (US EPA, 2006). This is inadequate for three reasons.

First, the number of days with greater than 0.1 inches of precipitation is not 60 as inferred from Figure 13.2.2-1 isopleths. Tonopah airport precipitation statistics for the last decade are shown in **Table 1**. There are typically 34 days with greater than 0.1 inches of precipitation, as expected for an area with 4.95 inches of average rainfall and a distribution of rain event magnitudes. A more accurate estimate of precipitation events is 34 days, rather than the 60 days used in dust emissions calculations calculating haul road emissions in Appendix B and Attachment H for haul road emissions, wind erosion emissions, and water truck requirements.

Table 1 - Tonopah ASOS Airport Precipitation statistics from 2012-2023[2]

Year	Days with >=0.1 inches of precipitation	Valid days	Percentage of days >=0.1 inches of precipitation
2012	36	347	10.4
2013	32	363	8.8
2014	30	362	8.3
2015	36	346	10.4
2016	41	366	11.2
2017	38	364	10.4
2018	39	365	10.7
2019	45	336	13.4
2020	24	363	6.6
2021	24	357	6.7
2022	27	350	7.7
2023	31	323	9.6
Median	**34**	**360**	**10.0**
Mean	**33.6**	**354**	**9.5**

2 Data acquired from https://mesonet.agron.iastate.edu/request/download.phtml?network=NV_ASOS May 15, 2024

location and magnitude of the dust impacts from all sources are not anticipated to cause any detrimental effects on the critical habitat. This analysis has been included in the Section 7 consultation process and the applicable NEPA documents.

Since publication of the DEIS, Ioneer has agreed to move the haul road from over 300 meters up to 870 meters east of the haul road location in the Proposed Action and the North and South OSF Alternative considered in the DEIS. Modeled 24-Hour average PM10 dust impacts for the North and South OSF to Tiehm's buckwheat subpopulations after movement of the haul road range from 7 to 26 percent of NAAQS primary and secondary standards. Haul trucks and traffic on the haul road are modeled to be substantially lower than the threshold identified in the BPP & APCM. The risk of larger dust particles impacting Tiehm's buckwheat has been substantially reduced by relocation of the haul road. This data has been included in the Section 7 consultation process and the applicable NEPA documents.

The haul roads will be constructed from mined competent overburden, not from surficial alluvial materials. Therefore, the use of a silt content value of 6.4% is an appropriate assumed value based on the type of material used. The commentors cited silt content values of 12% to 32%, but these materials do not represent the materials that will be used for the haul road construction. In addition, the reference to the 13% silt content value for the ore stockpiles is also not applicable. Ore will not be used to construct the haul roads and the ore is a geologically different material than the competent overburden that will be used for the haul road construction.

The meteorological data selection for the dispersion modeling evaluations was based on the requirements of 40 CFR 51, Appendix W which states the following:

Pursuant to Section 8.4.2(b): "Where surface conditions vary significantly over the analysis domain, the emphasis in assessing representativeness should be given to adequate characterization of transport and dispersion between the source(s) of concern and areas where maximum design concentrations are anticipated to occur."

Pursuant to Section 8.4.2(e): "The model user should ... ensure that worst-case meteorological conditions are adequately represented in the model results."

Based on the considerations below, the project is expected to generally experience a bimodal wind frequency distribution similar to that observed at the Tonopah airport:

- The northwesterly through northerly components of the expected wind distribution at the project site would be similar to those observed at the Tonopah airport given the similar gentle terrain relief in several upwind sectors in those directions. Sectors with more elevated terrain in the northern upstream quadrant have similar terrain relief at the project site and Tonopah airport. There is little intervening terrain north and upstream of the project site that could potentially interfere with the north-northwesterly through northerly flow component of the wind distribution.

- Despite the proximity of Rhyolite Ridge immediately to the east and Piper Peak and adjacent elevated terrain to the south, in the absence of larger scale synoptic forcing during specific weather events (that would also be experienced at Tonopah airport at the same time), the project site is likely to experience southerly winds during the nocturnal hours associated with drainage flows from these near-field terrain features. All portions of the proposed project site would experience a range of southeasterly through southerly winds depending on proximity to the above-mentioned specific terrain features. These southeasterly through

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		Secondly, the value of 0.1 inches of precipitation is not a good rule of thumb for this dust suppression application where evaporation rates are extremely high due to the elevation and low humidity. Watering requirements for 90% control efficiency require 0.8 L/m2 to be applied every 70 minutes on an annual basis in year 11 based on Attachment H. Each application is 800 cm3/10,000 cm2 = 0.08 cm application of water. Cumulatively, that results in 1.65 cm of water applied over the 20.6 daily water truck applications for the haul road (90% control efficiency – see **Table 2**). There are 2.54 cm in an inch – so that 1.65 cm is 0.65 inches of water applied daily to the haul road and minepit. In fact, even the 75% control efficiency application is 0.66 cm daily – or 0.26 inches. A 0.1 inch precipitation event is only sufficient to suppress dust on the haul roads for the equivalent of 3.175 applications of water truck activity – less than four hours at 90% control efficiency and about 2 hours at 95% control efficiency. Thirdly, the dust deposition model excludes all service road dust deposition, quarry activities (blasting, excavating, loading, unloading) and process plant activities. A proper accounting of the cumulative impacts is required informed decision-making. To evaluate dust deposition, a cumulative dust dispersion modeling of **all significant** proposed action PM emissions is necessary, with local meteorology input variables.	southerly winds would display a similar distribution from this quadrant as observed at the Tonopah airport. Based on the considerations above, the Tonopah meteorological data selected for use in the dispersion modeling evaluations is conservative and meets the requirements of "worst/case conditions" as required by 40 CFR 51, Appendix W, and is the best available data. Furthermore, as noted in the 2023 AQIA, the Tonopah meteorological data set has been used by the Nevada Division of Environmental Protection (NDEP) to complete various air dispersion modeling demonstrations in the local airshed and its use for the proposed project maintains consistency with other NDEP actions. Note that the webpage from which the Tonopah ASOS Airport Precipitation statistics are presented states that "This archive simply provides the as-is collection of historical observations, very little quality control is done." To avoid any concern of data reliability, Ioneer elected to base the calculations directly on information provided by the USEPA in the AP-42 compilation of air emissions factors. It is important to note that the threshold reference in Section 13.2.2 of AP-42 is 0.01 inches of precipitation for natural mitigation, not the 0.1 inches suggested by the reviewer. The value included in AP-42 for natural mitigation from precipitation events is an order of magnitude less than the 0.1 inches of precipitation suggested by the commenter. We relied on AP-42 and the proximity of the site to the 60-day isopleth for the 0.01-inch rainfall days for this analysis. The 2023 AQIA was developed in accordance with the workplan approved by the BLM. The 2023 AQIA considered all emissions sources and assumed ambient precipitation during 24-hour and 1-hour worst-case assessment. This resulted in an approximately 15 to 20 percent reduction in particulate impacts under those two scenarios as compared to no ambient precipitation. Considering the impact results obtained based on the approved work plan, an increase of 15 to 20 percent, using no ambient precipitation, would not be a material change in the overall conclusions of the analysis, since the margin between the impacts for the North and South OSF Alternative and the NAAQS standards is so great. Nevertheless, an updated analysis was developed to reflect no ambient precipitation during the 24-hour or one-hour averaging periods. This data was added to the applicable SERs. Standard practice is to use the closest isopleth in Figure 13.2.2.1 for annual emission estimation purposes. As an alternative approach, Figure 13.2.2.1 can be imported into a GIS system and number of precipitation days with 0.01 inches or more of precipitation interpolated based the “steepest gradient” between the two nearest isopleths that includes the point of interest. Using this alterative GIS-method, it results in an estimate of 43 days with precipitation of 0.01 inches or more at the site. As discussed above, the use of either method does not change the “dry” short emission estimates done in accordance with AP-42, which does not consider precipitation. The updated analysis was completed using the 43 days with precipitation of 0.01 inches or more at the site for the longer term (annual) analysis. This approach would not be a material change in the overall conclusions of the analysis, because of the margin between the impacts for the North and South OSF Alternative and the NAAQS standards. As noted in Appendix H, "Worst Case Year Memorandum" of the 2023 AQIA, emissions were generated for the operation year that is expected to generate the highest level of emissions, and consequently, the highest impacts. Pursuant to the requirements of 40 CFR Part 51 Appendix W the AQIA considers locations of "Ambient air". Pursuant to 40 CFR 50.1(e), "Ambient air" means that portion of the atmosphere, external to buildings, to which the general public has access. The critical habitat area is not available for general public access, not considered "ambient air", and was thus excluded from the 2023 AQIA analysis, consistent with the requirements of 40 CFR Part 51 Appendix W.

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			Because the 2023 AQIA properly did not consider the Tiehm's buckwheat subpopulations and other portions of critical habitat, which are areas that the general public does not have access (not "ambient air"), a separate modeling evaluation was completed for the subpopulations of Tiehm's buckwheat in critical habitat for the BPP & APCM. This data was included in the Section 7 consultation process and the applicable NEPA documents. This modeling evaluation is summarized in the BPP & APCM and provided as Attachment H in that document. The Attachment H evaluation only included the haul trucks and haul road traffic, based on the AQIA evaluation that demonstrated that the haul trucks and haul road traffic contributed approximately 96% of the maximum dust impacts. This modeling evaluation showed that the expected total maximum dust flux for all populations in the peak year of operation, including assumed maximum background levels are expected to range from 0.1670 to 0.3370 g/m2/d at 95 percent control efficiency using a 1.7 and 6.4 percent silt deposition, respectively. These values are 3.6 to 12.0 times smaller than the lowest daily flux rate reported in Lewis et al. (2017) and Wijayratne et al. (2009) [Citations and further discussion in BPP & APCM]. These values are significantly below the threshold level selected to trigger management strategies provided in APCM-9 in the BPP & APCM. In response to stakeholders concerns with the dust impacts from sources other than the haul roads could pose a risk or add to the effects of the action, Figure 17 of Revision 4 of the BPP & APCM was developed to demonstrate that the location and magnitude of PM10 impacts from all sources. This analysis shows that PM10 impacts are not expected to cause any detrimental effects to vegetation, including Tiehm's buckwheat within critical habitat. Discussion was added to the applicable NEPA documents. This analysis was updated in Revision 5.1 of the BPP & APCM to reflect all of the constituents considered in a NAAQS evaluation. In addition, the relocation of the haul road further reduces potential dust impacts to subpopulations of Tiehm's buckwheat and the more than 700 acres of unoccupied critical habitat that will not be directly impacted by Project development.
108 and 183	108.63 and 183.62	Resuspended herbicide and/or chemical suppressants will affect critical habitat Resuspension of particles and dust deposition of haul road, overburden storage, service road, and quarry dust with adsorbed/absorbed herbicides or chemical dust suppressants was not identified as a potential issue. In both the herbicide application and chemical suppressant cases, it is critically important to model the expected maximum loading of the herbicide and/or dust suppressant and then model the transport of these contaminants onto the critical habitat via multiple cycles of resuspended road dust activity over the course of the active lifetime of the chemical, rather than simply assume they will not migrate onto the critical habitat via fugitive dust resuspension.	As detailed in the Tiehm's Buckwheat Protection Plan for the North and South OSF Alternative, herbicide use will not occur within 50 feet of delineated Tiehm's buckwheat subpopulations. When weed removal within subpopulations is required, it will be accomplished mechanically and in a manner that minimizes disturbance to soils and plants. Dust monitoring is also an Applicant Proposed Conservation Measure in the Buckwheat Protection Plan for the North and South OSF Alternative. Ioneer selected herbicides without long-term residual toxicities and without toxic nitroguanidine neonicotinoids. Thus, chlorsulfuron (trade name: Telar® XP) herbicide or an equivalent approved substitute will be applied. More details can be found in the Tiehm's Buckwheat Protection Plan for the North and South OSF Alternative
108 and 183	108.64 and 183.63	*Herbicide particulate drift* Herbicide drift could kill or damage Tiehm's Buckwheat (Threatened and Endangered Species SER, 2024). The three main forms of herbicide drift are droplet drift, vapor drift, and particulate drift (Bish et al., 2021). Droplet drift is straight dispersion from the application source with larger droplets falling closer and smaller droplets having a wider area of impact. Vapor drift occurs when herbicide evaporates upon spraying – it can widely disperse until forced back to the ground via precipitation or dry deposition through dust particles. Last, particle drift can occur when droplets or vapors adsorb onto particle surfaces – particles can be resuspended especially in high silt conditions with frequent mechanical disturbance. APCM-7 in Appendix B of the Threatened and Endangered Species SER (2024) describes the Control of Nonnative, Invasive, and Noxious Species. Herbicide treatments will be applied in May and June using DuPont Telar XP herbicide or an equivalent substitute using Methylate Seed Oil (MSO) as a surfactant. The active ingredient in Telar XP is Chlorsulfuron, which has a DT50 of weeks to months in alkaline soils (Sarmah et al., 1999) and is essentially stable at pH 9. Measures will be taken to avoid droplet drift and vapor drift including low wind speed application, spray nozzles with low pressure, and wicking techniques, but no measures will be taken to avoid particle drift or resuspension beyond being 50 feet from critical habitat. Given the sticky and waxy nature of MSO and the stability of Telar, it is highly likely that mechanical disturbance of any herbicide treated areas will resuspend the herbicide via particle drift. It is unclear from this plan whether there will be any intention to apply herbicide to active disturbance areas – haul roads, surface roads, quarry, or overburden storage areas. If there is, and there is active disturbance, it is foreseeable that herbicide drift onto critical habitat areas will occur.	As detailed in the Tiehm's Buckwheat Protection Plan for the North and South OSF Alternative, herbicide use will not occur within 50 feet of delineated Tiehm's buckwheat subpopulations. When weed removal within subpopulations is required, it will be accomplished mechanically and in a manner that minimizes disturbance to soils and plants. Dust monitoring is also an Applicant Proposed Conservation Measure in the Buckwheat Protection Plan for the North and South OSF Alternative. Ioneer selected herbicides without long-term residual toxicities and without toxic nitroguanidine neonicotinoids. Thus, chlorsulfuron (trade name: Telar® XP) herbicide or an equivalent approved substitute will be applied. More details can be found in the Tiehm's Buckwheat Protection Plan for the North and South OSF Alternative. An air quality impact analysis was prepared for the Project, which was reviewed by the BLM and cooperating agencies, and was approved for use in the NEPA. The air quality impacts analysis demonstrates compliance with both secondary and primary NAAQS, including for particulate matter. The Clean Air Act

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			identifies two types of NAAQS which are primary standards and secondary standards. Primary standards, which are what is assessed in the Air Quality Impact Analysis, provides public health protection, including sensitive human populations. Primary standards are more stringent than the secondary standards. The secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. A particulate matter impact analysis was prepared as part of the Buckwheat Protection Plan for the North and South OSF Alternative. This particulate matter impact analysis was used to assess particulate matter deposition from haul trucks in proximity to designated critical habitat and Tiehm's buckwheat subpopulations and was used in the Buckwheat Protection Plan for the North and South OSF Alternative in assessing Project particulate matter deposition impacts relative to the particulate matter threshold that was established using the best available science. The results showed the Project is below the established threshold, and the Buckwheat Protection Plan includes measures to monitor particulate matter deposition within designated critical habitat and provides protocols and procedures to assess the established threshold during the life of the Project. This will allow for appropriate management implementation if data from monitoring shows the need to modify the threshold or implement other management requirements to meet the intent of the conservation measure detailed in the Buckwheat Protection Plan for the North and South OSF Alternative. Impacts to Tiehm's buckwheat from dust are disclosed in EIS Section 4.12 and additional clarification was added to Section 3.3.3 of the Threatened and Endangered Species SER for the Rhyolite-Ridge Lithium-Boron Project. This additional clarification was added to the SER but was available to the public during the comment period as Appendix B of the Threatened and Endangered Species SER for the Rhyolite-Ridge Lithium-Boron Project. Alternative is Appendix B of that SER. Dust control measures would be implemented for the Project, compliance with the Class II Air Permit issued by the State of Nevada would be required, and compliance with the conservation measures set forth in the Tiehm's Buckwheat Protection Plan, including dust monitoring, would be required.
108 and 183	108.65 and 183.64	*Chemical dust suppressants* Similarly, chemical dust suppressants are briefly discussed in various sections of the DEIS as a means of controlling dust deposition. Potential dust suppression chemical would need to be approved by Nevada Department of Transportation (NDOT) and Bureau of Land Management (BLM) prior to use. Page 4-2 of the DEIS states that polymer, and/or dust suppression reagents could be used to control dust. Page 4-22 states that '…chemical binding agents for dust suppression may impact Tiehm's buckwheat and designated critical habitat…' without explicitly stating which salts the DEIS identifies as potentially harmful to critical habitat. Two common salts used for dust suppression are calcium chloride and magnesium chloride, both of which function as hygroscopic materials to retain moisture for dust suppression. AP-42 Section 13.2.2 describes the impact of chemical dust suppression on unpaved haul roads. (US EPA, 2006) > *As opposed to watering, chemical dust suppressants have much less frequent reapplication requirements. These materials suppress emissions by changing the physical characteristics of the existing road surface material. Many chemical unpaved road dust suppressants form a hardened surface that binds particles together. After several applications, a treated road often resembles a paved road except that the surface is not uniformly flat. Because the improved surface results in* ***more grinding*** *of small particles, the* ***silt content*** *of loose material on a highly controlled surface may be substantially higher than when the surface was uncontrolled.* (AP-42 13.2.2-11) Chemical dust suppressants used in operational areas will be resuspended as fugitive dust – some of which will be deposited into critical habitat areas. It is critical to model these impacts if chemical dust suppressants are likely to be used on haul roads, service roads, or other uncontrolled mine surfaces for dust suppression. While this may be acceptable at significant distances of kilometers from critical habitat, it is much more likely to be detrimental to critical habitat and vegetation if used within a few km of critical habitat areas, given the possibility for mechanical disturbance, dust resuspension, and ensuing dust deposition.	As detailed in the Tiehm's Buckwheat Protection Plan for the North and South OSF Alternative, herbicide use will not occur within 50 feet of delineated Tiehm's buckwheat subpopulations. When weed removal within subpopulations is required, it will be accomplished mechanically and in a manner that minimizes disturbance to soils and plants. Dust monitoring is also an Applicant Proposed Conservation Measure in the Buckwheat Protection Plan for the North and South OSF Alternative. Ioneer selected herbicides without long-term residual toxicities and without toxic nitroguanidine neonicotinoids. Thus, chlorsulfuron (trade name: Telar® XP) herbicide or an equivalent approved substitute will be applied. More details can be found in the Tiehm's Buckwheat Protection Plan for the North and South OSF Alternative. An air quality impact analysis was prepared for the Project, which was reviewed by the BLM and cooperating agencies, and was approved for use in the NEPA. The air quality impacts analysis demonstrates compliance with both secondary and primary NAAQS, including for particulate matter. The Clean Air Act identifies two types of NAAQS which are primary standards and secondary standards. Primary standards, which are what is assessed in the Air Quality Impact Analysis, provides public health protection, including sensitive human populations. Primary standards are more stringent than the secondary standards. The secondary standards provide public welfare protection, including protection

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<tr><th>Comment Letter No.</th><th>Comment Number</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td></td><td></td><td>against decreased visibility and damage to animals, crops, vegetation, and buildings.

A particulate matter impact analysis was prepared as part of the Buckwheat Protection Plan for the North and South OSF Alternative. This particulate matter impact analysis was used to assess particulate matter deposition from haul trucks in proximity to designated critical habitat and Tiehm’s buckwheat subpopulations and was used in the Buckwheat Protection Plan for the North and South OSF Alternative in assessing Project particulate matter deposition impacts relative to the particulate matter threshold that was established using the best available science. The results showed the Project is below the established threshold, and the Buckwheat Protection Plan includes measures to monitor particulate matter deposition within designated critical habitat and provides protocols and procedures to assess the established threshold during the life of the Project. This will allow for appropriate management implementation if data from monitoring shows the need to modify the threshold or implement other management requirements to meet the intent of the conservation measure detailed in the Buckwheat Protection Plan for the North and South OSF Alternative.

Impacts to Tiehm’s buckwheat from dust are disclosed in EIS Section 4.12 and additional clarification was added to Section 3.3.3 of the Threatened and Endangered Species SER. This additional clarification was added to the SER but was available to the public during the comment period as Appendix B of the Threatened and Endangered Species SER. Alternative is Appendix B of that SER.

Dust control measures would be implemented for the Project, compliance with the Class II Air Permit issued by the State of Nevada would be required, and compliance with the conservation measures set forth in the Tiehm’s Buckwheat Protection Plan, including dust monitoring, would be required.</td></tr>
<tr><td>108 and 183</td><td>108.66 and 183.65</td><td>Water truck requirements are inaccurately modeled.
Dust suppression activities from Water Trucks are inadequately modeled for emissions activity and water management.

Haul road and operational mine areas will require multiple water trucks under high control efficiency scenarios when the mine is fully operational, but the emissions modeling assumes only one truck will be required to operate 16 hours a day (e.g., Table 16b and Table 18a of Appendix B of AQIA 2023 v5.6).

Under the 95% control efficiency scenario, haul roads will need to be watered every 35 minutes, 24 hours a day, 330 days a year, which is ~41 applications per day, over an inch of water daily, and about 473 inches per year. It will require ~2.5 trips for a 77,000 L (20,000 gallon) water truck to apply 0.8 L/m2 to the ~238,000 m2 area of haul road (4.7 km long, 51 m wide based on Attachment H). That will require 50,000 gallons of water per hour for dust suppression for the haul road. It is not clear how quickly water trucks can refill a 20,000 gallon tank – although a 1,000 gallon per minute pump would take 20 minutes. While being refilled, the water truck is not actively watering, and so additional water trucks will be needed. Moreover, this includes no watering requirements for service roads – which are multiple miles long and cannot accommodate the 100+ ton weight of the CAT 777 watering trucks. It also excludes water truck activity in the quarry. Table 2 provides a table of estimated watering rates and requirements
for the dust control efficiencies described in Attachment H.

Table 2. Water truck haul road dust suppression control efficiency calculations for (1) volume of water required daily and annually and (2) water depth applied to dust suppression surfaces daily and annually.

<table>
<tr><th>Control Efficiency (%)</th><th>Minutes between application (annual)</th><th>Applications per day</th><th>Depth of water per application (cm)</th><th>Water depth per day (cm)</th><th>Water depth per year - 330 days (inches)</th><th>Haul road Water volume per day (L)</th><th>Haul road water volume per day (gallons)</th></tr>
<tr><td>75</td><td>175</td><td>8.2</td><td>0.08</td><td>0.66</td><td>86</td><td>1,566,832</td><td>413,913</td></tr>
<tr><td>80</td><td>140</td><td>10.3</td><td>0.08</td><td>0.82</td><td>107</td><td>1,958,540</td><td>517,391</td></tr>
<tr><td>85</td><td>105</td><td>13.7</td><td>0.08</td><td>1.10</td><td>143</td><td>2,611,387</td><td>689,855</td></tr>
<tr><td>90</td><td>70</td><td>20.6</td><td>0.08</td><td>1.65</td><td>214</td><td>3,917,080</td><td>1,034,783</td></tr>
<tr><td>95</td><td>35</td><td>41.1</td><td>0.08</td><td>3.29</td><td>428</td><td>7,834,160</td><td>2,069,566</td></tr>
</table>
Applications will be 0.8 L/m2 based on Attachment H Table 1 Application intensity.
Water depth assumes 330 days of watering per year based on 35 precipitation days with >= 0.1 inches of precipitation</td><td>A CAT-777 water truck is too large for smaller service roads. In addition to the CAT-777, the project will utilize two smaller water trucks to maintain adequate water on all project roads for dust control. The model demonstrations are based on the utilization of three water trucks with greater assumed dust emissions than a CAT 777. This maximized dust emissions and dust impacts from this source.

As outlined in the BPP & APCM fugitive dust will be controlled on roadways and other areas of disturbance within the Project in accordance with the Project’s Air Quality Operating permit. Along the Haul Road, where it is proximate to critical habitat, control efforts will be implemented to achieve necessary efficiency using water applications and NDEP/BLM approved dust suppressants. It is reasonable to anticipate that NDEP/BLM approved dust suppressants would generally be needed from May through September when evaporation rates are highest and during years when haul truck activity is higher. Their use will provide the needed logistical flexibility to maintain required control efficiencies with the water truck fleet planned for the Project. The use of NDEP/BLM approved dust suppressants can significantly decrease the amount/frequency of watering and required control efficiency can be achieved with the equipment proposed.
Using competent overburden material to construct the road is not expected to be adversely impacted by the use of a combination of water and NDEP/BLM dust suppressants. Should noxious or invasive species become established along the margins of the haul roads and other areas subject to watering for dust control, those areas will be treated with herbicides in accordance with APCM-7 in the BPP & APCM.</td></tr>
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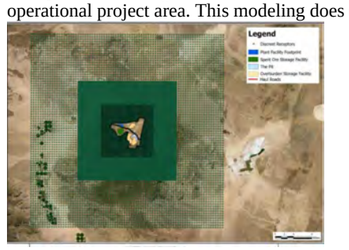
		• Haul road area of 238,000 m2 based on 4.696 km length and 51 m width (46 m + 5 m shoulder) based on Attachment H. Haul road area in geospatial shape files was 225,000 m2, about a 6% difference. Given the enormous volumes of water required for haul road dust suppression, the water tank and water truck filling pumps will also need to be quite large to efficiently transfer the 20,000 gallons per tank to keep the water trucks on the haul road and minepit watering. Additionally, there is no discussion of the structural impacts to the haul road of constant watering (in and out of the mine-pit), the noxious weeds impacts from having a tropical rain forest level of watering, and pollinator impacts of watering the haul road 86 to 400+ inches of water per year. It is also unclear if the mine operations have sufficient water for dust suppression under high control efficiency scenarios since the watering requirements indicate between 17,000 and 86,000 gallons per hour estimates is solely for the haul road. I have not included the watering and misting required for the quarry excavation, overburden storage, ore crushing, or service roads. Given a water budget of ~2,500 gallons per minute (150,000 gallons per hour) – it is not clear if the dust suppression plan is practical or implementable. It is foreseeable that the water management for dust suppression will be a critical part of the Project environmental impacts and it does not appear to have been considered holistically in the DEIS and supplemental environmental reports. Moreover, it is likely that critical habitat area adjacent to haul roads will be impacted by haul road mud, haul road water evaporation and deposition via dust, and indirectly impacted by the persistent misting of the sprayed water on adjacent haul roads and operational quarry surfaces and overburden storage areas. A full accounting of water management is necessary to characterize the dust suppression plan in detail.	
108 and 183	108.67 and 183.66	Model documentation is insufficient. DEIS documents, supplemental reports, appendices, and attachments are insufficient for evaluation of model domain and model results for critical habitat dust deposition. Air Quality modeling is described in the DEIS and AQIA 2023 v5.6. The Modeled Receptor Grid is displayed in Figure 3-1 as reproduced below. All receptors are outside of the boundaries of the operational project area. This modeling does not address the internal dust deposition in the critical habitat area.  **Figure 3-1** reproduced from the DEIS showing the model receptor grid used for Air Quality modeling – offsite only. As seen in the figure, there is no internal receptor modeling of critical habitat. Critical habitat modeling was done separately and only included emissions from the haul trucks on the haul roads. Receptor grids for the critical habitat were not provided for evaluation, and no spatial information was provided on the maximum impacted receptor. It is not clear to what extent the critical habitat was modeled, nor is it possible to evaluate why only two haul trucks were expected to pass by Buckwheat population 3 in year 3 of the mine operations, given that the DEIS definitively states that 'Approximately 2.8 Mt per year of ore is anticipated to be processed…' on p2-3. If ore processing is occurring at capacity in year 3, that is 7,000+ tons of ore a day, or 51 haul truck trips each way past population 3. Moreover, there would still be much more extensive haul truck activity within the mine pit quarry and overburden storage that would create fugitive dust emissions to the south of population 6 in removal and moving of overburden – on the order of 7 times as much haul truck activity as required for ore hauling. That is ~350 haul truck trips that were not modeled in Attachment H, for unknown reasons. Water truck emissions were not modeled, and neither were quarry activities or overburden storage wind erosion emissions. Model documentation is insufficient to evaluate the true impacts of the mine activities on critical habitat areas. It is highly likely that this is due to the insufficiency of the analysis in evaluating the cumulative impacts of mine operations on dust deposition due to arbitrary exclusion of emissions sources and insufficiently spatial characterization of mine impacts on the critical habitat areas.	In Revisions 4 of the BPP & APCM a contour map of PM10 impacts was generated using the receptor grid depicted in the comment which included receptors located along Cave Spring Road, including within critical habitat. For Revision 5.1 of the BPP & APCM, completed in response to comments and additional conservation commitments made during the consultation process, analysis of air emissions within the subpopulations of Tiehm's buckwheat that are dispersed throughout critical habitat was completed. This analysis concludes that air quality impacts within the subpopulations are well below the primary and secondary NAAQS standards. Emissions considered in this analysis did include Quarry activities, all haul truck trips, and water truck emissions, and other sources of fugitive dust, including dust from wind. The relocation of the haul road also substantially reduced the potential for larger dust particles (PM30) to impact the critical habitat, including the subpopulations of Tiehm's buckwheat. Data was added to the Section 7 consultation process and the applicable NEPA documents. As illustrated in Figure 17 of Revision 4 of the BPP & APCM, PM10 impacts are below the primary and secondary NAAQS standards. Secondary standards are established to protect wildlife and vegetation. Also as stated earlier, under the North and South OSF Alternative with the relocated haul road the PM10 impacts within the subpopulations are well below the NAAQS. [See Table 8 and Figure 18b of Revision 5.1 of the BPP & APCM.] Attachment H is focused on vehicle trips going past subpopulations 3 and 6 -- this was the area that in Ioneer's opinion that posed the greatest risk for larger dust fractions (PM30) to impact Tiehm's buckwheat and other vegetation within critical habitat. This assessment was affirmed by FWS requests to relocate the haul road at least 300 feet (91 meters) away from these populations. Notably, Ioneer has relocated the haul road under the North and South OSF Alternative from over 300 meters to 870 meters east of the original location. To bracket the likely impact of dust onto Tiehm's buckwheat, prior to relocation of the haul road to east of critical habitat, Ioneer's mine planners identified the number of times haul trucks would drive past subpopulations 3 and 6 to transport ore to the processing plant or to the North OSF to determine the peak year and year with the fewest vehicle trips. The potential dust deposition, using a 1.7 and 6.4 percent silt content and 75, 85, and 95 percent control efficiencies, was then determined to reasonably bracket the range of project impacts. Model receptors were located within all of the subpopulations. In the early years of the project, most haul truck trips will be south, transporting overburden to the South OSF. PM30 does not behave as a suspended airborne pollutant and is deposited relatively quickly after it becomes airborne. This analysis showed that the expected total maximum dust flux for all populations in the peak year of operation, including assumed maximum background levels are expected to range from 0.1670 to 0.3370 g/m2/d using a 95 percent control efficiency and 1.7 to 6.4 percent silt deposition, respectively. These values are 3.6 to 12.0 times smaller than the lowest daily flux rate reported in Lewis et al. (2017) and Wijayratne et al. (2009) [Citations and further

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			discussion in BPP & APCM]. These values are significantly below the threshold level selected to trigger management strategies provided in APCM-9 in the BPP & APCM. With the relocation of the haul road to the east side of the quarry these effects are expected to be less.
108 and 183	108.68 and 183.67	Conclusions The Draft Environmental Impact Statement is required to include sufficient information for decisionmakers and the public to evaluate the environmental impacts of a proposed action and its alternatives. The Rhyolite Ridge Lithium-Boron Project DEIS fails to adequately consider and address the environmental impacts of its project's dust deposition impacts on the critical habitat of Tiehm's Buckwheat within the Project operating area. The impacts of the dust deposition can cause damage directly or indirectly; the DEIS only evaluates the direct impacts of dust deposition and it does that only for one of the Project's emissions sources; this is piecemealing and the entirety of the Project impacts need to be considered. Moreover, the suppression of the dust impacts and the planned noxious weed management will also have environmental impacts and need to also be evaluated for their impacts when they are resuspended into dust by routine project operations. Finally, dust suppression will require extreme quantities of water that will alter the local ecosystem and require adequate water management evaluation and ecosystem impact evaluation.	Section 4.12.1.3 of the EIS discusses potential impacts from dust deposition on Tiehm's buckwheat subpopulations. Ioneer has committed to monitoring dust-related impacts and measures to control fugitive dust. An air quality impact analysis was prepared for the Project, which was reviewed by the BLM and cooperating agencies, and was approved for use in the NEPA. The air quality impacts analysis demonstrates compliance with both secondary and primary NAAQS, including for particulate matter. The Clean Air Act identifies two types of NAAQS, which are primary standards and secondary standards. Primary standards, which are what is assessed in the Air Quality Impact Analysis, provides public health protection, including sensitive human populations. Primary standards are more stringent than the secondary standards. The secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. A particulate matter impact analysis was prepared as part of the Buckwheat Protection Plan for the North and South OSF Alternative. This particulate matter impact analysis was used to assess particulate matter deposition from haul trucks in proximity to designated critical habitat and Tiehm's buckwheat subpopulations and was used in the Buckwheat Protection Plan for the North and South OSF Alternative in assessing Project particulate matter deposition impacts relative to the particulate matter threshold that was established using the best available science. The results showed the Project is below the established threshold, and the Buckwheat Protection Plan includes measures to monitor particulate matter deposition within designated critical habitat and provides protocols and procedures to assess the established threshold during the life of the Project. This will allow for appropriate management implementation if data from monitoring shows the need to modify the threshold or implement other management requirements to meet the intent of the conservation measure detailed in the Buckwheat Protection Plan for the North and South OSF Alternative. Impacts to Tiehm's buckwheat from dust are disclosed in EIS Section 4.12 and additional clarification was added to Section 3.3.3 of the Threatened and Endangered Species SER. This additional clarification was added to the SER but was available to the public during the comment period as Appendix B of the Threatened and Endangered Species SER. Alternative is Appendix B of that SER.
108 and 183	108.69 and 183.68	References ADEQ (2022) *State Implementation Plan Revision: Regional Haze Program (2018-2028)*. 3 June. Available at: https://static.azdeq.gov/aqd/haze/az_regional_haze_proposed_sip_20220603.pdf (accessed 30 May 2024). Bish M, Oseland E and Bradley K (2021) Off-target pesticide movement: a review of our current understanding of drift due to inversions and secondary movement. *Weed Technology* 35(3): 345–356. BLM (2024) *Rhyolite Ridge Lithium-Boron Project, Environmental Impact Statement*. Available at: https://eplanning.blm.gov/eplanning-ui/project/2012309/510. F.R. (2022) Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Tiehm's Buckwheat. Available at: https://www.federalregister.gov/documents/2022/02/03/2022-02298/endangered-and-threatened-wildlife-and-plants-designation-of-critical-habitat-fortiehms-buckwheat (accessed 28 May 2024). Sarmah, Konkana, and Alston (1999) Degradation of chlorsulfuron and triasulfuron in alkaline soils under laboratory conditions. *Weed Research* 39(2): 83–94. US EPA (2006) *AP-42: Compilation of Air Emissions Factors from Stationary Sources;* Fifth Edition, Volume 1. Available at: https://www.epa.gov/sites/default/files/2020-10/documents/13._miscellaneous_sources.pdf (accessed 31 May 2024).	References noted.
108 and 183	108.70 and 183.69	**Appendix D** Tom Myers, PhD, Technical Memorandum: Review of Rhyolite Ridge Draft Environmental Impact Statement (June 1, 2024).	Comment noted.

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108 and 183	108.71 and 183.70	Tom Myers, Ph.D. Hydrologic Consultant P.O. Box 177 Laporte, PA 18626 775-530-1483 tommyers1872@gmail.com **Technical Memorandum** **June 1, 2024** **Re: Review of Rhyolite Ridge Draft Environmental Impact Statement Prepared for: Center for Biological Diversity and Great Basin Resource Watch** This technical memorandum provides a review of impacts expected from the proposed Rhyolite Ridge project on the water resources, including hydrogeology, springs, wetlands, water rights, and surface water, in the project area. The draft environmental impact statement (BLM 2024a) (DEIS) generally provides just cursory information with very little actual information regarding the project site or impacts. There is also a supplemental report regarding water resources and water quality which only slightly expands on the information in the actual DEIS (BLM 2024b). Both documents rely on references to various technical supporting documents, including Piteau (2023 and 2024) and HGL (2020a and b), although the former replaced the latter except for reliance on some of the baseline hydrogeology. The DEIS considers three alternatives including no action. The water resources impacts of the quarry operation are the same for each action alternative because the differences are where the operator places waste. The DEIS summarizes very briefly water resources impacts estimated using a groundwater model developed by Piteau (2023). Piteau (2023) considered three water impact scenarios. A scenario 0 is the no action alternative which is current business continuing as usual for the proposed life of the project and recovery (200 years). The groundwater model developed for the valley to analyze the project simulates continuing Fish Lake Valley (FLV) pumping since 1940 into the future. Piteau simulates a future 200 years based on the observed average pumping between 2018 to 2022. The simulation predicts that by year 2240 pumping causes a drawdown compared to 1940 of up to 500 feet, which is clearly not sustainable. The baseline to which the project is compared is not realistic. Piteau (2023) simulates using its groundwater model a scenario 1 and 2 which analyze the effects of dewatering the quarry and pumping the water supply from FLV. Mining alternatives 1 and 2 cause similar drawdowns in the quarry area because the differences in the proposals are limited to the location of waste and tailings; there is no consideration of different quarry configurations or quarrying strategies. Piteau (2023) runs scenarios 1 and 2 to analyze different situations in FLV for obtaining water supply. Scenario 1 is that the water rights are transferred existing agricultural rights from a ranch in the valley; scenario 2 is that water supply water is simply new pumping from the valley. Scenario 2 adds significant drawdown to FLV by the end of quarrying, but the DEIS does not present this as an alternative, so I do not further consider it. This memorandum considers the magnitude of impacts and considers the baseline hydrology and assumptions used to make those predictions. I cursorily review the groundwater model below, focusing only on aspects of it that could make a difference in the predictions. HGL (2020a) provides baseline hydrology, although the model developed therein was expanded substantially to include all of FLV. It shows the project would affect up to 32 springs near the pit, contaminate groundwater because it will have at-least occasionally a flow-through lake, that the dewatering and quarry lake formation will intercept groundwater that the FLV wetlands depend on, and that additional drawdown in FLV could lower shallow groundwater affecting endangered plants.	Comment noted.
108 and 183	108.72 and 183.71	**Obtaining the water supply would increase drawdown in FLV potentially harming surrounding groundwater dependent vegetation.** The project would require approximately 2500 gallons/minute (gpm) (4000 acre-feet/year (afa)) for a water supply (BLM 2024, p 2-8). BLM claims Ioneer would use dewatering water supplemented with a water supply developed in FLV by acquiring agricultural rights. Piteau (2023) analyzes this plan as scenario 1 (noted above) using two wells each pumping 2000 afa each while shutting down pumping at 12 agricultural wells. Piteau (2023) notes that the model considers pumping the full 4000 afa whereas the simulated agricultural pumping accounts for return flow to the system. Piteau (2023) simulated a drawdown cone around the new wells. The drawdown was up a 20-foot increase over the baseline (Piteau 2023, p iv). Piteau may also have underestimated the effects of project pumping by assumptions made in the model, which apparently does not consider: 1. The difference between year-round pumping and seasonal pumping by simulating agricultural pumping on an annual time step (based on Piteau Figure 3.5) which ignores the seasonal drawdown. 2. The exact location of return flow 3. Variations in agricultural pumping due to the use of surface water or rainfall Piteau simulated agricultural pumping on an annual basis, using annual time steps. Annual time steps prevent them from adequately analyzing seasonality in the system, including pumping, recharge and evapotranspiration (ET). Simulating on an annual basis does not consider the increased ET and pumping during summer or the recharge occurring primarily during spring. The maximum drawdown caused by agriculture which the water supply pumping adds to is not appropriately simulated by Piteau (2023).	In-depth analysis of the direct, indirect, and cumulative impacts associated with the Proposed Action and alternatives were conducted in compliance with NEPA. EIS Section 4.16 contains the water resources and geochemistry analysis. Impacts to groundwater-dependent ecosystems are discussed in Section 4.17. Additional information is in the Water and Geochemistry SER and Wetland and Riparian Resources SER. A numerical groundwater flow model was used for assessing potential impacts which was reviewed by the BLM and cooperating agencies and approved for use in NEPA analysis. Annual estimates for recharge, evapotranspiration, and pumping are utilized in the model over its 200-year simulation based on information for these parameters that is primarily reported as annual data (e.g., annual NDWR pumping records. The sensitivity of model predictions to these parameters was evaluated for the groundwater flow model. Assessment of potential impacts to seeps and springs is not limited to the groundwater flow model but would rely more on required monitoring of surface water flow and groundwater water levels with mitigation requirements should dewatering pumping affect surface waters. Drawdown monitoring would inform the actual extent of impacts from dewatering on surface water sites that are dependent on upon the extent of hydraulic connectivity between surface waters and the groundwater targeted by the dewatering.

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108 and 183	108.73 and 183.72	**The quarry lake could be a flow-through lake.** A flow-through quarry lake would allow quarry lake water to flow from the quarry into the groundwater on the downstream side of the quarry. Although the DEIS claims it will be terminal (BLM 2024a, p 2-29, 4-5, 4-33) which means the DEIS also predicts there will no groundwater quality impacts, the analysis relies on assumptions that make the prediction of a terminal lake more likely. The DEIS provides information regarding the quarry lake that does not reflect the analysis in Piteau (2024a). The DEIS (BLM 2024a, p 4-33) claims the steady state quarry lake will be 100 feet below the surrounding groundwater, but the Piteau (2024a, p 58) indicates that the 5650-groundwater level contour will encircle the quarry lake at a level of 5646 ft amsl. That is only a four-foot difference. Clearly, seasonal variations or even a high quarry wall runoff could raise the water level and cause quarry lake water to flow into the surrounding groundwater. The pre-mining water table was not flat but sloped across the quarry. A lake would be a flat surface. The question not considered in the DEIS or supporting documents is whether that flat surface exceeds the recovered groundwater level at any point along its perimeter or provides sufficient pressure into a confined aquifer intersected by the lake to cause flow. The analysis fails for two reasons:(1) a failure to consider seasonal flows or annual dry periods and, (2) assuming the evaporation rate from the lake is too high. The predictive modeling uses an annual time step for 200 years (HGL 2020b, p 25). Therefore, the modeling does not account for seasonal variability or long-term dry conditions. Groundwater levels that respond to recharge by rising tens of feet could cause significant fluctuations in the quarry lake. Due to differing geologic formations intersecting the quarry, the groundwater level may recover at different rates around the quarry. It is possible that quarry water could enter formations either seasonally or after the rapid recovery from a long-term drought. Due to the steep groundwater gradient to the northwest, groundwater could reach the pathway down the drainage and discharge into Fish Lake Valley. The quarry lake level could fluctuate, possibly wetting and drying reactive rock or (2) even allowing the quarry lake to occasionally flow through. A fluctuating quarry lake level could fluctuate above the surrounding groundwater table and cause the lake to be flow through. This is quite possible because the groundwater divide is just 4 feet above the quarry lake level; it is easy to imagine fluctuations around that during high flow periods. Several things could be done to more accurately model this. For one, Piteau could specify recharge by month to reflect seasonality. To reflect drought, they could change the rates by year. This would require consideration of stochasticity in the annual precipitation, but there is plenty of research about that, including how recharge actually occurs maybe once a decade rather than being spread evenly among years. They also need to be more careful about where the recharge actually occurs because this affects the calibrated hydrologic parameters and the beginning of the flow paths. Piteau applies an ET rate for the quarry lake that is too high. It uses a 90.7 in/yr pan evaporation rate which yields a 63.5 in/y quarry lake evaporation rate. Because the quarry lake will be below quarry walls and sheltered from the wind, 0.7 may be an inappropriate pan coefficient which causes Piteau to overestimate the evaporation. Too much evaporation would simulate the quarry lake lower than would otherwise be accurate. A higher quarry lake level resulting from lower evaporation could cause the quarry lake to be flow-through. The evidence therefore is that the quarry lake will likely have periods during which it will be flow-through and discharge into surrounding groundwater.	A numerical groundwater flow model was used for assessing potential impacts which was reviewed by the BLM and cooperating agencies and approved for use in NEPA analysis. The model was calibrated based on available data and predicts that the quarry lake will be terminal. The numerical groundwater flow modeling was used to assess whether the quarry lake would be terminal or outflow to local groundwater. In the model simulation and all the sensitivity runs, the quarry lake was a terminal pit lake that did not outflow to groundwater. The recovered pit lake level is more than 100 feet below local groundwater levels indicating that groundwater flow gradients will be from the local groundwater into the quarry lake. Effects on varying recharge on groundwater levels and quarry lake recovery were evaluated through the sensitivity analysis applied to the groundwater flow model. Pan evaporation rates and quarry lake evaporation rates are consistent with meteorological monitory data at the methodology for estimating evaporation from a pit lake surface. Sensitivity analyses on evaporation rates indicated that the quarry lake will remain terminal under the range of likely evaporation rates. Based on the groundwater flow model results and model sensitivity analyses, a flow-through condition at the quarry pit lake is not anticipated.
108 and 183	108.74 and 183.73	**The DEIS shows that predicted drawdown will affect many springs in the quarry area. It provides no mitigation to protect those springs. It hypothesizes about the springs being perched that are not supported with evidence.** DEIS Figure 4-7 shows the surveyed springs that will be affected by the predicted maximum extent of the 10-foot drawdown along with a one-mile buffer beyond that prediction to account for uncertainty. The proposed action would cause a drawdown such that the groundwater table would drop more than 10 feet at their location. There are 12 springs, including Cave Spring (SP-01) within the projected maximum 10-foot drawdown area and 20 springs within the one-mile buffer around the 10-foot drawdown (BLM 2024a, p 4-32). These springs within the buffer will be just as affected by drawdown as those within the 10-foot drawdown because springs occur wherever groundwater intersects the surface and any decrease in the groundwater table will affect the flow. Wetland plants depending on those springs will also be affected by decreased water in the vadose zone, as discussed below regarding the Fish Lake Valley Wetlands. This assumption that drawdown must be 10 feet to affect springs has no scientific basis – any reduction in the groundwater level beneath a spring will cause the flow to lessen or cease. Spring discharge depends on the groundwater gradient at the spring; simply decreasing that gradient by lowering the groundwater table upgradient will decrease the discharge even though there has been no reduction in the groundwater table at the spring. Also, wetland plants often survive on water in the vadose zone above a shallow groundwater table. Vadose zone water results from two factors. First, water percolating downward from recent precipitation replenishes the moisture. However, this is independent of shallow groundwater and its drawdown. Second, and importantly, wetland plants can survive on water above the water table being drawn by capillarity. Lowering the shallow water table will increase the distance that water must move upward through the capillaries and decrease the water available to wetland vegetation. BLM has often justified using a 10-foot drawdown to separate the predicted drawdown from natural variability. This is fallacious reasoning. Modeled drawdown occurs in addition to natural groundwater level changes. BLM has considered less than 10 feet for other projects. The groundwater modeling completed for the Copper Flat project in New Mexico (BLM 2019) is one example. JSAI (2013) Figure 3.9 presented the one-foot drawdown around the downstream end of the stream that would be affected by water supply pumping. JSAI (2013, p 2) summarized: “The figures indicates that peak groundwater-level drawdown along Animas Creek and most of Percha Creek will be less than 1 ft. Drawdown in a small area along lower Percha Creek is projected to be greater than 1 ft and less than 2 ft. The projected effects on evapotranspiration and surface discharge from the shallow aquifers are correspondingly small.” JSAI (2013) Table 3.5 also tabulated drawdown as low as 0.01 feet expected at springs affected by the project. The US Geological Survey provided another example of considering drawdown to less than 1 foot in their model of water resources development in Snake Valley NV (Halford et al 2011). The authors presented drawdown contours to 1 foot and even showed areas expected to have drawdown of 0.3 feet. USGS did this because of an interest in determining the decrease in ET in natural wetlands away from the water supply pumping. The BLM should consider a much smaller drawdown when considering whether a project could affect a spring. A one-mile buffer is not sufficient because the drawdown could far exceed critical levels for springs or groundwater vegetation for much longer than a mile.	Detailed analysis of groundwater drawdown impacts to springs and wetlands is presented in EIS Sections 4.16 and 4.17 and the Water Resources SER and Wetland and Riparian Resources SER. Mitigation measures are included in Section 4.21 to address surface water impacts. The EIS assesses the predicted 10-foot drawdown contour and a one-mile buffer. A change in groundwater elevations of 10 feet or more was selected by the BLM for identifying areas of potential drawdown impacts. This threshold was established by the BLM based on the fact that natural fluctuations in water levels, particularly in fractured rock aquifers, commonly exceed 10 feet. Drawdowns of less than 10 feet are not considered since these changes probably would not be measurable or distinguishable from natural seasonal and annual variations in groundwater levels. In addition, it is important to note that the 10-foot drawdown contour has been used as the threshold for defining the potential drawdown impact area for numerous other BLM EISs for mining projects in central Nevada over the past 30 years. The BLM acknowledges that numerical models could be used to provide predictions of drawdown of less than 10 feet, and drawdown of less than 10 feet could significantly impact flow in some perennial springs and streams. However, considering the broad regional extent of the numerical modeling domain, and lack of hydrogeologic data outside of the mine exploration and mining area, it is not reasonable to use numerical modeling to predict areas with drawdown of less than 10 feet. Monitoring and mitigation are included in Section 4.21 to address potential for drawdown effects. The one-mile buffer was added to account for additional areas where impacts from less than a 10-foot drawdown contour may take place.

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		The DEIS does not propose mitigation to protect these springs. Rather, it suggests monitoring the surface water flows at the springs and suggests that the project proponent will find a new source of water (BLM 2024a, p 4-77). I discuss additional problems with monitoring and the use of make-up water below. The DEIS states that the springs in the project area likely will not be affected by drawdown because it assumes the springs are perched. Neither the DEIS nor supporting documentation provide conclusive evidence the springs are perched. The DEIS notes that "Cave Spring and SP-02 through SP-05 are likely related to a fault zone at the base of the exposed Rhyolite Ridge Tuff formation" (BLM 2024b, p ES-4). Neither the DEIS nor supporting documents presents evidence this fault compartmentalizes the groundwater. Drawdown lowering the groundwater table on one side of the fault will increase the flow through the fault by increasing the gradient to the detriment of the spring flow. A similar argument applies to SP-06 and SP-07 which "are likely related to a fault zone along the southern edge of the OPA" (Id.). SP-08 is located in the Cave Spring drainage so pulling water from the drainage will lower the head controlling flow from the spring. In summary, the proposed action will likely negatively impact up to 32 springs in the nearby vicinity of the proposed quarry if it is allowed to be excavated and dewatered. The following paragraphs provide additional discussion regarding Cave Springs based on data presented by HGL (2020a). A negative effect on Cave Spring would include a reduction in flow due to the mining operations, primarily the quarry dewatering. HGL (2020a) provided one flow measurement – 0.31 cfs (HGL (2020a) Table 6-1) – taken on June 26, 2019. Pictures and data in HGL (2020a) Attachment A show a substantial riparian vegetation cover, so there is probably more groundwater reaching the surface than reflected by the measurement. In late June, the flow is likely higher than it would be in the fall after a hot summer, but the vegetation indicates that moisture reaching the surface is perennial. This is much more than would be expected from the limited aquifer supporting a perched spring. Cave Springs chemistry shows low concentrations of most ions, with TDS at 270 mg/l; SO4 and Na are much of the TDS (HGL 2020a, Table B-3). Arsenic is at 0.067 mg/l and the only constituent that exceeds state standards at the spring. This chemistry suggests a short flow path to the spring. Based on TDS and individual ions, wells MW-1, MW-2a and MW-2B also have similar chemistry, but TW-1 and TW-2 have twice the TDS concentration and exceedances of aluminum and antimony. The monitoring wells and the spring are near the fracture zone down the middle of Cave Spring drainage northwest of the spring. Chemistry suggests the flow path for the pumping wells, with double the TDS concentration, is longer. This simply reflects that the wells are screened deeper in the aquifer. Quarry dewatering that lowers the pressure at depth would significantly change groundwater flow gradients so that groundwater would be pulled deeper into the aquifer. The hydrogeologic data is insufficient to adequately protect Cave Springs or to design a decent monitoring/mitigation plan. To assess the seasonal flow rates, a time series of monthly flow observations is necessary. Knowing when or if the spring goes dry, it would confirm that the flowpath is short and add evidence that it is perched or only poorly connected to deeper groundwater. Second, there should be a vibrating wire piezometer (VWP) installation within a couple hundred feet of the spring in the direction of the quarry. Simply developing the VWP would provide information on nearby geology and water levels. It should monitor four VWP levels and be monitored for a year prior to quarry development and be used for monitoring and mitigating impacts to the spring.	
108 and 183	108.75 and 183.74	**Drawdown in FLV could affect the Fish Lake Valley Wetlands, which include wetlands in northeastern portion of FLV including numerous springs around the playa, wetlands associated with Fish Lake Valley Hot Well, and McNett Springs. BLM (2024a and b) fail to disclose potential impacts in this area.** The quarry area dewatering and quarry lake refilling will divert substantial amounts of water from northeast Fish Lake Valley. The piezometric surface maps of the quarry area shows groundwater flows down Cave Springs drainage to enter Fish Lake Valley not far from McNett Ranch. Modeling predicts dewatering will average 280 gpm (450 afa) and peak at 650 gpm (BLM 2024b). Modeling also predicts a quarry lake will develop over about 60 years after which it will evaporate 347 afa when full. Thus, dewatering and quarry lake evaporation will intercept approximately 10% of the predicted recharge in the Silver Peak Range in perpetuity. Modeling does not predict the 10-foot drawdown will reach the McNett Ranch, but as explained below, any change in the groundwater level controlling flow to the springs at McNett Ranch could be detrimental. Because the flow path from the quarry area is directly towards the McNett Ranch, it is likely there will be some significant impact. The DEIS notes that quarry evaporation will have a "minor, permanent" effect on Fish Lake Valley. It is minor only when considering the valley as a whole, but not minor as a localized impact. Fish Lake Valley has been developed for agriculture since the first half of the 20th century because of the water that enters the valley from the surrounding mountains. Rhyolite Ridge is in the Silver Peak Range which is the range bounding the east side of Fish Lake Valley. To the west is the White Mountains. Total recharge to the basin, as estimated by Piteau (2023) is 30,000 afa under both natural and current conditions. About ten percent emanates from the Silver Peak Range to the east. Piteau estimates natural ET in FLV to be 27,000 afa with 3000 afa of interbasin flow to surrounding basins; this interbasin flow has been speculated on since at least the early 1970s (Rush and Katzer 1973). Because much of the groundwater development supporting agriculture lies in the southern parts of FLV, the pumping has not captured much of the natural ET and the basin is severely overappropriated. Recent agricultural pumping as estimated by Piteau (2023) is 29,700 afa, based on the last five years of pumping records obtained from the Nevada Division of Water Resources. Total discharge, pumping and ET, exceeds natural recharge which causes the groundwater table to lower. Piteau Figures 2.14, .15, and .16 show that northern, central, and southern Fish Lake Valley wells have declined 0.47, 1.1, and 2.2 ft/y, respectively, since 1970. Because agricultural pumpage and ET continues to exceed natural recharge, the decline will continue. Even with all of the existing drawdown, much of the northeastern portion of the basin including the area referred to as the Fish Lake Valley Wetlands has been little affected by drawdown. Wells near McNett Spring, like 117 So1 E35 24DB1, have declined only 5 feet; levels further northeast have probably declined even less (Piteau 2023, Figure 2.13). Figure 1 is a screen capture of a Google Earth image showing Fish Lake Valley Hot Well and McNett Springs area. The satellite image is recent and the wetlands are apparent.	The referenced wetlands are not within the one-mile buffer of the predicted maximum extent of the 10-foot drawdown contour and therefore, no impacts are expected.

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		 *Figure 1: Google earth image of northeastern Fish Lake Valley showing Fish Valley Hot Well and McNett Ranch wetlands in the lower left corner.* According to Piteau (2023), Fish Lake Valley Hot Well and Lower McNett Ranch well are artesian and discharge warm water; Piteau (2023, p 6) describes their construction. It also describes the waters as being a "mixture of surface recharge and deep geothermal water" (Id.). This is probably correct, but the authors have failed to disclose important information in that it has not estimated the proportions of each. That failure renders it difficult to predict the effects of this project or to assign damaged if monitoring reveals them in the future. Historically, the discharge from McNett Springs was 700 afa (Eakin 1950). GeoLogic (2024) estimated 77 gpm from the well alone (124 afa). There has not been substantial drawdown caused by current pumping at this area. Water supply pumping, which will be ten miles southwest of McNett according to DEIS Figure 4-7, drawdown will primarily be limited to areas that are currently affected by substantial agricultural drawdown. Although the patterns of pumping and return flow will change, the effects would occur in existing agricultural areas far from McNett Springs GeoLogic (2024) prepared a geologic and geochemical analysis and concluded the McNett Ranch waters are not from the project area. That may be true for existing groundwater conditions, but drawdown on the east side of the fault would affect flow at the ranch in two ways. First, drawdown would change the gradient which would draw groundwater from the west through the fault. This would also decrease the gradient at the spring and the flow rate. Second, drawdown east of the fault would remove shallow groundwater from the mix of flow at the well (the "surface recharge" referenced above). Piteau's currently postulated groundwater compartments cannot be assumed to protect McNett Springs, or any spring in the northeastern FLV, from future impacts. Impacts are not limited to those resulting from pumping the project water supply. The proposed quarry could intercept flows that would reach the northeastern FLV, including the McNett Ranch area, and cause drawdown in the shallow groundwater that affects the surface recharge and discharge. BLM should require substantial monitoring of groundwater flows downgradient from the quarry site and future lake to determine whether changes in the flow to Fish Lake Valley wetlands could be occurring. The groundwater model for the No Action alternative (Piteau Scenario 0) shows that agricultural pumping without the proposed mine would cause up to 500 feet of drawdown in the southern portion of the valley; in other words, existing pumping for the next 200 years would cause 500 total feet of drawdown from 1940 to 2240 (Piteau 2023, Figure 4.8). At the location proposed for pumping the water supply, existing pumping would cause more than 100 feet of drawdown. Areas in the northeast portion of Fish Lake Valley, like McNett Ranch, are outside of the 10-foot drawdown as predicted by Piteau Scenario 0 for no action alternative. There has been little drawdown at McNett Spring. Any changes to baseline caused by the project would be a negative effect. As described above, dewatering and quarry lake formation could substantially affect the McNett Spring and other springs in the northeast FLV. BLM should require substantial monitoring of groundwater flows downgradient from the quarry site and future lake to determine whether changes in the flow to Fish Lake Valley wetlands could be occurring.	
108 and 183	108.76 and 183.75	**Groundwater modeling relies on compartmentalization in the groundwater to limit impacts, but the reports do not present sufficient evidence to support the assumptions.** The modeler assumed that various faults and lineaments will be flow barriers and simulated them as hydraulic flow barriers (HFBs) in the numerical model. Some of the hydrogeologic units are compartmentalized as a result. However, neither Piteau (2023) nor HGL (2020a) presents adequate hydrologic evidence to support the assumption. HGL (2020a) reports on an eight-day pump test at well TW-02 that did not significantly affect VWP-11, which is located just east of Cave Spring, although it can only be an analogue for the spring. Pumpage averaged near 350 gpm. VWP-11 levels dropped about 1.5 feet from September through December, including through the period of the pump test. This water level decline probably reflects decreased recharge into the Cave Springs flow paths through the end of summer. Apparent cyclic variations at the well could be barometric because of their low magnitude. Water level behavior through the TW-02 pump test differs from the long period in that the larger cyclic variations have been virtually eliminated and the water level was relatively flat. The VWP-11 response simply reflects the distance and different aquifer levels being pumped and monitored reflecting a longer period for the effects to manifest. The assessment of the TW-02 pumping test described by HGL (2020a, p 33) makes no sense. HGL Figure 6-4 shows the response for the pumping test. It provides the water level for TW-02 and TW-03. However, the description makes a claim, "the drawdown response indicates an initial, near-liner, early- to mid-time trend" (Id.), that is wrong – the figure shows a parabolic trend in TW-02 for five days; after the fifth day following a minor jump in the water level, the drawdown remains constant. This indicates that drawdown has reached a steady state with flow into the drawdown cone being constant. That is not what would be expected from a compartmentalized well. Drawdown in TW-03 just increased linearly several feet over 8 days also indicating a constant inflow rather than being indicative of a compartment.	All faults and fracture zones in the model are based on mapped faults or modeled geologic contacts or by faults mapped by Ioneer geologists. However, not every fault shown on published geologic maps are depicted in the model. Only faults that Piteau Associates deemed to be hydrologically significant based on observed water levels, aquifer tests, and significant offset of geologic units were included. Faults and fracture zones are represented in the model at hydraulic flow barriers (HFBs) or as hydraulic zones. HFBs are barriers to flow and vertical whereas hydraulic zones are either barriers or conduits and are either vertical or dipping. In some cases, faults are represented as both HFB (to limit horizontal flow perpendicular to the fault) and as a zone (to allow vertical and horizontal conduit flow parallel to the fault). Hydraulic properties of faults and fracture zones (HFBs and hydraulic zones) were adjusted during calibration until the fit to field observations was deemed acceptable. Faults (as HFB or as zones) were only added to the model if there was corroborating evidence to support the existence of the fault. Typically, faults were only added during calibration when deemed necessary to improve the model fit in a particular area.

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		The TW-02 pump test lasted eight days and pumped up to 355 gpm. TW-02 is in the western portion of the proposed quarry, so it should be representative of the rock that will require dewatering. Groundwater levels reached about 40 ft bgs and leveled out after the pumping rate was reduced to 340 gpm due to drawdown. Recovery occurred almost immediately. HGL (2020a, p 33) suggests the initial response of the test reflects a near-linear trend at the beginning of the test, which indicates an isolated compartment, and the leveling off after several days reflects leakage into the compartment. The test is not long enough to provide information regarding how long the additional leakage would continue but the drawdown is sufficient to draw water from other aquifers or compartments. The model predicted that dewatering rates would vary from 345 to 63 gpm, averaging 144 gpm, over the five-year life of the quarry (HGL 2020a, p 68). Presumably, the dewatering rate decreases over the period. HGL's numerical model simulated the pump test for transient calibration. The model simulated several nearby monitoring wells reasonably well, but HGL notes that the lack of simulated recovery at TW-03 suggests the model may simulate the system as being too segmented (HGL 2020a, p 64). There is apparently more connection to surrounding aquifers than simulated in the model. This is based both on the rapid recovery from the TW-02 pump test and the lack of simulated recovery. Dewatering rates may stay high longer than predicted and the lake may recover more quickly than predicted. Both would increase the amount of water captured from the Cave Springs drainage. The model used horizontal flow barriers to simulate the segmentation, but with very little data for transient modeling it is very difficult to calibrate an HFB. The assumption that the area has segmented hydrogeology is based on little supporting data and may be a poor conceptual model of the area. The conductivity is highly variable among hydrogeologic units. There are also conductive faults in the area. There is a long fracture zone along the Cave Spring drainage north of the quarry. Any connection has been only poorly examined by HGL (2020a). HGL (2020a, p 33) indicates that responses from the pump test at TW-01 shows an "absence of a strong hydraulic flow barrier at depth along the Cave Springs drainage". HGL (2020a, p 13) indicated: "The 2019 pumping test for TW-01 (sustaining ~35 gpm for 7 days) generated a hydrologic response in vibrating wire piezometers (VWPs) across the Cave Springs Fracture Zone (VWP-01, MW-01, VWP-03, VWP-05). Residual drawdown on the order of <1 ft to 10 ft was observed in some piezometers 7 days after the test was completed, which suggests compartmentalization with a leaky bounded hydrogeologic block." That the pump test caused drawdown indicates a connection rather than compartmentalization. Residual drawdown may imply a slow connection over the contact between formations. Piteau (2023) Figure 2.9 shows a piezometric surface that does not contain any sharp groundwater table drops that could be linked to faults or HGBs. The contours appear sharper near the fracture zone near and northeast of the quarry simply due to their being more observations probably from different strata. Note that plotting a groundwater table based on all observations without consideration of their level in the strata implicitly assumes there is no vertical gradient in the groundwater pressures. Neither pump test provides evidence of complete compartmentalization. The hydrologic baseline data reports do not support the assumption of compartmentalization. Neither does the groundwater table map. The analysis of groundwater for this project should not depend on compartmentalization of portions of the groundwater aquifer.	
108 and 183	108.77 and 183.76	**Quarry Lake Modeling Errors** The quarry lake model simulates the chemistry of water accumulating in the pit. This review considers just the hydrogeologic aspects of the modeling effort. There are two primary errors in the hydrology input that can affect the predicted quarry lake chemistry. First, the modeling appears to use an annual time step for 200 years, as discussed above. Therefore, the predicted chemistry misses the fluctuations that would occur seasonally. The report (Piteau 2024) notes that quarry lake runoff flushes chemical constituents from the quarry walls that have accumulated there due to precipitation wetting the walls but not causing runoff into the pit. Runoff across each slice of the quarry wall flushes these contaminants but once the lake rises to a given level, the modelers assume oxidation and the contribution of contaminants will cease. Reality for a semiarid quarry lake is that the water level will rise and fall seasonally and probably annually due to drought periods, as noted above regarding the flow-through quarry lake question. Oxidation will not be shut off permanently once the lake reaches a given elevation because it will not remain inundated. As the quarry lake level falls, a wetted perimeter will remain within which much additional oxidation will occur. Fluctuating lake water levels will cause a much higher contaminant load to reach the quarry lake. The model should be rerun to include monthly time steps and variable precipitation and evaporation. Droughts should be considered by using actual annual precipitation rates. Second, groundwater inflow enters by flowing through various quarry wall lithologies. The model ignores this variable chemistry by setting inflow chemistry based on observed groundwater chemistry data without considering the leaching that would occur from the groundwater leaching through the damage zone in the skin of the quarry lake. The groundwater level may be higher than the quarry lake level so that groundwater inflow would reach the damaged layers above the lake level and therefore flow through multiple feet of damaged quarry wall before entering the lake. The model apparently neglects a substantial input of contaminants that could leach from the quarry wall. The lake model may also simulate a much too high evaporation rate from the quarry lake, as explained above. Based on standard pan evaporation, the model assumes evaporation will equal 63.5 in/y. Standard pan coefficients do not apply in a quarry or quarry lake situation because the water surface is usually protected from the wind by the quarry walls. Therefore, the simulation could be withdrawing too much water from the quarry lake and preventing the simulation from allowing it to rise as far as it otherwise would.	The groundwater model considered in the EIS was prepared by Piteau Associates in 2023. The document stated in this comment (HGL 2000a) is an older version of groundwater modeling. The updated groundwater model domain was expanded from the 2000 water model and went through BLM review and approval. The numerical groundwater flow model was used for assessing potential impacts which was reviewed by the BLM and cooperating agencies and approved for use in NEPA analysis. In-depth analysis of the direct, indirect, and cumulative impacts associated with the Proposed Action and alternatives were conducted in compliance with NEPA. EIS Section 4.16 contains the water resources and geochemistry analysis. Impacts to groundwater-dependent ecosystems are discussed in Section 4.17. Additional information is in the Water and Geochemistry SER and Wetland and Riparian Resources SER. Annual estimates for recharge, evapotranspiration, and pumping are utilized in the model over its 200-year simulation based on information for these parameters that is primarily reported as annual data (e.g., annual NDWR pumping records. The sensitivity of model predictions to these parameters was evaluated for the groundwater flow model. Assessment of potential impacts to seeps and springs is not limited to the groundwater flow model but would rely more on required monitoring of surface water flow and groundwater water levels with mitigation requirements should dewatering pumping affect surface waters. The presence of several geologic structures is supported by the drillhole, and surface geology data collected during exploration for the Project. However, only

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			three fault structures were incorporated in the groundwater flow model based on water level observations. While limited in duration, the available pump test data does not contradict the fault interpretations. In addition, the sensitivity analysis evaluated the simulation of the three fault zones included in the model. Predicted drawdown changed little when the conductivity of the fault zones and other lithologic units were increased. Mitigation measures for seeps and springs focus on maintaining the current use of those surface water features. Effects of groundwater pumping on seeps and spring would indicate that they were sourced from local groundwater. As such, flow supplementation would also be sourced from local groundwater for consistent water chemistry with the existing conditions.
108 and 183	108.78 and 183.77	**Groundwater Modeling Comments** The groundwater modeling effort uses spring levels as calibration targets, meaning it attempts to match the water level to the spring elevation (Piteau 2023, Table 3-5). This is appropriate only for springs connected to the intermediate level aquifer being simulated (not the regional aquifer or perched aquifers). Calibration involves minimizing residuals which could be negative or positive meaning there is as much chance for the simulated potentiometric surface being above the ground level as below, which is clearly not appropriate. A spring is better simulated as a DRAIN boundary with a targeted discharge rate than as a groundwater surface target. The boundary would prevent the potentiometric surface rising above the ground surface. Seeps should also not be used for calibration. Doing so causes the steady state water table to be higher than it in reality is. The calibration statistics for springs shows an average residual of about 105 (Piteau 2023, Table 3.9) which means the springs are about 105 feet above the simulated groundwater table, but they have still had the effect of raising it. Mapped calibration residuals show a significant areal bias with residuals tending to be positive or negative in different areas (Piteau 2023, Figure 3.20). For example, springs were underpredicted by up to hundreds of feet especially in the high elevations (Id.). Springs are effectively bounded and make poor targets as discussed above. Residuals are clustered throughout the model domain, including on the valley floor. Area bias in the residuals render the estimated conductivity throughout much of the model domain very inaccurate.	The model calibration results in acceptable calibration statistics. There is no spatial bias in the simulation of spring elevations. Instead, calibration to spring locations is biased by the assumption that the regional groundwater elevation is at the ground surface at the spring locations. This assumption overestimates groundwater levels at the locations of seeps and springs that are sourced from perched water zones rather than regional groundwater. The Draft EIS does not draw conclusions regarding whether seeps and springs are connected to regional groundwater or perched water. Instead, it notes that predicted effects associated with groundwater drawdown would not occur “if these springs are perched features.” Mitigation measures for seeps and springs focus on maintaining the current use of those surface water features. Effects of groundwater pumping on seeps and spring would indicate that they were sourced from local groundwater. As such, flow supplementation would also be sourced from local groundwater for consistent water chemistry with the existing conditions.
108 and 183	108.79 and 183.78	**The proposed monitoring and mitigation will not detect impacts before they happen nor provide a viable means of mitigating them.** BLM (2024a) suggests two water resources mitigation measures. The first, WR-01 (BLM 2024a, p4-77) proposes monitoring the flow rates at any surface water resources (springs) within the predicted ten-foot drawdown and one-mile buffer. “If monitoring indicates that flow reductions in surface waters are occurring, and that these reductions are likely the result of Proposed Action drawdown, Ioneer would be responsible for implementing mitigation at the affected surface water resource to enhance or replace the impacted surface water resource.” (Id). There is no plan to monitor groundwater levels between the quarry and the spring, therefore the DEIS does not provide a means for showing that any observed reductions are the result of the proposed action. BLM should require the installation and monitoring of monitoring wells between the springs and the quarry. Mitigation WR-92 does require Ioneer to monitor groundwater levels between “the quarry and existing groundwater or surface water rights”. Thus, a monitoring well would be required only if the source has a water right. Mitigation for surface water rights or springs for either WR-01 or WR-02 would require make-up water. If the water is sourced nearby, it will add to the deficit causing the problem. For example, if a nearby well replaces a spring that goes dry, then pumping that well will draw from the very resource that dewatering has already depleted, adding to the problem. Make-up water also may not be appropriate for the resource because it could have different chemistry. Springs and wetland seeps have water with chemistry based on the source. The local ecosystem would have evolved with and could depend on that chemistry. Using water from other sources could harm the local balance. Monitoring wells are not a sufficient for avoiding impacts. Once drawdown has reached intermediate monitoring, a certain momentum has become established which will continue the expansion of the drawdown even if the cause of the drawdown is removed.	The BLM’s analysis of the mitigation measures for surface water impacts is within the requirements of NEPA and FLPMA. The CEQ definition of “mitigation” for purposes of NEPA includes “rectifying the impact by repairing, rehabilitating, or restoring the affected environment,” and “compensating for the impact by replacing or providing substitute resources or environments” (40 CFR 1508.20). BLM’s 3809 regulations adopt the same definition (43 CFR 3809.5).
108 and 183	108.80 and 183.79	**SUMMARY** The proposed Rhyolite Ridge project would have substantial impacts on the hydrogeology of the area near the proposed quarry and in Fish Lake Valley, potentially harming the water resource dependent species. The analysis provided in support of the DEIS is insufficient. The following are some of the worst aspects of the proposal and analysis. Quarry dewatering and quarry lake evaporation will intercept water needed to support the Fish Lake Valley wetlands. These include wetlands near McNett and dependent on Fish Lake Valley Hot Well. Quarry development will lower the water table and potentially harm up to 32 springs near the proposed quarry. BLM does not require adequate monitoring or mitigation for these springs. Pumping the project water supply in FLV will add to existing drawdown and harm wetland plants dependent on shallow groundwater.	The EIS and SERs present detailed analysis of impacts from groundwater drawdown within the one-mile buffer of the predicted maximum extent of the 10-foot drawdown contour in Sections 4.16 and 4.17.

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		The quarry lake will occasionally be high enough relative to surrounding groundwater to cause lake water to enter surrounding groundwater. Groundwater modeling in support of the project relies on compartmentalization to prevent impacts from affecting valuable features, but the reports do not justify the simulations of barriers and compartments.	
108 and 183	108.81 and 183.80	**LITERATURE CITED** BLM (Bureau of Land Management) 2024a. Rhyolite Ridge Lithium-Boron Project, Draft Environmental Impact Statement, DOI-BLM-NV-B020-2021-0020-EIS. BLM (Bureau of Land Management) 2024b. Water Resources and Geochemistry Supplemental Environmental Report for the Rhyolite Ridge Lithium-Boron Project. April 2024. BLM (Bureau of Land Management) 2024c. Wetland and Riparian Resources Supplemental Environmental Report for the Rhyolite Ridge Lithium-Boron Project. April 2024. BLM (Bureau of Land Management) 2019. Copper Flat Copper Mine Final EIS. Vol. 1. April 2019. Available at: https://eplanning.blm.gov/public_projects/nepa/75353/169629/206199/Copper_Flat_Final_EIS.pdf, pp. 3-100, 3-101, 3-103. Geo-Logic (Geo-Logic Associates) 2024. Letter Report to Ms Rebecca Sawyer, Ioneer USA, Evaluation of the Hydrogeology of the McNett Ranch Well/Spring, Fish Lake Valley. Halford KJ, RW Plume (2011) Potential effects of groundwater pumping on water levels, phreatophytes, and spring discharges in Spring and Snake Valleys, White Pine County, Nevada, and adjacent areas in Nevada and Utah: U.S. Geological Survey Scientific Investigations Report 2011-5032, 52 p HGL (HydroGeoLogica, Inc.) 2020a. Rhyolite Ridge Baseline Hydrogeology Report, May 2020, Document number RR20-009-0000-EN-MEM-00006. Prepared for Ioneer USA Corporation, Reno NV HGL (HydroGeoLogica, Inc.) 2020b. Rhyolite Ridge Quarry Lake Evaluation Report, May 5, 2020. Document number RR20-009-0000-EN-MEM-00007. Prepared for Ioneer USA Corporation, Reno NV JSAI (John Shomaker & Associated, Inc.) 2013. Probable Hydrologic Consequences of the Copper Flat Project, Sierra County New Mexico. THEMAC Resources New Mexico Copper Corporation. Piteau (Piteau Associates) Piteau 2024. Technical Memorandum, Rhyolite Ridge Quarry Lake Water Quality Modeling. Final 2/12/2024 Piteau (Piteau Associates) 2023. Rhyolite Ridge Project Groundwater Quantity Impacts Report. December 2023. Document number RR30-0900-00-EN-REP-00037. Prepared for Ioneer Rhyolite Ridge LLC Rush FE, Katzer TL 1973. Water-Resource Appraisal of Fish Lake Valley, Nevada and California. State of Nevada Department of Conservation and Natural Resources, Division of Water Resources, Water Resources Reconnaissance Series, Report 58. 71 pp.	Literature cited noted.
108 and 183	108.82 and 183.81	**Appendix E** Tom Myers, PhD, Technical Memorandum: Review of Rhyolite Ridge Hydrogeology and Quarry Lake (April 23, 2021). Tom Myers, Ph.D. Hydrologic Consultant P.O. Box 177 Laporte, PA 18626 775-530-1483 tommyers1872@gmail.com **Technical Memorandum** **April 23, 2021** **Re: Review of Rhyolite Ridge Hydrogeology and Quarry Lake Prepared for: Center for Biological Diversity and Great Basin Resource Watch** **Prepared for: Center for Biological Diversity and Great Basin Resource Watch** This technical memorandum provides review of two technical documents with respect to the proposed Rhyolite Ridge Project, the baseline hydrogeology including groundwater modeling and the quarry lake development and chemistry report titled as follows: HydroGeoLogica Inc (HGL) (2020a) Rhyolite Ridge Baseline Hydrogeology Report, May 2020. Prepared for Ioneer USA Corporation. HydroGeoLogica Inc (HGL) (2020b) Rhyolite Ridge Quarry Lake Evaluation Report, May 5, 2020. Prepared for Ioneer USA Corporation. This memorandum provides specific comments regarding the question whether Cave Spring will be affected by quarry dewatering and whether the quarry lake will have flow through conditions at any point during its development. It also discusses production water, recharge, the groundwater model, and makes general comments. Additionally, this memorandum considers the water pollution control permit (WPCP) application submitted to the Nevada Division of Environmental Protection (NDEP). The specific focus is on the monitoring plan presented in appendix P. NDEP should require at least two more monitoring wells, one between the quarry and Cave Spring drainage and one upgradient of the tailings, and additional vibrating wire piezometers to track the development of the quarry as described below. NDEP should also require monitoring of three springs also described below.	The groundwater model considered in the EIS was prepared by Piteau Associates in 2023. The document stated in this comment (HGL 2000a) is an older version of groundwater modeling. The updated groundwater model domain was expanded from the 2000 water model and went through BLM review and approval. Analysis of the direct, indirect, and cumulative impacts associated with the Proposed Action and alternatives were conducted in compliance with NEPA. EIS Section 4.16 contains the water resources and geochemistry analysis. Impacts to groundwater-dependent ecosystems are discussed in Section 4.17. Additional information is in the Water and Geochemistry SER and Wetland and Riparian Resources SER. While implementation of the Proposed Action would require a WPCP from NDEP, the WPCP application is beyond the scope of the EIS. The EIS analyzes impacts from groundwater drawdown and quarry water quality and includes mitigation and monitoring for surface water and groundwater
108 and 183	108.83 and 183.82	**Will dewatering affect Cave Spring?** A negative effect on Cave Spring would include a reduction in flow due to the mining operations, primarily the quarry dewatering. HGL (2020a) states the spring is outside the project boundaries, but this is simply due to them drawing the project boundary with a small semicircle excluding the spring. HGL (2020a) provides just one flow measurement – 0.31 cfs (HGL (2020a) Table 6-1) – taken on June 26, 2019. The pictures and data in HGL (2020a) Attachment A show a substantial riparian vegetation cover, so there is probably more groundwater reaching the surface than reflected by the measurement. In late June, the flow is likely higher than it would be in the fall after a hot summer, but the vegetation indicates that moisture reaching the surface is perennial. Cave Spring is at elevation 6208 amsl. The groundwater model predicts less than ten feet of drawdown at the spring, but it only requires that the water level drop a foot to cause substantial changes in the flow. The spring will only be affected if there is a connection between the aquifers being dewatered and the aquifer feeding the spring. HGL (2000a) essentially assumes the dewatering will not	Cave Spring is within the modeled 10-foot drawdown contour. Impacts to Cave Spring from groundwater drawdown are discussed in EIS Section 4.16. Mitigation is included in Section 4.21 to monitor and address drawdown related impacts at Cave Springs and other surface water locations.

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		affect the spring. Evidence can be gleaned from water chemistry, geology maps, and pump tests; the model should not be considered evidence because its conceptualization depends on the modeler's interpretation of the evidence. Cave Springs chemistry shows low concentrations of most ions, with TDS at 270 mg/l; SO4 and Na are much of the TDS (Table B-3). Arsenic is at 0.067 mg/l and the only constituent that exceeds state standards at the spring. This chemistry suggests a short flow path. Based on TDS and individual ions, wells MW-1, MW-2a and MW-2B also have similar chemistry, but TW-1 and TW-2 have twice the TDS concentration and exceedences of aluminum and antimony. The monitoring wells and the spring are near the fracture zone down the middle of Cave Spring drainage northwest of the spring. Chemistry suggests there is a different source of water for the monitoring wells and spring than for the pumping wells in the proposed quarry. Chemistry does not indicate there is a connection between the quarry and Cave Spring. However, quarry dewatering could significantly change groundwater flow gradients so that flow directions could be affected. HGL reports on an eight-day pump test at well TW-02 (reviewed more below) that did not significantly affect vibrating wire piezometer (VWP) VWP-11, which is located just east of Cave Spring, although it can only be an analogue for the spring. Pumpage averaged near 350 gallons per minute (gpm). VWP-11 levels dropped about 1.5 feet from September through December, including through the period of the pump test. This water level decline probably reflects decreased recharge through the end of summer. Apparent cyclic variations at the well could be barometric because they are a low magnitude. Water level behavior through the TW-02 pump test differs from the long period in that the larger cyclic variations have been virtually eliminated and the water level was relatively flat. Nothing in the VWP-11 response suggests a connection to the level being pumped. Newfields installed both VWP-11 and TW-02 in tu3 brecia (Tbx) with TW-02 to 600 feet and VWP-11 to 300 feet with two VWPs at 190 and 300 B below ground surface (bgs) in tuff brecia (Tbx). The Tbx in TW-02 is below 350 B bgs. Geology map Figure 3-2 indicates Rhyolite Ridge Tu3 outcrops near both locations. VWP-06 is adjacent to TW-02 and is constructed in Tbx, confirming that the tuff is widespread at depth on the west side of the proposed quarry. Airlift tests produced over 50 gpm at depths greater than 160 B bgs. Compared to most other VWP installations, VWP-11 produces substantial flow during the tests (VWP-08 produces flow similar to VWP-11 and is installed in tuff) indicating its completion in a relatively conductive zone. Because VWP-11 does not show much response to an eight-day pump test, it is likely there is a disconnect between the pumping well and VWP-11. The disconnect could be the deep basin between the ridge where the proposed quarry would be located and the Rhyolite Ridge massif. The quarry would excavate Cave Spring formation. Wells constructed between TW-02 and Cave Spring support the hypothesis of there being a disconnect. VWP-05, although constructed at an angle, does not reach Tbx until it reaches 900 B bgs. VWP-2, TW-03 and TW-01 do not reach Tbx at greater than 800, 700 and 655 B bgs, respectively. It is possible that dewatering could transmit at depth through the tuff beneath the basin or through lower conductivity material between the quarry and spring, but the pump test does not reflect it, although it could be because the test was not long enough. Evidence is not conclusive regarding Cave Spring being affected by dewatering. Cave Spring may be perched, based on the short flow path as documented by TDS. Also, the elevation of the spring is 300 to 400 feet above the groundwater levels in the quarry area. The spring elevation is close to that of VWP-11 which HGL suggests is due to the step in the potentiometric surface across the Cave Springs fault. That the predicted drawdown in the groundwater model (HGL (2000a) Figure 7-13) does not extend very far to the east, including to the spring, reflects the natural gradient, step in the potentiometric surface, and fault. The natural gradient and the barriers between the quarry and spring indicate that effects on the spring are unlikely. Dewatering deep groundwater may not affect it (and other springs) it is indeed perched. Due to the importance of Cave Spring, Ioneer should complete two additional tasks to provide a better estimate regarding the affect on the spring. One, to assess the seasonal flow rates, Ioneer should measure the flow monthly to determine whether there are seasonal effects. If the spring goes dry, it would suggest that the flowpath is short and would suggest it is perched. Second, Ioneer should establish a VWP installation within a couple hundred feet of the spring in the direction of the quarry. Simply developing the VWP would provide information on nearby geology and water levels. It should monitor four VWP levels and be monitored for a year prior to quarry development and be used for monitoring and mitigating impacts to the spring. Both should be done prior to developing the quarry.	
108 and 183	108.84 and 183.83	**Will the lake that forms in the quarry after dewatering ceases be terminal? In other words, could water accumulating in the quarry flow from the quarry into surrounding groundwater potentially causing degradation?** The pre-mining water table was not flat but sloped across the quarry. A lake would be a flat surface. The question is whether that flat surface exceeds the recovered groundwater level at any point along its perimeter or provides sufficient pressure into a confined aquifer intersected by the lake to cause flow. As part of the modeling, HGL concluded the pit will be a terminal sink meaning that no water leaves the quarry lake to enter the groundwater. The lake would be mostly full within 40 years and reach a steady state after 60 years (HGL 2020b, p v), although steady state is a misnomer in this area. This would be 66 feet below the pre-quarry groundwater level (Id.), although this does no account for the sloping groundwater level across the quarry. The modeled potentiometric surface at the end of five years (HGL (2020a) Figure 7-13) shows several areas with very steep gradients, including just west and east of the quarry. This reflects the different lithology in various blocks and the segmented groundwater expected by HGL. A steep gradient is required for flow across blocks of significantly different conductivity. The long-term pump test held in TW-2 lasted eight days and pumped up to 355 gpm. TW-02 is located in the western portion of the proposed quarry, so it should be representative of the rock that will require dewatering. Groundwater levels reached about 40 B bgs and leveled out after the pumping rate was reduced to 340 gpm due to drawdown (Figure 1). Recovery occurred almost immediately. HGL (2020a, p 33) suggests the initial response of the test reflects a near-linear trend at the beginning of the test, which indicates an isolated compartment, and the leveling off after several days reflects leakage into the compartment. The test is not long enough to provide information regarding how long the additional leakage would continue but the drawdown is sufficient to draw water from other aquifers or compartments. The model predicted that dewatering rates would vary from 345 to 63 gpm, averaging 144 gpm, over the five-year life of the quarry (HGL 2020a, p 68). Presumably, the dewatering rate decreases over the period. The numerical model simulated the pump test for transient calibration. The model simulated several nearby monitoring wells reasonably well, but HGL notes that the lack of simulated recovery at TW-03 suggests the model may simulate the system as being too segmented (HGL 2020a, p 64).	A numerical groundwater flow model was used for assessing potential impacts which was reviewed by the BLM and cooperating agencies and approved for use in NEPA analysis. The model was calibrated based on available data and predicts that the quarry lake will be terminal.

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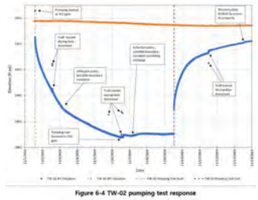
		There is apparently more connection to surrounding aquifers than simulated in the model. This is based both on the rapid recovery from the TW-02 pump test and the lack of simulated recovery. Dewatering rates may stay high longer than predicted and the lake may recover more quickly than predicted. The model used horizontal flow barriers to simulate the segmentation, but with very little data for transient modeling it is very difficult to calibrate an HFB. The assumption that the area has segmented hydrogeology is based on little supporting data and may be a poor conceptual model of the area. The conductivity is highly variable among hydrogeologic units. There are also conductive faults in the area. There is a long fracture zone along the Cave Spring drainage north of the quarry. Any connection has been only poorly examined by HGL (2020a). The predictive modeling uses an annual time step for 200 years (HGL 2020b, p 25). Therefore, the modeling does not account for seasonal variability or long-term dry conditions. Groundwater levels that respond to recharge by rising tens of feet could cause significant fluctuations in the pit lake. Due to differing geologic formations intersecting the quarry, the groundwater level may recover at different rates around the quarry. It is possible that quarry water could enter formations either seasonally or after the rapid recovery from a long-term drought. Due to the steep groundwater gradient to the northwest, groundwater could reach the pathway down the drainage and discharge Fish Lake Valley. The modeling does not preclude such an outcome. The evidence therefore is that the quarry lake will likely be terminal some of the time but that it is also possible that quarry lake water will discharge into surrounding groundwater during some periods.  Figure 6-4 TW-02 pumping test response Figure 1: Groundwater level response in well TW-02 during the TW-02 pump test.	
108 and 183	108.85 and 183.84	**Errors Simulating Recharge** The report describes conceptual recharge accurately with respect to runoff reaching drainages where it sinks into alluvium and then into underlying fractured bedrock with some recharge occurring at elevations due to melting snow and rainfall (HGL2000a, p 27). However, the report in many places overestimates the amount that would recharge at high elevations because it does not adequately account for geology. The report uses the Maxey-Eakin method for estimating recharge but commits two errors in its use. Conceptually, the method relates recharge simply to the amount of rainfall that occurs in varying bands of precipitation estimated to occur throughout a basin. The bands of precipitation are 8 to 12, 12 to 15, 15 to 20 and greater than 20 inches with coefficients equal to 3, 7, 15, and 25%, respectively. This means that, for example, 15% of the total volume of water falling within the area having between 15 and 20 inches of precipitation becomes recharge. The method was developed by assuming that recharge to a basin would equal discharge from that basin, accounting for interbasin inflow. Discharge is spring flow and groundwater evapotranspiration from the regional aquifer within the basin. It does not include perched aquifers and springs although perched springs that discharge to a flow that eventually recharges the regional aquifer would be recharge. The recharge coefficients were derived through a trial-and-error process using an annual precipitation map of Nevada dated 1936, applied to natural discharge by phreatophytes in 13 unidentified valleys in Nevada. Details of the derivation have not been published and have not been reproduced by anyone. The coefficients, and overall method, required use of the 1936 precipitation map or it will provide estimates not consistent with the original method. The method has been updated to different precipitation maps, including the recent PRISM mapping, and it is therefore essential that any use be limited to coefficients derived using the same precipitation estimation mapping. The second error with its use by HGL (2000a) is the tendency to assume that precipitation enters the ground where it falls. Although the report mentions the geologic control, it does not adequately apply it; there will be no recharge into granitic outcrops and no runoff from highly porous carbonate outcrops. The report must provide adequate reasoning for applying recharge as it does. Based on HGL (2000a) Figures 6-10 and 7-4, it appears that the groundwater model applies the precipitation where it falls and does not account for the fact it actually occurs along the washes, probably including into the fracture zone along the Cave Springs wash downstream from the spring. This affects the modeling because it forces groundwater to flow through portions of the model domain where geology would limit the flow. To not have simulated water levels that are too high, it is likely the calibrated conductivity values are too high, primarily in high elevation areas.	The groundwater model considered in the EIS was prepared by Piteau Associates in 2023. The document stated in this comment (HGL 2000a) is an older version of groundwater modeling. The Piteau 2023 updated groundwater model domain was expanded from the HGL 2000 water model and went through BLM review and approval. Annual estimates for recharge, evapotranspiration, and pumping are utilized in the Piteau 2023 model over its 200-year simulation based on information for these parameters that is primarily reported as annual data (e.g., annual NDWR pumping records). The sensitivity of model predictions to these parameters was evaluated for the groundwater flow model. Assessment of potential impacts to seeps and springs is not limited to the groundwater flow model but would rely more on required monitoring of surface water flow and groundwater water levels with mitigation requirements should dewatering pumping affect surface waters. Mitigation and monitoring are described in Section 4.21 of the Final EIS.
108 and 183	108.86 and 183.85	**Pit Lake Modeling Errors** The pit lake model simulates the chemistry of water accumulating in the pit. This review considers just the hydrogeologic aspects of the modeling effort. There are two primary errors in the hydrology input that can affect the predicted pit lake chemistry. First, the modeling appears to use an annual time step for 200 years (HGL 2020b, p 25). Therefore, the predicted chemistry misses the fluctuations that would occur seasonally. The report notes that pit lake runoff flushes chemical constituents from the pit walls that have accumulated there due to precipitation wetting the walls but not causing runoff into the pit. Runoff through each slice of the pit wall flushes these contaminants but once the lake rises to a given level, oxidation and contribution of contaminants will be assumed to cease (HGL 2000b, p 6). The reality in a semiarid pit lake is that the water level will rise and fall seasonally and probably annually during drought periods, as noted above regarding the flow-through quarry lake question. Oxidation will not be shut off permanently once the lake reaches a given elevation because it will not remain inundated. As the pit lake level falls, a wetted perimeter will remain within which much additional oxidation will occur. Fluctuating lake water levels will cause a much higher contaminant load to reach the pit lake. The model should be rerun to include monthly time steps and variable precipitation and evaporation. Droughts should be considered by using actual annual precipitation rates. Second, groundwater inflow enters by flowing through various pit wall lithologies. The model ignores this variable chemistry by setting inflow chemistry based on observed groundwater chemistry data without considering the leaching that would occur from the groundwater leaching through the damage zone in the skin of the pit lake. The groundwater level may be higher than the pit lake level	The groundwater model considered in the EIS was prepared by Piteau Associates in 2023. The document stated in this comment (HGL 2000a) is an older version of groundwater modeling. The Piteau 2023 updated groundwater model domain was expanded from the HGL 2000 water model and went through BLM review and approval. In addition, a sensitivity analysis was conducted with the modeling effort. In-depth analysis of the direct, indirect, and cumulative impacts associated with the Proposed Action and alternatives were conducted in compliance with NEPA. The Final EIS Section 4.16 describes the water resources and geochemistry analysis. Impacts to groundwater-dependent ecosystems are discussed in the Final EIS Section 4.17. Additional information is included in the Water and Geochemistry SER and Wetland and Riparian Resources SER.

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		so that groundwater inflow would reach the damaged layers above the lake level and therefore flow through multiple feet of damaged pit wall before entering the lake. The model apparently neglects a substantial input of contaminants that could leach from the pit wall. The lake model may also simulate a much too high evaporation rate from the quarry lake. Based on standard pan evaporation, the model assumes evaporation will equal 63.5 in/y. Standard pan coefficients do not apply in a quarry or pit lake situation because the water surface is usually protected from the wind by the quarry walls. Therefore, the simulation could be withdrawing too much water from the quarry lake and preventing the simulation from allowing it to rise as far as it otherwise would.	
108 and 183	108.87 and 183.86	**Production Water** The project would use about 2150 gpm for processing. HGL (2020a) models this water as withdrawn from the fracture zone along the drainage. The simulated drawdown does not extend far because of the high conductivity of the fracture zone. However, HGL does not analyze the potential impacts to the water balance of Fish Lake Valley. Assuming this flow enters the basin fill of that valley, it could have a substantial impact on the water rights in that valley. This would be especially true if the project extends longer than expected.	The BLM assessed drawdown impacts using a numerical groundwater model (Piteau 2023). Water right impacts are described in Section 4.16 of the EIS for the predicted 10-foot drawdown contour and a one-mile buffer.
108 and 183	108.88 and 183.87	**Groundwater Modeling Comments** The groundwater modeling effort uses spring levels as calibration targets, meaning it attempts to match the water level to the spring elevation. This is appropriate only for springs connected to the intermediate level aquifer being simulated (not the regional aquifer or perched aquifers). Calibration involves minimizing residuals which could be negative or positive meaning there is as much chance for the simulated potentiometric surface being above the ground level as below, which is clearly not appropriate. A spring is be6er simulated as a DRAIN boundary with a targeted discharge rate than as a groundwater surface target. The boundary would prevent the potentiometric surface rising above the ground surface. Seeps should also not be used for calibration. The model has a “constant head” boundary at its connection to Fish Lake Valley (HGL 2000a, p 49). However, the report also indicates there is a 3-foot drawdown at the boundary, which is impossible because the boundary head is constant. A constant head boundary will allow whatever flux is necessary to prevent the head from dropping. This is why a general head boundary is preferable – it can limit the inflow from the boundary. The constant head boundary can provide unreasonable changes in the water budget. HGL changed recharge rates as part of calibration (HGL 2000a, p 52). This indicates the model is nonunique. Calibration usually matches measured outflow or inflows to a model domain. for example, HGL should have measured outflows to Fish Lake Valley (based on pump test determined transmissivity and measured gradient) to which it sets the recharge rate (note this means that using Maxey-Eakin recharge values would be inappropriate, as discussed above). Using an established recharge rate as equal to the outflow rate, the calibration would attempt to match the observed groundwater levels by adjusting conductivity. Adjusting also the inflow leads to a nonunique solution. This means that any combination of recharge and conductivity could result in the observed groundwater levels on which the modeler based the calibration. Because the modeler reduced M-E recharge values, it seems likely that the model simulated too little water flowing through the system. **Underpredicting recharge could have resulted in a prediction of too little dewatering and a lower pit lake level than will actually occur.** HGL (2000a, p 54) makes assumptions about the conductance of faults that are not supported by data. There are no pump test results showing significant reductions over the fault, so HGL has no evidence for these assumptions. The response of the model is based on the assumptions input to the model, which may have no basis in reality. The steady state calibration shows a significant areal bias with residual tending to be positive or negative in different areas (HGL 2000a, p 55). For example, springs were underpredicted by up to hundreds of feet especially in the high elevations (Id.). Springs are effectively bounded and make poor targets as discussed above. The estimated conductivity throughout much of the model domain is therefore very inaccurate. The calibration statistics (HGL 2000a, p 56) are very poor. That the mean residual is -65.7 feet means the potentiometric surface is simulated as way too low under steady state conditions. Mean residual should equal zero. HGL uses the steady state groundwater level as the initial level for project simulation. **This would result in the model underpredicting drawdown, flow to the lake, and quarry lake recovery.** The supposed improvement in calibration statistics due to considering only project wells and VWPs means that removing targets leaves those that are easier to hit with the simulation. The mean residual is still substantially negative meaning the steady state groundwater even at the quarry site is too low. The graph showing observed and simulated water tables (HGL 2000a, Figure 7-6) is very misleading due to the scale; observations that appear close to the 1:1 line could still represent residuals of an order of 200 or more. HGL acknowledges the poor portrayal of an upward gradient within the pit due to the inability to match different VWP levels (HGL 2000a, p 58). The report acknowledges many errors due to the model’s inability to simulate small-scale features (Id.). It is therefore questionable how useful the model predictions are. Most of the observations in these comments suggest the model underpredicts flow into the quarry for both dewatering and quarry lake formation.	The groundwater model considered in the EIS was prepared by Piteau Associates in 2023. The document stated in this comment (HGL 2000a) is an older version of groundwater modeling. The Piteau 2023 updated groundwater model domain was expanded from the HGL 2000 water model and went through BLM review and approval. In addition, a sensitivity analysis was conducted with the modeling effort. The Piteau 2023 model used spring levels for calibration targets and applied weighting factors to account for uncertainty with these features. Annual estimates for recharge, evapotranspiration, and pumping are utilized in the model over its 200-year simulation based on information for these parameters that is primarily reported as annual data (e.g., annual NDWR pumping records. The sensitivity of model predictions to these parameters was evaluated for the Piteau 2023 groundwater flow model. Assessment of potential impacts to seeps and springs is not limited to the groundwater flow model but would rely more on required monitoring of surface water flow and groundwater water levels with mitigation requirements should dewatering pumping affect surface waters. Mitigation and monitoring are described in Section 4.21 of the Final EIS. In-depth analysis of the direct, indirect, and cumulative impacts associated with the Proposed Action and alternatives were conducted in compliance with NEPA. The Final EIS Section 4.16 contains the water resources and geochemistry analysis. Impacts to groundwater-dependent ecosystems are discussed in Section 4.17 of the Final EIS. Additional information is in the Water and Geochemistry SER and Wetland and Riparian Resources SER.
108 and 183	108.89 and 183.88	**General Comments** The spring survey does not indicate other springs near the quarry, but the perched aquifers could flow toward the fracture zone defining the Cave Spring drainage. Quarry construction could intercept groundwater that supports resources along the drainage. In summary, quarry construction could intercept shallow groundwater and have two significant effects: • Dewatering requirements, especially at the beginning of construction, could be substantially higher than predicted. • Dewatering of shallow groundwater could intercept flow down the Cave Springs drainage. There does not appear to have been investigations of shallow groundwater at the pit. HGL (2020a, p 30) notes that the groundwater monitoring data shows an upward gradient within the quarry area. The numerical model does not simulate this upward gradient or the probably flow upward into the quarry. This could result in an underestimate of the quarry dewatering rate and the potential for water leaving the quarry lake. A pump test completed in TW-01 failed due to the water being geothermal with temperature between 80 and 90°F. HGL does not explore the meaning or consequences of there being geothermal water in the area. It could reflect the tendency for upward flow into the quarry.	The numerical groundwater model prepared in 2023 was used for assessing potential impacts and included all available data to represent the groundwater systems and was reviewed by the BLM and cooperating agencies and approved for use in NEPA analysis. The document stated in this comment (HGL 2000a) is an older version of groundwater modeling. The Piteau 2023 updated groundwater model domain was expanded from the HGL 2000 water model and went through BLM review and approval. In addition, a sensitivity analysis was conducted with the Piteau 2023 modeling effort. In-depth analysis of the direct, indirect, and cumulative impacts associated with the Proposed Action and alternatives were conducted in compliance with NEPA. The Final EIS Section 4.16 contains the water resources and geochemistry analysis. Impacts to groundwater-dependent ecosystems are discussed in Section 4.17. Additional information is in the Water and Geochemistry SER and Wetland and Riparian Resources SER.

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			The presence of several geologic structures is supported by the drillhole, and surface geology data collected during exploration for the Project. However, only three fault structures were incorporated in the Piteau 2023 groundwater flow model based on water level observations. While limited in duration, the available pump test data does not contradict the fault interpretations. In addition, the sensitivity analysis evaluated the simulation of the three fault zones included in the model. Predicted drawdown changed little when the conductivity of the fault zones and other lithologic units were increased. The model calibration results in acceptable calibration statistics. There is no spatial bias in the simulation of spring elevations. Instead, calibration to spring locations is biased by the assumption that the regional groundwater elevation is at the ground surface at the spring locations. This assumption overestimates groundwater levels at the locations of seeps and springs that are sourced from perched water zones rather than regional groundwater. Impacts detailed as a result of groundwater drawdown are considered predicted impacts based on the groundwater model developed for the Project, which details a predicted maximum extent of 10-foot drawdown. The EIS assesses the predicted 10-foot drawdown contour and a one-mile buffer. A change in groundwater elevations of 10 feet or more was selected by the BLM for identifying areas of potential drawdown impacts. This threshold was established by the BLM based on the fact that natural fluctuations in water levels, particularly in fractured rock aquifers, commonly exceed 10 feet. Drawdowns of less than 10 feet are not considered since these changes probably would not be measurable or distinguishable from natural seasonal and annual variations in groundwater levels. In addition, it is important to note that the 10-foot drawdown contour has been used as the threshold for defining the potential drawdown impact area for numerous other BLM EISs for mining projects in northcentral Nevada over the past 30 years. The BLM acknowledges that numerical models could be used to provide predictions of drawdown of less than 10 feet, and drawdown of less than 10 feet could significantly impact flow in some perennial springs and streams. However, considering the broad regional extent of the numerical modeling domain, and lack of hydrogeologic data outside of the mine exploration and mining area, it is not reasonable to use numerical modeling to predict areas with drawdown of less than 10 feet. The potential for drawdown effects is therefore addressed via monitoring requirements that can be expanded based on monitoring results. The one-mile buffer was added to account for additional areas where impacts from less than a 10-foot drawdown contour may take place. Due to uncertainty in the modeling, BLM Battle Mountain District required a one-mile buffer to be placed on the predicted maximum extent of 10-foot drawdown to address this potential modeling uncertainty and establish the locations for monitoring drawdown effects on surface water resources. The hydraulic connectivity of surface water resources with the deep groundwater aquifer in the area of analysis is currently unknown, therefore the potential for impacts at present seeps, springs, and streams throughout the area of analysis is acknowledged but subject to monitoring for verification. Drawdown monitoring would inform the actual extent of impacts from dewatering on surface water sites that are dependent on upon the extent of hydraulic connectivity between surface waters and the groundwater targeted by the dewatering. The Draft EIS does not draw conclusions regarding whether seeps and springs are connected to regional groundwater or perched water. Instead, it notes that predicted effects associated with groundwater drawdown would not occur “if these springs are perched features.”

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108 and 183	108.90 and 183.89	**Monitoring Plan** Appendix P to the WPCP application contains the proposed monitoring plan. Primary concerns for monitoring are whether contaminants from quarrying or from the tailings deposits could reach the Cave Spring drainage. Also, the groundwater level in the area of the tailings appears to be close to the ground surface based on the level of springs 6 and 7, which appear to be connected to the intermediate aquifer based on their high TDS values; there is concern whether contaminants from the tailings could reach groundwater. In addition the requested additional monitoring well for the quarry lake discussed below, there is a need for another baseline monitoring well upgradient of the tailings pile; MW-1 is insufficient because it is near the main drainage whereas the bedrock underlying the tailings is outside of the drainage. MW SOSF, downgradient of the tails, is probably sufficient for monitoring leaks from the tails if it is placed properly in the most permeable bedrock below the tails and if there is leak detection under the tails. The monitoring plan does not discuss the screened or open interval for the wells. Because monitoring wells should not screen more than about 20 feet, the monitoring wells should be sampled with low flow pumps to draw from specific levels if the open interval exceeds 20 feet. To establish a vertical profile of chemistry within the aquifer, the monitoring wells should be sampled using low flow sampling at various levels prior to the commencement of quarrying. The monitoring plan relies on the assumption that the quarry lake will be terminal. This review has disputed the certainty of that assumption as discussed above. The monitoring does not but should include monitoring to verify whether the lake is terminal. Prior to closure, an additional monitoring well should be added between the quarry and the Cave Springs drainage north of the quarry. It should be established to both monitor the recovering groundwater table and the changing groundwater chemistry. Because it would be in an area of varying groundwater levels, it should be screened either in multiple development or sampled using low flow pumps to draw from various levels to ascertain a vertical profile in the aquifer. Additionally, to verify whether the evolving groundwater table near the quarry will flow toward the forming pit lake, the VWPs near the quarry should be retained; this is especially critical for VWP-3 which appears to be just north of the quarry. If it will not survive quarry construction, a replacement VWP should be installed to its north as close to the quarry as possible. This should be completed prior to quarry construction so that natural water levels as well as evolving water levels due to construction can be determined. Additionally, another VWP should be installed between VWP-3 (or its replacement) and VWP-8, which is within the Cave Spring drainage. VWP-3 (or its replacement), -8, and a new VWP between the two would allow a water surface pro2le to be monitored between the quarry, the forming quarry lake, and the drainage to verify whether the quarry is terminal. These VWPs should each have four monitoring levels as were used in VWP-3. Three additional VWP monitoring levels should be added to VWP-8 and the new VWP between -3 and -8 should also have four levels. Four levels are essential to monitor the vertical gradient of 4ow to and from the quarry and quarry lake and to provide monitoring data that would allow groundwater surface profile modeling to predict the future status of the forming quarry lake (a vertical two-dimension groundwater flow model could be used for this). The monitoring plan recommends quarterly sampling for the monitoring wells. That would be sufficient only after a year of monthly sampling to establish seasonal trends. As noted above, the groundwater level probably varies substantially due to seasonal changing recharge and it could lead to seasonal wetting and drying which could also lead to seasonal flushes of contaminants. Understanding natural seasonal variability is essential for understanding whether observed changes are natural or due to the quarry. The monitoring plan fails to include any spring monitoring which it should. As described above a VWP should be installed near Cave Spring to provide warning of impacts to Cave Spring. It is understandable that Cave Spring will not be sampled for chemistry because that would not show anything regarding the spring going dry, but it its flow rate should be monitored at least quarterly, after monthly monitoring for a year prior to quarrying to establish a baseline. Chemistry at the springs just west of the tailings, SP-06 and -07, should also be monitored quarterly to verify whether the tails affect those springs.	While implementation of the Proposed Action would require a WPCP from NDEP, the WPCP application is beyond the scope of the EIS. The EIS analyzes impacts from groundwater drawdown and quarry water quality and includes mitigation and monitoring for surface water and groundwater.
108 and 183	108.91 and 183.90	**Conclusion** HGL has prepared two reports in support of the proposed Rhyolite Ridge lithium quarry project. The reports depend on too little field data to support the conclusions. The lack of evidence is most apparent in the groundwater modeling effort for which there is too little data outside of the immediate pit area. This is obvious in the poor conceptual model established for the groundwater model. There are two obvious errors. First, the modeler may assume there is too much segmentation. Second, the amount and location of the recharge is inaccurate in several ways discussed above including the amount not equaling an estimated outflow from the model domain and the application of recharge with little regard for the underlying geology. The errors lead to a vast uncertainty regarding the future of Cave Spring. Although there are indications it will not be affected by drawdown, unsupported assumptions in the modeling may have underestimated the dewatering and its effect to surrounding hydrogeology. The same problem exists for the question of whether the quarry lake will be terminal. Faster, seasonal, or interannual variations of inflow could lead to the lake rising and falling and discharging water to surrounding groundwater. The lack of understanding of quarry lake refilling also manifests in poor or no prediction of the groundwater chemistry entering the lake after flowing through the surrounding quarry lithology.	The numerical groundwater model prepared in 2023 (Piteau 2023) was used for assessing potential impacts and included all available data to represent the groundwater systems and was reviewed by the BLM and cooperating agencies and approved for use in NEPA analysis. The document stated in this comment (HGL 2000a) is an older version of groundwater modeling. The Piteau 2023 updated groundwater model domain was expanded from the HGL 2000 water model and went through BLM review and approval. In addition, a sensitivity analysis was conducted with the Piteau 2023 modeling effort. In-depth analysis of the direct, indirect, and cumulative impacts associated with the Proposed Action and alternatives were conducted in compliance with NEPA. The Final EIS Section 4.16 contains the water resources and geochemistry analysis. Impacts to groundwater-dependent ecosystems are discussed in Section 4.17. Additional information is in the Water and Geochemistry SER and Wetland and Riparian Resources SER. The presence of several geologic structures is supported by the drillhole, and surface geology data collected during exploration for the Project. However, only three fault structures were incorporated in the Piteau 2023 groundwater flow model based on water level observations. While limited in duration, the available pump test data does not contradict the fault interpretations. In addition, the sensitivity analysis evaluated the simulation of the three fault zones included in the model. Predicted drawdown changed little when the conductivity of the fault zones and other lithologic units were increased.

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			The model calibration results in acceptable calibration statistics. There is no spatial bias in the simulation of spring elevations. Instead, calibration to spring locations is biased by the assumption that the regional groundwater elevation is at the ground surface at the spring locations. This assumption overestimates groundwater levels at the locations of seeps and springs that are sourced from perched water zones rather than regional groundwater. Impacts detailed as a result of groundwater drawdown are considered predicted impacts based on the groundwater model developed for the Project, which details a predicted maximum extent of 10-foot drawdown. The EIS assesses the predicted 10-foot drawdown contour and a one-mile buffer. A change in groundwater elevations of 10 feet or more was selected by the BLM for identifying areas of potential drawdown impacts. This threshold was established by the BLM based on the fact that natural fluctuations in water levels, particularly in fractured rock aquifers, commonly exceed 10 feet. Drawdowns of less than 10 feet are not considered since these changes probably would not be measurable or distinguishable from natural seasonal and annual variations in groundwater levels. In addition, it is important to note that the 10-foot drawdown contour has been used as the threshold for defining the potential drawdown impact area for numerous other BLM EISs for mining projects in northcentral Nevada over the past 30 years. The BLM acknowledges that numerical models could be used to provide predictions of drawdown of less than 10 feet, and drawdown of less than 10 feet could significantly impact flow in some perennial springs and streams. However, considering the broad regional extent of the numerical modeling domain, and lack of hydrogeologic data outside of the mine exploration and mining area, it is not reasonable to use numerical modeling to predict areas with drawdown of less than 10 feet. The potential for drawdown effects is therefore addressed via monitoring requirements that can be expanded based on monitoring results. The one-mile buffer was added to account for additional areas where impacts from less than a 10-foot drawdown contour may take place. Due to uncertainty in the modeling, BLM Battle Mountain District required a one-mile buffer to be placed on the predicted maximum extent of 10-foot drawdown to address this potential modeling uncertainty and establish the locations for monitoring drawdown effects on surface water resources. The hydraulic connectivity of surface water resources with the deep groundwater aquifer in the area of analysis is currently unknown, therefore the potential for impacts at present seeps, springs, and streams throughout the area of analysis is acknowledged but subject to monitoring for verification. Drawdown monitoring would inform the actual extent of impacts from dewatering on surface water sites that are dependent on upon the extent of hydraulic connectivity between surface waters and the groundwater targeted by the dewatering. The Draft EIS does not draw conclusions regarding whether seeps and springs are connected to regional groundwater or perched water. Instead, it notes that predicted effects associated with groundwater drawdown would not occur “if these springs are perched features.”
108 and 183	108.92 and 183.91	Attachments: ANCOLD 2012.pdf; Bayer 2015.pdf; Acme Lithium 2023.pdf; BLM 2018 Donlin Gold FEIS Chapter 3_6.pdf; BLM 2022b letter to Control Technology Incpdf.pdf; BLM 2023 Email from Distel re Schedule.pdf; BLM 2024 distel email re haul road.pdf; BLM 2024 Email re extension.pdf; BLM Manual 1780.pdf; BLM Manual 6840.pdf; CBD 2021 Fish-Lake-Valley-Tui-Chub-Petition.pdf; CBD 2023 Tecopa Birds Beak.pdf; BLM 2014 Haile Mine FEIS Chapter 4.pdf; Albano 2021.pdf; Coates et al 2023.pdf; BLM 2023a Ormat FLV Exploration.pdf; BLM 2019 Copper Flat FEIS.pdf; Executive Order 13175.pdf; Esmeralda County 2022.pdf; FWS 2023 BSSG Proposed Rule.pdf; Harju 2010.pdf; Hunt 2001.pdf; Eakin 1950.pdf; FWS 2017 Springsnails.pdf; Junior Mining Network 2023.pdf; Huntington 2014.pdf; Kirol et al 2020.pdf; Lithium Corporation 2019.pdf; Lund 1982.pdf; Lithium Corporation 2023.pdf; Klohn Crippen Berger 2017.pdf; McClinton et al 2022.pdf; Myers 2017.pdf; National Technical Team 2011.pdf; Maochang 2001.pdf; NOAA 2024a Dyer.pdf; NOAA 2024b Silverpeak and Tonopah.pdf; Morrill et al 2022.pdf; Pratt and Beck 2019.pdf; Pres Memo on Tribal Consultation and G to G.pdf; Pres Memo on Tribal Consultation.pdf; NDWR 2019.pdf; Timbisha et al extension request.pdf; US 2022.pdf; US District Court 2024 SSA in CBD v USFWS.pdf; Rush and Katzer 1973.pdf; USDOE 2022.pdf; Rissmann 2012.pdf; USDOI 2000 Mining Regs.pdf; USDOJ 2019.pdf; USFWS 2022 DVT Emergency Listing.pdf; USFWS 2022 Tui Chub.pdf; USDOI M-37039.pdf; Open Mountain Energy 2022.pdf; White 1998.pdf; Coates et al 2020.pdf	References noted.
Personal Information Requested to be Withheld – June 3, 2024			
109	109.1	The development of lithium resources in an environmentally low impact method as well as addressing exisiting offshore worker safety issues is critical to addressing global climate change concerns. Ioneer has provided a comprehensive high tech low impact solution to lithium mining concerns that takes into consideration local communities, resource impact and resident environmentally sensitive components. Has the alternative submitted by BLM the north south overburden storage been evaluated as to cost impact on a long term operation as proposed by Ioneer?	Screening criteria was applied to all alternatives considered and included an assessment of the technical and economic feasibility of the alternatives. The

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		Has this alternative been evaluated as to how any additional cost or operating restrictions may impact the capability of Ioneer to successfully operate this mine long term? Have any potential safety impacts been assessed for this alternate oprating scheme? If so please publish the cost differentials and operating restriction impacts from the mining operating perspective and the feasibility of operating under this alternate system. The no alternative option is not viable given the need to rapidly reduce human impact on the environment that this proposal addresses.	implementation costs of the different alternatives do not influence the environmental impacts of the Project and therefore are not included in the EIS.
Not Provided – June 3, 2024			
110	110.1	Marikana Massacre. Ioneer has sold fifty percent of its project to Sibaney Stillwater (SS). Check out Wikipedia on SS. Include Marakana Massacre. In 2012 SS killed 34 striking miners. In 2014 they killed 6 more. In 2018 they trapped 1000 miners underground. Half of all miners in the country died in SS mines. In 2019 they burned down sixty homes of striking miners, burning children. They have the worst safety record in all of South Africa. Here is just some of wikipedia. Controversies Marikana miners' strike (Lonmin) Main article: Marikana massacre In 2012, what started as a peaceful protest resulted in a massacre. The Marikana massacre[15] was the killing of thirty-four miners by the South African Police Service (SAPS) on 16 August 2012, during a wildcat strike at the Lonmin platinum mine in Marikana, Rustenburg, North West province, South Africa. Why do you think this company with this track record will obey environmental and safety regulations in Nevada? Why didn't Ioneer mention this track record? Why didn't the EIS mention it? Do you really believe this company is a good fit for Esmeralda County? It looks like Ioneer is nothing but a front company for SS. Also Ioneer had never mined a single gram of lithium. Neither has SS. You really think these people with their resumes and dog and pony show are what we need here in Nevada?	Comment noted. The Project would be required to be in compliance with all federal, state, county, and local laws and regulations.
Chloe Novak – June 3, 2024			
111	111.1	As a botanist who has worked extensively with colleagues documenting the flora of Rhyolite Ridge and the Silver Peak Range, I urge the Bureau of Land Management to take the No Action Alternative and deny permitting for what would amount to an environmental disaster with far-reaching consequences. The reality is that our public lands are being strongarmed by corporate interests operating under the presumption that they can violate U.S. environmental laws with impunity, or otherwise absorb the cost of the penalties. Your responsibility is to uphold those laws, not undermine them. Allowing this project to proceed would set a dangerous precedent by undermining the intent and authority of the Endangered Species Act. Extractive industry corporations are eager to receive the message that the ESA is not a credible impediment to destructive activities, rendering our public lands little more than a resource warehouse for untrammeled profiteering. As a biologist and plant conservation researcher, it is outrageous that my access to a federally endangered, single-site endemic plant on public land would be mediated, chaperoned, and subject to pre-approval by the very corporation that threatens its extinction. It is extremely concerning that the potential for independent oversight and monitoring of a critically endangered species would be hampered in this way. There is so much more at stake than the fate of Tiehm’s buckwheat. Eriogonum tiehmii plays a unique and integral role in an exceptionally diverse ecosystem with numerous rare and sensitive species, within one of the largest contiguous areas of intact, healthy habitat left in the continental U.S. The Rhyolite Ridge project would permanently destroy this vital functioning landscape, with far-reaching regional environmental impacts due to groundwater overdraw, light, noise and dust pollution, invasive plant introduction and continual disturbance. Having worked extensively throughout public lands in the western U.S.— including national forests and BLM land of Nevada, California, Utah, Idaho, Arizona and Oregon— I can say without exaggeration that Rhyolite Ridge and the Silver Peak Range easily rival any national park in terms of unique biodiversity, scenic beauty, and cultural significance. I believe it warrants designation as a national monument at a minimum, and to permanently preclude the possibility of such a designation by allowing this project to proceed would be to rob all future generations of the opportunity to experience this extraordinary place and the biodiversity that makes it unique. In the context of what is widely regarded as the sixth mass extinction event in Earth’s history that is uniquely attributable to human activities and specifically habitat destruction, gambling with wholly preventable extinction events should be completely off the table. The threat of climate change is very real for all life and livelihoods, but our remaining biodiversity is an asset and not an obstacle to addressing it. Functioning ecosystems composed of diverse native organisms are a critical component of climate resiliency; decimating them to boost shareholder profits and industries that remain major contributors to greenhouse gas emissions (including EV manufacture) is not. Please don’t let this project become the new standard of environmental protection in the “white gold rush” era. There is far more to lose than there is to gain, and those losses cannot be undone. Thank you.	The EIS was prepared in accordance with NEPA, FLPMA, NHPA, CEQ regulations, and BLM NEPA regulations. The Project is consistent with United States mining laws and BLM surface management regulations.
EPA – June 3, 2024			
112	112.1	Please see attached letter.	Comment noted.
182	182.1	Hi Scott, Please see EPA’s attached comments on the Rhyolite Ridge DEIS. Thanks again for meeting with me on Friday to discuss. (I also submitted these through e-Planning.) Sarah	Comment noted.

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112 and 182	112.2 and 182.2	Douglas Furtado District Manager Bureau of Land Management, Battle Mountain District Office Attention: Rhyolite Ridge Lithium-Boron Mine Project 50 Bastian Road Battle Mountain, Nevada 89820 Subject: EPA Comments on the Draft Environmental Impact Statement for the Rhyolite Ridge Lithium-Boron Mine Project, Esmeralda County, Nevada (EIS No. 20240067) Dear Douglas Furtado: The U.S. Environmental Protection Agency has reviewed the above-referenced document pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act. The CAA Section 309 role is unique to EPA. It requires EPA to review and comment on the environmental impact on any proposed federal action subject to NEPA's environmental impact statement requirements and to make its comments public. The EPA is also serving as a cooperating agency in accordance with the *Memorandum of Understanding Between EPA and Nevada BLM for Mining Environmental Impact Statements* (April 27, 2023). We provided scoping comments (February 3, 2023) and additional comments via cooperating agency meetings and review of the administrative draft of the EIS (February 13, 2024). The Bureau of Land Management is considering an application from Ioneer Rhyolite Ridge LLC proposing to construct, operate, close, and reclaim a lithium and boron mine approximately forty miles southwest of Tonopah in Esmeralda County, Nevada. The Project would include a quarry (i.e., open pit), three overburden storage facilities, a spent ore storage facility (i.e., tailings from processing), a processing facility, a sulfuric acid plant, and ancillary facilities. The mine boundary would include approximately 7,137 acres of BLM land and 29 acres of private land, and approximately 2,306 acres of new surface disturbance is expected. The life of the Project would be 23 years including 6 years of reclamation and closure, including monitoring pit lake water quality for as long as needed. The Draft EIS evaluates the Proposed Action, a North and South Overburden Storage Facility Alternative, and a No Action Alternative. The North and South OSF Alternative is identified as the BLM's preliminary environmentally preferred alternative. Review Summary The EPA identified public health, welfare, or environmental quality concerns and deficiencies in the analysis that EPA recommends be addressed in the Final EIS. Our primary concerns are the need to: provide additional details about disproportionate adverse impacts to communities with environmental justice concerns, identify mitigation, and conduct meaningful outreach prior to the Final EIS; report direct and indirect greenhouse gas emissions and correct and update estimates of the social cost of greenhouse gases; consider climate change adaptation measures; and offer additional Tribal consultation and include a formally trained cultural resource specialist on-site during new surface disturbance. Our other recommendations focus on water resources and air quality, among other areas. We appreciate the opportunity to review this Draft EIS. When the Final EIS is released for public review, please send an email with a link to the document to samples.sarah@epa.gov. If you have any questions, please contact me at (415) 947-4167, or Sarah Samples, the lead reviewer for this project, at (415) 972-3961. Sincerely, Jean Prijatel Acting Manager Policy and Operations Branch ENCLOSURE 1. EPA's Detailed Comments cc: Scott Distel Project Manager, Bureau of Land Management Matt Fockler Socioeconomic Specialist, Bureau of Land Management Ashley Taylor Minor Source Permitting Supervisor, Nevada Division of Environmental Protection Natasha Zittel Regulation Branch Supervisor, Nevada Division of Environmental Protection Justin Barrett Reno Fish and Wildlife Office Deputy Field Supervisor, U.S. Fish and Wildlife Service Colleen Draguesku Senior Fish and Wildlife Biologist, U.S. Fish and Wildlife Service Marissa Reed Regional Section 7 Coordinator, U.S. Fish and Wildlife Service	Comment noted.
112 and 182	112.3 and 182.3	**EPA'S DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE RHYOLITE RIDGE MINE PROJECT, ESMERALDA COUNTY, NEVADA – JUNE 3, 2024** **Environmental Justice**	EO 14096 language has been added to the Environmental Justice SER and Section 4.3 of the EIS. The BLM Tonopah Field Office has not received formal guidance from the CEQ and Department of the Interior for implementing EO 14096. Guidance will ensure the order is implemented consistently and

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		Section 3 (b)(i) of Executive Order 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All* (April 21, 2023),1 directs the EPA, in carrying out its Clean Air Act Section 309 responsibilities, to assess whether each agency analyzes and avoids or mitigates disproportionate human health and environmental effects on communities with environmental justice concerns. The EPA has concluded that updates and/or additions are needed in the Final EIS to adequately address these communities and concerns as well as appropriately consider mitigation measures. As part of our review of the Draft EIS, we offer further details regarding this recommendation through the following comments. ***Meaningful Involvement*** According to the Draft EIS, communities with environmental justice concerns within the vicinity of the project area, including people of color and low-income populations, may experience various disproportionate adverse impacts to water resources, noise, traffic, hazardous material transportation, and social and economic values (p. 4-5, 4-6). These disproportionate impacts are categorized as "moderate to major, long-term, and regional" (Environmental Justice Supplemental Environmental Report (SER) p. 3-6). As such, the EPA is concerned that the Draft EIS does not indicate how or if the BLM provided any opportunities for early and meaningful involvement for communities with environmental justice concerns, as directed by E.O. 14096, including Native American communities who may also have environmental justice concerns. E.O. 14096 includes specific directives for federal agencies to address in NEPA environmental reviews, including providing opportunities for early and meaningful involvement in the environmental review process with communities with environmental justice concerns potentially affected by a proposed action (E.O. 14096 Section 3(a)(ix)(C)). Beyond NEPA-specific directives, several opportunities for meaningful engagement that E.O. 14096 describes in Section 3(a)(vii)(A)-(D) include but are not limited to: providing notice and engaging in outreach to potentially affected individuals who do not typically participate in Federal decision-making; providing accessible information on Federal activities for individuals with limited English proficiency and individuals with disabilities; providing technical assistance, tools and resources to assist in facilitating meaningful and informed participation; and fully considering public input provided as part of the decision-making process. Although not disclosed in the Draft EIS, we understand that the BLM has engaged with communities with environmental justice concerns through BLM's development of an environmental justice outreach plan (M. Fockler, personal communication, April 23, 2024). This plan is characterized as focusing on distributing project information to targeted environmental justice communities and offers a variety of ways for meaningful engagement, yet it does not include engagement regarding disproportionate impacts and mitigation development. While we appreciate these outreach efforts, we are concerned that meaningful outreach, including addressing disproportionate impacts and potential mitigation, did not occur earlier in the project development since NEPA coordination has been ongoing since 2020. We also note that BLM Instruction Memorandum 2022-059 (September 22, 2022) commits to proactively providing opportunities for meaningful involvement of people of color and low-income populations in the decision-making process. To address both E.O. 14096 and BLM IM-2022-059, we recommend conducting further outreach and engagement opportunities prior to issuing the Final EIS, such as community events, to ensure that environmental justice concerns are identified and addressed and that mitigation measures are clearly laid out for public review. ***Recommendations for the Final EIS:*** • Include a summary of E.O. 14096 in the environmental justice section. • Seek and summarize input received from potentially affected communities regarding environmental justice concerns and potential measures that would avoid, minimize, or mitigate any identified disproportionate adverse impacts. Some best practices for outreach include: o Hosting community events or meetings and ensuring that these are scheduled at a time and location that is accessible for community participants, including scheduling meetings after work hours and on weekends, as appropriate, and providing opportunities for hybrid meetings. As part of these events, ensure that the informational materials that are distributed are accessible for a diverse range of audiences. o Providing ample notice of meetings and commenting opportunities so that community members have sufficient time to prepare and participate. o Promoting engagement opportunities within appropriate outlets used by affected communities, such as newspapers, radio, and social media. o Providing translation services, interpretation services, and other services as required to accommodate linguistically isolated populations and persons with disabilities, as applicable. o Addressing technology barriers that may prohibit participation from affected communities. This could include mailing notices to Tribes that have limited internet capacity, as needed. ***Identifying Disproportionate Impacts*** E.O. 14096 Section 3(a)(ix)(B) directs agencies to carry out NEPA reviews in a manner that considers the best available science and information on any disparate health effects arising from exposure to pollution and other environmental hazards, such as information on race, national origin, age, disability status, among others, of the individuals exposed. In addition, Section (3)(a)(i) also directs agencies to "identify, analyze, and address disproportionate and adverse human health and environmental effects (including risks) and hazards of Federal activities, including those related to climate change and cumulative impacts of environmental and other burdens on communities with environmental justice concerns." Under NEPA and E.O. 14096's direction, additional information is needed in the EIS to better understand direct, indirect, and cumulative impacts to communities with environmental justice concerns. For example, the Draft EIS's description of the affected environment does not describe additional baseline characteristics (e.g., human health vulnerabilities and environmental burdens) of the communities with environmental justice concerns which may affect how they are impacted by the project. EJScreen data identifies that Esmeralda County has a greater percentage of persons with disabilities (23.1%) than the state average (13.2%) as well heart disease and cancer rates that are higher than the state average.[2] EJScreen data also reveals high levels of ozone pollution in Esmeralda, Mineral, and Nye Counties in Nevada and Mono County, California, which were identified in the 50 kilometer (~31 mile) radius in the cumulative impacts analysis (p. 4-49). Exposure to ozone pollution may cause respiratory issues and could worsen preexisting conditions such as asthma and lung disease.[3] The Draft EIS also did not include a consideration of cumulative impacts and the reasonably foreseeable effects of climate change in the area through the anticipated life of the project as outlined in the E.O. 14096's directive. For example, in cooperating agency meetings that EPA attended for the BLM's Esmeralda Seven Solar Project, it is estimated that nearly one million truck trips may be necessary to deliver water to the 60,000-acre project site due to over-allocation in the groundwater basins in the planning area. These potential water quantity and air emissions are not captured in the current Draft EIS. The Fifth National Climate Assessment4 reveals that higher temperatures caused by climate change have intensified droughts in the Southwest region leading to a reduction of surface water and groundwater availability, which could further strain water quantity in the planning area. This assessment also highlights that these impacts are disproportionately experienced by	appropriately. The BLM will monitor for forthcoming guidance and prepare to implement it to the extent feasible. In cooperation with Esmeralda County, the BLM held in-person public comment meetings in Dyer and Tonopah to facilitate accessibility to these meetings and address technological barriers that residents of Fish Lake Valley and other affected communities discussed in the Draft EIS may be subject to. These meetings are documented in the Public Scoping report for the Project. An Environmental Justice Outreach Plan was developed for the Project and the BLM has been executing the Plan to the best of their abilities given the current lack of guidance from the CEQ for how to implement outreach. A description of the Environmental Justice Outreach Plan has been added to the EJ SER and EIS. BLM has not received any response on the outreach plan from the parties the plan was sent to. Health disparity data available on EJ Screen has been added to the Affected Environment sections of the EJ SER and EIS. BLM has not received formal guidance from CEQ for implementation EO 14096 in the NEPA analysis. There is not enough data or formal guidance to determine impacts from the Project related to some of the health disparities provided on EJ Screen, such as cancer risks. Potential impacts from hazardous transportation between Las Vegas and Reno relating to communities with environmental justice concerns are included in Section 4.3 of EIS. Additional data was added to the Environmental Justice SER from EJ Screen for the Hazardous Material route. Discussion on climate change related to environmental justice has been to the EJ SER and EIS. There is not currently enough data or formal guidance from the CEQ to specifically quantify the impacts that incremental climate change effects from the Project would have on communities with environmental justice concerns. Disproportionate impacts are currently disclosed in the EIS. Ioneer has provided the BLM a commitment letter to engage in a development agreement with Esmeralda County, which has been clarified in the Environmental Justice SER. No additional mitigation has been proposed for the Project. Ioneer has provided the BLM a commitment letter to engage in a development agreement with Esmeralda County, which has been clarified in the Environmental Justice SER and in Section 4.3 of the EIS. No additional mitigation has been proposed for the Project. Any additional agreements would be between Ioneer and collaborating parties, of which the BLM has no jurisdiction or authority overseeing.

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		certain communities in the region including Indigenous communities, Black communities, Hispanic communities, and low-income communities due to low-quality drinking water, lack of access to potable water, and lack of proper water infrastructure. ***Recommendations for the Final EIS*:** • Identify baseline characteristics, including existing environmental burdens and health and social conditions, of impacted individuals and communities with environmental justice concerns, such as existing environmental pollution, current or past industrial activities, the percentage of persons with disabilities, socioeconomic stressors, and asthma and cancer rates in the affected environment section. • Identify any communities with concerns outside the environmental justice area of analysis that may be along the transportation access path or the hazardous waste and solid waste area of analysis that were not discussed in the environmental justice analysis. • Discuss additional direct, indirect, and cumulative impacts to communities with environmental justice concerns that may result due to baseline characteristics. • In the analysis of the project's disproportionate adverse impacts to communities and individuals with environmental justice concerns, discuss how cumulative impacts and the foreseeable future effects of climate change in the area may magnify disproportionate effects in these communities through the life of the project, including post-closure. ***Measures to Avoid or Mitigate Disproportionate Impacts*** E.O. 14096 stresses the importance of not only identifying and analyzing disproportionate impacts, but also addressing such impacts. Specifically, Section 3(a)(vi) directs agencies "to evaluate relevant legal authorities and, where available and appropriate, consider adopting or requiring measures to avoid, minimize, or mitigate disproportionate and adverse human health and environmental effects (including risks) and hazards of Federal activities on communities with environmental justice concerns, to the maximum extent practicable." Considering that the Draft EIS concluded that communities with environmental justice concerns may experience disproportionate adverse impacts to water resources, noise, traffic, hazardous material transportation, and social and economic values, practicable measures to avoid, or mitigate adverse and disproportionate impacts to these populations are needed in the Final EIS. ***Recommendations*:** • Identify and implement measures to avoid or mitigate the project's disproportionate impacts that may affect individuals and communities with environmental justice concerns, factoring in the ongoing and future foreseeable effects of climate change. • Work with Ioneer to include these measures as Applicant Committed Environmental Protection Measures and disclose these in the Final EIS. ***Job Creation and Workforce Training*** The Department of Energy announced its conditional commitment to lend up to $700 million to Ioneer Rhyolite Ridge LLC for the development of the Rhyolite Ridge Lithium-Boron Mine.5 DOE's announcement states that "Rhyolite Ridge is committed to hiring locally and offering training opportunities, including funding higher education scholarships for local high school students and residents in various technical and managerial fields." E.O. 14096 section 3(a)(v) directs federal agencies to assess their legal authorities and, as available and appropriate, take steps to provide opportunities for workforce training and to support the creation of jobs for individuals who are part of communities with environmental justice concerns. The Draft EIS does not discuss the job and workforce development opportunities that would or could be created for communities with environmental justice concerns resulting from the Proposed Action. ***Recommendations for the Final EIS:*** • Add a discussion of Ioneer's commitments and available BLM authority to create opportunities for workforce training and support job creation for people who are part of communities with environmental justice concerns, and whether BLM would provide such opportunities. • Consider disclosing and summarizing any workforce and community benefits agreements being prepared with regards to the Proposed Action. 1 *Executive Order 14096, Revitalizing Our Nation's Commitment to Environmental Justice for All*. (April 21, 2023). **https://www.whitehouse.gov/briefing-room/presidential-actions/2023/04/21/executive-order-on-revitalizing-our-nations-commitment-to-environmental-justice-for-all/** 2 U.S. Environmental Protection Agency. (2024, May 10). *EJScreen: Environmental Justice Screening and Mapping Tool*. **https://ejscreen.epa.gov/mapper/** 3 U.S. Environmental Protection Agency. (2024, April 9). *Health Effects of Ozone Pollution*. **https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution** 4 U.S. Global Change Research Program (2023). *Fifth National Climate Assessment: Chapter 28 Southwest*. **https://nca2023.globalchange.gov/chapter/28/** **5** Department of Energy. (2023, January 13). *LPO Announces Conditional Commitment to Ioneer Rhyolite Ridge to Advance Domestic Production of Lithium and Boron, Boost U.S. Battery Supply Chain*. **https://www.energy.gov/lpo/articles/lpo-announces-conditional-commitment-ioneer-rhyolite-ridge-advance-domestic-production**	
112 and 182	112.4 and 182.4	**<u>Climate Change</u>** ***Presentation of Greenhouse Gas Emissions*** The Council on Environmental Quality's January 2023 interim guidance, *National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change*,6 states that "[a]gencies generally should quantify gross emissions increases or reductions (including both direct and indirect emissions) individually by greenhouse gas, as well as aggregated in terms of total CO2 equivalence." According to the Draft EIS, the project would emit carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O) (p. 3-3); however, emission estimates are only reported for CO2-equivalents and not for individual gases. The EPA is unable to confirm calculations of the climate change damages using social cost of greenhouse gases (SC-GHG) without this required information. In addition, greenhouse gas emissions are only presented from project operations and do not include indirect emissions from construction activities, transportation of quarried materials, and emissions from equipment during the six-year reclamation period (Air Quality and Climate Change SER p. 3-5). In the Final EIS, estimates of individual greenhouse gas emissions from all sources are needed to better help the public and decision-makers understand the reasonably foreseeable direct and indirect emissions of the project alternatives. There are several other climate change items that need clarification. It is unclear why mobile/tailpipe emissions from the transportation of quarried materials are considered indirect rather than direct emissions and whether they are calculated based on the total distance traveled (to Reno or Las Vegas) or within the project boundary. Section 3.2.2.1 of the Air Quality and Climate Change SER adds the sum of on-site/on-road vehicles (298 tons per year), on-site/non-road equipment (14,333 tpy), and off-site/on-road vehicles (5,447 tpy) to equal 20,078 tpy. However, total mobile/tailpipe emissions are stated as 20,431 tpy in Table 3-2 of that document. In addition, the EPA notes that the Trinity Consultants 2023 Air Quality Impact Analysis report used to estimate potential air quality and climate change impacts contains information that needs to be disclosed in the Draft EIS and its corresponding documents to fully represent potential impacts from the project. The Final EIS needs to include reasonably foreseeable downstream greenhouse	The Air Quality and Climate Change SER Section 3.2.2.1, and Section 4.1.1 of the EIS was modified to break out greenhouse gas emissions for each individual gas, including CO_2 equivalent for operations and transportation. Clarification on distance traveled for transportation has been added to the Section 3.2.2.1 of the Air Quality and Climate Change SER and Section 4.1.1 of the EIS. Mobile/direct tailpipe emissions have been clarified in the Section 3.2.2.1 of the Air Quality and Climate Change SER and Section 4.1.1 of the EIS. A discussion on the battery supply chain has been added based on the best available data that was identified for use in the Air Quality and Climate Change SER and Final EIS. Percentages characterizing the extent of contributions to climate change were removed and clarification was added.

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		gas emissions from the transport and delivery of the anticipated lithium and boron products, and the reasonably foreseeable decreases in greenhouse gas emissions from driving electric vehicles that would not occur absent this action.[7] ***Recommendations for the Final EIS***: • Consistent with the CEQ's interim guidance, report greenhouse gas emissions for each individual gas (CO2, methane, and nitrous oxide) in addition to reporting CO2-equivalent emissions. • Provide reasonably foreseeable direct and indirect greenhouse gas emissions for all sources—broken down by individual greenhouse gas—including the emissions from transportation of quarried materials. o Clarify why transportation of quarried materials are considered indirect effects and what distance was used to calculate emissions. o Resolve discrepancies in mobile/tailpipe direct emissions totals. • Include the following information from the Air Quality Impact Analysis: o Reasonably foreseeable downstream greenhouse gas emissions from battery production and vehicle usage for years 5-8 (years corresponding to lithium carbonate production) and years 9-17 (years corresponding to lithium hydroxide production), where practicable. o Anticipated end products from using the mined lithium and boron. o Any reasonably foreseeable decrease in greenhouse gas emissions from driving electric vehicles that would not occur absent this action. ***Characterization of Greenhouse Gases*** When evaluating the cumulative effects of greenhouse gas emissions from the project, the Draft EIS estimates that the Proposed Action would represent approximately 1% of the gross greenhouse gas emissions for the state of Nevada and result in an increase of 1.01% of the total state's emissions (p. 4-49). CEQ's interim guidance does not consider this type of comparison as an appropriate method for characterizing the extent of contributions to climate change. Representing the project as a percentage minimizes the project's impacts and does not identify how "diverse individual sources of emissions each make a relatively small addition to global atmospheric greenhouse gas concentrations that collectively have a large effect." Instead, CEQ's guidance recommends that agencies should "place emissions in relevant context, including how they relate to climate action commitments and goals." ***Recommendation for the Final EIS*:** Remove percentages characterizing the extent of contributions to climate change and instead discuss how project emissions relate to climate action commitments and goals. ***Monetized Climate Damages*** <u>Missing Emissions</u> The Draft EIS uses the Interagency Working Group (IWG) on SC-GHG 2021 *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990*[8] to monetize the climate damages from direct greenhouse gas emissions but does not monetize damages from indirect downstream emissions[9] or construction and reclamation emissions (Air Quality and Climate Change SER p. 3-5). As the Draft EIS does not include all direct and indirect emissions, the SC-GHG values included in the Draft EIS present an incomplete estimate of the climate damages from the project alternatives. ***Recommendation for the Final EIS*:** Estimate the SC-GHG for all the reasonably foreseeable direct and indirect greenhouse gas emissions of the project. <u>Lifetime Climate Damages</u> The Draft EIS only estimated and presented the climate damages from the project for one year as opposed to the expected lifetime of the project (i.e., 17 years plus the six-year reclamation period). The annual value of $32.96 million presented in Section 3.2.2.2 was estimated by multiplying CO2, CH4 and N2O emissions by the respective SC-GHG values for 2020 at the 2.5% discount rate. To correctly estimate climate damages, CO2, CH4 and N2O emissions from 2024 to 2047 need to be multiplied by the respective SC-CO2, SC-CH4 and SC-N2O values for each year at each discount rate. Before these estimates are included in the analysis, the monetized values of climate damages over time must be discounted to the present. In order to promote better public understanding of the climate damages of the project, the Final EIS needs tables that report the monetized climate change damages for each greenhouse gas as well as sufficient descriptions of data and methods on computing the monetized climate damages to allow confirmation of the calculations of the SC-GHG. ***Recommendations for the Final EIS*:** • Estimate the total SC-GHG for each type of greenhouse gas emissions over the expected lifetime of the project. • Revise the SC-GHG calculation by multiplying the CO2, CH4 and N2O emissions for each year between 2024 to 2047 by the corresponding SC-CO2, SC-CH4 and SC-N2O values. • Include tables that report the monetized climate change damages separately for each greenhouse gas and provide sufficient descriptions of data and methods on computing the monetized climate damages to allow them to be reproduced by a qualified individual. ***Application of EPA's Social Cost of Greenhouse Gas Estimates and 2023 Update*** In November 2023, the EPA published the *Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances*.[10] This report provides updated estimates of the SC-GHGs that reflect advancements in the scientific literature on climate change and its economic impacts and incorporate recommendations made by the National Academies of Science, Engineering, and Medicine (National Academies 2017). In this update, the methodology underlying each of the four components, or modules, of the SC-GHG estimation process – socioeconomics and emissions, climate, damages, and discounting – is developed by drawing on the latest research and expertise from the scientific disciplines relevant to that component. Regarding discounting, EPA's report presents updated estimates of the SC-GHG at multiple discount rates. Considering the multiple lines of evidence on the appropriate certainty-equivalent near-term rate, the modeling results presented in this report consider a range of near-term target rates of 1.5%, 2.0%, and 2.5%. This range of rates allows for a symmetric one point spread around 2.0%. The updated SC-GHG estimates have also undergone an expert peer review and a public comment process. The EPA has recently released a Microsoft Excel "Workbook for Applying SC-GHG Estimates" spreadsheet to better assist lead agencies with the utilization of these updated estimates, and it can be accessed at https://www.epa.gov/environmental-economics/scghg. This workbook presents a straightforward tool for applying the updated SC-GHG values to monetize project SC-GHG emissions for the Final EIS.	Social cost of greenhouse gas was updated in Section 3.2.2.2 of the Air Quality and Climate Change SER and Section 4.1.1 of the EIS as requested using the information and data sources provided in this comment. In response to the measures to reduce greenhouse gas emissions, clarification has been added to the Section 3.2.2 of the Air Quality and Climate Change SER and Section 4.1.1 of the EIS regarding NDEP Air permit conditions. BLM has provided Ioneer with the suggested mitigation measures, but there has been no commitment to include these measures in their Plan of Operations at this time. If Ioneer decides to incorporate these measures, the applicable NEPA documents will be revised at that time. In response to the stormwater and contact water handling facilities comment, stormwater and contact water handling facilities are designed to comply with NDEP WPCP requirements.

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		If the BLM needs assistance with correcting predicted climate damage calculations and/or using EPA's SC-GHG workbook, please contact Sarah Samples, the EPA's NEPA project lead for this project. She can connect BLM staff with EPA's National Center for Environmental Economics. ***Recommendation for the Final EIS*:** Revise the analysis monetizing greenhouse gas emission changes using EPA's updated SC-GHG estimates to reflect the latest science on the impacts of climate change. This can be done using EPA's Workbook for Applying SC-GHG Estimates. ***Measures to Mitigate Greenhouse Gas Emissions*** The EPA understands that the project would utilize the sulfuric acid plant to generate enough power for all operations, thereby negating the need for additional carbon-based energy sources. We believe additional measures could further avoid, reduce, and minimize greenhouse gas emissions. For this project, practicable measures to reduce mobile sources are included below. The EPA also recommends adopting the low emissions equipment specifications, as outlined below, unless: 1) a piece of specialized equipment is not available for purchase or lease within the United States; or 2) the relevant project contractor has been awarded funds to retrofit existing equipment, or purchase/lease new equipment, but the funds are not yet available. ***Recommendations*:** Work with Ioneer to reach agreement on adding the following measures to the Applicant Committed Environmental Protection Measures to avoid, reduce, and minimize greenhouse gas emissions, and disclose those commitments in the Final EIS: <u>Mobile and Stationary Source Controls</u>: • Minimize unnecessary idling of heavy equipment.11 (At the same time, this practice will result in fuel savings.) • Require advanced pollution controls and clean fuels for new equipment and older equipment be retrofitted with such controls. Use particle traps and other appropriate controls to reduce emissions of diesel particulate matter and other air pollutants. (Traps control approximately 80 percent of DPM, and specialized catalytic converters (oxidation catalysts) control approximately 20 percent of DPM, 40 percent of carbon monoxide emissions, and 50 percent of hydrocarbon emissions.) • Lease or buy newer, cleaner equipment using the best available emissions control technologies that meets the most stringent of applicable federal or state standards, including the following: o For on-highway vehicles, meet or exceed the U.S. EPA exhaust emissions standards for model year 2010 and newer heavy-duty on-highway compression-ignition engines (e.g., drayage trucks, long haul trucks, refuse haulers, shuttle buses, etc.).12 o The Draft EIS indicates that electric vehicle haul trucks are not currently available, and therefore use of EV trucks has been eliminated from analysis. It is possible that EV trucks will become available during the 17-year life of project construction and operations. We recommend the use of EV trucks be included as a mitigation measure that would be implemented once these trucks are available for commercial use. • Maintain and tune engines per manufacturer's specifications to perform at EPA certification levels, where applicable, and to perform at verified standards applicable to retrofit technologies. Prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations.[13] • Provide supporting information on why conveyors are not technically feasible and describe why they are not "environmentally reasonable" (Appendix C, p. C-4). <u>Administrative Controls:</u> • Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained, tuned, and modified consistent with established specifications. • Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking.[14] <u>Unavoidable Emissions</u> • Since environmental stewardship is stated as core to Ioneer's mission,15 consider including project elements to offset carbon (carbon offsets) or the voluntary purchase of carbon offset credits. ***Stormwater and Contact Water Handling Facilities*** The Draft EIS discusses anticipated climate change trends in the local environment and recognizes that climate risk can be "addressed by integrating climate adaptation into existing organizational investments, policies, and practices"; however, there is no discussion of the impact that future climate change may have on the project's infrastructure. The EPA has previously commented about inconsistencies in operational facility stormwater and contact water handling capacities that range from 25-year/24-hour to 100-year/24-hour events, and we have recommended upsizing operational facilities to withstand potential 500-year/24-hour events and accommodate more frequent and intense stormwater runoff. While the EPA understands that current stormwater handling capacities comply with Nevada Administrative Code 445A.433, we remain concerned that more frequent and intense downpours could overwhelm the capacity of both operational stormwater and contact water handling facilities should a 500-year/24-hour event occur during the life of mine and adversely affect water quality. ***Recommendations*:** • Discuss the impact of ongoing and projected climate change on the project's infrastructure. • Work with Ioneer to include the following measures in the Applicant Committed Environmental Protection Measures and disclose in the Final EIS: o Upsize all stormwater and contact water handling facilities to withstand a 500-year/24-hour event, especially the Acid Containment and Diesel Tank areas. o If upsizing to the 500-year/24-hour event is not feasible, upsize all facilities to the 100-year/24-hour event. 6 Council on Environmental Quality. (2023, January 9). *National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change*. **https://www.energy.gov/sites/default/files/2023-01/2023-01-CEQ%20interim%20guidance%20on%20GHG%20emissions%20and%20climate%20change.pdf** 7 The Department of Energy's Loan Programs Office conditional commitment to Ioneer Rhyolite Ridge estimates that the project "could reduce annual gasoline consumption by nearly 145 million gallons and prevent the release of 1.29 million tons of carbon dioxide each year." See **https://www.energy.gov/lpo/articles/lpo-announces-conditional-commitment-ioneer-rhyolite-ridge-advance-domestic-production**. 8 Interagency Working Group on Social Cost of Greenhouse Gases. (2021, February 19). *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990*. **https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf**	

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		9 The EPA recognizes that indirect downstream emissions were disclosed in the Air Quality and Impacts Analysis; however, this information was not included in the Draft EIS and the analysis was not publicly available during the public review period. 10 U.S. Environmental Protection Agency. (2023, November) *Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances.* **https://www.epa.gov/system/files/documents/2023-12/epa_scghg_2023_report_final.pdf** 11 California Air Resources Board. (2024). *Heavy-Duty Diesel Vehicle Idling Information.* **https://ww2.arb.ca.gov/capp-resource-center/heavy-duty-diesel-vehicle-idling-information** 12 U.S. Environmental Protection Agency. (2016, March). *Heavy-Duty Highway Compression-Ignition Engines and Urban Buses: Exhaust Emission Standards.* **https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100O9ZZ.pdf** 13 U.S. Environmental Protection Agency. (2020, November). *EPA Tampering Policy.* **https://www.epa.gov/sites/default/files/2020-12/documents/epatamperingpolicy-enforcementpolicyonvehicleandenginetampering.pdf** 14 Suitability of control devices is based on whether there is reduced normal availability of the construction equipment due to increased downtime and/or power output, whether there may be significant damage caused to the construction equipment engine, or whether there may be a significant risk to nearby workers or the public. 15 Ioneer, LLC. (2023). *Rhyolite Ridge Sustainability*. **https://rhyolite-ridge.ioneer.com/sustainability/#tiehms**	
112 and 182	112.5 and 182.5	**Cultural Resources** The Draft EIS states a Memorandum of Agreement between the BLM, Nevada State Historic Preservation Office, and the Advisory Council on Historic Preservation is being prepared and would be executed to resolve adverse effects to historic properties (p. 2-13) and provides several measures that may be adopted to avoid, minimize, or mitigate impacts. We appreciate that the BLM would consult with interested Tribes for the cultural resources that do not meet the criteria of National Register of Historic Places eligibility but are significant to Tribes (e.g., sacred sites). In addition, if the resources fall under the Archaeological Resources Protection Act, BLM must follow ARPA to ensure these sites are not destroyed. Due to the high number of sites that may be affected, including the 100 sites that would be destroyed, the EPA recommends additional measures as the MOA is under development (p. 4-4). The Draft EIS also states that 12 NRHP-eligible sites would "potentially be physically impacted by access road improvements, including widening the road to 100 feet" (p. 4-23). We appreciate that "road design would be modified to avoid the 12 NRHP-eligible cultural resources along the road if possible" since the road design is conceptual at this time. We recommend committing to this measure in the Applicant Committed Environmental Protection Measures and the Record of Decision. ***Recommendations*:** • In development of the MOA: o Work with interested Tribes to develop a Tribal-approved list of formally trained cultural specialists. o Require hiring cultural specialists to be on-site during new surface disturbance to provide information and/or recommendations to the BLM. Consider requiring Tribal-approved cultural specialists on-site during reclamation activities and audits of water quality testing. o If a selected cultural resource specialist is not available within five days' notice, contact Tribes to obtain an observer while using a different cultural specialist not from the Tribal-approved list. o Consider treating non-evaluated pre-historic cultural resources as if they are NRHP-eligible or conduct necessary evaluation to make accurate determinations (as identified in the Cultural Resources SER p. 3.5, 3.6). o Appropriately include impacted Tribes affiliated with the Western Shoshone and Northern Paiute peoples. • In the Applicant Committed Environmental Protection Measures and Record of Decision, commit to designing the road to avoid any Tribal cultural resources among the 12 NRHP-eligible cultural resources along the road.	Comments noted. BLM is working with consulting parties on drafting the Memorandum of Agreement (MOA). ACEPMs for cultural resources are presented in Section 2.1.13.3. Mitigation measures for adverse impacts to specific sites would be detailed in the Historic Properties Treatment Plan (HPTP). This is stated in Section 4.2.1 of the EIS. Unevaluated cultural resources are addressed the same way as eligible cultural resources for the assessment of Project impacts as well as historic properties management and treatment until such time that their eligibility is determined. Unevaluated sites were included in the analysis presented in Section 4.2 of the EIS; however, this specific statement was added to clarify. Tribal consultation with tribes identified as having an interest in the area will be included as part of the MOA and HPTP. Not all of the 12 NRHP-eligible sites along the road can be avoided as some sites span the roadway.
112 and 182	112.6 and 182.6	**Tribal Consultation** ***Consulting Additional Tribes*** The EPA appreciates the Tribal consultation summary listed in the Draft EIS (Table, 5-1 p. 5-2 to 5-4). Due to regional Tribal concerns about lithium mining that have been expressed to the EPA at Regional Tribal Operations Committee and other EPA events,16 we encourage offering consultation with additional Tribes in the vicinity of the project area, including the Walker River Paiute Tribe, Bridgeport Indian Colony, Fort Independence Indian Community of Paiute Indians, and the Lone Pine Paiute Shoshone Tribe. In addition, it appears that the BLM intended to visit the South Fork of the Te-Moak Tribe of Western Shoshone Indians, yet this Tribe was not included in any other consultation within the summary (p. 5-3). As such, we encourage the BLM to formally consult with this Tribe as well. ***Recommendation for the Final EIS:*** Consider offering formal consultation to the Walker River Paiute Tribe, Bridgeport Indian Colony, Fort Independence Indian Community of Paiute Indians, Lone Pine Paiute Shoshone Tribe, and South Fork of the Te-Moak Tribe of Western Shoshone Indians. ***Disclosing and Addressing Tribal Concerns*** The Draft EIS states that Duckwater Shoshone Tribe, Timbisha Shoshone Tribe, and the Big Pine Paiute Tribe of the Owens Valley as well as the Western Shoshone Defense Project expressed multiple concerns about the project. While we appreciate that the resources of concern were listed, more information is needed to understand how the BLM responded to these Tribal concerns in the development of the EIS, how the project may have changed based on these discussions, and whether any mitigation was identified for the concerns raised by the Tribes. ***Recommendations for the Final EIS*:** • Provide summaries of the non-confidential concerns expressed by the Duckwater Shoshone Tribe, Timbisha Shoshone Tribe, Big Pine Paiute Tribe of the Owens Valley, and the Western Shoshone Defense Project and how each of those concerns was addressed. • Identify how consultation influenced the decision-making process including the selected alternative and mitigation to avoid, minimize, or compensate for impacts to Tribes. • Identify if any confidential concerns were expressed by the Tribes and how they were addressed. ***Indigenous Knowledge*** Table 5-1 indicates that the Western Shoshone Defense Project provided information about Indigenous Knowledge (Table 5-1, p. 5-3); however, this information was not included in the Draft EIS. While the EPA understands that it is important to Tribes that sensitive information be withheld, a summary of Indigenous Knowledge, if used in the decision-making process, remains important to disclose if it is not protected under the Freedom of Information Act exemptions or other federal statutes. In November 2021 during the early engagement period of this project, the CEQ and the Office of Science and Technology Policy (OSTP) issued a memo to federal agencies stating that "ITEK [Indigenous Knowledge] can and should inform Federal decision making along with scientific inquiry."17 CEQ and OSTP issued follow-up Indigenous Knowledge guidance18 that provides NEPA-specific information and discusses how to include Indigenous Knowledge into	As stated in the EIS, the BLM contacted the following tribes: Big Pine Paiute Tribe of the Owens Valley Bishop Paiute Tribe Utu Utu Gwaitu Paiute Tribe of the Benton Paiute Reservation Te-Moak Tribe of Western Shoshone Indians of Nevada Ely Shoshone Tribe of Nevada Shoshone-Paiute Tribes of the Duck Valley Reservation, Nevada Duckwater Shoshone Tribe of the Duckwater Reservation, Nevada Yomba Shoshone Tribe of the Yomba Reservation, Nevada Timbisha Shoshone Tribe. These are the tribes that BLM identified as having interests in the area. The Te-Moak Tribe of Western Shoshone Indians did not respond to BLM requests for consultation/ communication. Tribal concerns were disclosed in Section 4.8.1 of the EIS. As noted in the EIS, project re-design avoids two areas of tribal concern. Cave Springs will also be avoided. The Western Shoshone Defense Project is not a sovereign nation but rather a non-governmental organization. Therefore consultation is not appropriate. The BLM solicits and obtains indigenous knowledge via its government-to-government consultation, staff-to-staff project-level discussions, ethnographic studies, and tribal comments on its NEPA documents. As noted in the EIS, consultation with tribes is on-going and would continue through the life of the Project.

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		federal decision-making. Without disclosure of Indigenous Knowledge in the Draft EIS, it is unclear if or how the BLM incorporated this information in the Rhyolite Ridge decision-making process. As such, the EPA continues to recommend the identification, inclusion, and integration of Indigenous Knowledge into the EIS. ***Recommendations for the Final EIS*:** • Disclose the Indigenous Knowledge provided by the Western Shoshone Defense Project, and other Tribes if applicable. • Describe how Indigenous Knowledge was collected and used in the NEPA decision-making process. If Indigenous Knowledge was not used, describe why it was not. • Invite and include Tribes to incorporate any Indigenous Knowledge into the Tiehm's Buckwheat Protection Plan. **<u>Communications Planning</u>** The Draft EIS does not disclose methods of communication to alert surrounding communities about project reporting/monitoring and emergency response. Community members may be interested in seeing reports such as quarterly air and groundwater monitoring. In addition, being able to quickly reach external stakeholders at the appropriate level can help reduce concerns related to mine operations in the event of an emergency. We also encourage disclosing the Ioneer community relations manager's contact information for community members that may have questions or concerns during the life of mine. ***Recommendations*:** Update the Emergency Response and Spill Contingency Plan (Appendix E of the Plan of Operations) to ensure surrounding communities would be notified of impacts in the event of an emergency or spill, including: • Identifying where project reporting/monitoring would be available to allow community members access. • Disclosing the Ioneer community relations manager's contact information in communication plans and announcements. 16 The RTOC is a working committee of EPA and Tribal personnel that meets quarterly. For more information, please see **https://www.epa.gov/tribal-pacific-sw/regional-tribal-operations-committee-rtoc**. 17 Council on Environmental Quality and the Office of Science and Technology Policy. (2021, November 15). *Indigenous Traditional Ecological Knowledge and Federal Decision Making*. **https://www.whitehouse.gov/wp-content/uploads/2021/11/111521-OSTP-CEQ-ITEK-Memo.pdf** 18 Council on Environmental Quality and the Office of Science and Technology Policy. (2022, November 30). *Guidance for Federal Departments and Agencies on Indigenous Knowledge*. **https://www.whitehouse.gov/wp-content/uploads/2022/12/OSTP-CEQ-IK-Guidance.pdf**	The Emergency Response and Spill Contingency Plan will be updated throughout the life of the Project. Ioneer and their contractors would be required to abide by all federal, state, and local laws, including compliance with the Emergency Planning and Community Right-to-Know Act. The BLM has provided these recommendations to Ioneer for consideration. The recommendation to disclose the community relations manager's contact information has been provided to Ioneer for consideration. Project reporting and monitoring would be provided to the appropriate agencies, as applicable. The community relations manager's contact information and where project reporting/monitoring would be available would not impact the outcome of the NEPA analysis; therefore, are not included in the EIS.
112 and 182	112.7 and 182.7	**Water Resources** ***Pit Lake Water Quality*** The pit lake is predicted to exceed Nevada Division of Environmental Protection Profile III reference values for arsenic, boron, fluoride, and molybdenum (p. 4-5). The ecological risk assessment (ERA) concluded that there could be some exceedances of the No Adverse Effect Levels, though actual risk could be less. The ERA was interpreted to indicate a low probability of risk to wildlife. The Draft EIS does not appear to consider potential future human interaction with the pit lake, even though it would be a permanent fixture on the landscape. Signs and a berm would be placed around the lake, but it is not clear whether they would be maintained in perpetuity. It is also not clear whether future management of the pit lake would be different if water quality is other than predicted, for example due to climate change or the uncertainties associated with the pit lake model and geochemical analysis. ***Recommendations*:** To better characterize the environmental consequences and mitigate potential pit lake impacts: • Describe the potential for future human interactions with the pit lake (e.g., recreational users, Tribal users) and potential impacts to human users in the Final EIS. • Describe and commit to adaptive management measures should the pit lake water quality be worse than predicted. Work with Ioneer to include these measures in the Applicant Committed Environmental Protection Measures and disclose these commitments in the Final EIS. ***Groundwater Quality*** The Draft EIS states that the mobile concentrations of metals and metalloid oxyanions would be short-lived, except for arsenic (p. 4-34). However, it is not clear what is meant by short-lived or which compounds are of concern. More information is needed in the Final EIS to better describe the potential contaminants of concern and the extent to which they would impact groundwater quality to support the conclusion that impacts would be "minor, short-term, and localized." ***Recommendations for the Final EIS*:** Provide a more robust discussion of groundwater impacts by including the following information: • A table that lists contaminants of concern in leachate from overburden and spent ore storage facilities compared to existing groundwater concentrations and groundwater standards. • A figure or table that provides the estimated distance from the mine components (overburden and spent ore facilities) over which groundwater quality would be changed due to uncollected seepage. The Draft EIS states that the underdrain and contact water collection systems would minimize the volume of leachate contacting the environment (p. 4-34), but the EIS does not describe the extent to which leachate would be minimized/collected. Further information regarding the sufficiency of the collection system is needed to support the conclusions. ***Recommendation for the Final EIS*:** Describe predicted efficiencies of the leachate collection systems (e.g., what percent of leachate would be collected vs. lost to groundwater) and provide references for the efficiency determinations based on use of these same systems for other projects or other supporting information. ***Water Quantity*** As noted in the environmental justice section above, higher temperatures caused by climate change have intensified drought conditions in the Southwest region. Drought-induced reductions to available surface water and groundwater may strain water quantity planning for this project. The Draft EIS states that "[t]he analysis on water rights assumes that existing consumptive uses in Fish Lake Valley would continue at their current rate which are near the Fish Lake Valley basin's perennial yield" (p. 4-5). The EPA is concerned that climate change impacts to available water supply over the 23-year life of mine were not adequately considered. Considering that Nevada is the driest state in the country19 and this project "would represent 13 percent of the basin's perennial yield" (p. 4-5), more details are needed to understand how this project's anticipated water usage would impact water availability for surrounding communities amidst declining perennial basin yields. In addition, we understand that the project would use water from the quarry dewatering to reduce the need for pumped water from Fish Lake Valley. We encourage the BLM to ensure that any additional mitigation for reducing the mine's water usage is addressed in the Final EIS.	Pit Lake Water Quality Closure of the quarry lake is a component of the Project's reclamation closure plan. Human interactions with the quarry lake are not part of the closure plan as the quarry perimeter would be bermed as part of closure. Mined materials would be monitored and tested during operations and the predicted quarry lake chemistry would be updated at least every five years based on these monitoring results. Quarry lake monitoring would be required under closure and post-closure conditions for a period of at least 25 years. If the quarry lake water quality differs from predictions, management would involve measures to inhibit wildlife access to the lake. These details have been added to the revised Water Resources SER for use or reference in the Final EIS. Groundwater Quality Constituents of concern and information on the predicted distance of effects from mine components have been incorporated into the revised Water Resources SER for use or reference in the Final EIS. Water Quantity Climate change is not explicitly simulated in the groundwater flow modeling for the action alternatives. However, model sensitivities to parameters affected by climate change such as evaporation and groundwater recharge by meteoric water are examined in the groundwater flow model and effects analysis. The groundwater flow model is subject to regular updates required by NDEP-BMRR as part of its WPCP, and other regulatory agencies may require updates as well. These updates are based on monitoring data for groundwater levels, surface water flows, and meteorological data that would reflect any observed effects of climate change on conditions in the analysis area. Climate change has the potential to modify the amount and timing of groundwater recharge which contributes to the perennial yield of the basin. In general, annual precipitation in the region could be reduced over time, but

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		The EPA notes cumulative impact concerns to water quantity availability from reasonably foreseeable projects such as the Esmeralda Seven Solar Project and the Greenlink West Project (both also seeking BLM permits from the Battle Mountain District Office). Additional specificity about the water usage needs for and potential impacts from these proposed BLM-permitted projects would help clarify potential cumulative impacts to available water quantity. ***Recommendations for the Final EIS*:** • Describe how climate change may affect total water availability from the basin during the 23-year life of mine and how the mine's consumption of 13% of the basin's current perennial yield could impact other water rights. • Ensure that all practicable mitigation options for reducing the mine's water usage have been disclosed and incorporated into Applicant Committed Environmental Protection Measures or plan approval conditions, as appropriate. • Disclose cumulative impacts to water quantity from reasonably foreseeable projects such as the Esmeralda Seven Solar Project and the Greenlink West Project. ***Water Pollution Control Permit*** The Water Pollution Control Permit issued in August 2021 and referred to in the Draft EIS was specifically for the Proposed Action. According to NDEP, the WPCP will need to be updated for the preferred North and South OSF Alternative, but this is not explicitly stated in the Draft EIS (N. Zittel, personal communication, May 13, 2024). ***Recommendation for the Final EIS*:** If the North and South OSF Alternative is selected, disclose that NDEP would need to revise the WPCP permit, as necessary. ***Water Management – Water Balance*** The Draft EIS states that an operational site-wide water balance has been developed to achieve the applicant's goals of recycling water and achieving zero discharge (p.2-8). There is a general description of how water would be managed for each of the mine components, but information is not supplied to support the zero-discharge statement. In our experience, mining EISs typically contain a figure that shows water inputs and outputs from each of the project components so that readers can easily visualize the overall operational water flows and balance. ***Recommendation for the Final EIS*:** Include a figure that shows all the mine components (quarry, overburden piles, spent ore facility, contact water ponds, processing facility, etc.) and the water flows into and out of each, including water lost to groundwater and evaporation. For example, the Spent Ore Storage Facility components would show water entrained in the spent ore, runoff and seepage collection and recycling back to the process facility, seepage lost to groundwater, evaporation, etc. ***Classification of Stormwater and Contact Water*** Section 2.1.10.2 refers to water entering the quarry as stormwater. Water that contacts mine materials is not considered stormwater but instead is designated as mine drainage under Clean Water Act regulations (40 CFR 440.132(h)). To fully disclose how contact water would be managed, this clarification is needed in the Final EIS as well as a discussion of contact water management. We recommend adding a similar level of detail as provided in the stormwater section. ***Recommendation for the Final EIS*:** • Add a new section that describes how contact water is proposed to be managed, including water from the quarry, spent ore, and wastewater from processing; and • Move the discussion of water that encounters the quarry and pit dewatering water out of the stormwater section and into this new section. **<u>Long-Term Funding Mechanism</u>** The Plan of Operations for the proposed mine states that "the BLM may determine that a LTFM [long-term funding mechanism] is required to address post-reclamation/closure obligations (including long-term monitoring and mitigation) associated with specific components of the Project" (p. 75). The Draft EIS states that monitoring and reporting under mitigation measure WR-01 would continue for seeps and springs until the BLM determines there are no longer water drawdown impacts (p. 4-78). The Monitoring Plan also indicates that surface water monitoring (water quality and elevation) of the quarry lake would continue as required by NDEP until it has reached approximately 90 to 95 percent of its anticipated filling depth (Plan of Operations Appendix F, p. 18). The lake is modeled to be full in 60 years (p. 2-10), which implies monitoring would be ongoing for at least 50 years for pit lake level and water quality. Adequate and viable funding for long-term post-closure management can be a critical factor in whether a project is environmentally acceptable – especially in considering long-term post closure operations, maintenance, and monitoring. Although the BLM would require the applicant to secure a ***Recommendation for the Final EIS*:** Include a more detailed assessment of post-closure protective measures, specifically considering surface water mitigation for at least 50 years, and the identification of the long-term funding mechanism(s) to assist with the post-record of decision financial determination to be made by the BLM. **<u>Exporting Lithium and Boron</u>** The Draft EIS does not disclose the eventual destination of lithium and boron; however, the Trinity Consultants 2023 Air Quality Impact Analysis20 indicates that 85% of lithium would be exported to Asia and Germany and 94% of boron would be exported to Asia (AQIA p. 8-4). We note that, the DOE has offered a conditional commitment to lend up to $700 million to Ioneer for the project and expects the project to increase the availability of critical minerals in the United States and reduce U.S. dependency on foreign supply sources. Among other things, DOE points to near-term contracts and agreements to illustrate that expectation.21 The Draft EIS does not describe how the project would primarily increase the domestic supply of lithium, a critical mineral, and assist the US with its commitments to electric vehicle and renewable energy production. ***Recommendations for the Final EIS*:** • Disclose the reasonably foreseeable uses of lithium and boron that would be produced from the project. • Confirm if it is reasonably foreseeable that the exported products would ultimately re-enter the U.S. electric vehicle and renewable energy supply chain. [19]U.S. Environmental Protection Agency. (2016, May). *Saving Water in Nevada*. **https://19january2017snapshot.epa.gov/www3/watersense/docs/nevada_state_fact_sheet.pdf** [20]While this report is cited in the Draft EIS, it is not included on the project's E-Planning website.	surface water runoff and groundwater recharge are expected to occur earlier in the year due to rising temperatures. There is uncertainty regarding how these changes would affect utilization of water rights. However, the Proposed Action utilizes existing water rights rather than new water rights. Utilization of the existing water rights would have the same effect on other water rights as the No Action Alternative regardless of climate change effects. Utilization of new water rights would have an increased potential to affect the availability of groundwater for other water rights if climate change were to reduce perennial yield. The EIS evaluates the cumulative effects of reasonably foreseeable future actions on water quantity. Water Pollution Control Permit The relationship between BLM and NDEP-BMRR regulatory authorities is described in the Water Resources SER Section 2.2. This section indicates that any BLM decision would also be subject to approval by NDEP-BMRR. Water Management-Water Balance The suggested figure will be incorporated into the revised Water Resources SER for use or reference by the Final EIS. Stormwater and Contact Water The description of contact water management will be incorporated into the revised Water Resources SER for use or reference by the Final EIS. Long-Term Funding Mechanism See also the response above regarding quarry lake water quality. Information regarding post-closure effects and long-term funding mechanisms will be added to the Water Resources SER for use or reference by the Final EIS. Exporting Lithium and Boron Export of lithium and boron for use in manufacturing products in the supply chain would not have an effect on water quantity and water quality in the analysis area. Discussion of the battery supply chain has been added to Section 4.20.1 and the Air Quality and Climate Change SER..

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		[21]Department of Energy. (2023, January 13). *LPO Announces Conditional Commitment to Ioneer Rhyolite Ridge to Advance Domestic Production of Lithium and Boron, Boost U.S. Battery Supply Chain*. **https://www.energy.gov/lpo/articles/lpo-announces-conditional-commitment-ioneer-rhyolite-ridge-advance-domestic-production**	
112 and 182	112.8 and 182.8	**Air Quality** ***Class II Air Permit*** The Draft EIS states that the project currently has a Class II minor source air permit as defined by Nevada Administrative Code 445B.037 and requires testing and recordkeeping as determined by the Nevada Division of Environmental Protection (NDEP) (p. 4-1). Given that modelled emissions for non-fugitive nitrogen oxides and sulfur dioxide (SO2) are near the 100 tons per year limit for a Class II permit and that nitrogen dioxide and SO2 emissions are near the National Ambient Air Quality Standards limits (Table 4-2, p. 4-2), summaries regarding the responsibility and frequency for testing and recordkeeping are needed for public disclosure in the Final EIS. Information about short-term excess emissions events is also needed for the public to understand how the mine proponent would be required to respond if the Continuous Emissions Monitoring System indicates exceedances of SO2.22 In addition, the EPA understands that the North and South OSF Alternative would include a "higher output steam turbine generator," resulting in five additional megawatts of power than the Proposed Action for a total of 40 MW (p. 2-18). Without further information provided on this new generator, it appears that the Class II permit would need to be revised if this alternative is selected (A. Taylor, personal communication, May 6, 2024). ***Recommendations for the Final EIS*:** • Summarize requirements for testing, recordkeeping, and excess emissions mitigation, including the party responsible for collecting and reporting to NDEP. • If the North and South OSF Alternative is selected, disclose that NDEP would need to revise the Class II permit, as necessary. [22]The EPA recognizes that nitrogen oxide emissions are not included in the Continuous Emission Monitoring System under the NDEP permit.	Additional information was added to the Air Quality and Climate Change SER for use or reference by the Final EIS.
112 and 182	112.9 and 182.9	***Valley Fever*** The Centers for Disease Control and Prevention indicates that the project area falls within the zone that is endemic for *Coccidioides immitis*, a fungus causing Valley fever (*Coccidioidomycosis*) in humans.23 According to the CDC, rising temperatures have allowed the fungus to spread to new areas that previously were too cold and wet for it to survive. As a result, fugitive dust could disperse *Coccidioides immitis* spores, if present, to on-site workers. To reduce the human health risk of contracting Valley fever, it will be important to identify how onsite workers would be educated about the risks of contracting Valley fever, safety measures, and symptoms. ***Recommendations for the Final EIS*:** • Include a description of Valley fever, its potential presence within the project area, and risks to on-site workers. • Work with Ioneer to ensure that Applicant Committed Environmental Protection Measures identify measures to prevent or reduce the risk of exposure to fugitive dust, including training for workers and supervisors on the potential presence of Valley fever spores, methods to minimize exposure, and how to recognize symptoms and disclose these commitments. ***Fugitive Dust from the Crusher*** We understand that "water sprays or other dust control measures" would be used at the crusher to minimize fugitive emissions (p. 2-13). It is unclear if this would include covering the crusher, which is a standard mining practice. ***Recommendations*:** • Work with Ioneer to reach an agreement to cover the crusher to minimize fugitive emissions. • If the crusher would be covered, disclose this information in the Final EIS and update the Plan of Operations, the Applicant Committed Environmental Protection Measures, and the Record of Decision to include this commitment. [23]Centers for Disease Control and Prevention. (2023, July). *Valley Fever (Coccidioidomycosis) Awareness.* **https://www.cdc.gov/fungal/features/valley-fever.html**	The BLM has sent the information about valley fever to Ioneer for management considerations. Information about valley fever has been added to Section 3.11 and Section 4.11.1 of the Final EIS. Ioneer's air permit Class II air permit AP1099-4256 has been issued with all areas of crushing described as Fully Enclosed or Fully Enclosed/Saturated.
112 and 182	112.10 and 182.10	**BIOLOGICAL RESOURCES** ***Tiehm's Buckwheat*** The EPA understands that the North and South Overburden Storage Facility Alternative, which is the BLM's preferred alternative, was designed to avoid direct impacts to Tiehm's buckwheat subpopulations and minimize disturbance within designated critical habitat (p. 4-23). The EPA strongly supports the selection of the North and South OSF alternative over the Proposed Action since it would disturb 197 acres (22%) of critical habitat compared to the Proposed Action which would impact 354 acres (39%) of critical habitat (p. 4-21, 4-23). Given that the Tiehm's buckwheat population already experienced greater than 60% damage or loss of individual plants in 2020,[24] cumulative loss, including project impacts to Tiehm's buckwheat, would be exceedingly large. Adherence to the U.S. Fish and Wildlife Services' Biological Opinion requirements for avoidance, minimization, and mitigation will be critical to maintain the existing populations. ***Recommendations*:** • Append the USFWS's Biological Opinion to the Final EIS for public disclosure and demonstrate that the preferred alternative is consistent with the Biological Opinion. • Include all USFWS recommendations from the Biological Opinion into the Tiehm's Buckwheat Protection Plan. [24] Endangered and Threatened Wildlife and Plants; Endangered Species Status and Designation of Critical Habitat for Tiehm's Buckwheat, 87 F.R. 77368 (proposed December 16, 2022) (codified January 17, 2023, at 50 CFR 17.96(a)). **https://www.federalregister.gov/documents/2022/12/16/2022-27225/endangered-and-threatened-wildlife-and- plants-endangered-species-status-and-designation-of-critical**	BLM will choose an appropriate mechanism to ensure Biological Opinion requirements and/or applicable recommendations are included in the approval of the selected alternative.
112 and 182	112.11 and 182.11	***Migratory Birds*** To address the protection of migratory birds, the Draft EIS includes an Applicant Committed Environmental Protection Measure to conduct surveys when surface disturbance must occur during the avian breeding season (p. 2-16). The Draft EIS does not disclose whether the applicant would be required to avoid an area if active nests, young birds, or other evidence of nesting is observed (i.e.,	This ACEPM is a summary of the ACEPMs included in the Bird and Bat Conservation Strategy which includes timeframes and coordination with BLM on avoidance areas. The migratory birds effects analysis (Section 4.18) considers the implementation of the ACEPMs as written in the BBCS. The EIS

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		mating pairs, territorial defense, carrying nesting material, transporting of food, etc.) to prevent destruction or disturbance of nests until the birds are no longer present (p. 2-16). In addition, the Draft EIS does not provide a timeframe for how long a survey would be valid. Updates are needed to the Applicant Committed Environmental Protection Measures to address this information. ***Recommendations*:** Work with Ioneer to include the following measures in the Applicant Committed Environmental Protection Measures and disclose in the Final EIS: • Commit to area avoidance if active nests are located or other evidence of nesting is observed. Consider clearance surveys valid for 14 days and commit to re-surveying if surface disturbance would occur beyond that period. • Submit survey results to the BLM before surface disturbance occurs and to obtain BLM concurrence.	has been revised to include the details on when surveys would occur and nest protection buffers.
112 and 182	112.12 and 182.12	**INCORPORATION BY REFERENCE** The Draft EIS incorporates analyses and conclusions from many different project planning documents. We support streamlining efforts when referenced documents are reasonably available for review during the public comment period and the relevant content is briefly described (40 CFR Part 1501.12). However, we note that the Draft EIS lacks brief descriptions of the referenced documents and did not append or include referenced documents on the BLM E-Planning project website. For example, the Air Quality Impact Analysis, including its greenhouse gas and global climate change analysis, Bird and Bat Conservation Strategy, Geochemical Characterization Report, and Rhyolite Ridge Baseline Hydrogeology Report were not made available to the public. While the EPA had access to these documents as a cooperating agency, we are concerned the public does not have the same access to ensure they fully understand the project and can properly engage with the NEPA process. Ideally, all references would include specific page numbers to assist the reader to locate the relevant information. ***Recommendations for the Final EIS*:** • Make referenced documents reasonably available for review by posting on a public website or providing working hyperlinks. Briefly summarize relevant information and provide page numbers to assist in locating referenced information. • Publish the Air Quality Impact Analysis, Bird and Bat Conservation Strategy, Geochemical Characterization Report, Rhyolite Ridge Baseline Hydrogeology Report, and other appropriate documents on the BLM E-Planning project website and clearly describe how these documents relate to or support the analyses, methodologies, or conclusions of the EIS. • Summarize the full Greenhouse Gas and Global Climate Change Analysis section from the Air Quality Impacts Analysis, including reasonably foreseeable direct and indirect downstream greenhouse gas impacts.	The National NEPA Register, also referred to as ePlanning, allows online review and comment of BLM planning and implementation projects. Not all documents referenced in the EIS can be published on the BLM's National NEPA Register website due to the documents not being 508-compliant, being housed by the publisher(s) behind a paywall, or otherwise being protected by copyright laws. All documents referenced can be made available for inspection at the Tonopah Field Office or by request. Air quality and climate change is discussed in sections 3.1, 4.1, and 4.20.1 of the EIS. Additional supporting information is described further in the Air Quality and Climate Change SER.
Allison Henderson – June 3, 2024			
113	113.1	Dear Mr. Distel and Mr. Martin: The proposed Rhyolite Ridge Mine would push the endangered Tiehm's buckwheat to extinction, in violation of the Endangered Species Act and BLM's mandate under the Federal Land Policy and Management Act to prevent unnecessary or undue degradation. As you are aware, this wildflower exists on only a small amount of BLM managed lands in Nevada and nowhere else in the world. Yet the proposed mine would directly destroy 22% of the wildflower's 910 acres of designated critical habitat while allowing the rest of the habitat to be severely degraded and lost due to the proximity of the mining operations, including the massive open pit mine walls comings within a mere 44 feet of the imperiled wildflowers. The impacts from dust and impacts of dust management are unacceptable. The proposed approach would result in a massive increase in water in a highly arid area, which would cause a domino effect, changing the arid nature of the area, increasing introduction of invasive and noxious weeds, and lead to rampant herbicide application, creating yet another suite of problems like dust from the herbicide. The amount of fluids that would be applied also jeopardizes stability of the pit wall and thus the assumptions that the agency has made as to the percentage of direct impacts to the wildflower. There would be direct, indirect, and cumulative impacts on the species, the wildflower's 100 (or more) pollinators, as well as surrounding spring resources that have not been given proper and full consideration. It is particularly concerning that areas where the mine proponent has previously disturbed for exploration has had a direct correlation with the presence of invasive and noxious weeds to the area. Allowing further disturbance, destruction, and proven-weed spreading activities within and near the wildflowers' habitat is not compliant with BLM's duty to ensure that it's actions are leading to the recovery of endangered species and not resulting in unnecessary or undue degradation. The impacts dewatering that would be allowed would also result in acidification of not only the wildflower's habitat but the surrounding areas that provide critical spring resources to wildlife, including but not limited to iconic desert species like the desert bighorn and pronghorn. BLM cannot move forward with the proposed mine and comply with federal law. The impacts and harms are too great.	The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. Impacts to water resources are described in EIS Sections 4.16 and 4.20.16.
Svend Brandt-Erichsen – June 3, 2024			
114	114.1	Attached comments are submitted on behalf of Ioneer Rhyolite Ridge LLC (Ioneer).	Comment noted.
114	114.2	Rhyolite Ridge-1-500690418_Attachment 1	Comment noted.
114	114.3	2.1.13.3 | 2-13 | 5th line | Delete Advisory Council on Historic Preservation from list of reviewers, they will not be reviewing documents In their draft MOA BLM has not invited the Advisory Council on Historic Preservation (ACHP) to participate in consultation because the Mine does not meet the requirements for their participation (as specified in Component 5 of the 2012 National PA among BLM, ACHP, and the National Conference of SHPOs).	Revision made.
		2.1.13.3 | 2-13 | 14 | Replace the last line with If the site meets NRHP eligibility criteria, it will be mitigated during Phase II data recovery as detailed in the HPTP	Revision made.
		2.1.13.3 | 2-13 | 15 | Remove "or human remains funerary objects, or items of cultural patrimony" to distinguish how newly discovered sites are dealt with from how human remains and funerary objects are dealt with.	Revision made.
		2.1.13.3 | 2-13 | 16 | Replace Discovery Plan with Monitoring and Discovery Plan	Revision made.
		2.1.13.3 | 2-13 | 23 4d paragraph | Start first sentence fourth paragraph of section with "If human remains, funerary objects, or objects of cultural patrimony are	Revision made.

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					encountered, the location ….."	
		2.6	2-23		Table 2-6 (Entire). In reviewing this table, the summaries lack the nuance and specificity of the analysis provided in Chapter 4. In many instances there are two or three sentences that could be copied from the appropriate section of Chapter 4 that would provide a summary of impacts that would be useful to the decision maker/reviewer of the document. For example. The following copied from Section 4.12.1.1 provides a much clearer summary of the impacts of the project to monarch butterflies: "*There would be no impacts to leks or breeding BSSG due to the distances of these habitats from the Project. During construction, operation, and reclamation increased human presence and noise could cause those BSSG that occasionally travel through the OPA to avoid the area. Impacts would be negligible, long-term, and localized. While unlikely due to the limited use of the OPA by BSSG and established ACEPMs, vehicular traffic associated with the Project could injure or cause fatalities to individuals, but population- level impacts would not be expected. Impacts from vehicles would be minor, long-term, and localized.*"	The table presents a brief summary of impacts for each resource to provide for comparison. Detailed analysis is provided in the EIS in Section 4.0 with additional detail in the associated SERs.
		3.18.2.1	3-22		The EIS would benefit from an elaboration of the existing information in the record on the Fish Lake Valley tui chub, as outlined in GLA 2024 (EIS SharePoint//Documents/Baseline Reports/Groundwater/Evaluation of Hydrogeology of McNett Ranch). The springs, seeps, and flowing well on the Durk Pearson property that support the chub, as well as the Hot Box well and other springs and seeps near it are likely caused by the presence of a significant northeast-trending, basin-bounding fault zone that causes the upward welling of groundwater to land surface. The fault zone acts as a groundwater barrier. Chiatovich Creek is a major source of local recharge to the groundwater system in this area of Fish Lake Valley. Groundwater derived from Chiatovich Creek recharge flows toward the northeast where it encounters the basin- bounding fault barrier and rising deep geothermal groundwater that is also influenced by the fault zone. Geochemical data supports the conclusion that Chiatovich Creek is the likely source of recharge water to the area in and around the Durk Pearson well/springs (GLA 2024).	EIS and SER text revised to state that no dewatering impacts are expected for Fish Lake Valley tui chub and pyrg due to their location outside the drawdown contour.
		3.2	3-4	5	Add reference Ross-Hauer 2020	This has been added to the EIS.
		3.2	3-4	5-8	Replace these lines with - As a result of these inventories, a total of 227 sites have been identified within the Project Area. One site was determined and concurred upon by the SHPO as eligible for listing on the NRHP under Criteria A, C, and D, 24 sites were determined and concurred upon as eligible for listing on the NRHP under Criterion D, 14 sites were determined and concurred upon as unevaluated for listing on the NRHP pending subsurface testing, and 188 sites were determined and concurred upon as not eligible for listing on the NRHP under any evaluation criteria. A total of three architectural resources have also been identified within the Project Area, one of which was determined and concurred upon by the SHPO as eligible for listing on the NRHP under Criteria A, C, and D, while the remaining two were determined and concurred upon as not eligible for listing on the NRHP under any evaluation criteria.	During ongoing consultation with tribal representatives from the Timbisha Shoshone Tribe and Duckwater Shoshone Tribe of Duckwater Reservation, Nevada in August of 2024, two cultural resource sites were expanded to include other sites identified in previous surveys. In response to this, the number of sites was reevaluated and the FEIS and Cultural Resource SER were updated to reflect the changed number of sites (Westland 2024c).
		3.2	3-4	9	Third Paragraph: Move (i.e., historic properties) behind NRHP eligible. (only determined eligible sites are considered historic properties. Unevaluated sites are considered cultural resources)	Moved "(i.e., historic properties)" after "NRHP eligible". However, for purposes of the NEPA analysis, unevaluated sites are treated as eligible resources.
		4.12.1.3	4-21	3rd paragraph, 6th sentence	In the section regarding impacts to ERTI the following should be struck. "*However, the removal and storage of Tiehm's buckwheat preferred soils could alter the characteristics of the soils that the plant needs for survival.*" This mischaracterizes the intent of this section in the BPP included with the proposed action. While ERTI has been shown to grow in a wide variety of soils, none of the salvaged soils will be removed from extant ERTI subpopulations and therefore will not alter the characterization of soils within buckwheat subpopulations nor affect the survival of any ERTI.	Modifications to this section were made for clarification.
		4.18.1.2	4-40		Impacts discussion should be expanded for Fish Lake Valley tui chub to include the additional reasons why the waters that provide the chub's habitat are not impacted by the Project, along with the information provided in Section 4.18.1.1. Potential impacts to the springs and thus to the species endemic to the wetlands downstream of the well/spring are not expected. As discussed in Piteau (2023b) (EIS SharePoint//Documents/Baseline Reports/Groundwater/Groundwater Report/Rhyolite Ridge GW Impacts Report) the extent of the 10-foot drawdown isopleth, and including the one-mile analysis buffer, does not reach these springs. In addition, the analysis in GLA 2024 indicates a source of groundwater for the springs is disconnected from the groundwater pumped in the OPA for construction water and dewatering.	EIS and SER text revised to state that no dewatering impacts are expected for Fish Lake Valley tui chub and pyrg due to their location outside the drawdown contour.
		4.2	4-3	1	Modify the sentence to say: "…..six sites are found on one side of the road corridor and 7 span the corridor. One of the 6 sites is outside of the boundary of the proposed 100-foot corridor and will be monitored during construction."	Added that the sites are either on one side of the corridor or span the corridor. Did not change numbers.
		4.2	4-3	3	Replace to avoid the 12 NRHP-eligible sites with "avoid or minimize adverse impacts to the 13 sites along the road if possible. (7 cannot be avoided)	Added "or minimize adverse impacts."
		4.2.1	4-3	4	Sites that span the width of the road corridor cannot be avoided. Please delete "if these cultural resources cannot be avoided" (and replace the text with "the Proposed Action would "	Deleted "if these cultural resources cannot be avoided."
		4.2.1	4-4	1-3	Text in this section needs to more clearly indicate that the effects are to sites that are not eligible for designation to NRHP or to architectural features that are not eligible.	Added "Sites that are not eligible for the NRHP require no further management under Section 106."
		4.2.2	4-4	23-25	Text in this section needs to more clearly indicate that the effects are to sites that are not eligible for designation to NRHP or to architectural features that are not eligible for designation to the NRHP.	Added "Sites that are not eligible for the NRHP require no further management under Section 106."
		4.21	4-77		The mitigation and monitoring measures identified in section 4.21 supplement the many design features identified within DEIS sections describing the alternative actions and in the context of individual resources that avoid, minimize, and mitigate for Project effects. A note to this effect should be added to the first introductory sentence of section 4.21.	No edits made.
		4.21.1	4-77		TE-01 requires survey of all portions of critical habitat that will be disturbed prior to construction and surveys can be completed no more than two weeks prior to disturbance.	Revision complete.

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					The following should be added to TE-01 “This work will be done in accordance with a protocol reviewed and approved by the BLM.”	
		4.22.1	4-80		Table 4-8. Threatened and Endangered Species: ERTI is pollinated by a generalist pollinator guild and Pollinator ‘relationships’ will not be permanently altered. The wording is awkward and not reflective of the biological meaning of the phrase – relationships are not expected to change. The overall number of pollinators in critical habitat will be reduced but considering the local nature of those pollinator communities (WestLand 2023) there is no data to support the notion that pollinator community composition would change nor is any data provided that would argue that pollinator services for ERTI would be reduced. There is no data provided in the EIS to support the conclusion provided in this table. Stating that the soil moisture in buckwheat subpopulations will be adversely affected by proposed drainage improvements overstates impacts and is not supported by best available science nor reflective of the topography in critical habitat.	Clarification added to Table 4-8.
		4.22.1	4-80		Table 4.8. Under N-S alternative change 19 to 16	Revised to 16 sites.
		4.22.2	4-83		Table 4.9. Under N-S alternative change 19 to 16	Revised to 16 sites.
		5.2	5-2	9th paragraph, last line	The sentence ”Follow-up consultation with the Timbisha Shoshone Tribe, including Project area visits, were completed on April 27, 2023, and November 9, 2023” should be edited to correspond with the table indicating that there was a site visit on 6/20/2023 as well.	Revision complete.
		5.2	5-2		Table 5.1 Add: BLM sent a letter requesting consultation with all of the cultural survey reports on 5/28/2024 was sent to: • the Walker River Paiute Tribe, • the Fort Independence Paiute Tribe, and the Lone Pine Paiute Shoshone Tribe	Section 5.2 has been updated with all Tribal consultation that occurred after release of the DEIS for public comment.
		5.2	5-3		Table 5-1. Additional tribes besides Timbisha were present at the 4/27 Field Consultation - Duckwater Shoshone, Bishop Paiute and Big Pine Paiute. Ioneer and Westland were there too and have consistent notes as to what tribes attended.	Table 5-1 has been revised with information provided by the BLM.
		Appendix B			Please remove eagle take permit from the list of required permits. It is not among the required permits identified by the proposed MPO and no final decision has been made as to whether an eagle take permit is warranted. Ioneer remains committed to implementing measures to reduce impacts to eagles and continued coordination with USFWS on these measures and refinements to Ioneer’s ECP.	Revision complete.
114	114.4	RhyoliteRidge-1-500690418_Attachment_2				Comment noted.
114	114.5	June 3, 2024 Submitted via BLM’s National NEPA Register (ePlanning) Prudence Crampton, Acting District Manager Rhyolite Ridge Lithium-Boron Mine EIS c/o BLM Battle Mountain District Office 50 Bastian Road Battle Mountain, NV 89820 RE: Comment on Bureau of Land Management’s Draft EIS for Rhyolite Ridge Lithium- Boron Project Dear Ms. Crampton: This letter is submitted on behalf of Ioneer Rhyolite Ridge LLC (Ioneer), the lithium-boron production developer that is the 100% owner of the Rhyolite Ridge Lithium-Boron Project (Rhyolite Ridge Project or Project) located on public lands in Esmeralda County, Nevada. Ioneer is pleased to provide these comments in support of the Bureau of Land Management’s (BLM) Draft Environmental Impact Statement (DEIS) for the Rhyolite Ridge Project. At Ioneer, we are committed to undertaking the Rhyolite Ridge Project in an environmentally responsible, sustainable and community-focused manner. The Project will produce battery components that will power 370,000 Electric Vehicles annually and strengthen domestic supply chains. The Project will provide the United States with a significant, long-term, and secure source of lithium and boron, two materials necessary for multiple clean energy technologies, including lithium-ion batteries for EVs and renewable energy storage systems. It will also provide significant jobs for Nevada, estimated to be 500 jobs during construction and 350 direct jobs during operations. The Project design also ensures carbon-free energy production and limited greenhouse gas emissions, with no evaporation ponds, no tailings dam, and a footprint that has evolved and been modified to avoid protected resources.				Comment noted.
114	114.6	**PROJECT ALTERNATIVES** Ioneer supports the North and South Overburden Storage Facility (OSF) Alternative described in the DEIS, and asks that BLM adopt this Alternative as BLM’s preferred alternative, and that BLM’s Record of Decision approve Ioneer’s Mine Plan of Operations (POO) for the Project with the North and South OSF Alternative. Ioneer first submitted a proposed POO to BLM for the Rhyolite Ridge Project in May 2020. This initial proposed POO would have involved relocating several subpopulations of Tiehm’s buckwheat, a rare plant that has only been found only along a section of the western boundary of the site’s mineral deposit on a total of about 10 acres to date and that U.S. Fish and Wildlife Service (USFWS) listed as an endangered species under the Endangered Species Act (ESA) on December 16, 2022. In response to concerns that successful relocation of Tiehm’s buckwheat has not yet been demonstrated, Ioneer made several revisions to its initial POO, ultimately redesigning its quarry to entirely avoid all of the Tiehm’s buckwheat subpopulations. This has been an iterative process that has required extensive evaluation of slope stability, quarry sequencing, collection of additional geotechnical data, and quarry wall stability assessment. The redesigned quarry was incorporated into Ioneer’s July 2022 revised POO, which forms the basis for the Proposed Action evaluated in the DEIS.				Comment noted. The EIS provides detailed analysis of the environmental effects of the Proposed Action and the North and South OSF Alternative.

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		After submitting the July 2022 POO to BLM, Ioneer continued to work with BLM and USFWS to identify ways of avoiding and minimizing not only direct impacts to Tiehm's buckwheat, but also to the critical habitat that USFWS designated for the species in December 2022. For Tiehm's buckwheat, the designated critical habitat includes the approximately 10 acres actually occupied by the plants and about 900 acres of surrounding land, which was designated to protect potential pollinators. Through those efforts, Ioneer developed an applicant-preferred alternative, submitted to BLM in June 2023, which forms the basis for the North and South OSF Alternative. This Alternative minimizes ground disturbance and avoids overburden storage within designated Tiehm's buckwheat critical habitat, reducing disturbance within critical habitat by 166 acres (46%) compared to the Proposed Action Alternative.	
114	114.7	**Resources** The following comments highlight specific information regarding the Rhyolite Ridge Project, its potential impacts, and the permitting process for your inclusion into the administrative record for this Project. We also include with this letter more detailed comments regarding various pertinent matters set forth in the DEIS for your consideration.	Comment noted.
114	114.8	Socio-Economic Benefits The Project will generate significant economic growth and downstream benefits in rural America, as well as promote domestic independence in the critical minerals market. As noted above, the Project would add 500 direct jobs during the construction phase (four years) and 350 direct jobs during the quarrying and processing phase (17 years) to the natural resources and mining sector, an increase of 26% and 19%, respectively. In addition, total calendar year direct labor income generated from the construction phase (four years) of the Project is estimated to be approximately $54,141,401 per calendar year, and total calendar year indirect and induced labor income is estimated to be approximately $2,619,995 per calendar year. Overall, the estimated calendar year direct value added from the construction phase would be approximately $102,788,237 per calendar year, and total calendar year indirect and induced value added would be approximately $10,028,255 per calendar year. These estimated figures demonstrate the significant infusion of economic growth to this rural region from the construction phase of the Project. Additional economic growth will also result from the quarrying and processing phase of the Project. Total direct calendar year labor income generated from quarrying and processing phase (17 years) of the Proposed Action is estimated to be approximately $37,898,981 per calendar year, and total calendar year indirect and induced labor income is estimated to be $1,833,996 per calendar year. The total direct calendar year output that would be generated by employment from the quarrying and processing phase is estimated to be approximately $125,142,545 per calendar year, and total indirect and induced calendar year output is estimated to be approximately $18,709,469 per calendar year. Total estimated direct calendar year value added from quarrying and processing phase would be approximately $71,951,766 per calendar year, and total indirect and induced calendar year value added would be approximately $7,019,778 per calendar year. These increases in income would significantly improve annual household incomes in the region for the life of the Project. Average annual earnings per job would likely increase, as mining provides a higher annual wage in comparison to other industries. Overall, this economic growth along with other sources of revenue, such as tax benefits from Project's operation estimated to generate between $13 million and $31 million annually for state and local governments, can be found in the DEIS in the "Social and Economic Values Supplemental Environmental Report (April 2024)."	The EIS presents detailed analysis of impacts to social and economic values in Sections 4.10 and 4.20.10.
114	114.9	Domestic Supply Chain In addition to substantial economic benefits, the Project also advances the nation's top priority to domestically produce and process critical minerals, with lithium being an essential component of this national strategy. The demand for domestically-sourced critical minerals is growing at a rapid pace, necessitating the need for projects like Rhyolite Ridge. As recently noted by President Biden, "As the world transitions to a clean energy economy, global demand for these critical minerals is set to skyrocket by 400-600 percent over the next several decades, and, for minerals such as lithium and graphite used in electric vehicle (EV) batteries, demand will increase by even more—as much as 4,000 percent." See White House Fact Sheet: Securing a Made in America Supply Chain for Critical Minerals (Feb. 22, 2022); see also Exec. Order No. 14017, America's Supply Chain (Feb. 24, 2021) (noting the nation's need for resilient, diverse, and secure supply chains to ensure our economic prosperity and national security and directing agency studies on the same, including with regard to high-capacity batteries). Congress has similarly stressed the need for domestic production of critical minerals, as reflected in its historic enactment of the Inflation Reduction Act (IRA), which provides funding and tax benefits to promote domestic mineral development, particularly in support of lithium needed for batteries and electric vehicles. P.L. 117-169 (2022). For example, the IRA's Qualifying Advanced Energy Project Credit (48C) program consists of $10 billion in new funding to allocate credits to projects in three categories: (1) clean energy manufacturing and recycling, (2) greenhouse gas emission reduction, and (3) critical materials refining, processing, and recycling. Similarly, in the IRA's Section 45X advanced manufacturing production tax credit for eligible components, including critical minerals such as lithium, incentivizes domestic production that is vital to strengthening the country's renewable energy and energy storage supply chains. Indeed, the IRA has accelerated the increased domestic demand for critical minerals such as lithium, making Ioneer's project an essential part of the United States' portfolio: "Spurred by the IRA, energy- transition-related US demand for the critical minerals lithium, nickel and cobalt, taken together, will be 23 times higher in 2035 than it was in 2021." See S&P Inflation Reduction Act: Impact on North America Metals and Minerals Market (Aug. 2023). In short, Ioneer's Project is the embodiment of these national priorities, including its receipt of a conditional commitment for a $700 million Advanced Technology Vehicles Manufacturing (ATVM) loan from the U.S. Department Energy, where its production and processing of lithium will not only achieve the domestic independence that is so critical to our nation's energy and economic security, but also will ensure that other downstream tax benefits associated with domestic content requirements for high capacity batteries and electric vehicles are achieved.	Comment noted.
114	114.10	ESA – Tiehm's Buckwheat The changes Ioneer has made to the Project in the North and South OSF Alternative to avoid and minimize impacts to Tiehm's buckwheat and its designated critical habitat are highlighted in the discussion of proposed alternatives, above. In addition, Ioneer has developed a suite of fifteen applicant proposed conservation measures (APCMs), in consultation with USFWS and BLM. These are actions that Ioneer has taken or will be taking to protect Tiehm's buckwheat while providing minerals essential to address global environmental issues. APCMs include: • Fencing around each buckwheat subpopulation and the designated critical habitat; • Development of a pollinator habitat reclamation program within critical habitat; • Control of nonnative, invasive, and noxious weeds, using only methods approved by BLM and USFWS; • Dust control and monitoring of fugitive dust emissions within Tiehm's buckwheat subpopulations;	The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat for the Proposed Action and alternatives in Sections 4.12 and 4.20.12.3. Additional details are provided in the Threatened and Endangered Species SER. The analysis included consideration of the respective Buckwheat Protection Plans for the Proposed Action and North and South OSF Alternative.

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		• Regular monitoring of the condition of critical habitat and of the demographics and recruitment of Tiehm's buckwheat subpopulations; • Development of in-quarry overburden storage (back-fill) to minimize ground disturbance and improve stability; • Adoption of site-tailored mining techniques to maintain stable quarry walls; • Geotechnical monitoring; and • Implementation of closure plans to provide long term stability once mining is completed. The DEIS references the Buckwheat Protection Plan & Applicant Proposed Conservation Measures developed in consultation with USFWS and BLM, which further details the APCMs for Tiehm's buckwheat and its designated critical habitat. Ioneer welcomes the addition of these important, protective measures for inclusion in any final decision of BLM and the USFWS. Ioneer also continues to consult with USFWS and BLM regarding potential ways to further minimize impacts to designated Tiehm's buckwheat critical habitat. In response to USFWS concerns regarding the proximity of disturbance to the Tiehm's buckwheat subpopulations, Ioneer has developed revisions to some existing APCMs and added three new APCMs since the DEIS was published. Information regarding these proposed changes was provided to BLM last week. • In response to a specific USFWS recommendation to consider relocating the Project's haul road, Ioneer has proposed a realignment of the haul road from the west to the east side of the quarry. This moves the haul road away from the Tiehm's buckwheat subpopulations that are located south of Cave Spring Road, thereby achieving the USFWS' objective of reducing the effects from dust, artificial light, and noise. This change also reduces overall disturbance of critical habitat by about 5 acres. • Addition of regular monitoring of light impacts and an annual audit of light fixtures. • Addition of noise monitoring proximate to Tiehm's buckwheat subpopulations. • Addition of monitoring of insect visitors and pollinator diversity and abundance. • Addition of a commitment to develop an ex-situ Tiehm's buckwheat conservation program in cooperation with USFWS and BLM. The program will build on Ioneer's ongoing, permitted seed collection work and its existing propagation of Tiehm's buckwheat in a greenhouse that Ioneer constructed for this purpose.	
114	114.11	Water Resources The DEIS provides a thorough discussion of potential impacts associated with the Project's water supply. Water from the dewatering system that supports quarry operations will supply the Project during the construction phase. During the Project's operational phase, the water supply will be supplemented by wells in Fish Lake Valley (from new or existing agricultural wells) and the water withdrawals from those wells will be offset by reducing existing agricultural water use, as noted in the DEIS. Groundwater modeling has shown that the Project's water use will not have a significant impact on the water table in Fish Lake Valley or around the Project site. Separately, an evaluation of the Valley's hydrology and water chemistry has shown that the Project will not affect surface waters important to sensitive species. Ioneer's water use also will be subject to any monitoring or other conditions that the State Engineer (head of the Nevada Division of Water Resources) attaches to approval of changes in the nature of water use and points of water withdrawal.	Impacts from dewatering on surface water and groundwater are discussed in EIS Sections 4.16 and 4.20.16.
114	114.12	**Tribal Engagement** A. Ioneer's Tribal Engagement Track Record Ioneer is committed to open and meaningful engagement with tribal nations and has proactively taken steps to engage with affected tribal nations on a parallel track with BLM's government-to-government consultation efforts, including BLM's responsibilities under Section 106 of the National Historic Preservation Act (NHPA). Ioneer has taken the initiative to engage early with tribes, has not waited for official federal permitting reviews to commence and has not relied solely on the federal government to government process to fulfill its tribal engagement commitments. Ioneer's first engagement was in 2020 during a BLM-sponsored site visit, prior to Ioneer holding its pre-application meeting with BLM in 2020. Furthermore, this engagement has been recurring and extensive. For example, since March 2020, Ioneer has had over 325 contacts with tribal nations or other tribal representatives in the form of written correspondence, phone calls, meetings including tribal council meetings, one-on-one conversations, or site visits. Many of these have been repeat engagements with specific tribes who have expressed an interest in ongoing conversations. From these engagements, Ioneer has learned about potential opportunities to collaborate with tribal nations on Inflation Reduction Act incentives or other economic development opportunities, areas of concern regarding cultural resources, or questions about the proposed Project's location, operational details, and employment opportunities. This feedback and engagement have been invaluable and Ioneer has adjusted its approach, project layout, and methodology in direct response to information learned. One specific accomplishment that Ioneer and certain tribal nations have achieved is the development of a tribal cultural resources monitoring MOU that addressed Ioneer's geotechnical drilling activity. Over several months, Ioneer and multiple tribal nations engaged in extensive conversations and mutually developed the MOU, which has previously been provided to BLM. The approach outlined in this early-stage MOU is now being applied to BLM's consideration of cultural resource monitoring provisions in its NHPA Memorandum of Understanding and Historic Properties Treatment Plan. This is a great example of how early collaboration can build mutual understanding and integration of tribal traditional knowledge into the permitting process. We look forward to implementing similar measures that emerge from the Section 106 consultation process. Additional highlights of Ioneer's tribal engagement efforts include: • BLM sponsored the first site visit during pre-planning in March 2020 with Ioneer participation. • BLM sponsored a site visit in March 2022 as part of the Section 106 consultation process. As a result of this meeting, Ioneer adjusted its plan layout to avoid important cultural resources. • BLM sponsored site visits in April 2023, June 2023, and November 2023 as part of Section 106 process, with Ioneer's support and participation. • Ioneer had tribal participation for cultural monitoring purposes in June/July and November 2023, for surface disturbance related to a 2920 permit for geotechnical drilling activity requested to support the Ioneer NEPA process. • Since 2021, Ioneer has provided written invitations to, and notice of, Fish Lake Valley Community meetings to Tribal Chairs and designated administrators, resulting in valuable tribal member participation. • Tribal members have been attending Fish Lake Valley Community meetings since January 2020. • Ioneer has presented to tribal councils for various tribal nations, starting in 2021, with some meetings occurring on repeat occasions with certain tribes.	Comment noted. Section 5.0 of the EIS describes government-to-government consultation and coordination for the Project. Tribal consultation is ongoing through the life of the Project and will continue. Table 5-1 has been updated with information as provided by the BLM.

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		• Ioneer provided written invitation to tribal chairs and designated administrators to meet when NEPA scoping process began in December 2022. • Ioneer had printed copies of the DEIS hand delivered to affected tribal nations across Nevada with the offer to meet to discuss any questions or concerns. • Ioneer provided invitations to the opening event for its Tiehm's Buckwheat Conservation Center greenhouse facility in Gardnerville in May 2023, resulting in tribal participation. In addition to these efforts, Ioneer has also supported and attended various tribal-related and cultural events. For example: • Scholarship Award as part of Ioneer's "Sustainable World" scholarship program • Duckwater Education Night • Ely Shoshone Fandango • Walker River Pinenut Festival (Schurz) • Pabanamanina Powwow (Bishop) • Regional Tribal Operations Caucus • ITCN Environmental Managers Meeting (Reno) • RES Economic Development Conference • U.S. Department of Energy Tribal Clean Energy Conference • Sponsorship support for earth day events, powwows, construction, and tribal conferences In addition to the above outreach, Ioneer has met with U.S. Department of Energy officials and other relevant agencies to discuss opportunities for economic development or other benefits for tribes, including under the Inflation Reduction Act. Ioneer, along with the tribes and federal agencies, have devoted significant time and resources to explore potential opportunities for partnerships in economic development ventures and other community benefit opportunities. This engagement remains ongoing and promising, and we hope it will bear fruit in the future. Lastly, Ioneer understands the importance of having in-house expertise regarding tribal affairs and cultural sensitivity. To that end, Ioneer established a tribal liaison position that has been filled since March 2023, which has resulted in enhanced communication and relationship building with tribal nations. For example, the tribal liaison was instrumental in coordinating communication among nine tribes to discuss and develop the MOU for cultural resource monitoring. In sum, Ioneer will continue its engagement with tribal nations to ensure that their interests and concerns are considered in the development of this Project. The protection of tribal cultural resources and exploration of tribal economic development opportunities is not incongruent with the development of this landmark Project that will create secure domestic supply of critical materials and support for emerging low-carbon or carbon-free technologies. B. BLM Tribal Engagement In addition to Ioneer's own efforts, BLM has been engaged in meaningful government-to- government consultations with the tribal nations, including under the NHPA's Section 106 consultation process. See Rhyolite Ridge, DEIS, Section 5.0. For example, BLM has discussed in the draft EIS its extensive consultations with the tribes and how it has adopted an approach that strives to avoid impacts to cultural resources within and near the Operational Project Area (OPA), and in the event avoidance is not feasible, to provide for agreed-upon procedures to mitigate impacts, as follows: A Class III cultural resource survey was performed within and near the OPA. The types and locations of cultural resources within this area have been documented and would be avoided, where possible, during all phases of Project implementation. In the event impacts to potentially eligible or unevaluated cultural resources are unavoidable, Ioneer would undertake actions in accordance with the Memorandum of Agreement (MOA) between the BLM, Nevada State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation, which is currently in preparation. For eligible cultural resources that cannot be avoided by the Project, Ioneer is working with the BLM and SHPO to develop a Historic Properties Treatment Plan (HPTP) for data recovery, archaeological and architectural documentation, and report preparation that would be based on the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (NPS 1983). See Rhyolite Ridge DEIS, Section 2.1.13.3. BLM is currently in the stages of the development of an MOA and HPTP to address any unavoidable impacts to cultural resources. With Ioneer's support, BLM has provided affected tribes with a draft MOA for their review and comment and will be providing a draft HPTP as well as a Monitoring and Discovery Plan in the near term. Ioneer welcomes the inclusion of cultural resources monitoring, discovery, and training processes within these documents to ensure that tribal knowledge and interests are known during the construction of the Project. Ioneer also recommends that BLM include in the administrative record any additional information regarding its communications with tribal nations, as the DEIS summarizes engagement through November, 2023. In closing, Ioneer appreciates BLM's efforts to ensure that the Project is sited and developed in a manner that is respectful of cultural resources protection and consonant with environmental stewardship. In furtherance of this shared goal, we also may submit additional feedback once Ioneer has had an opportunity to review the public comment record published by BLM after the close of the June 3rd public comment deadline. We look forward to proceeding to the next stages in the NEPA and related permitting and consultation processes in the coming months. Sincerely, Bernard Rowe President	
114	114.13	RhyoliteRidge-1-500690418_Attachment_3 Ioneer Tribal Communication Report As of 5/31/2024 Prepared by Ioneer*	The coordination and communication log provided has been added as Appendix A in the Native American Traditional Values SER.

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		Communication date	**Communication method**	**Stakeholders linked**	**Communication last updated by**	The coordination and communication log provided has been added as Appendix A in the Native American Traditional Values SER.
		Jan 23, 2020	In-person / face-to-face	Timbisha Shoshone Tribe	tjim	
		Jun 22, 2020	In-person / face-to-face - Site Visit	Duckwater Shoshone Tribe	tjim	
		Jun 22, 2020	In-person / face-to-face - Site Visit	Timbisha Shoshone Tribe	tjim	
		Apr 01, 2021	Letter/mail	Timbisha Shoshone Tribe	tjim	
		Apr 01, 2021	Letter/mail	Duckwater Shoshone Tribe	tjim	
		Apr 01, 2021	Letter/mail	Yomba Shoshone Tribe	tjim	
		Apr 05, 2021	Phone call	Yomba Shoshone Tribe	tjim	
		Apr 08, 2021	Phone call	Duckwater Shoshone Tribe	tjim	
		Apr 12, 2021	Phone call	Duckwater Shoshone Tribe	tjim	
		Apr 14, 2021	Phone call	Yomba Shoshone Tribe	tjim	
		Apr 15, 2021	Video Conference	Duckwater Shoshone Tribe	tjim	
		Apr 23, 2021	Video Conference	Timbisha Shoshone Tribe	tjim	
		Apr 27, 2021	Phone call	Yomba Shoshone Tribe	tjim	
		Jun 25, 2021	In-person / face-to-face	Timbisha Shoshone Tribe	tjim	
		Jul 09, 2021	Email	Timbisha Shoshone Tribe	tjim	
		Jul 19, 2021	Email	Duckwater Shoshone Tribe	tjim	
		Jul 19, 2021	Email	Yomba Shoshone Tribe	tjim	
		Feb 08, 2022	Letter/mail	Duckwater Shoshone Tribe	tjim	
		Feb 08, 2022	Letter/mail	Timbisha Shoshone Tribe	tjim	
		Feb 08, 2022	Letter/mail	Yomba Shoshone Tribe	tjim	
		Feb 17, 2022	In-person / face-to-face	Timbisha Shoshone Tribe	tjim	
		Mar 17, 2022	In-person / face-to-face	Duckwater Shoshone Tribe	tjim	
		Mar 25, 2022	In-person / face-to-face - Site Visit	Duckwater Shoshone Tribe	tjim	
		Aug 05, 2022	In-person / face-to-face	Duckwater Shoshone Tribe	tjim	
		Aug 24, 2022	Email	Timbisha Shoshone Tribe	tjim	
		Nov 22, 2022	Email	Duckwater Shoshone Tribe	tjim	
		Nov 22, 2022	Email	Timbisha Shoshone Tribe	tjim	
		Nov 22, 2022	Email	Yomba Shoshone Tribe	tjim	
		Dec 20, 2022	Email	Duckwater Shoshone Tribe	tjim	
		Dec 20, 2022	Email	Timbisha Shoshone Tribe	tjim	
		Dec 20, 2022	Email	Yomba Shoshone Tribe	tjim	
		Jan 06, 2023	Email	Big Pine Paiute Tribe	tjim	
		Apr 03, 2023	Email	Big Pine Paiute Tribe	tjim	
		Apr 03, 2023	Email	Bishop Paiute Tribe	tjim	
		Apr 03, 2023	Email	Timbisha Shoshone Tribe	tjim	
		Apr 03, 2023	Email	Walker River Paiute Tribe	tjim	
		Apr 04, 2023	Email	Fort Independence Indian Reservation	tjim	
		Apr 04, 2023	Email	Lone Pine Paiute Shoshone Tribe	tjim	
		Apr 04, 2023	Email	Utu Utu Gwaitu Paiute Tribe	tjim	
		Apr 05, 2023	Phone call	Lone Pine Paiute Shoshone Tribe	tjim	
		Apr 07, 2023	Phone call	Utu Utu Gwaitu Paiute Tribe	tjim	

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		Apr 13, 2023	Email	Fallon Paiute Shoshone Tribe	tjim	
		Apr 17, 2023	Phone call	Walker River Paiute Tribe	tjim	
		Apr 18, 2023	Phone call	Big Pine Paiute Tribe	tjim	
		Apr 20, 2023	Video Conference	Inter-Tribal Council of Nevada Inc	tjim	
		Apr 20, 2023	Video Conference	Inter-Tribal Council of Nevada Inc	tjim	
		Apr 20, 2023	Video Conference	Inter-Tribal Council of Nevada	tjim	
		April 22,2023	In-person / face-to-face	Fallon Paiute Shoshone Tribe	tjim	
		Apr 23, 2023	In-person / face-to-face	Big Pine Paiute Tribe	tjim	
		Apr 25, 2023	Email	Fallon Paiute Shoshone Tribe	tjim	
		April 27,2023	In-person / face-to-face - Site Visit	Big Pine Paiute Tribe, Bishop Paiute Tribe, Timbisha Shoshone Tribe, Duckwater Shoshone Tribe	tjm	
		Apr 28, 2023	In-person / face-to-face	Walker River Paiute Tribe	tjim	
		Apr 28, 2023	Email	Walker River Paiute Tribe	tjim	
		May 03, 2023	In-person / face-to-face	Duckwater Shoshone Tribe	tjim	
		May 04, 2023	Email	Bishop Paiute Tribe	tjim	
		May 04, 2023	Email	Duckwater Shoshone Tribe	tjim	
		May 04, 2023	Email	Timbisha Shoshone Tribe	tjim	
		May 04, 2023	Email	Big Pine Paiute Tribe	tjim	
		May 09, 2023	Email	Duckwater Shoshone Tribe	tjim	
		May 10, 2023	Phone call	Bishop Paiute Tribe	tjim	
		May 10, 2023	Phone call	Timbisha Shoshone Tribe	tjim	
		May 11, 2023	Phone call	Fallon Paiute Shoshone Tribe	tjim	
		May 10, 2023	Phone call	Timbisha Shoshone Tribe	tjim	
		May 11, 2023	Phone call	Fallon Paiute Shoshone Tribe	tjim	
		May 12, 2023	Video Conference	Duckwater Shoshone Tribe	tjim	
		May 17, 2023	Text message	Fallon Paiute Shoshone Tribe	tjim	
		May 24, 2023	Video Conference	Puyenpa Services, LLC	tjim	
		May 30, 2023	In-person / face-to-face	Bishop Paiute Tribe	tjim	
		May 30, 2023	In-person / face-to-face	Timbisha Shoshone Tribe	tjim	
		Jun 02, 2023	In-person / face-to-face	Walker River Paiute Tribe	tjim	
		Jun 06, 2023	Email	Shoshone-Paiute Tribes of Duckvalley Indian Reservation	tjim	
		Jun 06, 2023	Email	Walker River Paiute Tribe	tjim	
		Jun 07, 2023	Email	Bishop Paiute Tribe	tjim	
		Jun 07, 2023	Phone call	Ely Shoshone Tribe	tjim	
		Jun 08, 2023	Email	Timbisha Shoshone Tribe	tjim	
		Jun 09, 2023	Email	Timbisha Shoshone Tribe	tjim	
		Jun 12, 2023	Phone call	Big Pine Paiute Tribe	tjim	
		Jun 12, 2023	Voicemail	Yomba Shoshone Tribe	tjim	
		Jun 13, 2023	Email	Ely Shoshone Tribe	tjim	
		Jun 13, 2023	Email	Ely Shoshone Tribe	tjim	
		Jun 13, 2023	Video Conference	Duckwater Shoshone Tribe	tjim	
		Jun 14, 2023	Phone call	Yomba Shoshone Tribe	tjim	
		Jun 14, 2023	Email	Bishop Paiute Tribe	tjim	
		Jun 14, 2023	In-person / face-to-face	Walker River Paiute Tribe	tjim	
		Jun 16, 2023	Email	Bishop Paiute Tribe	tjim	
		Jun 16, 2023	Phone call	Yomba Shoshone Tribe	tjim	

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		Jun 20, 2023	In-person / face-to-face - Site Visit	Timbisha Shoshone Tribe	tjm	
		Jun 20, 2023	In-person / face-to-face - Cultural Resource Monitoring	Timbisha Shoshone Tribe	tjim	
		Jun 22, 2023	Email	Duckwater Shoshone Tribe	tjim	
		Jun 22, 2023	Email	Timbisha Shoshone Tribe	tjim	
		Jun 27, 2023	In-person / face-to-face	Timbisha Shoshone Tribe	tjim	
		Jul 10, 2023	Video Conference	Puyenpa Services, LLC	tjim	
		Jul 11, 2023	Email	Walker River Paiute Tribe	tjim	
		Jul 11, 2023	In-person / face-to-face	Ely Shoshone Tribe	tjim	
		Jul 20, 2023	Email	Bishop Paiute Tribe	tjim	
		Jul 20, 2023	Email	Utu Utu Gwaitu Paiute Tribe	tjim	
		Jul 25, 2023	Phone call	Utu Utu Gwaitu Paiute Tribe	tjim	
		Jul 26, 2023	Email	Ely Shoshone Tribe	tjim	
		Jul 26, 2023	Email	Utu Utu Gwaitu Paiute Tribe	tjim	
		Jul 29, 2023	In-person / face-to-face	Ely Shoshone Tribe	tjim	
		Aug 01, 2023	Email	Bishop Paiute Tribe	tjim	
		Aug 01, 2023	Email	Ely Shoshone Tribe	tjim	
		Aug 01, 2023	Email	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Aug 01, 2023	Email	Utu Utu Gwaitu Paiute Tribe	tjim	
		Aug 03, 2023	Email	Ely Shoshone Tribe	tjim	
		Aug 03, 2023	Email	Utu Utu Gwaitu Paiute Tribe	tjim	
		Aug 03, 2023	Email	Ely Shoshone Tribe	tjim	
		Aug 03, 2023	Email	Utu Utu Gwaitu Paiute Tribe	tjim	
		Aug 08, 2023	In-person / face-to-face	Inter-Tribal Council of Nevada Inc	tjim	
		Aug 08, 2023	Video Conference	Inter-Tribal Council of Nevada	tjim	
		Aug 15, 2023	Email	Bishop Paiute Tribe	tjim	
		Aug 18, 2023	Email	Bishop Paiute Tribe	tjim	
		Aug 18, 2023	Phone call	Yomba Shoshone Tribe	tjim	
		Aug 18, 2023	Video Conference	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Aug 18, 2023	Video Conference	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Aug 21, 2023	Text message	Yomba Shoshone Tribe	tjim	
		Aug 22, 2023	Email	Bishop Paiute Tribe	tjim	
		Aug 22, 2023	Email	Ely Shoshone Tribe	tjim	
		Aug 22, 2023	Email	Utu Utu Gwaitu Paiute Tribe	tjim	
		Aug 30, 2023	Email	Bishop Paiute Tribe	tjim	
		Aug 30, 2023	Email	Ely Shoshone Tribe	tjim	
		Sep 05, 2023	Email	Bishop Paiute Tribe	tjim	
		Sep 13, 2023	Phone call	Duckwater Shoshone Tribe	cyeftich	
		Sep 15, 2023	Email	Ely Shoshone Tribe	tjim	
		Sep 15, 2023	Email	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Sep 16, 2023	In-person / face-to-face	Walker River Paiute Tribe	tjm	

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		Sep 18, 2023	Email	Big Pine Paiute Tribe	tjim	
		Sep 19, 2023	Email	Bishop Paiute Tribe	tjim	
		Sep 19, 2023	Video Conference	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Sep 23, 2023	In-person / face-to-face	Bishop Paiute Tribe	tjm	
		Sep 29, 2023	Email	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Sep 29, 2023	Email	Bishop Paiute Tribe	tjim	
		Sep 29, 2023	Email	Ely Shoshone Tribe	tjim	
		Oct 02, 2023	Email	Ely Shoshone Tribe	tjim	
		Oct 03, 2023	Email	Ely Shoshone Tribe	tjim	
		Oct 03, 2023	Phone call	Big Pine Paiute Tribe	tjim	
		Oct 03, 2023	Phone call	Bishop Paiute Tribe	tjim	
		Oct 03, 2023	Phone call	Utu Utu Gwaitu Paiute Tribe	tjim	
		Oct 03, 2023	Phone call	Lone Pine Paiute Shoshone Tribe	tjim	
		Oct 03, 2023	Phone call	Walker River Paiute Tribe	tjim	
		Oct 03, 2023	Phone call	Yomba Shoshone Tribe	tjim	
		Oct 04, 2023	Phone call	Big Pine Paiute Tribe	tjim	
		Oct 04, 2023	Phone call	Bishop Paiute Tribe	tjim	
		Oct 04, 2023	Phone call	Utu Utu Gwaitu Paiute Tribe	tjim	
		Oct 04, 2023	Phone call	Lone Pine Paiute Shoshone Tribe	tjim	
		Oct 04, 2023	Phone call	Ely Shoshone Tribe	tjim	
		Oct 04, 2023	Phone call	Lone Pine Paiute Shoshone Tribe	tjim	
		Oct 04, 2023	Phone call	Ely Shoshone Tribe	tjim	
		Oct 04, 2023	Text message	Walker River Paiute Tribe, Walker River Paiute Tribe	tjim	
		Oct 04, 2023	Text message	Timbisha Shoshone Tribe	tjim	
		Oct 06, 2023	Email	Bishop Paiute Tribe	tjim	
		Oct 06, 2023	Email	Ely Shoshone Tribe	tjim	
		Oct 06, 2023	Email	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Oct 06, 2023	Email	Bishop Paiute Tribe	tjim	
		Oct 09, 2023	Phone call	Inter-Tribal Council of Nevada Inc	tjim	
		Oct 09, 2023	Phone call	Inter-Tribal Council of Nevada Inc	tjim	
		Oct 11, 2023	Email	Bishop Paiute Tribe	tjim	
		Oct 11, 2023	Email	Ely Shoshone Tribe	tjim	
		Oct 11, 2023	Email	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Oct 11, 2023	Phone call	Big Pine Paiute Tribe	tjim	
		Oct 11, 2023	Phone call	Duckwater Shoshone Tribe	tjim	
		Oct 13, 2023	Video Conference	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Oct 18, 2023	In-person / face-to-face	Inter-Tribal Council of Nevada Inc	cyeftich	
		Oct 23, 2023	Phone call	Inter-Tribal Council of Nevada Inc	tjim	
		Oct 23, 2023	Phone call	Inter-Tribal Council of Nevada	tjim	
		Oct 24, 2023	Email	Bishop Paiute Tribe	tjim	

Comment Letter No.	Comment Number	Comment				Response
		Oct 24, 2023	Email	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Oct 24, 2023	Email	Ely Shoshone Tribe	tjim	
		Oct 25, 2023	Email	Big Pine Paiute Tribe	tjim	
		Oct 26, 2023	In-person / face-to-face	Bishop Paiute Tribe	tjim	
		Oct 30, 2023	In-person / face-to-face	Duckwater Shoshone Tribe	tjim	
		Oct 31, 2023	Email	Big Pine Paiute Tribe	tjim	
		Oct 31, 2023	Email	Bishop Paiute Tribe	tjim	
		Oct 31, 2023	Email	Ely Shoshone Tribe	tjim	
		Oct 31, 2023	Email	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Nov 02, 2023	Email	Big Pine Paiute Tribe	tjim	
		Nov 06, 2023	Phone call	Inter-Tribal Council of Nevada	tjim	
		Nov 06, 2023	Video Conference	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Nov 06, 2023	Newspaper article	Timbisha Shoshone Tribe	tjim	
		Nov 08, 2023	In-person / face-to-face	Shoshone-Paiute Tribes of Duckvalley Indian Reservation	cyeftich	
		Nov 08, 2023	In-person / face-to-face	Inter-Tribal Council of Nevada	tjim	
		Nov 08, 2023	Email	Big Pine Paiute Tribe	tjim	
		Nov 09, 2023	Text message	Big Pine Paiute Tribe	tjim	
		Nov 09, 2023	Text message	Timbisha Shoshone Tribe	tjim	
		Nov 09, 2023	Text message	Big Pine Paiute Tribe	tjim	
		Nov 09, 2023	Text message	Timbisha Shoshone Tribe	tjim	
		Nov 09, 2023	In-person / face-to-face - Site Visit	Timbisha Shoshone Tribe	tjm	
		Nov 10, 2023	In-person / face-to-face - Cultural Resource Monitoring	Timbisha Shoshone Tribe, Big Pine Paiute Tribe	tjm	
		Nov 11, 2023	Text message	Margaret Cortez	tfalk	
		Nov 13, 2023	Text message	Timbisha Shoshone Tribe	tjim	
		Nov 14, 2023	Text message	Timbisha Shoshone Tribe	tjim	
		Nov 15, 2023	In-person / face-to-face - Cultural Resource Monitoring	Timbisha Shoshone Tribe, Big Pine Paiute Tribe	tjim	
		Nov 20, 2023	Phone call	Inter-Tribal Council of Nevada	tjim	
		Nov 20, 2023	Text message	Timbisha Shoshone Tribe	tjim	
		Nov 28, 2023	In-person / face-to-face	UNR Office of Indigenous Relations	tjim	
		Nov 28, 2023	Text message	Big Pine Paiute Tribe	tjim	
		Nov 28, 2023	Text message	Danelle Guiterrez	tjim	
		Nov 28, 2023	Text message	Timbisha Shoshone Tribe	tjim	
		Nov 29, 2023	Phone call	Duckwater Shoshone Tribe	cyeftich	
		Nov 29, 2023	Text message	Timbisha Shoshone Tribe	tjim	
		Nov 30, 2023	Email	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Nov 30, 2023	Email	Big Pine Paiute Tribe	tjim	
		Nov 30, 2023	Email	Ely Shoshone Tribe	tjim	
		Nov 30, 2023	In-person / face-to-face	Yomba Shoshone Tribe	tjim	
		Nov 30, 2023	Email	Bishop Paiute Tribe	tjim	
		Dec 04, 2023	Phone call	Inter-Tribal Council of Nevada	tjim	

Comment Letter No.	Comment Number	Comment				Response
		Dec 05, 2023	Text message	Timbisha Shoshone Tribe	tjim	
		Dec 05, 2023	Video Conference	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Dec 06, 2023	Phone call	Duckwater Shoshone Tribe	cyeftich	
		Dec 06, 2023	Text message	Big Pine Paiute Tribe	tjim	
		Dec 07, 2023	In-person / face-to-face	Yomba Shoshone Tribe	tjim	
		Dec 07, 2023	Video Conference	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Dec 07, 2023	Text message	Danelle Gutierrez	tjim	
		Dec 08, 2023	Text message	Danelle Guiterrez	tjim	
		Dec 08, 2023	Text message	Big Pine Paiute Tribe	tjim	
		Dec 11, 2023	Email	Bishop Paiute Tribe	tjim	
		Dec 11, 2023	Email	Bishop Paiute Tribe	tjim	
		Dec 13, 2023	Email	Big Pine Paiute Tribe	tjim	
		Dec 13, 2023	In-person / face-to-face	Big Pine Paiute Tribe	tjim	
		Dec 14, 2023	Email	Big Pine Paiute Tribe	tjim	
		Dec 15, 2023	Text message	Timbisha Shoshone Tribe	tjim	
		Dec 18, 2023	Phone call	Inter-Tribal Council of Nevada	tjim	
		Dec 18, 2023	Phone call	Duckwater Shoshone Tribe	cyeftich	
		Dec 18, 2023	Text message	Cheyenne Stone	tjim	
		Dec 18, 2023	Text message	Big Pine Paiute Tribe	tjim	
		Dec 20, 2023	In-person / face-to-face	Timbisha Shoshone Tribe	tjim	
		Dec 18, 2023	Text message	Big Pine Paiute Tribe	tjim	
		Dec 20, 2023	In-person / face-to-face	Timbisha Shoshone Tribe	tjim	
		Jan 02, 2024	Text message	Big Pine Paiute Tribe	tjim	
		Jan 04, 2024	Email	Bishop Paiute Tribe	tjim	
		Jan 08, 2024	Phone call	Inter-Tribal Council of Nevada Inc	tjim	
		Jan 08, 2024	Phone call	Inter-Tribal Council of Nevada Inc	tjim	
		Jan 08, 2024	Phone call	Inter-Tribal Council of Nevada	tjim	
		Jan 09, 2024	Email	Andrea Martinez (Walker River Paiute Tribe	tjim	
		Jan 13, 2024	Phone call	Utu Utu Gwaitu Paiute Tribe	tjim	
		Jan 13, 2024	Phone call	Utu Utu Gwaitu Paiute Tribe	tjim	
		Jan 15, 2024	Email	Bishop Paiute Tribe	tjim	
		Jan 15, 2024	Email	Ely Shoshone Tribe	tjim	
		Jan 15, 2024	Email	Timbisha Shoshone Tribe, Bishop Paiute Tribe, Big Pine Paiute Tribe, Walker River Paiute Tribe, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Utu Utu Gwaitu Paiute Tribe, Lone Pine Paiute Shoshone Tribe	tjim	
		Jan 17, 2024	Email	Ely Shoshone Tribe	tjim	
		Jan 17, 2024	Newspaper article	Timbisha Shoshone Tribe	tjim	
		Jan 18, 2024	Email	Duckwater Shoshone Tribe, Duckwater Shoshone Tribe	cyeftich	
		Jan 18, 2024	Phone call	Duckwater Shoshone Tribe	cyeftich	
		Jan 21, 2024	Email	Walker River Paiute Tribe, Walker River Paiute Tribe, Walker River Paiute Tribe	tjim	
		Jan 21, 2024	Phone call	Bishop Paiute Tribe	tjim	
		Jan 21, 2024	Text message	Timbisha Shoshone Tribe	tjim	
		Jan 22, 2024	Email	Bishop Paiute Tribe	tjim	
		Jan 22, 2024	Social media	Big Pine Paiute Tribe	tjim	
		Jan 22, 2024	Phone call	Inter-Tribal Council of Nevada	tjim	

Comment Letter No.	Comment Number	Comment				Response
		Jan 23, 2024	Email	Big Pine Paiute Tribe	tjim	
		Jan 24, 2024	Email	Duckwater Shoshone Tribe	tjim	
		Jan 25, 2024	Email	Duckwater Shoshone Tribe	tjim	
		Jan 25, 2024	Email	Timbisha Shoshone Tribe	tjim	
		Jan 26, 2024	Email	Big Pine Paiute Tribe	tjim	
		Jan 26, 2024	Phone call	Utu Utu Gwaitu Paiute Tribe	tjim	
		Jan 29, 2024	Phone call	Duckwater Shoshone Tribe	cyeftich	
		Jan 29, 2024	Text message	Timbisha Shoshone Tribe	tjim	
		Jan 30, 2024	Email	Ely Shoshone Tribe	tjim	
		Jan 30, 2024	In-person / face-to-face	Yomba Shoshone Tribe	tjim	
		Jan 30, 2024	In-person / face-to-face	UNR Office of Indigenous Relations	tjim	
		Jan 31, 2024	In-person / face-to-face	Walker River Paiute Tribe	tjim	
		Feb 02, 2024	Video Conference	Duckwater Shoshone Tribe, Puyenpa Services, LLC, Puyenpa Services, LLC	tjim	
		Feb 05, 2024	Text message	Timbisha Shoshone Tribe, Timbisha Shoshone Tribe	tjim	
		Feb 06, 2024	Email	Lone Pine Paiute Shoshone Tribe	tjim	
		Feb 06, 2024	Phone call	Lone Pine Paiute Shoshone Tribe	tjim	
		Feb 14, 2024	Email	Timbisha Shoshone Tribe	tjim	
		Feb 15, 2024	Email	Bishop Paiute Tribe	tjim	
		Feb 15, 2024	Email	Timbisha Shoshone Tribe	tjim	
		Feb 16, 2024	Email	Duckwater Shoshone Tribe	tjim	
		Feb 23, 2024	Email	Duckwater Shoshone Tribe	tjim	
		Feb 23, 2024	Video Conference	Duckwater Shoshone Tribe, Duckwater Shoshone Tribe, Duckwater Shoshone Tribe, Puyenpa Services, LLC, Puyenpa Services, LLC	tjim	
		Feb 28, 2024	Email	Andrea Martinez (Walker River Paiute Tribe	tjim	
		Mar 04, 2024	Email	Timbisha Shoshone Tribe	tjim	
		Mar 05, 2024	Video Conference	Duckwater Shoshone Tribe, Puyenpa Services, LLC, Puyenpa Services, LLC	tjim	
		Mar 07, 2024	Email	Duckwater Shoshone Tribe, Duckwater Shoshone Tribe	tjim	
		Mar 11, 2024	In-person / face-to-face	Bishop Paiute Tribe	tjim	
		Mar 11, 2024	In-person / face-to-face	Fallon Paiute Shoshone Tribe	tjim	
		Mar 11, 2024	In-person / face-to-face	Duckwater Shoshone Tribe	tjim	
		Mar 12, 2024	In-person / face-to-face	Bishop Paiute Tribe	tjim	
		Mar 13, 2024	In-person / face-to-face	Fallon Paiute Shoshone Tribe	tjim	
		Mar 13, 2024	In-person / face-to-face	Inter-Tribal Council of Nevada	tjim	
		Mar 13, 2024	In-person / face-to-face	Duckwater Shoshone Tribe	tjim	
		Mar 15, 2024	Email	Duckwater Shoshone Tribe	tjim	
		Mar 15, 2024	Email	Duckwater Shoshone Tribe	tjim	
		Mar 18, 2024	Phone call	Duckwater Shoshone Tribe	tjim	
		Mar 21, 2024	Email	Bishop Paiute Tribe	tjim	
		Mar 22, 2024	Email	Big Pine Paiute Tribe	tjim	
		Mar 22, 2024	Email	Big Pine Paiute Tribe, Big Pine Paiute Tribe	tjim	
		Mar 22, 2024	Email	Bishop Paiute Tribe	tjim	
		Mar 22, 2024	Email	Timbisha Shoshone Tribe, Timbisha Shoshone Tribe	tjim	
		Mar 22, 2024	Email	Utu Utu Gwaitu Paiute Tribe	tjim	
		Mar 22, 2024	Email	Lone Pine Paiute Shoshone Tribe	tjim	
		Mar 22, 2024	Email	Yomba Shoshone Tribe	tjim	

Comment Letter No.	Comment Number	Comment				Response
		Mar 22, 2024	Email	Fallon Paiute Shoshone Tribe	tjim	
		Mar 22, 2024	Email	Duckwater Shoshone Tribe, Duckwater Shoshone Tribe	tjim	
		Mar 22, 2024	Email	Ely Shoshone Tribe, Ely Shoshone Tribe	tjim	
		Mar 22, 2024	Email	Walker River Paiute Tribe	tjim	
		Mar 25, 2024	Email	Bishop Paiute Tribe	tjim	
		Mar 25, 2024	Email	Lone Pine Paiute Shoshone Tribe	tjim	
		Mar 25, 2024	Email	Fallon Paiute Shoshone Tribe	tjim	
		Mar 25, 2024	Email	Bishop Paiute Tribe, Bishop Paiute Tribe	tjim	
		Mar 27, 2024	Phone call	Big Pine Paiute Tribe	tjim	
		Mar 27, 2024	Phone call	Bishop Paiute Tribe	tjim	
		Mar 28, 2024	Email	Big Pine Paiute Tribe	tjim	
		Mar 29, 2024	Text message	Duckwater Shoshone Tribe	tjim	
		Apr 01, 2024	Email	Fallon Paiute Shoshone Tribe	tjim	
		Apr 01, 2024	Text message	Bishop Paiute Tribe	tjim	
		Apr 01, 2024	Text message	Duckwater Shoshone Tribe	tjim	
		Apr 03, 2024	Email	Fallon Paiute Shoshone Tribe	tjim	
		Apr 04, 2024	Email	Duckwater Shoshone Tribe, Duckwater Shoshone Tribe	tjim	
		Apr 08, 2024	Text message	Timbisha Shoshone Tribe	tjim	
		Apr 11, 2024	Email	Big Pine Paiute Tribe, Big Pine Paiute Tribe, Big Pine Paiute Tribe	tjim	
		Apr 11, 2024	In-person / face-to-face	Fallon Paiute Shoshone Tribe	tjim	
		Apr 17, 2024	Email	Fallon Paiute Shoshone Tribe	tjim	
		Apr 11, 2024	In-person / face-to-face	Fallon Paiute Shoshone Tribe	tjim	
		Apr 17, 2024	Email	Fallon Paiute Shoshone Tribe	tjim	
		Apr 18, 2024	In-person / face-to-face	US Department of Energy, US Department of Energy, US Department of Energy	tjim	
		Apr 24, 2024	Video Conference	Duckwater Shoshone Tribe, Duckwater Shoshone Tribe, Puyenpa Services, LLC, Puyenpa Services, LLC, US Department of Energy	tjim	
		Apr 29, 2024	In-person / face-to-face	Duckwater Shoshone Tribe	tjim	
		Apr 29, 2024	In-person / face-to-face	Te-Moak Tribe of Western Shoshone)	tjim	
		Apr 29, 2024	In-person / face-to-face	Shoshone-Paiute Tribes of Duckvalley Indian Reservation	tjim	
		Apr 29, 2024	In-person / face-to-face	Ely Shoshone Tribe	tjim	
		Apr 29, 2024	Phone call	Ely Shoshone Tribe	tjim	
		Apr 30, 2024	In-person / face-to-face	Big Pine Paiute Tribe	tjim	
		Apr 30, 2024	In-person / face-to-face	Utu Utu Gwaitu Paiute Tribe, Utu Utu Gwaitu Paiute Tribe	tjim	
		Apr 30, 2024	In-person / face-to-face	Walker River Paiute Tribe	tjim	
		Apr 30, 2024	In-person / face-to-face	Bishop Paiute Tribe	tjim	
		Apr 30, 2024	In-person / face-to-face	Timbisha Shoshone Tribe	tjim	
		May 03, 2024	In-person / face-to-face	Yomba Shoshone Tribe, Inter-Tribal Council of Nevada Inc	tjim	
		May 06, 2024	In-person / face-to-face	Big Pine Paiute Tribe	tjim	
		May 06, 2024	In-person / face-to-face	Bishop Paiute Tribe	tjim	
		May 06, 2024	In-person / face-to-face	Timbisha Shoshone Tribe	tjim	
		May 06, 2024	Text message	Walker River Paiute Tribe	tjim	
		May 14, 2024	Video Conference	Inter-Tribal Council of Nevada	tjim	
		May 15, 2024	Email	Ely Shoshone Tribe	tjim	
		May 16, 2024	Email	Bishop Paiute Tribe, Bishop Paiute Tribe	tjim	
		May 16, 2024	Email	Shoshone-Paiute Tribes of Duckvalley Indian Reservation	tjim	
		May 17, 2024	Email	Timbisha Shoshone Tribe	tjim	

Comment Letter No.	Comment Number	Comment				Response
		May 23, 2024	Phone call	Fallon Paiute Shoshone Tribe	tjim	
		May 23, 2024	Phone call	Timbisha Shoshone Tribe	tjim	
		May 23, 2024	Phone call	Bishop Paiute Tribe	tjim	
		May 23, 2024	Phone call	Duckwater Shoshone Tribe	tjim	
		* Additional detail on any entry available upon request.				Comment noted.
Ian Zabarte – June 3, 2024						
115	115.1	Rhyolite Ridge Lithium-Boron Mine EIS June 3, 2024 Comments of Ian Zabarte, Secretary of State of the Western Shoshone National Council of the Western Bands of the Shoshone Nation of Indians, Treaty of Ruby Valley 1863 (Consolidated Treaty Series Volume 127-1863 and 18 Statute at Large 689-692, US Constitution Article 6, Section 2).				Comment noted.
175	175.1	Comments attached. PM Ian Zabarte, Secretary of State Western Shoshone National Council Western Bands of the Shoshone Nation of Indians				Comment noted.
115	115.2	RhyoliteRidge-1-500690470_Attachment				Comment noted.
115 and 175	115.3 and 175.2	Comments of Ian Zabarte, Secretary of State of the Western Shoshone National Council of the Western Bands of the Shoshone Nation of Indians, Treaty of Ruby Valley 1863 (Consolidated Treaty Series Volume 127-1863 and 18 Statute at Large 689-692, US Constitution Article 6, Section 2). The Western Bands of the Shoshone Nation of Indians does not consent to the inclusion of Shoshone property defined by the Treaty of Ruby Valley into the boundary of any state or Territory of the United States (US) including Nevada or any unit of local government thereof, including Esmerelda County (Nevada Territorial Act 18611). Nevada, and disclaimed all lands in the Enabling Act of 1864 and the Western Bands of the Shoshone Nation of Indians have not given assent to be included in the boundaries of Nevada. The Western Bands of the Shoshone Nation of Indians have sought the creation of a reservation by the President under Article 6 of the Treaty of Ruby Valley. The fact that the President has not yet determined the need of a reservation for the Western Shoshone under Article 6 of the Treaty of Ruby Valley demonstrate unextinguished Indian title of the proposed Operational Project Area (OPA) bounded on the north by Wong-goga-da Mountains; on the west by Su-non-to-yah Mountains; on the south by Wi-co-bah; on the east by Po-ho-no-be Valley. Establishing a reservation under the treaty is a good alternative. Also distinguishing land ownership is the lack of knowledge of the full extent of the Shoshone homelands is the Doty treaty map (attachment 1) that accompanied the Shoshone Nation of Indians treaties with the US back to Washington, D.C. in 1863. Showing Southwest to Northeast are the words “UNEXPLORED” leaving boundaries undefined, except by the indigenous peoples themselves. The matter of ownership has not been satisfactorily addressed. We seek an extension of 60 days to comment. The proposed action is environmental racism and fails to recognize laws for the improvement of the Shoshone people or restraint of action by non-Indian people to prevent violations of the law, the Treaty of Ruby Valley. The agencies and proponent maintain a longstanding pattern and practice that deny any argument, evidence or fact that does not support the proposed action and in fact demonstrate a secret agenda. The Shoshone have no appetite for destruction of their land brokered by the US for foreign fast money mining interests that seek to destroy indigenous people’s sacred land used for spiritual faith. No effort is placed on investigating the faith of indigenous people closely connected to the land or potential impacts to people, plants, animals and environmental quality. The OPA contains uranium that will be disturbed with potential increased spikes above background. Radioactive fallout from US and United Kingdon testing of 928 nuclear weapons of mass destruction is plausibly deposited in the OPA and can expose the already vulnerable Shoshone people to cumulative risks of radiation exposure that has not been studied in the EIS process and ought to be. The Environmental Protection Agency (EPA) has not investigated the baseline radiation levels at the OPA from naturally occurring radioactive material that can spike as a result from the Ioneer mining; or resuspension of radiation by mining at the OPA from past fallout of testing nuclear weapons of mass destruction. In the past, the EPA has been silent on the risk of exposure to the Shoshonean people from radioactive fallout seeking higher radiation protection standard based upon lifestyle differences after we called into question safety by revaluating the DOE Off-site Radiation Exposure Review Profile.2 The Department of Energy (DOE) adopted the EPA standard without acknowledging Shoshone concerns of increased risk in the Site-Wide EIS process for the Nevada National Security Site (formerly the Nevada Test Site) and the proposed Yucca Mountain high-level nuclear waste repository EIS. The purpose of these comments is to question the assumptions of the Ioneer Lithium EIS as not being protective or beneficial to the Shoshone people and homelands. The involved agencies create boundaries of the mind. Use of linguistic boundaries are misleading and not constructs of property ownership, but instead agency efforts that seek to diminish Shoshone property interests defined by the Treaty of Ruby Valley. Property is not a thing; it is a relationship between people in regard to things and that relationship between the Shoshone Nation of Indians and the US is by the Treaty of Ruby Valley that is the supreme law of the land that binds this nation together. The linguistic references map of Steward is not to be trusted. It is identity politics and is questionable without further research. Moreover, the linguistic references are a culture war on indigenous people seeking to pit Shoshonean people against each other. Traditionally, the Shoshone homelands conform to physiological boundaries that place the OPA within the boundaries of the Treaty of Ruby Valley (Figure 2). The agencies involved have a long-standing pattern and practice of not acting for the benefit of the Shoshone people and instead act divest their trespassing from the Constitutional obligation to protect and defend the US Constitution Article 6, Section 2, treaty supremacy. Further, Steward acted against the Shoshone and Paiute people defining the stereotype of them as “primitive” so that the west can distinguish civilization and the progress made. The State of Nevada in a study of Native Americans at Yucca Mountain documented contemporary acts of the traditional council of the Western Bands of the Shoshone Nation of Indians together with legal and political study. Also, religion and world view were investigated, finding:				The BLM reviewed all requests for extensions and did not extend the public comment period beyond the 45-days. The Project is consistent with U.S. laws, including NEPA, NHPA, FLPMA and applicable EOs. Section 4.8 of the EIS contains the analysis as related to Native American Traditional Values. Government-to-government consultation and coordination for the Project was initiated in 2020 and is described in Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process. During consultation, the Project was redesigned to avoid impacts to culturally significant areas. Tribal consultation is ongoing and will continue through the life of the Project. If avoidance of areas of tribal concern is not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected Tribes to reduce or eliminate impacts. According to the EPA (https://www.epa.gov/radtown/radioactive-fallout-nuclear-weapons-testing#about-radioactive-fallout-from-nuclear-weapons-testing), “fallout typically contains hundreds of different radionuclides… Very little radioactivity from weapons testing in the 1950s and 1960s can still be detected in the environment now… The EPA maintains a system of radiation monitors throughout the United States. These monitors were originally designed to detect radionuclides that were released after a nuclear weapon detonation… Since the end of aboveground nuclear weapons testing, the day-to-day radiation in air readings from monitoring sites has fallen. For many years, analysis of air samples has shown risk levels far below regulatory limits. In fact, results are now generally below levels that instruments can detect.” Section 2.1.13.2 of the EIS includes commitments of Ioneer for managing dust, including implementation of fugitive dust control per Bureau of Air Control. Additionally, fugitive dust would be controlled on roadways and other areas of disturbance with water or NDEP/BLM-approved dust suppressants, where appropriate. Fugitive emissions at the crusher and material drop points would be minimized through application of water sprays or other dust control measures as per accepted industry practice and permit stipulation. Disturbed areas would be seeded with an interim seed mix developed in conjunction with the BLM to minimize fugitive dust emissions from exposed, unvegetated surfaces. Consultation is ongoing through the NEPA process and the literature cited in the EIS have been used for many years in the Great Basin region as ethnographic literature of the Western Shoshone and Northern Paiute tribes.

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		"Ethnographic data on Great Basin religion and world views are minimal at best. A major reason for this is that few ethnographers ever spent any length of time in a single community or with persons to get in-depth information. Most of the traditional ethnography in the region was of the survey type, and oriented toward subsistence, social organization, and material culture. The specific evolutionary theoretical orientation of Julian Steward (1938) also heavily influenced inquiry away from the subtleties of Great Basin religions." (Fowler et.al. 1991) According to McMillen, Steward worked at the Justice Department arguing cases against the Shoshone, Northern Paiutes, and Utes in adversarial cases before, and during the Indian Claims Commission (ICC). "That Steward developed key features of his theoretical position on hunter-gatherers' property while working at Justice, and with no further fieldwork, suggests the influence of the political-legal context in which he operated. (The ICC disagreed with Stewart and Justice in all three cases, siding with the Indian plaintiffs each time.)" (McMillen 2007) There is ample room for investigating the impacts unique to Shoshonean people practicing religious or spiritual ceremony and additional study should be done at the OPA and regionally. Lifestyle differences are important and should be studied further. Origin and ownership are important and documented by treaty. Shoshone have not received any benefits of jobs or independent research or payments equal to taxes while bearing disproportionate burden of risk of exposure to resuspended radionuclides that, exposure to is cumulative in that include US nuclear weapons testing fallout, etching out a fate of extinction of Shoshonean people. There are large gaps in the literature particularly in identifying Shoshonean people's enduring lifeways including unique spiritual practices, hunting, gathering of traditional food and medicine used for healing and religious purposes. The cooperating agency, the DOE documented the Native American "holistic world view" that is diametrically opposed with the "site specific" scientific world (Stoffle 1990). The Native American perspective views the regional landscape as seamless with all things connected. The scientist cannot answer a holistic question and therefore rephrases the question in terms that science can answer site specifically. "Is this burial, spring, of medicine plant at risk of contamination?" The DOE researchers conduct an analysis of the site-specific question and substitute their site-specific solution as the answer to the original Native American holistic question. The DOE research went further by creating a study protocol that would allow the DOE to subjectively mitigate Native American site-specific cultural resources. The process was called "cultural triage" that is defined as, "…a forced choice situation in which an ethnic group is faced with the decision to rank in importance equally valued cultural resources that could be affected by a proposed development project." (Stoffle1990). The DOE researchers also created two historic tribes that did not exist: The Pahrump Paiute Tribe and the Las Vegas Indian Center while denying the inclusion of the Western Shoshone National Council, traditional treaty governance of the Western Bands of the Shoshone Nation of Indians, manufacturing consent by the Consolidated Group of Tribes and Organizations now the Nuclear Energy Tribal Working Group led by the same fake tribe(s). The DOE researchers had created a systematic process to "mitigate" Native American living lifeways practiced since before the current era in what is ethnic cleansing, a violation of the Proxmire Act (18 USC 1091) and the 2009 Human Rights Enforcement Act (28 USC 509B). There is no doubt that the US has a trust responsibility to the Shoshone people as created in the 1903 case Lonewolf v. Hitchcock. Under the doctrine of the "plenary power of Congress," tribes themselves are incompetent and, as such, are wards of the US. Therefore, Native Americans, are unable to consent to participate in the project. The DOE itself, not the involved tribes, is responsible for the outcomes and recommendations that the researcher claims were made by tribal leaders recruited by the DOE as Official Tribal Contact Representatives (OTCR's) who met in Las Vegas on May 5, 1988. The proposed action is racial discrimination and should not go forward. Coordinate agency of the US government that practice occupancy and exclusion by attrition is intent evolved from the culture of secrecy withing the DOE, financier of the present proposed action. The OPA is wholly within the boundaries of the homelands of the Western Bands of the Shoshone Nation of Indians defined by the Treaty of Ruby Valley. The no Action Alternative protects Shoshone people, property and religion. None of the cooperating agencies seems to care how federal law, vis-a-via the Treaty of Ruby Valley, impact the indigenous Shoshone people and instead seek to accelerate extractive processes without further investigation. The EIS assumes ownership by convenience and does not use any legitimate basis for determining property ownership and instead substituting Esmeralda County's Land Use Planning document as a proxy and the BLM's Tonopah Resource Management Plan for ownership. Both planning documents make no claim to Shoshone property. All rights, title and interests defined by the Treaty of Ruby Valley boundaries in Article 5 are first and foremost ownership encumbrances upon the US agencies involved. The treaties between the US and the Shoshone Nation of Indians does not include the transfer of rights to foreign trans-national corporations and instead are enactment of restraint upon the US to provide protection to the Western Bands of the Shoshone Nation of Indians from exploitation by Ioneer Rhyolite Ridge LLC (Ioneer).	

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		 *Figure 1 Doty Map.*  *Figure 2 WSNC MAP* [1]Nevada Territorial Act 1861: Provided, further, That nothing in this act contained shall be construed to impair the rights of person or property now pertaining to the Indians in said Territory, so long as such rights shall remain unextinguished by treaty between the United States and such Indians, or to include any territory which, by treaty with any Indian tribe, is not, without the consent of said tribe, to be included within the territorial limits or jurisdiction of any State or Territory. [2]Quigley D, Handy D, Goble R, Sanchez V, George P. Participatory research strategies in nuclear risk management for native communities. J Health Commun. 2000 Oct-Dec;5(4):305-31. doi: 10.1080/10810730050199123. PMID: 11191016.	
MSandi Campbell – June 3, 2024			
116	116.1	Please accept my comments on the Rhyolite Ridge Lithium-Boron Project and BLM's draft EIS. THE PROJECT WOULD VIOLATE WESTERN SHOSHONE TREATY RIGHTS ..... ENDAGERED SPECIES: The Proposed action and North and South OSF Alternative would Jeopardize the Continued Existence of Tiehms Buckwheat and adversely modify its critical Habitat. WATER: Do you have adequate water rights? A current water pollution permit? What happens when you run the streams dry? which will happen in time. What about water quality impacts? BUCKWHEAT The DEIS significantly Underestimates the likelihood of pit wall failure and erosion of occupied Tiehms Buckwheat Habitat into the pit. The DEIS underestimates the dust impact on the Tiehms buckwheat. WILDLIFE. The DEIS fails to take a look at the impacts to sensitive and imperiled wildlife and also plant species.	The Project is consistent with United States laws, including NEPA, NHPA, ESA, FLPMA and applicable EOs. The EIS includes detailed analysis of impacts to Tiehm’s buckwheat, special status wildlife and plant species, and water resources.
Personal Information Requested to be Withheld – June 3, 2024			
117	117.1	Please see attached the National Mining Association's comments.	Comment noted.

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117	117.2	June 3, 2024 U.S. Department of the Interior Bureau of Land Management Scott Distel Supervisory Project Manager 50 Bastian Rd. Battle Mountain, NV 89820 Submitted electronically via: https://eplanning.blm.gov/eplanning-ui/project/2012309/570 RE: Notice of Availability of the Draft Environmental Impact Statement for the Rhyolite Ridge Lithium-Boron Mine Project, Esmerelda County, Nevada, 89 Fed. Reg. 28,803 (April 19, 2024). Dear Mr. Distel, The National Mining Association (NMA) appreciates the opportunity to provide comments on the Bureau of Land Management's (BLM) Draft Environmental Impact Statement (DEIS) in support of the Rhyolite Ridge Lithium-Boron Mine Project (Rhyolite Ridge Project).[1] The DEIS, conducted pursuant to the National Environmental Policy Act (NEPA) and the Federal Land Policy and Management Act (FLPMA) assesses the effects of federal authorizations associated with the proposed action described within the proposed plan of operations. Ioneer, the Rhyolite Ridge Project proponent, is one of NMA's members. The NMA previously commented during the scoping process in support of the Rhyolite Ridge Project and its unique benefits locally and nationally that will further this administration's stated clean energy goals. The NMA hereby incorporates those comments by reference.[2] [1]89 Fed. Reg. 28,803 (April 19, 2024). [2]See National Mining Association's Scoping Comments on Rhyolite Ridge Lithium-Boron Project.	Comment noted. Comments submitted during the public scoping period were considered and used to develop issues for analysis in the EIS as discussed in Section 1.5.
117	117.3	**Introduction** America's mining industry supplies the essential materials necessary for nearly every sector of our economy – from technology and healthcare to energy, transportation, infrastructure, and national security. NMA has a membership of more than 290 companies and organizations involved in every aspect of mining in the United States. NMA's members work to ensure America has secure and reliable supply chains, abundant and affordable energy, and the American-sourced materials necessary for U.S. manufacturing, national security, and economic security, all delivered under world-leading environmental, safety, and labor standards. The Rhyolite Ridge Project will provide responsibly produced domestic sources of lithium and boron – materials necessary for a sustainable future and our national security. **Importance of U.S. Mined Minerals** As the Biden Administration has recognized, mining is the foundation of its electrification goals. The U.S. has abundant mineral resources to meet these goals. Yet, despite the exponential growth in mineral demand driven by global competition for more electric vehicles (EVs), wind turbines, solar panels, and the needed batteries to store energy, U.S. mineral production is stuck in first gear. In fact, over the last two decades, the U.S. has grown increasingly reliant on imports and supply chains dominated by geopolitical rivals, including China and Russia. Alarmingly, the U.S. is now import-reliant for 50 minerals, and 100 percent import-reliant for 12 of them.[3] The trendlines for lithium demonstrate how U.S. production has failed to keep pace with demand and the resulting reliance on imports. Until the mid-1990s, the U.S. was a leader in lithium production. The lithium industry started in the U.S. and led the globe in production for nearly 50 years. Today, according to the U.S. Geological Survey's (USGS) Mineral Commodity Summaries, the U.S. is more than 25 percent reliant on lithium imports from countries such as Argentina, Chile, China and Russia.[4] Lithium reserves in the U.S. remain unchanged – there are roughly eight million metric tons of lithium embedded in U.S. soil, placing us in the top five countries for lithium reserves. Over the last decade, however, the U.S. has seen a steady decline in active lithium mines and today we make up only 1 percent of global lithium production. With projects such as Rhyolite Ridge, the U.S. can remedy this overreliance. Now is the time to act to position the U.S. as a leader to meet the growing lithium demand projected by USGS and Benchmark Mineral Intelligence.[5] [3]Mineral Commodity Summaries 2024, available at https://pubs.usgs.gov/periodicals/mcs2024/mcs2024.pdf (last visited June 3, 2024). [4]United States Geological Survey Mineral Commodity Summaries, available at https://www.usgs.gov/centers/national-minerals-information-center/mineral-commodity-summaries (last visited June 3, 2024). [5]Minerals Make Life, Lithium: Electrifying America, available at https://mineralsmakelife.org/blog/lithium-electrifying-america/ (last visited June 3, 2024).	Comment noted.
117	117.4	**Rhyolite Ridge Project** The U.S. is poised to develop domestic supplies of lithium and boron, right here at home as the Rhyolite Ridge Project will deliver lithium from Nevada directly to battery makers. Recognizing this need, the U.S. Department of Energy (DOE) Loan Programs Office (LPO) in 2022 selected 12 lithium projects funded with $1.6 billion from the Bipartisan Infrastructure Law to support commercial-scale domestic facilities to extract and process lithium.[6] Importantly, the Rhyolite Ridge Project was one of those selected.[7] The LPO's loan for the Rhyolite Ridge Project will finance on-site processing of lithium carbonate that could potentially support lithium production for approximately 370,000 EVs each year.[8] As such, the project could reduce annual gasoline consumption by nearly 145 gallons, and prevent the release of 1.29 million tons of carbon dioxide each year.[9] Further, an on-site production facility will produce large quantities of borates that are essential for our future energy needs. The Rhyolite Ridge Project is committed to responsible development of lithium and boron, and has adopted a comprehensive set of environmental, social , and governance (ESG) standards to ensure that key mining risks are managed responsibly. These standards include early and meaningful outreach to Tribal Nations prior to the permitting process to foster consistent engagement and	Section 5.0 of the EIS describes government-to-government consultation and coordination for the Project with the Tribes.

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		collaboration in advancing Tribal interests and resolving any potential issues. For example, Ioneer has been working with Tribes to understand any cultural resource areas and environmental concerns, and exploring opportunities for economic development including job training and identifying initiatives for tribes to participate in the clean energy economy.[10] [6]Id. [7]Id. [8]U.S. Department of Energy, LPO Announces Conditional Commitment to Ioneer Rhyolite Ridge to Advance Domestic Production of Lithium and Boron, Boost U.S. Battery Supply Chain, available at https://www.energy.gov/lpo/articles/lpo-announces-conditional-commitment-ioneer-rhyolite-ridge-advance-domestic-production (last visited June 3, 2024). [9]Id. [10]Id.	
117	117.5	**Proposed Action** As outlined in DEIS, Ioneer is proposing the construction, operation, reclamation, and closure of a surface quarry from which lithium and boron would be extracted using conventional quarrying techniques and associated facilities. Ioneer has gone to great lengths to ensure the environmental, economic, and community sustainability for the approximately 23-year duration of the project. For example, Ioneer has pledged adoption of several environmental protection measures (applicant-committed environmental protection measures, or ACEPMs).. A snapshot of a few ACEPMs, outlined below, demonstrate Ioneer's sustainability commitment. From the outset, Ioneer has been actively engaged with the BLM and the U.S. Fish and Wildlife Service (FWS) to ensure the long-term viability of the Endangered Species Act (ESA) listed Tiehm's buckwheat and its habitat. The ACEPMs for the Tiehm's buckwheat include disturbance buffers, fences, and implementing a propagation and transplant program for new plants at varying locations. A Tiehm's Buckwheat Protection Plan outlines that all activities including quarrying have been designed to avoid any surface disturbance within a Buckwheat Exclusion Area that would be fenced off with locked gates. Furthermore, Ioneer intends to produce its lithium and boron using an energy-neutral process with minimal emissions and adequate emissions control equipment at stationary sources. Fugitive dust would be controlled on roadways and at the crusher and material drop points. Notably, air quality permits have already been obtained by the State of Nevada. Another ACEMP addresses how cultural resources surveys will be conducted to prioritize avoidance of such resources where possible. Additional ACEPMs for cultural resources include vibration monitoring at cultural sites, and mitigation for potentially adverse impacts to the sites.	The effects analysis presented in EIS Section 4.0 considers the implementation of ACEPMs to reduce impact.
117	117.6	**BLM-Preferred Alternative** The BLM has identified three alternatives in its evaluation: alternative A, or the prosed action; alternative B or the North and South overburden storage facilities (OSF); and a no action alternative. Alternative A and alternative B are substantially similar except for a few slight modifications. Alternative B would slightly reduce the mine and associated facility footprint within the endangered Tiehm's buckwheat and its critical habitat. Placement of overburden would occur in the North OSF, Quarry Infill OSF and the South OSF, resulting in an approximately 35 acres less of disturbance compared to alternative A. Because of the similarities between alternatives A and B, the ACEPMs described in alternative A would be included in alternative B. Further, Ioneer is working with BLM and other cooperating agencies to refine and expand the ACEPMs to prevent unnecessary or undue degradation of public lands throughout the life of the project, and consistent with BLM's regulations under the General Mining Law. Ioneer has also included analysis in its Buckwheat Protection Plan that outlines specific ACEPMs for alternative B, that is designed to avoid and minimize impacts to the Tiehm's buckwheat. As a result of the ACEPMs and commitments by Ioneer to develop a state-of-the-art mining project in an environmentally safe manner, the BLM made a preliminary selection of alternative B as its environmentally preferred alternative. The NMA strongly supports the BLM's environmentally preferred alternative and urges the BLM to work expeditiously to finalize the EIS.	The EIS contains detailed analysis of the Proposed Action and alternatives and considers the implementation of ACEPMs to reduce impacts.
117	117.7	**Conclusion** The NMA appreciates the opportunity to provide support for the Rhyolite Ridge Project. As outlined above, the U.S. is at a critical juncture for meeting the administration's clean energy goals and to reduce our reliance on foreign sources of mined materials. The Rhyolite Ridge Project is the right project at the right time. NMA believes the BLM should move forward with the finalization of the EIS as efficiently as possible and supports the BLM's environmentally preferred selection of alternative B. The NMA looks forward to continuing engagement with the BLM as it reviews the Rhyolite Ridge Project. Sincerely,	Comment noted.
Jennie Pakradooni – June 3, 2024			
118	118.1	As a frequent visitor to the Rhyolite Ridge area, I am writing to submit comments regarding the Rhyolite Ridge Lithium-Boron Project. I attended the May 9 BLM public meeting and heard the presentations from representatives of BLM and Ioneer providing some helpful and more detailed information on the proposed project. I recognize that we need a supply of lithium and boron for many purposes that benefit humans, and mining is necessary, but not at the expense of extinction. This mine and its 17-year long operations are situated far too close to the population of critically endangered Tiehm's buckwheat. As a naturalist and desert ecologist, I have visited the population multiple times and explored the surrounding area and habitat in Fish Lake Valley, and being aware of the impacts to local communities and wildlife by similar mining operations across the west including in Nevada, I have many concerns. Aside from having seen incomplete fencing and witnessed the "exclusion area" being breached multiple times by free roaming cattle who have destroyed biocrust and crushed plants, I do not feel that any of the three proposals adequately address protection of the endangered species present nor do any of the proposals take into account protections for local communities and wildlife who move through the area. Simply mitigating surface disturbance in a portion of the habitat while drilling hundreds of feet into the ground in close proximity to a designated critically endangered species with unknown impacts to an already compromised water table in a delicate desert region is not adequate. Yes we need these components, but the mine needs to be relocated elsewhere. We cannot simply continue to risk species to go extinct for one purpose. We as humans are a part of nature - and mining the earth may be a part of that but we must do it in a way that is responsible and the information and proposals I heard on May 9 did not convince me that this mine as proposed is a sound operation for human communities or for any species living in the region. Thank you for considering my comments and input. Sincerely,	The Project proposes development of a locatable mineral resource. Relocation of the Project is not possible because the proposed activities must occur on the mining claims held by the proponent where the resource deposit is located. The EIS describes ACEPMs in Section 2.1.13 that would be implemented to reduce impacts. Analysis of effects to Tiehm's buckwheat, local communities, and wildlife are analyzed in detail in EIS Sections 4.10, 4.12, and 4.18.

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		Jennie Pakradooni	
Sally Manning – June 3, 2024			
119	119.1	Please see attached letter from the Big Pine Paiute Tribe of the Owens Valley	Comment noted.
181	181.1	To Whom It May Concern: Here is a comment letter from the Big Pine Paiute Tribe of the Owens Valley on the draft EIR for the Rhyolite Ridge lithium-boron mining project. This letter was also just now uploaded online on the e-planning site. Sally Manning, Environmental Director Big Pine Paiute Tribe of the Owens Valley P. O. Box 700 825 S. Main St. Big Pine, CA 93513	Comment noted.
119 and 181	119.2 and 181.2	BIG PINE PAIUTE TRIBE OF THE OWENS VALLEY Big Pine Paiute Indian Reservation P.O. Box 700 · 825 South Main Street · Big Pine, CA 93513 (760) 938-2003 · fax (760) 938-2942 www.bigpinepaiute.org June 3, 2024 Bureau of Land Management Attn: Rhyolite Ridge Lithium-Boron Project 50 Bastian Road Battle Mountain, Nevada 89820 [submitted electronically] Subject: Comments on proposed Rhyolite Ridge Lithium-Boron Mine Project draft Environmental Impact Statement Dear Bureau of Land Management Decision Maker, The Big Pine Paiute Tribe of the Owens Valley (“Tribe”), a federally recognized Tribe, submits the following comments on the proposed Rhyolite Ridge Lithium-Boron Mine Project draft Environmental Impact Statement (“dEIS”) in accordance with the National Environmental Policy Act (“NEPA”). This extensive mining project is being pursued by a private company, Ioneer Rhyolite Ridge LLC (“Ioneer”). The Bureau of Land Management (“BLM”) is the lead agency, and there are several cooperating agencies. Lands withdrawn and managed by the United States federal government were taken from Indigenous peoples, and to this day, tribes rely on agencies such as BLM to be defenders and caretakers of these lands. The Tribe seeks meaningful protection of the land, air, water, and other resources in the Tribe’s traditional territory and throughout the nation’s public lands in general. The Rhyolite Ridge Lithium-Boron Mine Project as described in the dEIR would result in significant, adverse, irreversible damage and the harm far outweighs what little value the mostly for-profit project may have. The Tribe objects to the proposed Rhyolite Ridge Lithium-Boron Mine Project, and this letter explains some of the reasons this mining should not be allowed. To begin, the Tribe states two important points. First, in these public comments submitted on the dEIS, the Tribe will not discuss cultural resource issues in detail. The Tribe understands that consultation will continue between tribes and the BLM regarding these important matters. The Tribe hopes the NEPA consultation process concludes with BLM making a decision with which the Tribe concurs. Second, the period between the release of the (at least) 1,608 pages of NEPArelevant material and the due date for public comments is too short. The Threatened and Endangered Species Supplemental Environmental Report alone is 509 pages! More time is needed for the Tribe and others to read, fact-check, and provide necessary feedback on the information. Innumerable and diverse resources are put in jeopardy should the mining be allowed to proceed. The short public review period is unfair when so much is at stake. BLM’s decision to limit the period for public input gives the appearance the agency is expediting the mining project in order to please Ioneer and ignore the intent of NEPA as well as the important concerns expressed by tribes and the general public. The Tribe notes that BLM is tasked with priorities and objectives which contradict each other. The overall BLM mission statement is, “The Bureau of Land Management's mission is to sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations” (https://www.blm.gov/about/our-mission). BLM is also tasked with allowing activities such as mining and installation of industrial-scale energy development (for example solar and geothermal) that destroy or degrade the health, diversity, and productivity of its land holdings. Mining operations conducted at the scale they now are carried out, and as planned in the proposed Rhyolite Ridge project, are completely inconsistent with the mission of the BLM. One important, overarching truth should be sufficient for BLM to deny mining, namely that it has never been shown that the lands can be fully restored to pre-project conditions after open pit mining has been allowed. Plans for reclamation for this and most mining projects include setting aside topsoil, recontouring disturbed areas, and scattering seeds; however, the lands do not recover, at least not at the scale of a human lifetime. Reclaimed lands remain visually and ecologically scarred for generations to come, never blending into the natural landscape. BLM knows this, and these unacceptable outcomes are contrary to the BLM mission. The No Project Alternative needs to be selected, because the Rhyolite Ridge Lithium-Boron Mine Project will result in an unacceptable level of adverse impacts. Table 2-6 of the dEIS compares the effects of Ioneer’s plan with BLM’s preliminary “environmentally preferred” alternative, which is also called the North and South Overburden Storage Facility Alternative or “North and South OSF Alternative.” It is not clear why BLM presents an alternative that causes nearly identical adverse impacts to existing resources as Ioneer’s plan and calls it “environmentally” preferred. What, exactly, is “environmental” about it? At best, the BLM preliminary preferred alternative very slightly reduces the acreage of outright destruction, “saving,” for example, 20 acres in the midst of	The public comment period was conducted in accordance with CEQ and BLM NEPA regulations. The EIS presents detailed analysis of the Proposed Action and alternatives and discloses environmental impacts associated with each. Impacts to Tiehm’s buckwheat are analyzed in EIS Sections 4.12 and 4.20.12. In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm’s buckwheat and its designated critical habitat. The Project has been considered as required by NEPA and CEQ regulations. Changes to NEPA are beyond the scope of the Project. Impacts from hazardous materials used for the Project are discussed in EIS Section 4.5.

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		2,000 acres of destruction. To any reasonable person, “saving” such a small percentage and calling it “environmental” is disingenuous. For both the project proponent’s and the BLM’s alternatives, there will be—as listed throughout the documents—significant, unavoidable, unmitigable, irreversible, and/or permanent adverse impacts to: plants and animals including endangered species; cultural resources; water resources; geology; Native American traditional values; air quality; night sky and visual resources; soils; greenhouse gas emissions; recreational and livestock grazing opportunities; social conditions; and traffic. In fact, while some of the impacts of both alternatives will be identical, the BLM preferred alternative admits to a significant increase in damage to cultural resources! Even with BLM’s contradictory and confusing mission and mandates, and despite the statement in the dEIS that the final “BLM-preferred alternative will be determined following the Draft EIS public comment period,” the impacts from mining at Rhyolite Ridge far exceed any level of disturbance which may be seen as acceptable to any reasonable person. The only way to protect the numerous resources at risk is to select the No Project Alternative. The Tribe understands that threatened and endangered plant and animal species occur within the mining project footprint, and the Tribe is particularly concerned about the rare plant Eriogonum tiehmii (“Tiehm's buckwheat”). The U. S. Fish and Wildlife Service (“USFWS”) in December 2022 determined Tiehm’s buckwheat to be “endangered.” This plant species is known in the wild only from the Cave Springs Road canyon site where Ioneer plans to remove the substrate on which this species grows. Its limited distribution already makes its continued existence as a species precarious, but Tiehm’s buckwheat was listed as endangered because of the threat of Rhyolite Ridge mining project. Humans know much about lithium, but very little about Tiehm’s buckwheat. Which is more important: allowing a company to engage in massive digging and on-site chemical processing for the relatively common minerals lithium and boron or protecting a plant associated with the unique site now and for future generations? To the Tribe, and to be consistent with BLM’s mission statement, the answer is clear: the plant must be protected. USFWS also designated nearly 1,000 acres of critical habitat, which is what they estimate as the land area necessary to support the plant now and into the near future, and all of its critical habitat is in the footprint of the Rhyolite Ridge proposed lithium-boron mine. Scientifically speaking, no one knows why this buckwheat grows here or why it has such a limited distribution. We do not know about its biology, including abiotic tolerances such as water and temperature, pollinators, seed production and viability, recruitment/reestablishment potential, the effects of grazing or ambient particulate matter, the effects of climate change, etc. There is always much humans may learn from a living organism, so its fate and long term survival should not be put in the hands of a mining company which will be allowed to operate within the plant’s critical habitat for a generation or more. The Rhyolite Ridge mining project is completely inconsistent with the Tonopah Resource Management Plan (“RMP”), which dates from 1997, with regard to endangered species. As quoted from the Supplemental Environmental Report, the RMP, “identifies objectives related to special status species, including threatened and endangered species. The RMP states the objective: to protect, restore, enhance, and expand habitat of species identified as threatened, endangered, or Nevada BLM Sensitive Species under the ESA. “In addition, the RMP includes the following determination: habitat for all federally listed threatened or endangered species or Nevada BLM Sensitive Species (plant and animal) will be managed to maintain or increase current populations of these species.” BLM’s first step along the way to protecting Tiehm's buckwheat now and into the foreseeable future is to reject the proposed project. A next step would be to provide a higher level of land protection, for example by designating the site as an Area of Critical Environmental Concern. Lithium is not a rare element; it occurs all over the earth. Lithium can be recycled and thus recovered from existing materials such as everyday batteries, and in the not-too-distant future, lithium may be at least partly replaced by other substances for use in energy storage. The common metal lithium simply has a current market-rate value which makes this project viable for private industry in the short term. The future of a very rare plant species should not be compromised for a project to mine a common substance (which at Rhyolite Ridge is clay containing a tiny 0.18% lithium). The value of a plant that has evolved with an apparent affinity for a substrate with a unique mineral composition is not something that one may put a dollar figure on; these resources are truly irreplaceable thus of immeasurable value. Another significant problem with the proposed project is its anticipated water consumption. The project involves both dewatering the large open pit Ioneer plans to dig and pumping and piping water several miles from wells in Fish Lake Valley to the site for processing the ore. Page 2-9 of the dEIR says that quarry pit dewatering rates will range from about 60 gallons per minute (gpm) to a maximum annual average of 650 gpm. Page 2-8 says that water piped in from Fish Lake Valley would flow at approximately 2,500 gallons per minute (gpm). With minor exceptions, all of this water will be consumed through evaporation. At, say, 2,800 gpm, the Tribe estimates the project will consume at least 4,500 acre-feet of water per year. Vegetation communities and wildlife species, which are important to Native Americans, are likely to be impacted. The dEIR indicates there could be flow reductions and thus adverse impacts at some or all of the 32 nearby surface water sites, including Cave Spring, if the hydrologic response to quarry dewatering affects the aquifer from which these springs and seeps derive water. The Tribe expects the drought conditions already happening with the changing climate are stressful enough on these valuable arid-land water sources, so it is unacceptable to add to the threat by tampering with regional hydrology. Onsite ore processing could adversely affect water quality. The mine would also take water away from local people who rely on farming and ranching. The Tribe knows of no instances where the outcome of pumping and chemical pollution resulted in good or improved hydrologic conditions. The Tribe notes that Section 4.21 of the dEIS presents some mitigation measures proposed to be in place should the hydrology not respond as predicted. Ioneer will be required to monitor flows and changes within the zone of predicted 10-foot groundwater drawdown, quarterly, and report monitoring results to BLM annually. If flows diminish or environmental impacts exceed expectations, the mitigation does not mitigate for the environment, rather the measures allow Ioneer to seek additional water, such as drilling new wells or pumping and importing from elsewhere. As mentioned earlier in this letter, the Tribe knows of no former mining operation of comparable size and scope which has truly successfully cleaned up and left an area as good as or better than conditions when mining started. Even if an example or two exist, successful techniques in one situation most likely will not apply directly in another mining operation due to a multitude of reasons (different minerals being mined, slopes and aspects, climate, starting biological conditions, etc.). Nevertheless, Ioneer and BLM plan for a project lifespan approximately equal to one human generation. Ioneer will not be required to reclaim all of the disturbance: they will leave behind an open quarry pond and a total of 383 totally disturbed acres. The time periods exceed the tenure of most BLM and other government employees, such as those of the cooperating agencies, but the impacts persist indefinitely, at least several generations. The Tribe is, of course, alarmed to read about the onsite ore processing. If the BLM listens to public comment and refuses to allow the mining to proceed, this becomes a non issue. Should the wrong decision to be made and the project proceeds, then BLM will indeed need to take all precautions regarding hazardous liquid, solid, and gaseous materials which would be brought in or generated on site, used during the active project period, and no doubt left behind when the project ends (if it does). In addition, there is the infrastructure needed to carry out the processing, including generators, pads, liners, containers, and more. None of the above belong in a remote high desert canyon. They all present a threat to vegetation, wildlife, and human health. Components always escape, polluting the air or contaminating ground water. Once escaped, it is extremely difficult or impossible to recapture them or reverse the effects of the pollution. Adequate reclamation is not possible, so the project should be rejected to be consistent with BLM’s mission and the Tribe’s trust in federal resource management and protection agencies.	

Comment Letter No.	Comment Number	Comment	Response
		The Tribe applauds the nation's priority to tackle the climate crisis at home and abroad, and the Tribe is in favor of reducing to the point of zero the burning of fossil fuels, but the Tribe is alarmed that the federal government has prioritized the destruction of western lands and resources to achieve its goals. The nation cannot create a true environmentally-sound future using the same protocols, laws, and processes that have put the country and the world in the crisis it is in today. NEPA is more than 50 years old, and its approach to protecting the environment falls far short of what modern western science now understands about landscapes and ecosystems. NEPA fails to take a holistic, thus more realistic, view of the resources and systems in which they function. While NEPA is better than nothing, the nation is fooling itself that progress will be made in tackling today's big problems using yesterday's "western" tools and mindset. Indigenous approaches to land management need to be brought forward. For the Tribe, these well-tested, organic approaches work with natural systems, not in defiance of them. With regard to the nation's energy future, more focus is needed on the reasonable viable alternatives including energy conservation, recycling, energy storage technology, and decentralization. In conclusion, the Tribe respectfully requests BLM reject the Rhyolite Ridge Lithium-Boron Mine Project. For mining proposals, BLM has discretion to prevent land and resource degradation and significant impacts that can be avoided. The Tribe calls upon BLM to steadfastly protect irreplaceable, extremely valuable natural and cultural resources rather than subject them to degradation brought on by mining operations. The Tribe and other people rely on the agency to be a strong voice for ecological integrity. Please select the No Project Alternative. Sincerely, Cheyenne Stone Tribal Chairperson	
Not Provided – June 3, 2024			
120	120.1	Please see attached comment from Ford Motor Company.	Comment noted.
120 and 185	120.2 and 185.1	Mr. Scott Distel Battle Mountain District Office Bureau of Land Management U.S. Department of the Interior 50 Bastian Road Battle Mountain, NV 89820 May 30, 2024 RE: Rhyolite Ridge Lithium-Boron Project Dear Mr. Distel, As a representative of Ford Motor Company, I would like to express Ford's support for Ioneer's Rhyolite Ridge lithium project. Ford aspires to source only raw materials that are responsibly produced. We work to ensure that everything we do – or that others do for us – upholds our commitment to protect the environment and respect human rights. By advancing groundbreaking technology, supporting our people, our partners, and our customers, and protecting our planet, we are ensuring that Ford Motor Company will be here for generations to come. Around the globe, we are investing to advance our EV strategy and create a sustainable manufacturing system for our vehicles and the batteries that power them. We are working with directly contracted suppliers towards diversifying our supply chain, including domestic sources of lithium. This will allow us to have a stronger impact as we secure minerals for our EVs more directly and gain transparency into our EV battery raw material supply chains. As such, Ford has taken a distinct interest in the Rhyolite Ridge project. Our technical team has thoroughly reviewed the current draft of the Environmental Impact Statement (EIS) and are pleased to see a vigorous environmental monitoring and mitigation program, strong engagement with local indigenous communities, and a conscious effort towards conservation and biodiversity. Ford Motor Company looks forward to the development of this project and the continued support from the Bureau of Land Management for lithium mine and processing development in the U.S. to support the significant investments we are making throughout the U.S. in the EV supply chain. I appreciate your consideration, Tony Reinhart Director, State & Local Government Affairs	Comment noted.
Not Provided – June 3, 2024			
121	121.1	I do not support the endangerment of Tiehm's buckwheat habitat in order to mine Lithium. This endangered species plays an important role in pollinators, and spider species. This is the only place in the world where this plant grows, and extinction is not an option. We as humans can do better to have more sustainable mining practices that do not choose one species life over another. Please reconsider destroying a habitat of an endangered species that plays such an important role. Thank you	The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat in Sections 4.12 and 4.20.12. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.
Kathryn K LaShure – June 3, 2024			

Comment Letter No.	Comment Number	Comment	Response
122	121.2	None of the proposals for this mine are adequate to protect the fragile water table. In the desert water is so precious and this mine would adversely affect a large area extending into Death Valley National Park making water even more scarce for the wildlife and plants that depend on it. And on the site itself there is a beautiful rare plant, Eriogonum tiehmii, that occurs no where else on the entire planet. None of the proposals put forth by the mining company would protect this plant from extinction. Lithium can be mined responsibly but this site is too fragile so Ioneer should look elsewhere for a suitable site.	The EIS assesses impacts to water resources using the predicted 10-foot drawdown contour from the numerical groundwater model and a one-mile buffer. The 10-foot drawdown contour and one-mile buffer do not extend into Death Valley National Park. Additional detail on the area of potential impacts can be found in EIS Section 4.16.
Suzanne Carter – June 3, 2024			
123	123.1	Please do not open this fragile desert environment to mining. The native species there are irreplaceable and the desert pavement is susceptible to massive damage. It will also require much more water than is available.	The lands in the Project area are open to mineral entry under the 1872 Mining Law, as amended. Impacts to native plants and wildlife are analyzed in EIS Sections 4.14 and 4.18. Impacts to water quantity are discussed in EIS Section 4.16.
Personal Information Requested to be Withheld – June 3, 2024			
124	124.1	As an Eriogonum lover who lives states away, i would love to be able to see this one day.	Comment noted.
Ian Zabarte – June 3, 2024			
125	125.1	Key points and issues raised by Ian Zabarte regarding the Rhyolite Ridge Lithium-Boron Mine EIS: Treaty Rights: The Western Bands of the Shoshone Nation of Indians assert that their property rights, as defined by the Treaty of Ruby Valley, have not been respected in the creation of state or local boundaries, including Nevada and Esmerelda County. They have not consented to inclusion within these boundaries and have sought the creation of a reservation under the treaty. Land Ownership: The extent of Shoshone homelands remains undefined, except by the indigenous people themselves. The Doty treaty map, which lacks clarity on boundaries, has not satisfactorily addressed the matter of ownership. Environmental Concerns: The proposed mining project is viewed as environmental racism, failing to consider laws for the improvement of the Shoshone people or to prevent violations of the Treaty of Ruby Valley. The project is seen as destructive to sacred lands and disregards potential environmental impacts. Radiation Risks: Concerns are raised about the disturbance of uranium and potential radioactive fallout in the Operational Project Area (OPA), which has not been adequately studied in the EIS process. The EPA's silence on baseline radiation levels and the DOE's adoption of standards without addressing Shoshone concerns are intentional infliction of conditions intended to bring about the destruction of Shoshone people, a peremptory norm in international human rights laws and US law 18 USC 1091 and 28 USC 509B. Cultural Impact: The comments question the assumptions of the Ioneer Lithium EIS as not being protective or beneficial to the Shoshone people and homelands. The use of linguistic boundaries is seen as misleading and diminishing Shoshone property interests. There is a call for further investigation into the impacts on Shoshonean people's religious and spiritual practices. Request for Extension: A 60-day extension is sought to allow for more comprehensive commenting on the EIS. This outline captures the main ideas, points of law, and issues from Ian Zabarte's comments regarding the Rhyolite Ridge Lithium-Boron Mine EIS. It highlights the need for further investigation and consideration of the Shoshone Nation's rights and concerns.	The BLM reviewed all requests for extensions and did not extend the public comment period beyond the 45-days. Establishment of state, county, homeland, and reservation boundaries is beyond the scope of the EIS. Several Indian Claims Commission and federal court cases have addressed alleged taking of land including territory described in the Treaty of Ruby Valley. Judgement on these cases found that a taking occurred and aboriginal title was extinguished. In response to these cases, Congress passed the Western Shoshone Claims Distribution Act to provide for distribution of the settlement funds. The EIS contains detailed analysis of the Proposed Action and alternatives and discloses the anticipated impacts. Section 4.8 of the EIS contains the analysis as related to Native American Traditional Values. Government-to-government consultation and coordination for the Project was initiated in 2020 and is described in Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process. During consultation, the Project was redesigned to avoid impacts to culturally significant areas. Tribal consultation is ongoing and will continue through the life of the Project. If avoidance of areas of tribal concern is not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected Tribes to reduce or eliminate impacts. According to the EPA (https://www.epa.gov/radtown/radioactive-fallout-nuclear-weapons-testing#about-radioactive-fallout-from-nuclear-weapons-testing), "fallout typically contains hundreds of different radionuclides… Very little radioactivity from weapons testing in the 1950s and 1960s can still be detected in the environment now… The EPA maintains a system of radiation monitors throughout the United States. These monitors were originally designed to detect radionuclides that were released after a nuclear weapon detonation… Since the end of aboveground nuclear weapons testing, the day-to-day radiation in air readings from monitoring sites has fallen. For many years, analysis of air samples has shown risk levels far below regulatory limits. In fact, results are now generally below levels that instruments can detect." Section 2.1.13.2 of the EIS includes commitments of Ioneer for managing dust, including implementation of fugitive dust control per Bureau of Air Control. Additionally, fugitive dust would be controlled on roadways and other areas of disturbance with water or NDEP/BLM-approved dust suppressants, where appropriate. Fugitive emissions at the crusher and material drop points would be minimized through application of water sprays or other dust control measures as per accepted industry practice and permit stipulation. Disturbed areas would be seeded with an interim seed mix developed in conjunction with the BLM to minimize fugitive dust emissions from exposed, unvegetated surfaces

Comment Letter No.	Comment Number	Comment	Response
Not Provided - June 3, 2024			
126	126.1	The obliteration of native species and intact ecosystems is unacceptable anywhere, but especially so when it involves profit-obsessed corporations laundering their work through the sellout BLM, a supposed protector of public land. The plan is insulting and transparent. If there were any justice Ioneer would be driven out with pitchforks.	Comment noted.
Christopher Berry – June 3, 2024			
127	127.1	I think the limited habitat of the Thiem Buckwheat should not be impacted by this project and the species should be fully protected from and harm or take from this project.	Avoidance of Tiehm's buckwheat critical habitat was considered but is not feasible due to the location of the mineral resource. Additional information is provided in the SIR.
Bill Helmer – June 3, 2024			
128	128.1	Bill Helmer's comment letter is attached.	Comment noted.
133	133.1	Comment letter from Bill Helmer attached in case the first comment letter didn't go through. I submitted a comment letter earlier, but I did not receive a receipt by email, and there was no download after pressing download/print.	Comment noted.
128 and 133	128.2 and 133.2	June 3, 2024 Bureau of Land Management (BLM) Attn: Rhyolite Ridge Lithium-Boron Project 50 Bastian Road Battle Mountain, NV 89820 Re: Comments on the Rhyolite Ridge Lithium-Boron Project (DOI-BLM-NV-B020-2021-0020-EIS) Dear Mr. Distel: I recommend the "No Action Alternative" for this mining proposal because it is the only Alternative which protects an endangered species, the Thiem's Buckwheat which grows nowhere else on earth, and the Native American ethnographic landscape which will be desecrated with the construction of a lithium-boron mine in this location. The following comments are being sent today because BLM refused a reasonable request for a comment extension of 45 days from today. The complexity of the Rhyolite Ridge Lithium-Boron Project (Project), and the listing of Theim's Buckwheat as an Endangered Species justified an extended period for comments. Public input and Tribal consultation have been inadequate, and once again the public and tribes are treated as nuisance hurdles to get through, and then to get on with this project. This subverts the spirit and letter of the public participation provisions of the National Environmental Policy Act. The accelerated schedule benefits no one except the developer, Ioneer. The Project is not "green," and will accelerate the extinction of the Tiehm's buckwheat, a listed endangered species, and will desecrate a culturally and spiritually important area to the Western Shoshone, Owens Valley Paiute, and the Northern Paiute. This Project will do NOTHING to combat human-induced climate change, but it will increase the profits of the multinational mining company, Ioneer, while callously pushing a unique species to extinction. The draft Environmental Impact Statement (DEIS), as required under the National Environmental Policy Act (NEPA), is being rushed through, and is very disorganized. Important impacts are obscured, and the actual environmental impacts of the Project are not emphasized or even clearly stated. Substantive tribal consultation needs to be conducted so that there is meaningful input in the analysis in the draft Environmental Impact Statement. Although by law there is supposed to be coordination of NEPA and the National Historic Preservation Act (NHPA), there is no NEPA and NHPA coordination in this DEIS.	The Project is consistent with NHPA and applicable EOs. Section 4.8 of the EIS contains the analysis as related to Native American Traditional Values. Government-to-government consultation and coordination for the Project was initiated in 2020 and is described in Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process. During consultation, the Project was redesigned to avoid impacts to culturally significant areas. Tribal consultation is ongoing and will continue through the life of the Project. If avoidance of areas of tribal concern is not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected Tribes to reduce or eliminate impacts. The EIS provides detailed analysis of the Proposed Action and alternatives and discloses anticipated impacts. Section 2.6 provides a summary of impacts while Section 4.0 provides detailed disclosure of impacts and rationale.
128 and 133	128.3 and 133.3	On pp. 4-11 and 4-12 of the DEIS it is stated: "Multiple tribes expressed preference to avoid prehistoric cultural resources. Where avoidance is not reasonably feasible, the BLM would consult with the appropriate Native American tribe(s) and individuals to obtain information about the identified concerns and what mitigation measures might be appropriate. After consulting with the appropriate tribe(s), the BLM, in consultation with the Tribes and the Nevada SHPO, would then determine the appropriate course of action." The Section 106 Regulations of the National Historic Preservation Act state (800.8(a)(1): "…Agencies should consider their section 106 responsibilities as early as possible in the NEPA process, and plan their public participation, analysis, and review in such a way that they can meet the purposes and requirements of both statutes in a timely and efficient manner." According to the DEIS passage above, the "course of action" is still to be determined even after four years of meeting with some of the affiliated tribes. On p. 5-1 of the DEIS, it states: On February 11, 2020, five tribal representatives from the Timbisha Shoshone Tribe accompanied the BLM on a visit to the Project. During the site visit, the tribal representatives expressed concern about impacts to prehistoric cultural resources and inquired about impacts to bighorn sheep and Tiehm's buckwheat. Tribal representatives stated that avoidance of cultural resources is preferred over mitigation." Since "Tribal representatives stated that avoidance of cultural resources is preferred over mitigation" why wasn't this followed up? If mitigation is not possible, what is the next step? Were tribal Elders consulted, was an ethnographic study for the Project area conducted? Apparently not, and this is one of the reasons that the DEIS is inadequate. For early coordination, meaningful government-to-government consultation should have already taken place in the last four years, and waiting for any "meaningful" consultation until after the DEIS comment period is over is unacceptable and a violation of NEPA and the NHPA.	The Project is consistent with NEPA, NHPA, and applicable EOs. Government-to-government consultation and coordination for the Project was initiated in 2020 and is described in Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process. During consultation, the Project was redesigned to avoid impacts to culturally significant areas. Tribal consultation is ongoing and will continue through the life of the Project. If avoidance of areas of tribal concern is not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected Tribes to reduce or eliminate impacts.
128 and 133	128.4 and 133.4	On p. 5-3 of the DEIS in Table 5.1 (Tribal Consultation/Coordination), comments from the Big Pine Paiute Tribe of the Owens Valley, 02/03/2023, state "Letter expressing opposition to the project, acknowledges ongoing consultation, and resource concerns including Tiehm's buckwheat, water, plants, wildlife." Comments from the Western Shoshone Defense Project (02/03/2023) state: "Letter expressing opposition to the project, resource concerns including impacts to springs and wildlife, the Cave Springs sacred site, Indigenous traditional ecological knowledge, ground and surface water contamination, and tribal treaty rights." (emphasis added).	The Project is consistent with NEPA, ESA, NHPA and applicable EOs. Government-to-government consultation and coordination for the Project was initiated in 2020 and is described in Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process.

Comment Letter No.	Comment Number	Comment	Response
		Two consulting parties expressed opposition to the project due to the issues cited, including the concern for the Thiem's Buckwheat and the Cave Springs sacred site. However, there was no discussion in the DEIS of how BLM conducted meaningful government-to-government consultation in order to deal with these extremely important concerns. Just collecting comments from tribes in letters and on site visits isn't meaningful government-to-government consultation. The Section 106 process of the National Historic Preservation Act has not been followed. A mining proposal can't be built anywhere a proponent wants because there are environmental and cultural resource laws which govern the appropriate locations for private developments on public lands. That's why there is the National Environmental Policy Act, the National Historic Preservation Act, and the Endangered Species Act. All three of these laws are being ignored in this DEIS.	The Project is consistent with the 1872 Mining Law, as amended, which confers a statutory right to enter upon public lands that are open to mineral entry to explore for and develop mineral deposits.
128 and 133	128.5 and 133.5	On p. 4-4, Cultural Resources, Proposed Action, 4.2.1, it is stated: "A MOA [Memorandum of Agreement] between the BLM, SHPO, Ioneer, and other consulting parties is being prepared and would be executed. The MOA would lay out the steps that the agency and other parties take to consider and resolve any adverse effects that the Project would have on historic properties. Unavoidable adverse impacts to historic properties would be minimized and/or mitigated through implementation of an HPTP [Historic Properties Treatment Plan], which is also in preparation." After years of meeting and "consulting" with tribes and tribal organizations, and after finding out the concerns of the Timbisha Shoshone Tribe and the Western Shoshone Defense Project, why was nothing done? Are the Tribes that were contacted about this Project involved in the development of the MOA and the HPTP? Were the Tribes and tribal organizations asked to be Signatory Parties to the MOA? Or will they be asked to sign on to an agreement which they didn't write, and which ignores the fact that the Project can't be mitigated?	During consultation, the Project was redesigned to avoid impacts to culturally significant areas. Tribal consultation is ongoing and will continue through the life of the Project. If avoidance of areas of tribal concern is not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected Tribes to reduce or eliminate impacts in accordance with the MOA and HPTP. The Tribes were sent the Draft MOA on April 18, 2024 for review. The HPTP was sent to the Tribes on June 12, 2024. Table 5-1 in the Final EIS has been updated with additional consultation and coordination conducted.
128 and 133	128.6 and 133.6	p. 4.51: Under the Cumulative Impacts section, 4.20.2.1, it states: "Historic properties located in the CESA [Cumulative Effects Study Area] on federal land or if there is a federal nexus, would be mitigated in accordance with applicable Section 106 consultation requirements. In addition, any previously unknown NRHP-eligible cultural resources discovered during construction activities would be treated in accordance with the MOA and ACEPMs [Applicant-Committed Environmental Protection Measure]. Compliance with Section 106 of the NHPA has minimized adverse effects to historic properties; however, past and present disturbances in the CESA have resulted in cumulative impacts to these properties. Cumulative effects to historic properties from past, present, and reasonably foreseeable future activities combined with the Proposed Action would be adverse, permanent, and localized; an MOA and HPTP would be implemented to mitigate these adverse impacts." The above passage is revealing in that it ignores tribal comments regarding opposition to the project and the fact that the adverse impacts to the Tiehm's buckwheat and cultural resources and sacred sites can't be mitigated. If they can be mitigated, where are the passages in the DEIS where the tribe agrees to mitigation? A Memorandum of Agreement and an Historic Properties Treatment Plan for cultural resources should have been completed before the DEIS was out for public review, and should have had the full approval of the involved tribes and tribal organizations. It is stated above "Compliance with Section 106 of the NHPA has minimized adverse effects to historic properties." Actually, compliance with Section 106 has not minimized adverse effects to any historic property. Data recovery is not mitigation. An ethnographic study needs to be initiated before the Final EIS is completed in order to find out the full effects of the Project on Cultural Resources and Native American Values. It is also stated in the same paragraph: "Cumulative effects to historic properties from past, present, and reasonably foreseeable future activities combined with the Proposed Action would be adverse, permanent, and localized; an MOA and HPTP would be implemented to mitigate these adverse impacts." Again, an MOA and HPTP will not mitigate any cumulative impacts.	The referenced text is referring to the development of ACEPMs, MOAs, or HPTPs to minimize effects from reasonably foreseeable future projects, and not the effects of the proposed Project.
128 and 133	128.7 and 133.7	What if the "No Action Alternative" is the most environmentally and culturally acceptable outcome for the project because, if approved, the Thiem's Buckwheat will become extinct, and the rights and spiritual values of the native people who know this land the best are trampled upon? Ioneer knows absolutely nothing about the Silver Peak Range except that it will make them lots of money. This a "green" future that paves the way for environmental and cultural degradation. Short term gain for a few, long term devastation for everyone else. Along with the No Action Alternative, the proposed Project location should be designated a Rhyolite Ridge Area of Critical Environmental Concern (ACEC), as submitted to the BLM in 2021 by the Center of Biological Diversity (CBD) and the botanist Naomi Fraga. Besides preventing the extinction of the Thiem's Buckwheat, the Native American ethnographic landscape would be preserved, and the area will be protected for present and future generations. There are other ways to combat the real threat of global warming—the world isn't a blank slate for a mining company's profit. This ACEC proposal should be included as part of the No Action Alternative to show that this Alternative is a proactive positive solution in contrast to the proposed Project Alternatives which will have destructive consequences for Rhyolite Ridge. I will end this comment with the conclusion of the ACEC nomination of the Center for Biological Diversity and Naomi Fraga to the BLM. This proposal, and an ethnographic study--with the full participation and approval of the involved tribes and tribal organizations-- can point the way towards a truly livable future for all, humans and non-humans alike. Reference: Center for Biological Diversity [CBD] and Fraga . 2021. Re: Nomination of Rhyolite Ridge Area of Critical Environmental Concern Submitted to BLM. Available at: https://www.biologicaldiversity.org/species/plants/pdfs/Tiehms_Buckwheat_ACEC_Petition _032921.pdf: In 2021, a petition to establish the Rhyolite Ridge Area of Critical Environmental Concern (ACEC) on BLM managed public land in the Tonopah Field Office was submitted (CBD and Fraga 2021). The proposed Rhyolite Ridge ACEC boundary includes all six subpopulations of Tiehm's buckwheat, and a one-mile buffer surrounding them, for a total of 4,015 acres. This proposal would be consistent with the No Action Alternative, as it would provide the opportunity to reclaim any roads or other disturbances from mining exploration that have already occurred. We also request that BLM should also deny any future requests to develop or extract locatable minerals within the proposed ACEC. This would be consistent with the purpose of the ACEC designation, BLM's special status species policy, and BLM's statutory mandate to prevent "unnecessary and undue degradation" of the public lands. (The Federal Land Policy and Management Act, 43 U.S.C § 1732(b).) In addition to prohibiting future mining development, BLM should take steps to re-acquire any interests in mineral rights within the proposed ACEC that may have already vested. The ACEC designation should also include management direction to reclaim any roads or other disturbances from mining exploration that have already occurred. Motorized travel, including OHV use, should be limited to existing, designated routes within the ACEC. Finally, BLM should develop appropriate and effective conservation and recovery measures for Tiehm's buckwheat. Thank you, Bill Helmer Independence, CA	Designation of an ACEC is beyond the scope of the Project's purpose and need.

Comment Letter No.	Comment Number	Comment	Response
Jessica Johnson – June 3, 2024			
129	129.9	I oppose permitting a gold mine on rhyolite ridge. Tiehm's buckwheat cannot be allowed to go extinct for the sake of profit. It would be a dangerous precedent for the entire environmental protection act. What is it even protecting if you allow entire populations with such limited to range to be obliterated forever? We're in an extinction and biodiversity crisis and cannot intentionally make species go extinct. You cannot get them back ever.	The Proposed Action and North and South OSF Alternative incorporate ACEPMs and Buckwheat Protection Plans to minimize effects to Tiehm's buckwheat and designated critical habitat. Impacts to Tiehm's buckwheat are discussed in EIS Section 4.12.
Personal Information Requested to be Withheld – June 3, 2024			
130	130.1	SAVE THE BUCKWHEAT	Comment noted.
Woody – June 3, 2024			
131	131.1	I implore the BLM to not allow this mining operation to occur at Rhyolite Ridge. Even if Eriogonum tiehmii plants are not directly destroyed by the mining equipment, the resulting dust and chemicals that will coat the plants as huge mining trucks drive back and forth will be just as deadly to this endemic plant. We as a society should not accept the extinction of or crippling of a plant that has been evolving for tens of thousands of years so that a foreign mining company can make a quick buck, permanently destroy the land and leave. The benefits do not outweigh the negatives by a long shot in this case. Eriogonum tiehmii has nowhere else to go, and its survival is now within your hands. Lithium can be had elsewhere. Do not allow this shameful, greed fueled action to take place.	The Proposed Action and North and South OSF Alternative incorporate ACEPMs and Buckwheat Protection Plans to minimize effects to Tiehm's buckwheat and designated critical habitat. Impacts from dust deposition are discussed in EIS Section 4.12.
Not Provided – June 3, 2024			
132	132.1	Save the plant	Comment noted.
Personal Information Requested to be Withheld – June 3, 2024			
134	134.1	For Christ sake don't go forward with this project. We're so lucky to have public land as a means to preserve biodiversity and you're going to eliminate the only population of a species of Eriogonum. I pay taxes and I have a stake in this land. Please don't go through with this.	The Proposed Action and North and South OSF Alternative incorporate ACEPMs and Buckwheat Protection Plans to minimize effects to Tiehm's buckwheat and designated critical habitat. Impacts to Tiehm's buckwheat are discussed in EIS Section 4.12.
Personal Information Requested to be Withheld – June 3, 2024			
135	135.1	Please do not allow the mining project to proceed and degrade the sensitive desert habitat of the critically imperiled species Eriogonum tiehmii. Extinction is forever.	Impacts to Tiehm's buckwheat designated critical habitat are discussed in EIS Section 4.12.
Michael Trier – June 3, 2024			
136	136.1	There is no way to proceed with the development of this proposed lithium mine and also prevent the extinction of Tiehm's buckwheat. Please protect this important part of our natural heritage rather than enriching a foreign mining company.	The Proposed Action and North and South OSF Alternative incorporate ACEPMs and Buckwheat Protection Plans to minimize effects to Tiehm's buckwheat and designated critical habitat. Impacts to Tiehm's buckwheat are discussed in EIS Section 4.12.
Julianna Paulsen – June 3, 2024			
137	137.1	The development of this lithium mine threatens so many beautiful and unique plants and animals that inhabit desert ecosystems. Many of the native ecosystems in the United States have been destroyed by human development projects before we had the chance to understand their importance to us. Deserts are clearly undervalued, and also understudied. If we allow lithium mine developments on these lands to destroy populations of rare and native plants and ecosystems, there could be severe, unforseen consequences to ecosystem health in the southwest and beyond. The value of biological life in these areas should be thoroughly assessed by experts and researchers before development of this kind is even considered.	The EIS contains detailed analysis of the Project on wildlife and plants and discloses anticipated impacts in Sections 4.14 and 4.18.
Personal Information Requested to be Withheld – June 3, 2024			
138	138.1	This project should be denied because it would take place on land that's home to endemic and endangered species. Our environments should be cared for and protected rather than sold and destroyed.	Comment noted.
Not Provided – June 3, 2024			
139	139.1	I provided my comment in the attached file.	Comment noted.
139	139.2	Hello Blm, I am here to voice my disapproval of the proposed Lithium mine (Rhyolite Ridge Lithium-Boron Mine Project). It is disgraceful that such an action is even being considered given it would decimate the only known population of Eriogonum tiehmii. In the age of staggering biodiversity loss (DOI: https://doi.org/10.1017/S0030605317001302), it is unacceptable to allow a mine to so visibly contribute to the greatest environmental challenge of all time, the sixth mass extinction. The BLM is supposed to protect biodiversity for future generations and the health of the environment: "The Bureau of Land Management's mission is to sustain the health, diversity, and productivity of public land s for the use and enjoyment of present and future generations" (BLM Mission). "As part of our multiple use and sustained yield mandate, we will address climate change and conservation in all we do " (BLM Priorities). The approval of this mine would so obviously go against these guiding priorities of the BLM. Thank you for listening to me, Student of Restoration Ecology, Botany, and Range Ecology at CSU (Colorado State University)	The Proposed Action and North and South OSF Alternative incorporate ACEPMs and Buckwheat Protection Plans to minimize effects to Tiehm's buckwheat and designated critical habitat. Impacts to Tiehm's buckwheat are discussed in EIS Section 4.12.
Raymond Mendez – June 3, 2024			
140	140.1	Extinction is final, but your greed will die with you. The lawsuits will drag on until everyone involved is worn to the bone.	Comment noted.
Not Provided – June 3, 2024			

Comment Letter No.	Comment Number	Comment	Response
141	141.1	Stop being close minded. You're taking away something that can never be replaced.	Comment noted.
Stephen Sharrett – June 3, 2024			
142	142.1	My name is Stephen Sharrett. I am an MSc student at Eastern Washington University, a biodiversity scientist, and the Friends of the Eastern Washington University Herbarium vice president. Current proposals for the project estimate 22% losses of individuals/habitat for the federally endangered species, Eriogonum teihmii. This is unacceptable. Any losses or damage to the species or its present habitat would ultimately doom this rare and beautiful wildflower to extinction. The loss of this species will result in unforeseen impacts reverberating across the ecosystem. Rare species are essential to biodiversity, as well as, ecosystem services, stability, and resilience. Countless organisms rely on this species, with the shortlist including a diversity of pollinating and non-pollinating arthropods constituting another highly threatened group of organisms. I am writing to express my adamant opposition to the Rhyolite Ridge Lithium-Boron Mine Project and to urge the BLM to recognize and protect this federally listed species by terminating this project.	The Proposed Action and North and South OSF Alternative incorporate ACEPMs and Buckwheat Protection Plans to minimize effects to Tiehm's buckwheat and designated critical habitat. Impacts to Tiehm's buckwheat are discussed in EIS Section 4.12. In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.
Kiamara Ludwig – June 3, 2024			
143	143.1	Please recognize that the greater the diversity in species the greater resilience we have for the effects of climate change. We should not risk losing a species as important as this Eriogonum is. The extraction of components needed for energy storage while very important needs to be done in the sustainable fashion. These methods need to be addressed before the extraction can begin and in no way should we lose a species that sustains so much in its ecosystem	Comment noted.
Bryce Silver-Bates – June 3, 2024			
144	144.1	The Rhyolite Ridge project should be DENIED. This project will provide for a few months - a few weeks? - of the world's lust for lithium. Eriogonum tiehmii is a federally recognized endangered species. The fact that this is even a question speaks volumes of the state of our country. We have a chance to make - or unmake - history. The Rhyolite Ridge project should be DENIED.	Comment noted.
Not Provided – June 3, 2024			
145	145.1	Please don't approve this mining unless the endangered plant will be reliably and effectively protected. BLM should not be responsible for contributing to an extinction. Thank you.	The Proposed Action and North and South OSF Alternative incorporate ACEPMs and Buckwheat Protection Plans to minimize effects to Tiehm's buckwheat and designated critical habitat.
Jeff T – June 3, 2024			
146	146.1	It is UNACCEPTABLE we would allow ANY entity to mine and destroy America's biodiversity. Public land is for the people, not the corporate death cult. I condem the destruction of such beautiful habitat.	Comment noted.
Jonathon Schmidt – June 3, 2024			
147	147.1	This project threatens to extinguish the world's only population of Eriogonum tiehmii! Biodiversity is becoming evermore important as the impacts of climate change are made more clear with each passing year. It is important to preserve this species like all species. This project must not continue.	Comment noted.
Nicholas Rocha – June 3, 2024			
148	148.1	Knowingly dealing an extinction-level blow to Tiehm's Buckwheat for a non-renewable (it'll run out eventually) and for-profit (private, not public interest) enterprise is both immoral and avaricious. As a botanist and member of the public, I urge BLM to reconsider this proposal for the sake of biodiversity and, by extension, ecosystem health. Thank you.	The Proposed Action and North and South OSF Alternative incorporate ACEPMs and Buckwheat Protection Plans to minimize effects to Tiehm's buckwheat and designated critical habitat.
Elaine Larsen – June 3, 2024			
149	149.1	You cannot move forward with this project that will condemn a critically imperiled species to extinction. The plan as written will almost certainly result in the extirpation of Eriogonum tiehmii. End this now.	The Proposed Action and North and South OSF Alternative incorporate ACEPMs and Buckwheat Protection Plans to minimize effects to Tiehm's buckwheat and designated critical habitat.
Not Provided – June 3, 2024			
150	150.1	I would like to see the BLM prioritize protecting a Federally Listed Endangered Species (Eriogonum tiehmii) over opening their lands up to mining operations.	The Project area is open to mineral entry for the exploration and development of mineral deposits. In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.
Not Provided – June 3, 2024			
151	151.1	As this proposed lithium mine would be built through endangered populations of buckwheat, how are you planning on reestablishing these populations? Similarly, how are you planning on restoring any of the native plant communities? This is a major concern of mine as historically we seen have that corporations will establish non-native plants instead of the original plant communities. Additionally, are there plans in place for lithium leaks that might occur and pollute the surrounding environment? These actions would need to occur quickly as lithium can quickly enter plant roots and move throughout the plants - plants that could be consumed by humans. Mining has already adding million of pollutants into terrestrial and aquatic ecosystems globally. By building this Lithium mine, I am concerned that this would be contributing to the global waste when there needs to be an emphasis on bioremediation and restoring ecosystems impacted by these pollutants.	Proposed reclamation activities are described in EIS Section 2.1.11. Additional reclamation for Tiehm's buckwheat critical habitat is described in the Buckwheat Protection Plans for the Proposed Action and North and South OSF Alternative.

Comment Letter No.	Comment Number	Comment	Response
Not Provided – June 3, 2024			
152	152.1	I have a handful of environmental concerns with the addition of a lithium mine to this mountain range. All mining activities produce some amount of by product waste, especially if the ore is low-grade. The removal and transport of heavy metals is not a controlled system. With this mine being situated near a valley, there's a high possibility that some of this waste could end up in loess or, more concerning, in water runoff into the valley. Lithium ions have been shown to be harmful to most life on earth in the right quantities. How do you plan on reducing or mitigating these effects in the local ecosystem? Will the surrounding area be vegetated with known metal resistant plants or bioaccumulators? What prevention would be put in place to prevent lithium seeping into any nearby aquifers? Are there any concerns with lithium polluting drinking aquifers or is this site far enough away from cities where that isn't a problem?	The processing circuit and management of spent ore is described in EIS Sections 2.1.3 and 2.1.4.
Kelan Long – June 3, 2024			
153	153.1	There is no reason other than ignorance and greed to allow a foreign company to desecrate the habitat of a beautiful and endangered species. Please do not allow the plans for the lithium mine to continue and commit to protecting Tiehm's buckwheat and all the other organisms in the region. Permitting this mining operation will set a dangerous precedent for the Endangered Species Act to be ignored. Do not flippantly allow a unique species to go extinct	In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.
Katherine Sutherland, MD – May 28, 2024			
154	154.1	Dear Nevada BLM, I'm a physician who fears for my family in a warming world. We are rapidly losing biodiversity which is critical for how all living things are interconnected. I urge you to deny a permit for the Rhyolite Ridge lithium-boron mine. The mine would result in environmental harm, including the extinction of the rare wildflower, Tiehm's buckwheat. This wildflower is protected by the Endangered Species Act. If this permit is approved, it would jeopardize the species' existence, or cause adverse modification to its critical habitat - this mine would do both. The mine, and the heavy industrialization, will destroy 22% of the plant's critical habitat and severely degrade the rest. It will pollute the environment with toxic mining dust and sulfuric acid mist, interrupt the movement of pollinators and wildlife, and drain precious Nevada groundwater. Climate change is happening now. We must protect our water, our air and native wildlife. I urge you to comply with the Endangered Species Act and save our wildlife. Please deny a permit for the Rhyolite Ridge Mine. Sincerely, Katherine Sutherland, MD	In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. Air quality impacts are described in EIS Section 4.1. As described in Section 2.1.3, processing is completed using a closed system that would contain the sulfuric acid. Impacts from hazardous materials are discussed in Section 4.5.
Tench C Page – May 28, 2024			
155	155.1	Tench C Page 4635 Saddlehorn Drive Reno, NV 89511 Mr. Scott Distel Project Manager US Bureau of Land Management Battle Mountain District 50 Bastion Road Battle Mountain, NV 89820 Re: The DEIS for loneer's Rhyolite Ridge Project Dear Mr. Distel, This letter is written in support of permitting loneer's Rhyolite Ridge Lithium-Boron Project in Esmeralda Co. NV. I am a retired geologist, a graduate of UNR with a Masters Degree in Economic Geology and a resident of Nevada from 1979 until and including today. I am familiar with lithium deposits in general and have worked extensively throughout Nevada and parts of Mexico. As the past Vice-President of Exploration for Minefinders Corporation I was responsible for permitting and environmental issues as well as contracting support services for all aspects of putting a mine in production. Additionally the importance of domestic production of the lithium and associated elements in regards to benefits to the entire country and its economic independence cannot be overstated. In particular one must weigh lloneer's commitment to mine in an environmentally responsible way with little impact on the land, ground water and the endangered Tiehm's buckwheat plant, in return for a very large benefit to many others. Although I have not reviewed the documentation in any detail my understanding is that the followng parameters apply: • The unique characteristics of the Rhyolite Ridge deposit will allow for extraction of lithium using much less water when compared with other lithium deposits and most other metal mines. • Recovery of lithium from the mineralized rock will be by the vat leach process with no leach pads, tailings ponds or tailings dams, and therefore ground water contamination is minimized. • A weak sulfuric acid solution, needed to dissolve lithium from the ore, will be produced on site. The heat produced as a by-product of sulfuric acid production will supply more than enough energy to power the entire operation for the life of the mine, making it independent of Nevada's power grid. • Currently, the US depends on importing lithium, mainly from Argentina, Chile, China and Russia, making our country dependent on imports from generally unreliable nations, thus creating a supply chain which can be interrupted at any time. Production of the lithium-boron minerals from the Rhyolite Ridge deposit will provide a reliable domestic supply chain for materials needed to boost domestic production of batteries for a cleaner, more energy efficient future. • The European Union, Canada, Australia and China have all listed lithium as critical to energy needs of their own nations, resulting in a reduction of their exports of lithium, and an increase in worldwide competition for this critical mineral.	Comment noted.

Comment Letter No.	Comment Number	Comment	Response
		• Once the project is in production, it will increase domestic lithium production by 400% and provide enough lithium to power approximately 370,000 vehicles per year for at least 20 years. • The Boron produced from this project will be used in items such as touch screens for smart phones and computers and in the production of semiconductors, medicinal grade glass vials, abrasives, cleaning products, insecticides, and insulation. • The financial impact on Nevada and Esmeralda County will be significant. The project will· employ up to 500 people during the construction phase, and then 350 people throughout the life of production with many of those jobs going to local communitees and additionally individual indigenous Indian populations. The median annual income of loneer's employees, including a generous benefits package, will be approximately $141,000. • Financial benefits to Esmeralda and adjacent counties, and the State of Nevada range from a myriad of direct employment opportunities and employment in a myriad of wide-ranging support service providers. Other sales taxes, property taxes and Net Proceeds of Mines revenue will range from approximately $600,000 in the first year of construction to between $5.2 to $11.6 million per year during the estimated 26 years of planned lithium-boron production. This is significant for a small-population rural county. In summary, this project is a rare win-win opportunity to capitalize on Nevada's mineral wealth to the benefit of the county, state and our nation, with minimal environmental impact. Thank you for your time reviewing my comments. And please recommend this project for the good of the State of Nevada, the United States of America, and local populations and infrastructure that will benefit from the mine. Sincerely yours, Tench C Page - BS Geology from Un;(e"rsity of North Carolina - Chapel Hill - 1977 Masters in Geology from Univ of Nevada - Reno, Mackay School of Mines - 1988	
Jan Schiff – May 29, 2024			
156	156.1	To whom it may concern Please stop the lithium mine project. I’m worried about the environment it will be damaging. Thank you A concerned NV resident, Jan Schiff Sent from my iPhone	Comment noted.
John Deymonaz – May 30, 2024			
157	157.1	PUBLIC COMMENT RHYOLITE RIDGE LITHIUM-BORON PROJECT DRAFT ENVIRONMENTAL IMPACT STATEMENT DOI-BLM-NV-B020-2021-0020-EIS MAY 30, 2024 **These comments are to voice my strong support for the Rhyolite Ridge Lithium-Boron Project here in Fish Lake Valley, Esmeralda County.** After reading through the 230 page Draft Environmental Impact Statement I have found no significant negative impacts and numerous positive aspects to the project for our county, state and nation. I urge the BLM to grant Ioneer approval to move ahead with the project as outlined in the Proposed Action and allow this long delayed project to proceed. I am a long time resident in Fish Lake Valley and live approximately 12 miles from the proposed mine site. Given my close proximity to the mine site I will be directly affected by all activity associated with the mining as well as the social impact, population growth and positive financial benefits for our sparsely populated county (729 residents per the 2020 census) and local businesses. I have closely followed the project since the early exploration phase and have gotten to know many of the Ioneer employees, including Managing Director Bernard Rowe. I have found Bernard and other Ioneer staff to be open and honest and willing to address any concerns I have had. As a retired geologist in the geothermal industry I understand exploration and development and have been impressed with the skills, dedication and concern Ioneer has for the local residents and their understanding of the environmental and financial impacts on our small county. The 2,306 acre (3.6 sq. mile) area of disturbance is a very minimal footprint given the projected large volume and long term production of lithium carbonate and boric acid. I am very familiar with the nearby lithium operation at Silver Peak, which produces much less lithium carbonate than Rhyolite Ridge will produce and produces no other commercial minerals such as boric acid in their processes. The Silver Peak operation has turned the once lake filled Clayton Valley basin into a 25 square mile desolate moonscape by pumping and evaporating over 15 million gallons of water per day (over 16 thousand acre feet per year) to extract lithium. Ioneer has revolutionized the U.S. lithium industry with its innovative plan to extract lithium from hard rock using existing technology and a fairly modest sized open pit rather than the historic process of evaporating huge amounts of brines. The boric acid processing also generates heat which will be used to generate upwards of 15MW of electricity to power the mining and processing operations. Waste heat recovery to power the production of lithium for electric vehicles. The Ioneer project appears to be the perfect green new deal! Regarding the Tiehm’s buckwheat, which somehow achieved “endangered species” status. Buckwheat is a common desert plant that is prolific throughout the western U.S., with over 200 variations/species (pers comm USFS). From my observations of the project area in the past, the “endangered” buckwheat appears to thrive on ground previously disturbed during prospecting efforts	The Proposed Action and North and South OSF Alternative incorporate ACEPMs, including fencing, to minimize effects to Tiehm’s buckwheat and designated critical habitat. Impacts to access are discussed in EIS Section 3.13. Groundwater drawdown was modeled for the Project and included an analysis of the cumulative use of water in the area of analysis. Impacts to water rights are discussed in EIS Section 4.16.

Comment Letter No.	Comment Number	Comment	Response
		for borax and other minerals in the immediate area since the 1800's. Having to fence in 559 acres (714 acres in Alternative) for critical habitat, which limits public access as well as mining activity, for a plant occupying a mere 10 acres is incredibly excessive! Ground water concern is a convenient red flag that opponents have been waving, however, I do not see the proposed mining activity as having an adverse effect. Quite the opposite, existing water rights in FLV will actually be reduced! The state of Nevada controls all ground water in the state and in the past has over allocated water rights which resulted in the lowering of ground water in many of the states desert basins. The state is responsible for the existing ground water issue! Fish Lake Valley is a Designated Basin and no new water rights have been issued for years. Groundwater decline is an ongoing issue in FLV and agriculture accounts for over 99% of groundwater consumption in the valley, approximately 30,000 acre ft/year. Ioneer will be purchasing EXISTING water rights from agricultural operations in FLV. NO NEW WATER RIGHTS WILL BE INVOLVED! Since the state will reduce the amount of water by 20 per cent when the water right status is changed from agricultural to mining, Ioneer will be required to purchase approximately 5,000 acre feet of existing water rights to utilize the 4,000 acre ft/year of water rights the mining and processing may require. That is a reduction of approximately 1,000 acre ft/year of water rights in FLV. To put that in perspective, this is over four times the amount of all 2014 domestic water well pumping (213 acre ft/year, NDWR). The Ioneer purchase of existing water rights will actually improve the current groundwater situation in FLV! Like all residents of FLV, I obtain my potable water from a domestic well and declining water levels are a serious concern! Thank You, John Deymonaz P.O. Box 145 / 15500 Hwy 264 Dyer, NV 89010 (775) 225-3500 johndeymonaz@gmail.com 20240530_RR_DEIS_JohnDeymonaz_viaEmail_Attachment	
Susan Lewitt – May 30, 2024			
158	158.1	I urge you to deny a permit for the Rhyolite Ridge lithium-boron mine. The mine would result in environmental harm, including the extinction of the rare wildflower, Tiehm's buckwheat. This wildflower is protected by the Endangered Species Act. If this permit is approved, it would jeopardize the species' existence, or cause adverse modification to its critical habitat — this mine would do both. The mine, and the heavy industrialization, will destroy 22% of the plant's critical habitat and severely degrade the rest. It will pollute the environment with toxic mining dust and sulfuric acid mist, interrupt the movement of pollinators and wildlife, and drain precious Nevada groundwater. Climate change is happening now. We must protect our water, our air and native wildlife. I urge you to comply with the Endangered Species Act and save our wildlife. Please deny a permit for the Rhyolite Ridge Mine. Sincerely, Susan Lewitt	In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. Air quality impacts are described in EIS Section 4.1. As described in Section 2.1.3, processing is completed using a closed system that would contain the sulfuric acid. Impacts from hazardous materials are discussed in Section 4.5.
Timbisha Shoshone Tribe – May 30, 2024			
159	159.1	Good Morning, Emailing on behalf of Chairwomen Cortez. Original will be mailed. Thank you Sookaaki Charley Tribal Administrator Timbisha Shoshone Tribe	Comment noted.
159 and 184	159.2 and 184.1	May 29, 2024 U.S. Bureau of Land Management (BLM) Attn: Scott Distel 50 Bastian Road Battle Mountain, NV 89820 sdistel@blm.gov Re: Rhyolite Ridge Project DEIS Comment Period; Extension Request The Timbisha Shoshone Tribe hereby requests a 45-day extension to the comment period for the Rhyolite Ridge Lithium-Boron Mine Project Draft Environmental Impact Statement (DEIS), DOI-BLM-NV-B020-2021-0020-EIS.	The BLM sent a letter on June 3, 2024 to the Timbisha Shoshone Tribe stating that the request for an extension was declined. The BLM public scoping period was extended twice at the request of the public and the BLM conducted three public meetings for the DEIS comment phase. At this juncture, as the result of prior extensions of the public scoping period, the BLM must maintain the project schedule while considering all public comments received during the comment period and continue with the Section 7 consultation efforts with the USFWS regarding Tiehm's buckwheat. Tribal consultation under Section 106 of the National Historic Preservation Act. Tribal consultation is ongoing.

Comment Letter No.	Comment Number	Comment	Response
		1. The Timbisha Shoshone Tribe being a small tribe with limited staff (11 employees) and with one THPO and Environmental worker, makes it difficult to read a 1,300- page document. 2. Forty-five days is an inadequate response time for a complex mining project which includes a threat to a listed endangered species, the Tiehm's buckwheat, a medicinal plant important to the Western Shoshone. 3. Government-to-government consultation, including Section 106 consultation is incomplete, and many of the concerns of the involved tribes have not been stated in the draft EIS; this includes surveys for the effects on the migration patterns of the Big Horn Sheep; Vibration Studies; Water Impact Studies and these are just to name a few. This makes tribal responses to the draft EIS more complicated, and the extremely inadequate comment period is disrespectful to the consultation requirements of the involved tribes. 4. The completion of the draft EIS has been accelerated against the wishes of the public as well as consulting tribes, such as the Timbisha Shoshone Tribe, and there is absolutely no reason to deny an adequate comment period within the context of meaningful consultation as required by Executive Order 13175. 5. The fact that the scoping period for the project--by necessity--had to be extended after the listing of the Tiehm's buckwheat (Eriogonum tiehmii) as an endangered species within the Project does not mean that a reasonable comment period has to be denied. It defies logic to provide time for scoping but then deny adequate time I for comments. ' Timbisha Shoshone Tribe - Bishop Office - 621 West Line Street, Suite #109, Bishop CA 93514 Phone: 760-872-3614 Fax: 760-872-3670 Should you require any other information please do not hesitate to contact me and your consideration would be greatly appreciated. Sincerely, Margaret Cortez, Tribal Chairwomen	Table 5-1 has been updated with additional information and Tribal consultation that has occurred to date.
Ariana Seeber – May 31, 2024			
160	160.1	As a Nevada local and Advertising Manager for the Tonopah Times Bonanza, I believe this project can house a lot of opportunities for us. I am in support of this project and hope it will do good things for our state. Thank you! -- Ariana Seeber Tonopah Times-Bonanza aseeber@tonopahtimes.com 150 N. Main St. Tonopah, NV 89049 775-482-3365 775-482-5042 Fax	Comment noted.
Ashlyn Lockey – May 31, 2024			
161	161.1	Dear Nevada BLM, I'm a high school student who is terrified for my future, the future of wildlife, and the future of my generation. I urge you to deny a permit for the Rhyolite Ridge lithium-boron mine. The mine would result in environmental harm, including the extinction of the rare wildflower, Tiehm's buckwheat. This wildflower is protected by the Endangered Species Act. If this permit is approved, it would jeopardize the species' existence, or cause adverse modification to its critical habitat — this mine would do both. The mine, and the heavy industrialization, will destroy 22% of the plant's critical habitat and severely degrade the rest. It will pollute the environment with toxic mining dust and sulfuric acid mist, interrupt the movement of pollinators and wildlife, and drain precious Nevada groundwater. Climate change is happening now. We must protect our water, our air, and native wildlife. I urge you to comply with the Endangered Species Act and save our wildlife. Please deny a permit for the Rhyolite Ridge Mine. Thank you. Sincerely, Ashlyn Lockey	In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm’s buckwheat and its designated critical habitat. Air quality impacts are described in EIS Section 4.1. As described in Section 2.1.3, processing is completed using a closed system that would contain the sulfuric acid. Impacts from hazardous materials are discussed in Section 4.5.
Bishop Paiute Tribe – May 31, 2024			
162	162.1	Mr. Distel, Please accept this attached request for a 45-day extension of the comment period for the above referenced project.	The BLM sent a letter on June 3, 2024 to the Bishop Paiute Tribe stating that the request for an extension was declined.

Comment Letter No.	Comment Number	Comment	Response
		If you have any questions, please feel free to write or call. Thank you. Brian	
162	162.2	Re: Request/or Consultation and for a 45 Extension of Comment Period on the Rhyolite Ridge Lithium-Boron Project Draft Environmental Impact Statement, DOI-BLM-NV-B020-2-21-0020-EIS Dear Mr. Distel, By this letter, the Bishop Paiute Tribe formally requests: (1) a 45-day extension to the comment period for the Rhyolite Ridge Lithium-Boron Mine Project Draft Environmental Impact Statement (DEIS), and (2) to engage in government-to-government consultation and consultation pursuant to Section 106 of the National Historic Preservation Act. As you know, the proposed project is located within the ancestral territories of the Tribe. The BLM recognizes in its own governing documents that meaningful tribal engagement provides for the education of both parties and "results in the best informed BLM land use decisions."[1] A 45-day extension is necessary for the BLM and the Tribe to engage in meaningful tribal Consultation, as required by the trust responsibility and the National Historic Preservation Act. As sovereign nations, tribes have a role and a relationship with the federal government that makes them distinct from other stakeholder groups throughout the NEPA process, as the "[f]ederal government and Indian tribal relationships reflect the political and historical development of the Nation."[2] The federal trust responsibility requires the BLM to engage in government-to-government consultation, and this mandate is reflected in the BLM's own governing documents.[3] BLM's Tribal Relations Manual provide that "[t]he BLM conducts government-to-government consultation with Indian tribes to improve collaborative and informed Federal decision making."[4] The handbook also recognizes that "Indian tribes are knowledgeable sources and experts concerning their own cultures," and that "[t]hey can provide unique insight and explanation of tribal history and land uses. When provided with such information, the BLM will take this into account when making decisions related to the identification, evaluation, treatment, and management of natural and heritage resources. "[5] This consultation responsibility is also affirmed by Executive Order No.13175 (Consultation and Coordination with Indian Tribal Governments dated November 6, 2000, which requires all agencies, bureaus, and offices within the Federal Government to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications). In addition, Presidential Memorandum for the Heads of Executive Departments and Agencies on Tribal Consultation dated November 5, 2009 (74 Fed. Reg. 57881), Presidential Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships dated January 26, 2021 (86 Fed. Reg. 7491), and Joint Secretarial Order on Fulfilling the Trust Responsibility to Indian Tribes in the Stewardship of Federal Lands and Waters No. 3403 dated November 15, 2021, serve to strengthen and supplement Executive Order No. 13175. Collectively, these policies require that management decisions fulfill the "United States' unique trust obligation to federally recognized Indian Tribes and their citizens."[6] Finally, pursuant to Section 106 of the National Historic Preservation Act, federal agencies are required to consult with any Tribe that attaches religious and cultural significance to historic properties that may be affected by an undertaking.[7] At a minimum, The consultation shall provide Tribes a reasonable opportunity to: (1) identify their concerns about historic properties; (2) advise on identification and evaluation of historic properties, including those of traditional religious and cultural importance; (3) articulate its views on the undertaking's effects on such properties; and (4) participate in the resolution of adverse effects.[8] The Section 106 consultation process must respect Tribal sovereignty and represent the government-to-government relationship between Tribes and the federal government.[9] Here, by the BLM's own admission, the planning process for the Rhyolite Ridge project has been carried out at an unusually rushed timeline.[10] While the Tribe appreciates the BLM's outreach in the form of a press release dated December 19, 2022, an informational letter dated January 27, 2023, and the opportunity to conduct a site visit on April 27, 2023, the BLM did not invite the Bishop Paiute Tribe to become a cooperating agency or to engage in government-to-government consultation until August 2023. The Tribe exercised due diligence and obtained legal counsel to assist in reviewing these options. With the drafting of the DEIS already underway and only eight months between this invitation and the publication of the DEIS, this timeframe was insufficient for the Tribe to become fully educated about the project, identify concerns and potential impacts, and engage in consultation with the BLM such that those concerns could inform the DEIS before it was published.[11] Due to this limited timeframe and the complex nature of the DEIS and supporting documents, a 45-day extension to the comment period is necessary to provide the Tribe and the BLM with an opportunity to satisfy the robust requirements of tribal consultation described above. Sincerely Meryl Picar Tribal Chairwoman Bishop Paiute Tribe CC: Honorary Tribal Council, Bishop Paiute Tribe Kody Jaeger, Chief Operations Officer 1, Bishop Paiute Tribe Brian Adkins, Environmental Director, Bishop Paiute Tribe Tribal Environmental Protection Agency, Bishop Paiute Tribe Darren Delgado, Tribal Historic Preservation Officer (THPO), Bishop Paiute Tribe Margaret Cortez, Chairwoman, Timbisha Shoshone Tribe Cheyenne Stone, Chairperson, Big Pine Paiute Tribe Thomas Swab, Chairperson, Lone Pine Paiute Shoshone Tribe Advisory Council on Historic Preservation Rebecca L. Palmer, Nevada State Historic Preservation Officer Jon Raby, BLM Nevada State Director Douglas Furtado, BLM Battle Mountain District Manager Scott Lake, Nevada Staff Attorney, Center for Biological Diversity	The BLM sent a letter on June 3, 2024 to the Bishop Paiute Tribe stating that the request for an extension was declined. Government-to-government consultation and coordination for the Project has been conducted as required by NHPA, EO 13175 and other applicable EO and regulations. Consultation is described in EIS Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process. Tribal consultation under Section 106 of the NEPA continues throughout the NEPA process and is not dependent on the public review and comment period. As such, these efforts can and will continue until the finalization of the Record of Decision.

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		Mia Montoya Hammersley, Director, Vermont Law & Graduate School Environmental Justice Clinic [1]BUREAU OF LAND MGMT., BLM MANUAL 1780 TRIBAL RELATIONS (P)AT 1-14 (Dec. 15, 2016), https://www.blm.gov/ ·ites/blm.gov/fi le. /uploads/MS%201780.pdf ("BLM Tribal Relations Manual"). [2]BLM Tribal Relations Manual at 1-3. [3]See generally BLM Tribal Relations Manual & BLM HANDBOOK (H) 1780-1, IMPROVING AND SUSTAINING BLM-TRIBALRELATIONS (Dec. 15, 2016), https://www.blm.gov/sitcs/blm .gov/fi l.es/uploads/I-I-1780-1 O. pdf. [4]BLM Tribal Relations Manual at 1-14. [5]BLM Tribal Relations Manual at 1-15. [6]U.S. Dept. oflnterior & U.S. Dept. of Agriculture, Joint Secretarial Order on Fulfilling the Trust Responsibility to Indian Tribes in the Stewardship of Federal Lands and Waters No. 3403 (Nov. 15, 2021), https:.'" iS\\ .doi. QC v/siks/doi.!W\ /fiks/dips!docun1~m '·o-J-WJ-jointSt:'Cretarial-order-on-fulfillin (T -the-trust-respon ' ibi lil._--to-indian-tribes-in-the-stem1rdshin-offeJeral-lands-and-waters. pd[[7]36 C.F.R. § 800.2(c)(2)(ii). [8]36 C.F.R. § 800.l(c). [9]36 C.F.R. § 800.2(c)(2)(ii). [10]See Letter from The Timbisha Shoshone Tribe, Center for Biological Diversity, Great Basin Resource Watch, Western Shoshone Defense Project, Earthworks, Basin and Range Watch, and Western Watersheds Project to Scott Distel (May 17, 2024) (Extension Request fur the Rhyolite Ridge Project DEIS Comment Period) (citing an email from Scott Distel, BLM, to Doug Furtado, BLM (Dec. 21, 2023) ("This is a very aggressive schedule that deviates from other project schedules on similar projects completely recently and concurrently at the Oistrict and State.") (Attachment 1). [11]The BLM Tribal Consultation Manual recognizes "that tribes have different interests and capacities" and commits the BLM "to working collaboratively with tribes to develop consultation procedures that meet the needs and capabilities of both the DLM and tribes." BLM Tribal Relations Manual at 1-3.	
Esmeralda County Land Use Advisory Committee – May 31, 2024			
163	163.1	Attached please find a letter of support from the Esmeralda County Land Use Advisory Committee (ECLUAC) for the Ioneer Rhyolite Ridge Lithium-Boron Project. We welcome any questions or follow-up you may require. Dan J. Peterson, Chair, ECLUAC - djpco33@gmail.com	Comment noted.
163	163.2	Transmitted by email to: BLM_NV_BMDO_P&EC_NEPA@blm.gov , Douglas Furtado dfurtado@blm.gov , Scott Distel sdistel@blm.gov Subject Line: Rhyolite Ridge Mr. Douglas Furtado, District Manager Bureau of Land Management, Battle Mountain District Office 50 Bastian Road Battle Mountain, NV 89820 Mr. Scott Distel, Project Manager, NEPA Compliance Tonopah Field Office 1553 S Main Street Tonopah, NV 89049 Re: Ioneer Ltd. Rhyolite Ridge Lithium/Boron Mine/processing plant Fish Lake Valley Esmeralda County, Nevada Subject: Recommendation Dear Mr. Furtado and Mr. Distel: Over the past several years, the Esmeralda Board of County Commissioners have reviewed and proposed conditions for the County's interest in the Ioneer, Ltd. Lithium/Boron mine and processing facility to be constructed/operated at the northeast end of Fish Lake Valley. Ioneer has: • shown its willingness to listen, engage and support the community and they are consistently available and have offered many opportunities to talk with them about issues that will affect Esmeralda County. • listened to the concerns of local elected officials and County employees regarding impacts to public safety and other services that the County provides. In order to help augment these services, Ioneer has publicly committed to entering into a development agreement with the County to help support public services. • provided resources to the County to hire several experts to provide opinion and analysis on the proposed plan of operations, ensuring that the County has had adequate resources to properly evaluate proposed impacts without any impact to local taxpayers. • emphasized and demonstrated their commitment to the local community for many years, and has likewise committed to hiring and doing business locally.	The EIS provides a detailed analysis of anticipated social and economic impacts in Section 4.10, including impacts from increased tax revenue.

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		The projected tax revenues that will be collected by Esmeralda County through the various tax revenue streams is considerable and will provide the County and its elected officials an opportunity to provide increased services in the area of public safety, emergency response, community facilities and more throughout the life of the Project. The Land Use Advisory Committee supports and endorses the Board of County Commissioners recommendations and conditions. Sincerely, Dan J. Peterson Chair, Esmeralda County Land Use Advisory Committee DP:kf	
Esmeralda County Board of Commissioners – June 3, 2024			
164	164.1	Dear Mr. Scott Distel, Please accept the attached comments from Esmeralda County, Nevada for the above identified project. Please let me know if you have any questions. Have a great day, Maureen Maureen Glennen Administrative Assistant Esmeralda County Board of Commissioners Director, Senior Transportation 403 E. Crook Street P.O. Box 517 Goldfield, NV 89013 775-485-3406 mglennen@esmeraldacountynv.org 6/3/24, 10:23 AM Mail - Distel, Scott J - Outlook https://	Comment noted.
164	164.2	Esmeralda County, Nevada Public Scoping Comments June 3, 2024 Attn: Mr. Scott Distel, Project Manger Bureau of Land Management 50 Bastian Road Battle Mountain, NV 89820 Transmitted via Email: BLM NV BMDO P&EC NEPA@blm.gov RE: Comments on DOI-BLM-NV-B020-2021-0020-EIS Rhyolite Ridge Lithium-Boron Mine Project on behalf of Esmeralda County, Nevada. Please accept the following public scoping comments on the Rhyolite Ridge Lithium-Boron Mine Project on behalf of Esmeralda County, Nevada. **WATER RESOURCES (Section 3.16)** 1. In ser 17, Section 3.2.2.1 on page 3.19 there is an orphaned sentence fragment "at levels that were well below the low-effect thresholds." What is this sentence referring to? 2. Quarry lake evaporation rate seems understated. The evaporation rate is listed as 347 acre feet on page ES-5. The evaporation loss for the 113 acre surface area of the quarry lake should be 598 acre feet based on the evaporation rate of 63.5 inches listed on page 2-4. It should also be noted that the 598 acre feet evaporation loss will forever be removed from the 30,000 acre feet perennial yield. Fish Lake Valley will have a perennial yield of 29,402 acre feet once the quarry lake is full. ser 17 pages 2-4 and ES-5. 3. Section 3.2.1.4 states that 5,377 acre feet of agricultural water rights are needed by the mine project. This is listed as 13% of the basin's perennial yield. This should be changed to an 18% reduction in the valley's usable water rights. ser 17, Page 3-12. We would like to see, once the operations have concluded, for this water to be put to beneficial use. 4. Section 3.2.2.1 states that the mature quarry lake water which will exceed NDEP Profile Ill limits for Arsenic, Boron, Fluoride, and Molybdenum will not have an adverse effect on wildlife because "Actual wildlife exposure that would be less than daily year-round and the low magnitude by which the calculated doses exceeded the NOAELs are interpreted to indicate a low probability that risks to wildlife would occur based on the predicted water quality in the Rhyolite Ridge quarry lake (Cedar Creek 2022)." and" . .. reduced foraging and drinking frequency at the higher TDS source in favor of lower TDS sources elsewhere. Therefore, combined with the ability to obtain water from alternative nearby sources (i.e., springs, water troughs), animals are unlikely to be affected by TDS concentrations in the quarry lake." ser 17, page 3-19. Many types of flying insects are attracted to lakes and ponds. Swallows and bats hunt for these insects above and around lakes. Other bird and animal species also hunt for aquatic insects living in the lake water. The assumption that these birds and other animals will hunt for food around and above the quarry lake but go elsewhere for a drink is speculative at best, considering nearby springs	Orphaned sentence was corrected. Clarification added on quarry lake evaporation rate. The ERA values and impacts analysis on wildlife are described in the Wildlife SER and stated in the EIS in Section 4.18. Backfill of the quarry was considered as an alternative but not carried through for analysis because of the likelihood that the lake would be flow-through with potential water quality impacts to the groundwater system. More information on backfill alternatives is provided in the SIR. Mitigation for impacts to surface water and groundwater is described in Section 4.21 and includes development of a surface water monitoring and contingency mitigation plan. The ERA (Cedar Creek 2022) was provided by the Esmeralda County on June 14, 2024.

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		may also be impacted by the 300 foot groundwater drawdown with a 200 year recovery period, and deemphasizes the harm to animals drinking the quarry lake water which will exceed. NDEP Profile Ill limits for Arsenic, Boron, Fluoride, and Molybdenum. On page 3-17 it states in reference to the effect of quarry lake water on wildlife, "Details on the problem formulation, selection of reference toxicity values, ecological exposure factors, bioaccumulation and risk assessment sensitivities are presented in detail in the ecological risk assessment document (Cedar Creek 2022)." This statement is problematic as the Esmeralda Land Use Advisory Committee is prohibited from reviewing the above referenced information in order to better understand, assess and comment on the quarry lake water quality issue. The quarry lake's exceedance of multiple NDEP Profile Ill levels coupled with the permanent loss of 598 acre feet of water to ranchers due to the necessity of acquiring a permanent water right at the quarry lake because of the evaporation loss begs the question why isn't the quarry lake back filled to the water table level. The reduced available water also permanently reduces this water availability for future use. It is recommended that to add clarity and understanding of NDEP Profile Ill the following statement from The Nevada Bureau of Mining Regulation and Reclamation guidance document, Pit Lake Characterization Analytical Profile, be added to Section 3.2.2.1: "[NDEP] Profile Ill was specifically designed to provide a method by which pit lake water quality could be compared to toxicity limits for lifeforms." It is additionally, recommended that to protect wildlife additional drinking water sources such as troughs or guzzlers, etc. be placed adjacent to the quarry lake to provide a safe alternative source of drinking water in case the nearby springs and seeps dry up due to the large groundwater drawdown and extended recovery period. 5. loneer, with review and input from the County and consultants, should be required as a condition of their water rights transfer application and therefore in order to receive the requisite water permits, will need to submit a comprehensive water monitoring plan to the State of Nevada so we can assess and, potentially mitigate, any impacts.	
164	164.3	**TRANSPORTATION & ACCESS (SECTION 3.13)** 1 . 4.13.1 should include loneer will be responsible for traffic control all stages of development for life of mine (ie. Flagman, pilot cars, proper signage in any area hazardous to public access.) 2. The current description of the MOU with Esmeralda County is unclear as to maintenance of secondary assess roads to the project. We recommend adding the language in bold italic to the paragraph below to clarify. 3. The access road and rerouted portions of Cave Springs Road would also be improved and maintained per loneer's MOU with Esmeralda County for Road Improvement and Maintenance to accommodate the additional traffic generated by the Proposed Action (Newfields 2022d; loneer 2023d). loneer would improve the roadway surface and drainage infrastructure to prevent washouts. Maintenance would include dust control, grading, and snow removal. The access road would be maintained at a minimum width of 24 feet wide and crowned to provide for proper drainage. Additional drainage control measures could include culvert installation, culvert repair, leadoff ditches, and fords/boardbased dips. A combination of techniques such as compaction, blending, cement stabilization, polymer soil stabilization, and cellular confinement would be used to stabilize the access road (Newfields 2022d). Continued maintenance and improvement of the access road for the duration of the Proposed Action would reduce the impacts from the increased amount of traffic by improving the condition of the road to meet the needs of the Project plus the existing traffic. The MOU with Esmeralda County also contemplates "secondary" roads near the Project area, whereby if use of these roads increases as a direct result of loneer's construction and operation of a mine at the Project such that additional or more frequent maintenance is necessary to assure safe use, Esmeralda County and loneer will establish a schedule for more frequent maintenance to be performed in accordance with the MOU. Impacts to traffic would be moderate to major, long-term, and regional as trucks would disperse to areas outside the area of analysis. (Page 4-26) Draft EIS 4. The road maintenance agreement between Esmeralda "County and loneer should be part of the forthcoming Development Agreement.	The access road considered for analysis in the EIS is the Hot Ditch/Cave Springs Road west of the OPA. The Proposed Action and North and South OSF Alternative do not include Project-related use of the Cave Springs Road to the east of the OPA. The Development Agreement is private agreement between Ioneer and Esmeralda County for which the BLM has no jurisdiction or input.
164	164.4	**RECREATION** (SECTIONS 3.0 AND 4.9) **HAZARDOUS MATERIALS, SOLID WASTE** (Section 3.5), **VEGETATION RESOURCES** (Section 3.14) **VISUSAL RECOURCES & VEGETATION** (Section 3.15) 1. With 186-248 mine vehicle trips (per 24 hour period) during construction and 230-288 vehicle trips during quarrying and processing in the OPA, how is the impact deemed moderate for travelers to the FLV Hot Springs on the Hot Springs Road, west of the OPA? The current mitigation is to "escort" vehicles entering the OPA, requiring the use of escorts and traffic signaling. The Hot Springs Road is designated a primary access route for mining operations, both east and west of the OPA. 2. The issue still remains that using the FLV Hot springs road both east and west of the OPA will cause "moderate effect for long term" on access to the hot springs, recreational traffic, hunter access, big game relocation due to road traffic, etc. Why isn't BLM furthering their investigation? This was evaluated as an alternative by the BLM, but it was into using the Gap Springs Road from the mining operations facilities north to state highway 6? Using Gap Springs Road would have less impact on travel time, fuel consumption, highway safety, and access restrictions. 3. Visual impacts to the HOT BOX need to be upgraded from MODERATE to MAJOR	The access road considered for analysis in the EIS is the Hot Ditch/Cave Springs Road west of the OPA. The Proposed Action and North and South OSF Alternative do not include Project-related use of the Cave Springs Road to the east of the OPA. Use of the Gap Springs Road was considered as an alternative and determined to not be technically or economically practical or feasible or environmentally reasonable. Additional detail is provided in the SIR. Impact definitions for each resource area are in EIS Appendix D. The impacts to visual resources described in EIS Section 4.15 are consistent with the impact definitions.
164	164.5	**WILDLIFE RESOURCES (Section 3.18)** 1. The seasonal migration of Tarantula crossing the County Road between the Hot Ditch and the mouth of the canyon should be assessed. We don't find evidence that this has been done. 2. If the current NDOW big game guzzlers are affected by mine operations in hunting unit 211 , when and where will the effected guzzlers be relocated and rebuilt per the EIS.	An NDNH request was submitted to identify additional species in the Plan of Operations boundary and its five-kilometer radius. A response was received on June 14, 2024. No tarantulas were identified (NDNH 2024). Newly identified species were added to the EIS and SERs, as applicable. Additionally, further coordination with NDOW occurred and no tarantula migration corridors are known to occur throughout the Project area. EIS Sections 3.18 and 4.18 have been updated to mention arachnids. EIS Section 4.21 describes the general location and timeframe for replacement of the existing guzzler and construction of the new guzzler.
164	164.6	**SOLID WASTE (Section 3.5)** .	Per the Plan of Operations, solid waste would be disposed of off-site at a licensed landfill. The analysis was conducted based on Ioneer’s proposed Plan

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		1. 2.1.13.11 Should state Ioneer will not be utilizing Esmeralda County Landfill or Transfer Stations. Respectfully submitted: Ralph Keyes, Chairman, Esmeralda Board of County Commissioners	of Operations. Esmeralda County and Ioneer can privately coordinate this suggested EPM as BLM does not have jurisdiction.
Chris Stotka – June 1, 2024			
165	165.1	Your project has 100% approval and support from my company IRC. Chris Stotka INDUSTRIAL RAILWAYS CO. 675 EAST H STREET BENICIA, CA 94510 OFFICE MAIN: (707) 361-5732 FAX: (707) 752-2104 MOBILE: (510) 774-5262 EMAIL: cstotka@indrailco.com Please visit our website for a complete descripti on of all of our services, www.industrialrailways.com	Comment noted.
Ryan Cole – June 1, 2024			
166	166.1	I would like to voice my support for this fantastic project. This would be a huge step in the right direction for the USA's transition to Electric vehicles that will ultimately help with Global warming. Not only is this project great for the environment, it also secures the Lithium supply chain which is a Global security issue. On top of that it will be hugely beneficial for the local residents brining jobs & revenue to the state that will support family's & local tribes. Honestly, opportunities like this don't come around often if ever and this is so beneficial to Navada. There is push back from some groups that wish to protect the Buckwheat. However they have not been doing much to help this plant in terms of providing a plan or financially contributing to its future. Instead they just oppose the project. That being said Ioneer is the plants best long term plan for protection. They will have the revenue to propagate, protect and make sure this plant thrives into the future, and so that said I can't see any negatives with this project. It really is the future for the USA's position in the global race to go green. Thank you for hearing my view. Kind Regards, Ryan Cole Director Blessed Bowls Newport-Manly-Palm Beach m. 0407666777	Comment noted.
Caleb Cage – June 2, 2024			
167	167.1	To Whom It May Concern: Please find a letter of support from the Nevada Battery Coalition on behalf of Ioneer and the Rhyolite Ridge Project. Please feel free to contact me if you have any questions. Best, Caleb	Comment noted.
167	167.2	Bureau of Land Management Attention: Rhyolite Ridge Lithium-Boron Project 50 Bastian Road Battle Mountain, NV 89820 To Whom It May Concern: This letter is provided in support of the Rhyolite Ridge Lithium-Boron Project in Esmeralda County, Nevada. This project is crucial to meet national goals, it will have an extraordinary impact on state and local communities, and Ioneer has proven itself to be committed to ensuring the project is carried out responsibly, safely, and collaboratively. We support this project fully and without reservation.	Comment noted.

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		The Nevada Battery Coalition (NBC) was formed in 2023 in recognition of Nevada's growing role in the developing lithium and battery storage economy. NBC's focus is to provide coordination and support for projects that will strengthen, grow, and support Nevada's position as a national leader in the battery supply chain. Ioneer has been an important supporter of ours since before our founding, and their project is exactly the type of project that we wish to support. As you are aware, developing critical mineral resource projects, increasing the national reliance on alternative fuel vehicles, and onshoring essential parts of the energy supply chain are critical objectives for the Biden Administration. These are important steps for ensuring national security and energy independence, as well as ensuring that our nation's decarbonization goals are being met. In addition to developing goals and policies in support of these objectives, the Biden Administration has also invested enormous resources to achieving its objectives. The Rhyolite Ridge Lithium-Boron Project is one of two mining projects at a phase of development that can contribute to achieving these objectives in the next few years. Specifically, once online, this project is expected to quadruple national electric vehicle manufacturing capabilities over the life of the project. The Ioneer team has worked diligently and collaboratively over recent years in order to ensure that it is capable of achieving this result, and doing so in a responsible manner. This project is also extremely significant at the state and local level. As noted previously, Nevada is a national leader in the lithium and battery storage supply chain and is poised to improve its position in the. Nevada is the only state in the nation with companies in each of the seven stages of the lithium battery supply chain; we are home to the only operational lithium mine in the country; and Nevada companies have been the recipient of billions of dollars in federal loans from the U.S. Department of Energy, one of which is the largest federal loan for a natural resources project in the nation's history. This industry has the potential to transform Nevada's economy and to provide family-supporting jobs to Nevadans across the state. This project specifically will generate millions of dollars in public resources to Esmeralda County and its residents as well. We support this project for all of the national, state, and local reasons outlined above. I am happy to provide any additional comments or answer any questions that you may have. Thank you for your considerations of our comments. Sincerely, Caleb S. Cage Executive Director Nevada Battery Coalition	
Charles Galt – June 2, 2024			
168	168.1	I want to support fully the development of the Lithium prospects near Silver Peak Nevada by IONEER and other mining interests. The Federal Government continues to remove millions of acres of multiple use lands from the people, the private economy and the taxbase, There are vast tracts in southern Nevada that within the last year have been withdrawn from commercial, productive use in the name of "conservation". The private companies have detailed plans and processes that will insure the preservation of a small piece of land where the endangered Chenopod can be better salvaged and monitored unlike the lack of good protection under the administration of the Federal Government. Allow private industry to develop our mineral resources in an efficient manner without having to rely on China, or Russia or African nations to provide critical resources that we have available.	Comment noted.
Joe Westerlund – June 2, 2024			
169	169.1	[EXTERNAL] Support letter for the Ioneer Lithium Boron project located near Fish Lake Valley. As the Tonopah Town Manager and a long time resident of Tonopah NV, I can see the great financial impacts this project will bring to Tonopah and surrounding a... Joe Westerlund Town Manager Town of Tonopah 140 South Main Street PO Box 151 Tonopah, NV 89049 775-482-6643 - Office 775-482-4308 - Cell 775-482-3778 - Fax E-mail - tpu.joe@gmail.com http://www.tonopahnevada.com	Economic impacts are analyzed in EIS Section 4.10.
Blake Dore – June 3, 2024			
170	170.1	Dear Nevada BLM, I'm a father who fears for my family in a warming world. I urge you to deny a permit for the Rhyolite Ridge lithium-boron mine. The mine would result in environmental harm, including the extinction of the rare wildflower, Tiehm's buckwheat. This wildflower is protected by the Endangered Species Act. If this permit is approved, it would jeopardize the species' existence, or cause adverse modification to its critical habitat — this mine would do both.	In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. Air quality impacts are described in EIS Section 4.1. As described in Section 2.1.3, processing is completed using a closed system that would contain the sulfuric acid. Impacts from hazardous materials are discussed in Section 4.5.

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		The mine, and the heavy industrialization, will destroy 22% of the plant's critical habitat and severely degrade the rest. It will pollute the environment with toxic mining dust and sulfuric acid mist, interrupt the movement of pollinators and wildlife, and drain precious Nevada groundwater. Climate change is happening now. We must protect our water, our air and native wildlife. I urge you to comply with the Endangered Species Act and save our wildlife. Please deny a permit for the Rhyolite Ridge Mine. Sincerely, Blake Dore Blake Doré Attorney at Law Licensed in Oregon and Washington He/Him/His Doré Law Firm, LLC 4511 SE 63rd Ave., Suite E Portland, OR 97206	
Nevada Department of Wildlife – June 3, 2024			
171	171.1	Good afternoon, Please see the attached pdf files presenting the Nevada Department of Wildlife's review input to the Draft EIS. Sincerely, Brad	Comment noted.
171	171.2	20240603_RR_DEIS_BradHardenbrook_NDOW_viaEmail_Attachment_2	Comment noted.
171	171.3	Daltrey Balmer, Acting Field Manager BLM Tonopah Field Office PO Box 911 Tonopah NV 89049 dbalmer@blm.gov BLM_NV_BMDO_P&EC_NEPA@blm.gov Re: Draft Environmental Impact Statement (DEIS) for the Proposed Rhyolite Ridge Lithium-Boron Project (Project), DOI-BLM-NV-B020-2021-0020-EIS Dear Mr. Balmer: As a Cooperating Agency, the Nevada Department of Wildlife (NDOW) has contributed to the development of the DEIS. In doing so, we have worked with the BLM and Ioneer Rhyolite Ridge LLC (Ioneer) for identifying and describing existing wildlife resources, developing reasonable wildlife impact minimization and mitigation measures, and planning for a post-mining landscape which is beneficial to wildlife. In this spirit, our comments are intended to build-upon this effort by requesting an optimal bat protection measure and outlining a desert bighorn sheep monitoring plan as reasonable wildlife considerations incorporated into the final EIS and Record of Decision. In addressing abandoned mine lands, NDOW completed subterranean surveys of existing adits within the Operational Project Area (OPA). Survey results suggested that feature ES-3480 should be closed using a bat compatible closure (e.g., bat gate). Therefore, we recommend that the Wildlife Resources – WL-03 mitigation measure be updated to include the installation of a bat gate which would promote public safety and protect bat habitat within the OPA. The location of the proposed Rhyolite Ridge mine is a known movement corridor for desert bighorn sheep within NDOW Unit 211. Empirical evidence from ground observations and aerial survey data shows frequent movements between the Rhyolite Ridge area and Argentine Canyon - Ice House Canyon vicinities. The precipitous terrain adjacent to the Project is known lambing habitat. Rolling hills and lower elevation areas are important winter ranges for both rams and ewes. Overall, the landscape affords escape terrain and multiple springs located adjacent to the surrounding hills provides ideal bighorn sheep habitat. The DEIS correctly finds that potential impacts to bighorn sheep could occur because of Project construction and operations. While we recognize the DEIS identifies several environmental protection measures (EPMs) and mitigation measures to reduce potential impacts to desert bighorn sheep, we believe even with full implementation, potential impacts to the Unit 211 bighorn sheep herd could occur. Because of this outstanding concern, NDOW proposes a bighorn sheep monitoring plan for the Project be undertaken. We have taken the opportunity to draft a bighorn sheep monitoring plan which is attached for reference. We are ever available to coordinate with the BLM regarding our comments. To this end, please contact Habitat Biologist Tracy Kipke located at NDOW's Southern Region office in Las Vegas. She can be reached by email at tkipke@ndow.org. Sincerely, D. Bradford Hardenbrook Supervisory Habitat Biologist Nevada Department of Wildlife, Southern Region 3373 Pepper Lane, Las Vegas NV 89120 702.688.3960; bhrdnbrk@ndow.org	Mitigation Measure WL-03 has been revised. The Bighorn Sheep Monitoring Plan has been provided to Ioneer for consideration. Ioneer has committed to funding the monitoring and will continue to coordinate with NDOW. Information about the monitoring plan and Ioneer's commitment to fund it have been added to the Final EIS..

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171	171.4	Desert Bighorn Sheep Monitoring Proposal - Rhyolite Ridge Lithium-Boron Project **INTRODUCTION AND PROJECT OVERVIEW** The Bureau of Land Management (BLM) Tonopah Field Office has prepared a Draft Environmental Impact Statement (EIS) for the Rhyolite Ridge Lithium-Boron Project (Project). The Draft EIS analyzed the Plan of Operations (NVNV106205338 [NVN 373 098058]) submitted by Ioneer Rhyolite Ridge LLC (Ioneer) for the Project, including two alternatives. Ioneer's Plan of Operations proposes a surface quarry from which lithium and boron ore would be extracted and processed at associated facilities. The mine's construction phase would take approximately four years, the quarrying and processing phase 17 years, and the closure and reclamation phase would continue for six years after mining is completed. The DEIS found that potential impacts to bighorn sheep could occur as a result of Project construction and operations. Because of the potential impacts, this desert bighorn sheep monitoring plan was prepared. This monitoring plan (MP) is intended as a guidance document for initially determining if impacts to desert bighorn sheep occur during the Project's four-year construction phase, identify measures that may be implemented to minimize potential impacts through reactive management actions, and an adaptive management vehicle for facilitating future actions as needs arise. With exception to the intent of MP goals and objectives outlined below, this MP should be considered a living document, where the cooperators may agree to make change modifications, additions, or exclusions of any aspect of MP guidance. Any modifications to this document would be made through a collaborative process involving the BLM, Nevada Department of Wildlife (NDOW), and Ioneer. This monitoring plan includes the following components: • Goals and objectives • A description of the types of monitoring, locations, and procedures • A monitoring schedule, including the timing and frequency of monitoring • Documentation and reporting requirements Much of the background discussion and analysis presented in this MP document are derived from the DEIS. The reader is referred to the DEIS for more details on the descriptions of the affected environment and the environmental effects of the project. **Rhyolite Ridge Lithium-Boron Project and Management Unit 211 Desert Bighorn Sheep** The Project is proposed in the Silver Peak Range, approximately 40 air miles southwest of Tonopah and 13 air miles northeast of Dyer, Nevada, and involves construction, operation, and closure of a new lithium-boron mine. The Project encompasses approximately 7,166 acres, consisting of a 6,369-acre Operational Project Area (OPA) and the 797-acre Access Road and Infrastructure Corridor. Approximately 7,137 acres are public lands administered by the BLM, and roughly 29 acres of private land are within the Project area. The western side of the Silver Peak Range is identified as occupied desert bighorn sheep habitat. Bighorn sheep occurring throughout the Project area utilize a variety of habitats. NDOW identifies the bighorn sheep a part of the Management Unit 211 Herd. The Project area is within mapped year-round bighorn sheep habitat, and a large proportion of the Unit 211 Herd lives within the basin of the proposed mine. This makes a large portion of the Unit 211 bighorn sheep habitat potentially impacted from the proposed mine. The adjacent escape terrain and multiple springs located in the surrounding hills afford ideal bighorn sheep habitat. NDOW provided the following summary of the Unit 211 bighorn sheep herd. Bighorn sheep populations within NDOW's Management Area 21 are some of only a few remnant herds in west-central Nevada. These bighorn herds have been analyzed genetically, found to be unique, and given the moniker of the "Great Basin Race". Historically, bighorn sheep movement occurred regularly between the Silver Peak Range (Unit 211), Monte Cristo Range (Unit 213), and Lone Mountain (Unit 212). In Unit 211, aerial surveys in 2023 detected lamb ratios that were greatly improved (2023 lamb ratio was 42 and the previous most recent survey in 2021 was 24), but sample size were drastically decreased from previous years. This population has experienced population level contractions in recent years primarily caused by bacterial pneumonia and drought conditions. Given the importance of retaining the remnant herd genetics, the conservation of their habitat is paramount. **Project Environmental Protection Measures and Applicant Committed Actions** As part of the Plan of Operations for the Rhyolite Ridge Mine, Ioneer has committed to several environmental protection measures (EPMs) to reduce potential impacts to bighorn sheep. The DEIS outlines the following actions and EPMs: • Operators would be trained to monitor the OPA for the presence of larger wildlife such as deer, antelope, and sheep. Mortality information would be collected and reported, as necessary. • Ioneer would establish wildlife protection policies that prohibit feeding or harassment of wildlife within the OPA boundary. • Following Project construction, areas of disturbed land no longer required for operations would be reclaimed as required by the BLM to promote the reestablishment of native plant and wildlife habitat. • Speed limits would be posted at 35 miles per hour (mph) on haul roads, 45 mph on access roads, and 25 mph in the OPA. The processing facility, the quarry, explosive storage area, and contact water ponds would be fenced to specifications outlined in the BLM Handbook 1741-1, as applicable. All fences would include double swing gates to allow for human access. Ioneer would also coordinate with NDOW on fencing specifications. Avian and wildlife protection measures would be in compliance with Industrial Artificial Pond Permit measures. **Project Mitigation and Monitoring (See DEIS Section 4.21)** Wildlife Resources – WL-02 *Mitigation Measure:* Increased human activity may cause wildlife, including big game species avoidance of the NDOW Silver Peak 04-guzzler, limiting access to water. Groundwater use and drawdown may impact surface water sites used by wildlife; however, guzzlers are not affected by drawdown since they are either sourced by precipitation of manually filled. As mitigation, Ioneer would establish two guzzlers (outside of Tiehm's buckwheat designated critical habitat) to address potential impacts to water sources used by wildlife, including big game species. NDOW Silver	The BLM provided the proposed monitoring plan to Ioneer for consideration, and the EIS has been revised to state that this Plan was prepared by NDOW and provided to Ioneer for voluntary consideration. The BLM analysis has not identified this as required mitigation for the Project. The BLM manages habitat and this plan is specific to species management. Mitigation for wildlife is described in EIS Section 4.21. Effects to desert bighorn sheep are analyzed in EIS Section 4.18 and considers these potential impacts. The impact analysis for desert bighorn sheep also considers the implementation of ACEPMs.

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Peak 04 (Cave Springs) Guzzler would be relocated, and one new guzzler would be established east of the OPA and within the maximum extent of the predicted 10-foot groundwater drawdown contour and its one-mile buffer. Ioneer would relocate and rebuild the Cave Springs guzzler and build an additional new guzzler based on recommendations from NDOW and the BLM. Both guzzlers would be established during the four-year construction period of the Proposed Action.

Potential Project Impacts

Even with the implementation of the EPMs and wildlife resources mitigation (WL-02), potential impacts to the Unit 211 bighorn sheep herd could still occur as a result of Project implementation. The location of the Rhyolite Ridge mine is a known movement corridor for desert bighorn sheep within Unit 211. Empirical evidence from ground observations and aerial survey data show frequent movements between the Rhyolite Ridge area and Argentine Canyon/Ice House Canyon. The precipitous terrain adjacent to the Project is known lambing habitat and the rolling hills/ lower elevation areas are important winter ranges for both rams and ewes. It is unknown the effects that this project will have on the Unit 211 desert bighorn sheep movement patterns and demographic parameters. Potential impacts are as follows:

- Habitat loss, including removal of vegetation. Disturbance within the OPA may lead to the establishment or spread of invasive weeds that may degrade bighorn sheep habitat.
- Fragmentation of movement corridors. Displacement of individuals and habitat fragmentation decreases survival rates of affected individuals to some degree and increases competition.
- Collision with vehicles. The additional presence of roads and mine traffic may increase mortality from vehicle collisions.
- Noise and human activity would be expected to cause desert bighorn sheep to avoid areas of active disturbance. Activities can cause alternative movement patterns and seasonal use for desert bighorn sheep.
    - Lambing locations and land use can be altered. Demographic parameters can be affected by these alternative strategies.
    - Use of water sources can be altered.

GOALS AND OBJECTIVES

The goal of this desert bighorn sheep monitoring plan is to identify and minimize potential mining related impacts to the Unit 211 bighorn sheep herd. The objectives of the monitoring and adaptive management strategy are to:
1. Determine bighorn sheep use and movement within the Project area;
2. Determine whether mining operations cause disturbance to bighorn sheep utilizing the basin and adjacent terrain;
3. Based on results from Objective 2, identify whether adaptive management actions may be required to reduce impacts to bighorn sheep; and
4. Based on the results of Objective 3, implement site-specific adaptive management actions that would minimize or avoid any additional impacts.

MONITORING PROCEDURES

Monitoring of bighorn sheep will be accomplished by deploying GPS collars on bighorn sheep residing within and adjacent to the OPA. Key information collected during monitoring of bighorn sheep would include, but is not limited to:

- If bighorn sheep are able to move around the Project area without energetic consequences (e.g., changing course, stuck in a bottle neck);
- If bighorn sheep are moving through mine facilities such as roads and haul roads; and
- If bighorn sheep can access suitable lambing habitat and water sources adjacent to the Project area.

Approach and Timeline

Desert bighorn sheep captures will be conducted during January 2026. A licensed vendor under the state of Nevada will complete the capture work of 20 desert bighorn sheep. The states current licensed vendors are Quicksilver, Heliwild or Wildlife Capture Inc. With this being said, the state is currently going through the request for proposal process so additional professional contractors may conduct this work. The capture crew will use a net-gun to capture desert bighorn sheep and will physically restrain individuals with hobbles and blindfolds then sling them back to a basecamp operation. Once at basecamp, Nevada Department of Wildlife personal will collect biological samples, collect morphometric data, check for injuries and outfit each sheep with a GPS collar and identifying ear tags.

GPS collars will remain on Desert Bighorn sheep for approximately 2 years, after which, a locking mechanism will release and allow the collars to drop off. Collar location data will be collected every 4-6 hours for the duration of time the collar is deployed. Data is uploaded daily and can be viewed and exported. Area biologists will regularly monitor desert bighorn sheep movements online and will investigate mortalities when they occur. Movement data will be analyzed to determine movement corridors, critical lamb use areas, and season habitat selections/high use areas. Information will be shared with BLM and Ioneer Raw data will not be accessible to the public until after one year in accordance with Nevada Revised Statute.

NDOW Biologists will compile data and complete a preliminary report annually. Additional in-depth analysis will be completed at a later date, once the collars have dropped off. In-depth analysis may require contracting with a private consultant or research institute. The need and design of additional collaring after the construction phase and Project operations begin will be evaluated following the initial data analysis.

Budget

Project Components	**Amount Requested from Ioneer**
Bighorn Collars and Associated Fees	
1. GPS/VHF Collar ($1,500.00 X 20)	$30,000.00
2. Collar Activation Fee ($40/collar X 20)	$800.00
3. Annual Collar Data Fee ($300/collar X 20 X 2)	$12,000.00
Sub Total (Collars)	**$42,800.00**
Capture Costs	
1.Helicopter Capture Crew ($1,000/animal X 20)	$20,000.00
Total Funding Requested from Ioneer	**$62,800.00**

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		Guzzler and Spring Monitoring Guzzler and spring monitoring are necessary to identify the potential issues associated with Project operations, which may affect bighorn sheep habitat use within the basin of the proposed mine site. Guzzler and spring monitoring would occur in order to determine if water developments need maintenance or filling. Guzzler monitoring would be implemented at the discretion of NDOW or by Ioneer. A surface water monitoring and contingency mitigation plan is in development as part of the DEIS water resources mitigation. **ADAPTIVE MANAGEMENT ACTIONS** Potential adaptive management actions would be dependent on understanding how the bighorn sheep utilize the active mine site. Adaptive management actions could include, but are not limited to, one or more of the following: • Creation of a travel path suitable for bighorn sheep. • Reduce noise pollution during peak parturition season. • Excluding bighorn sheep from areas determined to be hazardous that are not currently identified. If these adaptive management actions are not effective in protecting bighorn sheep from the potential hazards of the mine, Ioneer would work collaboratively with BLM and NDOW to develop other adaptive management actions based on the threat at the time of the event to mutually develop a solution.	
Dan Peterson – June 3, 2024			
172	172.1	Corrected letter Please disregard previous draft, thanks, Dan Douglas Furtado; District Manager; Battle Mountain District Office BLM_NV_BMDOwebmail@blm.gov Perry B Wickham Field Manager Tonopah office BLM_NV_BMDOwebmail@blm.gov Mr. Wickham Mr. Furtado Please include this letter in the comments for Ioneer' s Rhyolite Ridge Lithium-Boron Project DOI-BLM-NV-B020-2021-EIS, April 2024 Please review these comments and I would appreciate a response to me regarding the access issue separately. Thank You for your consideration Dan J. Peterson	Comment noted.
172	172.2	Dan J. Peterson Comments on Ioneer's Rhyolite Ridge Lithium-Boron Project (mine) for DOI-BLM-NV-B020-2021- EIS, April 2024, transmitted by email to: BLM_NV_BMDO_P&EC_NEPA@blm.gov *The Plan states:* **SUMMARY** **Transportation and Access** **Section 2.1.8.1 Plan Boundary Access - - - states:** "Once operational, Mineral Ridge Mine traffic would use the Cave Springs Road through the OPA for access to the Mineral Ridge Mine site for truck traffic and light vehicles would utilize Coyote Road (BLM 2014). When operational, the Mineral Ridge Mine estimates that mine-related traffic could account for 16 to 18 commuter vehicles (for two operating shifts), and two to four semi tractor-trailers for freight and chemical delivery and product shipment, for a total daily average (round-trip) traffic count of 40 vehicles per day, seven days per week (NewFields 2020)." *The Plan further states:* This seems to be somewhat mis-leading because in the Transportation section of the Draft EIS the description is different. **Transportation and access** **Supplemental Environmental Report** **Rhyolite Ridge Lithium-Born Project** **Executive Summary - - - states:** "Public access to the OPA from US 6, a two-lane arterial highway that provides the east-west connection between US 95 in Nevada and US 395 in California, is to turn south onto SR 264 or SR 773. US 6, SR 264, and SR 773 are paved roads. Continue traveling southward SR 773 to SR 264 or continue traveling southward on SR 264 for approximately 13 miles to the intersection with Hot Ditch Road. Hot Ditch Road is the beginning of the access road and continues for eight miles before becoming Cave Springs Road. Continue on Cave Springs Road for five miles until the OPA is reached. The entire access road is unpaved from SR 264 through the OPA". Basically, this plan just assumes that the access to the mine will be over State Highway 264 and Hot Ditch Road to where it joins Cave Springs Road, then to the mine.	Several alternate access routes were considered as an alternative and determined to not be technically or economically practical or feasible or environmentally reasonable. Additional detail on consideration of alternate access routes is provided in the SIR. The air quality analysis in EIS Section 4.1 includes an emissions inventory and modeled air quality impacts. Effects of increased traffic associated with the Project are analyzed in detail in the EIS and include analysis of transportation system impacts, impacts to wildlife, dark skies, and wildlife. The EIS analyzed use of the Hot Springs portion of the access road as currently aligned and proposed in the Plan of Operations. The EIS discloses that this portion of the road crosses private land in EIS Sections 2.1 and 3.6.

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		NO OTHER ACCESS WAS ANALYZED IN THE PLAN (that I could find). Fish Lake Valley residence's have asked Ioneer about using the Cave Springs alignment to Highway 6 instead of the Hot Ditch road and have been informed that Ioneer would look at this alternate after BLM approves this [completely flawed] access plan. Ioneer personnel have informed me that when this EIR is approved, they will consider this alternate access. Ioneer's excuse has been that to add this alternate, and much shorter route study now, would delay BLM's approval of this [flawed] Plan. At the Esmeralda County Land Use Advisory Committee meeting on Thursday, May 30, 2024, there was unanimous opposition to the use of the Hot Ditch Road for access to the Ioneer mine. The Committee's written response to the EIS states these facts and conditions. The people of Fish Lake Valley have been supportive of the mine, although it will disrupt the quiet Ranch style life in fish Lake Valley. But the FLV people don't need to be disrupted with the horrible amount of truck traffic over our highways and county roads, when there is a very excellent alienate to Hot Ditch Road access. The residents of FLV didn't or haven't filed a lawsuit like the environmentalists did and unnecessarily delayed the project approximately 2 to 3 years and cost Ioneer stockholders approximately 5 to 10 million dollars to a save a (what FLV people call a) flower or weed. The obvious mine access should be on the Cave Springs corridor from U.S. Highway 6, near the intersection of state Highway 773, to the mine location (see attached map) This would reduce mine access travel by 19.6 miles per trip. An analysis of increased costs to Ioneer to use the Hot Ditch Road. 1. extra diesel fuel for lithium trucks at 4 trips per hour, each way, 24 hours per day, 7 days per week, for 23 to 30 years. $46,252,800 2. extra diesel fuel for construction trucks 186 to 248 vehicle passes per day for 4 years, daylight hours (ave. 12 hours/day (6 days per week) = (200 trips x 6 days x 52 weeks x 4 years) = 249,600 trips extra Diesel fuel $5,491,200 3. Damage to State highway roads. With this much heavy duty truck traffic, it is estimated that the road surface on 264 & 773 will need replacement every 4 years plus, ongoing pothole maintenance. Estimate of road replacement for approximately 12 miles of 2 lane highway . (cost per mile $1,000,000.) 12 miles = $12,000,000 x 7 replacements [28 years divided by 4 = 7 replacements]. $84,000,000 4. Extra truck driver costs, 630,720 hours for the extra 13.2 miles $ 1,261,440 $137,005,440 TOTAL These are monetary costs not considered in either Ioneer nor BLM's, EIR analysis. Seems like Ioneer is oblivious [blind] to such costs. The EIS Plan also does not consider the environmental cost to the residents of Fish Lake Valley. 1. the increased truck traffic spewing diesel soot and smoke and lungdamagingchemicals into the valley for 27 to 30 years estimated 3504 tons of soot per year • Diesel engines produce CO2- 22.38 pounds per gallon for this mine project, if the Hot Ditch access is used 209,265,532 pounds of CO2 will be disbursed into FLV during mine operation [over 104,000 tons]. That will blacken FLV air, stick on and damage farm products, deposit on cars and homes and may cause numerous illnesses. If the Cave Springs road is used, none of this amount of possible lung, health and property damage will occur. This is one of the environmental costs the April 2024, BLM EIS doesn't even mention. • heavy-duty diesel vehicles account for 20%. of all NOx emissions from US transportation sources, • NOx includes nitrogen dioxide (NO2), which is toxic, and nitric oxide (NO), which reacts with oxygen to create NO2. • Particulate matter (PM2.5), Diesel exhaust contains solid material known as diesel particulate matter (DPM), which is a subset of PM2.5. • heavy-duty diesel vehicles accounting for 25%.of all PM2.5 emissions, with • Other toxic emissions, Diesel vehicles also emit nitrous oxide (N2O), a greenhouse gas. 2. the interference with wildlife on the roads, such as (wild horses) (cattle) (birds) etc. estimated Wild Horses 10,950 impacts Cattle 7,800 impacts Birds 1,560 impacts 3. the interference with the school buses 6 per day for school year (9 months) 1080 impacts 4. the disruption and traffic control while repaving the pot holes caused by the heavy truck traffic (probably monthly) 28 years x 12 times per year = 336 traffic control disruptions. [BLM IRS says these are minor) but not to the residents of fish Lake Valley. 5. truck headlight pollution at night for 8 trucks per hour going up and down the Hot Ditch road. Assume winter average darkness, 5 PM to 6 AM = 13 hours, 30 years, 8trips/hr = 567,840 trips Assume summer average darkness, 8 PM to 5 AM = 9 hours 30years, 8trips/hr = 393,120 trips TOTAL 960, 960 trips 6. the highway roadbed through Fish Lake Valley is not constructed for truck traffic weight and is narrow with minimal shoulders, increasing the danger to residents driving on the road with the trucks. 7. The tax payers will be footing the bill for highway repairs unless the Cave Springs Road is used. 8. If Ioneer hasn't pursued the alternative routes by now, then I believe they were never serious when they led us on for the last several years, to believe they were looking at those alternative routes. This could be a bad sign of things to come from Ioneer, once they get their permits, they won't need our support. At that point we just become a nuisance to them like a insect that needs to be swatted away.	

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		All of these environmental impacts can be eliminated with the mine access being the Cave Springs corridor instead of the Hot Ditch Road & highway 264 & 773 corridors. None of these environmental impact were analyzed or considered in the current April 2024, Draft EIR. Ioneer personnel have related to the community that all of these environmental impacts will be analyzed after the approval of the April 2024 EIS. This is unacceptable to the Fish Lake Valley Community. These impacts MUST BE cured prior to approval of the April 2024 EIS. Ioneer personnel have related to the community that the Cave Springs Road may cross Indian burial ground and may cross some dried up wetlands. This is Ioneer‘s excuse for not now analyzing and proposing use of this road. That is completely unacceptable to the residents of Fish Lake Valley. If these concerns are a problem, the Cave Springs corridor can and should be detoured around these obstacles. Not using this obvious access is just an insult to the residents of Fish Lake Valley and needs to be rectified before mine construction commences. A Design/Build RFP could be prepared by Ioneer for the design and construction Cave Springs Road. Probable time to design & construct the road is approximately 6 months. This could already have been completed, if Ioneer had started the process in 2022, when suggested by Mr. Peterson. (see attached 2/19/22, letter to Ioneer) Fish Lake Valley residents have been very patient with the Ioneer’s intrusion and Ioneer employees has verbalized that they will “work with FLV to minimize its impacts life” in Fish Lake Valley. Ioneer could terminate these employees tomorrow and where would the trusting residents of Fish Lake Valley be?? In addition, with the proposed EIS ”assumption” that the Hot Ditch Road is the access to the mine, was performed without analyzing the impacts to the residents is not very nice. When a strange lawyer threatened to sue Ioneer over a Flower that no one in FLV knew about and did not interfere with the FLV life style, Ioneer stopped the mine construction plans and Ioneer spent 2 to 3 years (and millions of dollars) appeasing these outsiders over an (unknown to FLV people) plant. But, with the issue of this road impact to the actual life of FLV, is raised. Ioneer says it will (maybe verbally, but not in writing, take care) of that later (after the BLM approves the EIR), The April 2024, EIR just assumes that using the Hot Ditch will not cause the FLV residents pain and suffering for the next 27 to 30 years. Therefore, this plan should be revised and resubmitted to the Public, with the road access revised to eliminate this very real and very objectionable daily impact on the residents of Fish Lake Valley. In addition, the current alignment of the Hot Ditch Road crosses private property where it joins Highway 264. The BLM and Ioneer were appraised of this interference in 2022, and again almost a year ago, but nothing was analyzed in the EIR regarding the relocation of the Hot Ditch Road off of Private property. Neither the BLM nor Ioneer responded in writing to the concerns expressed in the written communications, nor was any of these concerns included in the EIS. Ioneer (not the BLM) have verbally discussed these road concerns with Mr. Peterson and the County, but it is always “we will do something after approval of the EIS”. Seems like in 2 years Ioneer could have analyzed the Impacts for using the Hot Ditch Road & Highway 264/773 and had a plan in place to correct these obvious errors. Nothing was done. Ioneer wastes huge amounts of money appeasing outside lawyers about a Flower, but just give lip service to the Residents of Fish Lake Valley. *Former commissioner Tim Hipp made an interesting observation about the Gemfield mine in Goldfield. When the Gemfield mine (Waterton) was pursuing their permits they were very helpful and readily open to communicating and participating with the community. When Gemfield received their permits, they stopped returning calls and as Tim said they don't need us anymore once they got what they wanted.* The people of Fish Lake Valley do not believe this will occur with Ioneer, but ‘the proof is in the pudding’ so to speak. So far Ioneer’s actions speak louder that words. This obvious road dilemma has been discussed for over 4 years and could/should have been resolved during that period. Ioneer has not put anything in writing to respond to various requests for solving this obvious road access problem. The FLV residents question the need to approve a very flawed EIS without any writings from Ioneer that they will correct this problem after approval of the April 2024 EIS. This recommendation is to solve the obvious access road dilemma, before EIS approval instead of “maybe” after approval. Ioneer has had permission to use this private property road for their exploration activities, but this permission will cease when construction begins. (See Dan J. Peterson attached letter dated February 14, 2022 and July 14, 2023. cc: BLM, Tonopah office Esmeralda County Land Use Advisory Committee Tyson Falk, Ioneer Bob Bender, Arlemont Ranch Attachments: Dan J. Peterson letter to Ioneer dated February 19, 2022 Dan J. Peterson letter to BLM and Ioneer dated July 14, 2023 Google maps of Cave Springs Road, Hot Ditch Road and State Highway 264, 773, US 6 & US 95	

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172	172.3	Transmitted only by email to: Robert Stepper rstepper@ioneer.com Tyson Falk tfalk@ioneer.com Mr. Robert Stepper, Director of Process Operations Mr. Tyson K. Falk, MPA, Government and Public Affairs Manager Ioneer, Inc. 9460 Double R Blvd. Suite 200 Reno, NV 89521 USA RE: Lithium Mine access roads Subject: Road to State Highway 773 State Highway 264 Dear Mr. Stepper and Mr. Tyson: I would just like to put in writing what I thought was discussed regarding Ioneer's access roads to the mine. Ioneer apparently was not aware of the road along the base of the silver peak mountains that connects with State Highway 773, just about a 1/4 mile+/- west of U.S. 6 Highway. On Goggle Maps it is called Emigrant Pass Road. Mr. Ralph Keyes, County Commissioner, related that he had discussed the use of Emigrant Pass Road with some Ioneer personnel. Mr. Keyes, had recommended/suggested that this access be explored. Ioneer had been concentrating on improving the 264 access road. As I explained, the distance from the intersection of each access road which is just east of the "Hot-Box" to a State Highway is almost equal-distant (approximately 8 miles). Having lived in Esmeralda County since 1978, and observing various mining projects, it is my opinion that a majority of Ioneer's workers will want to live in Tonopah. I estimate that maybe 1/3 will end up living in Fish Lake Valley. In addition, for Ioneer's delivery/supply trucks, once they realize the shorter distance to Hwy 6, they will use Emigrant Pass Road rather than take the extra 12 to 20+/- miles using highway 264 and/or 773 to highway 6. I was surprised by the number of people that were concerned about traffic and lights at night coming towards Hwy264. Using Emigrant Pass Road would probably reduce this concern. I appreciate the time of Ioneer to consider this travel issue. Improving both roads should be a consideration for Ioneer. As I explained during our meeting, I have experience in road design and construction and I will more than happy to assist/consult with the Ioneer team to accomplish this task. Sincerely, Dan J. Peterson Cc: Mr. Ralph Keyes, Esmeralda County Commissioner commissionerkeyes13@yahoo.com Mr. Bob Bender, Arlemont Ranch bob.bender@tastefulselections.com	Several alternate access routes were considered as an alternative and determined to not be technically or economically practical or feasible or environmentally reasonable. Additional detail on consideration of alternate access routes is provided in the SIR.
172	172.4	Transmitted only by email to: Robert Stepper rstepper@ioneer.com Tyson Falk tfalk@ioneer.com Mr. Robert Stepper, Director of Process Operations Mr. Tyson K. Falk, MPA, Government and Public Affairs Manager Ioneer, Inc. 9460 Double R Blvd. Suite 200 Reno, NV 89521 USA RE: Lithium Mine access road location Subject: re-location of road near State Highway 264 through private property Summary of conversation with Ioneer, Tyson Falk and Robert Stepper, 1:00 to 1:25Pm, 7/13/23 regarding Ioneer using my property for access to their lithium mine over what is refereed to as the "Hot-Ditch" road between State highway 264 and east, to the mine location. Ioneer recognizes that the existing road crosses both Peterson and Arlemont private property. Ioneer is planning on relocating the portion of the road on private properly to the north section line, after the BLM completes its first review of the mine plan. Ioneer says it is easier to perform this task after the first BLM review is competed, instead of including this road relocation in the original plan. Ioneer will perform this road-relocating task after the initial BLM approval is issued and before any construction is started at the mine site. Peterson pointed out that Ioneer has permission to use the current road over his property while the permit process is progressing, but that permission will be withdrawn when mine construction begins. The Road relocation to the north is not in the current BLM approval process, but Ioneer states that after the initial BLM process is competed, that Ioneer will relocate the road to the north off of private property DJP pointed out that approximately 20 years ago Esmeralda County sued VonDyrk, Knighten and Peterson , to use its private property for this County road. The Nevada Supreme Court ruled that the County road on VonDyrk, Knighten and Peterson's private proper was not a county road. Thereafter, the County constructed a County road on the north section line of the private property on BLM land. The "Hot-ditch" road is an extension of the relocated county road.	Proposed road realignments are described in EIS Section 2.1.8. The EIS analyzed use of the Hot Springs portion of the access road as currently aligned and proposed in the Plan of Operations. The EIS discloses that this portion of the road crosses private land in EIS Sections 2.1 and 3.6.

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		In fact, there is already use of this “section-line” portion of the “Hot-Ditch” Road and completing the grading of the existing road will be quite inexpensive. Ioneer in its conversations, has assured Peterson that after the initial BLM approval process is completed, that Ioneer will notify the BLM that the current location of the “Hot-Ditch” road over private property will be relocated to the north section line coinciding with the existing County Road west of State highboy 264. Ioneer related that the BLM has stated that the road from the mine to State Highway SR773/US6 has some environmental issues and the BLM has/is refusing the use of that road for mine access. Use of this exiting road would prevent all the truck traffic from traveling into Fish Lake Valley and severely disrupting valley life. It was pointed out that this (SR773/US6) access is a shorter route for all the truck traffic and probably would be used once truckers realized that they can reduce their trip by approximable 16 miles by using this access road. The phone call ended with assurances from Mr. Tyson and Mr Stepper representing Ioneer’s intention that the Hot Ditch road over private property would be relocated to the north section line prior to mine construction. Attached is the February 19, 2022, letter to Ioneer regarding the road relocation. Ioneer via Mr. Falk on numerous past occasions has verbally related the above Ioneer position when discussed with both during Esmeralda County Land use Planning Commission meetings and private conversations. Dan J. Peterson printed 6/3/24, 3:11 pm, July 14, 2023, Summary of conversation with Ioneer Tyson Falk and Robert Stepper, 1:00 to 1:25Pm, 7/13/23, regarding Ioneer using my property for access to their lithium mine over what is refereed to as the “Hot-Ditch” road between State highway 264 east, to the mine location  	
Nevada Mineral Exploration Coalition – June 3, 2024			
173	173.1	To Whom it may concern: Please see the attached letter of support from the Nevada Mineral Exploration Coalition. Thank you. David R. Shaddrick, President Nevada Mineral Exploration Coalition	Comment noted.
173	173.2	May 28, 2024 Rhyolite Ridge Lithium-Boron Mine EIS c/o BLM Battle Mountain District Office 50 Bastian Road Battle Mountain, NV, 89820 *Submitted via email: BLM_NV_BMDO_P&EC_NEPA@blm.gov* **Comments on Rhyolite Ridge Draft EIS** Dear Mr. Distel: **Introduction** The Nevada Mineral Exploration Coalition (NMEC) is submitting this letter in response to the BLM’s solicitation for comments on the Rhyolite Ridge lithium-boron project’s Draft EIS, proposed by Ioneer. These comments highlight three positive impacts to be afforded by the project: contributing to the establishment of a robust, domestic lithium supply chain; stimulating the economy of nearby local communities through job creation and public revenue impacts; and facilitating the conservation of the endangered Tiehm’s Buckwheat plant as evidenced by the North and South OSF Alternative considered within the Draft EIS.	Comment noted.

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		For background, The NMEC is a grassroots coalition of individuals and small businesses who make up the exploration, research, and development segments of the mining industry. Our goal is to promote and preserve the natural resource exploration industry of Nevada and the Western US. NMEC members use state-of-the-art science and technology to search for and develop the natural resources in the areas where we work, and we generate jobs, economic activity and considerable tax revenues for local and state governments. We bring in new capital, commonly from out of the country, all of which is spent domestically. We find the mines of the future, ensuring the long-term economic well-being of Nevada and the Western US.	
173	173.3	**Rhyolite Ridge will Bolster the United States' Critical Mineral Supply Chains** Although the demand for lithium, a critical mineral used in the manufacturing of lithium-ion batteries, is set to increase 500% by 2050[1], the only current production of this commodity in North America is from Albemarle's Silver Peak brine operation in Esmeralda County, Nevada[2]. While domestic projects in the production pipeline have been beset by legal challenges and permitting delays, the United States remains a net importer of lithium2, posing a serious hurdle to the Biden administration's goals of curtailing carbon pollution and emerging as a global leader in clean vehicle manufacturing[1]. As the second lithium-producing operation in the United States and the first Boron producing operation in Nevada, the Rhyolite Ridge project will contribute greatly to strengthening domestic supply chains and facilitating the renewable energy transition. According to the U.S. Geological Survey's 2022 Mineral Commodity Summaries[2], the United States relied on imports for >25% of lithium consumption between 2017 and 2021, a dependency on foreign products that can only be expected to increase as the demand for lithium quintuples by 2050. Eight percent of lithium imports over this period came directly from China or Russia, and 91% came from Chile or Argentina, where the importance of Chinese trade and magnitude of Chinese investment have increased exponentially in recent decades[3]. Thus, virtually all lithium imports into the United States came from competing global superpowers or regions decidedly within their sphere of influence, constituting a serious supply chain concern that can only be resolved by advancing domestic lithium deposits, such as Rhyolite Ridge, into production. As one of the two known major lithium-boron deposits that exist on Earth[4], Rhyolite Ridge is a unique geological occurrence that affords a remarkable value proposition to the American people. Lithium-boron mineralization is hosted within ancient lake beds that were deposited in an enclosed basin within a tectonically active region, a set of conditions that is only preserved at specific times and locations within the geologic record, and very rarely results in the formation of economically valuable ore deposits. According to the Draft EIS Section 2.1.3.1 (Section 2-3), the Project will produce "approximately 26,800 tons per year (tpy) of lithium carbonate and 219,000 tons per year of boric acid." When viewed through a geological lens, such a deposit is a veritable needle in a haystack, and through a societal lens, a prolific natural resource capable of delivering the United States into an era of reduced carbon emissions. To mineral exploration geologists who truly appreciate the value and scarcity of deposits like Rhyolite Ridge, we believe it is imperative that the Project receive an affirmative Record of Decision. [1]https://www.whitehouse.gov/wp-content/uploads/2022/02/Capstone-Report-Biden.pdf [2]https://pubs.usgs.gov/periodicals/mcs2022/mcs2022.pdf [3]https://rb.gy/ewv9pw [4]https://www.sec.gov/Archives/edgar/data/1896084/000114036121040692/filename5.htm	Comment noted.
173	173.4	**Rhyolite Ridge will Create High-Wage Jobs and Substantial Public Revenues** Beyond strengthening American critical mineral supply chains, mining at Rhyolite Ridge will revitalize Esmeralda County and the surrounding communities by creating hundreds of quality, family-sustaining jobs, promoting local spending by Ioneer employees and fostering a rich environment for business start-ups. According to the Draft EIS the Project would generate a "construction workforce of 500 people for four years, plus 113 indirect and induced jobs, and there would a quarrying and processing workforce of 350 people for 14 years, plus 79 indirect and induced jobs." (Section ES-5).[5] According to the "Social and Economic Values Supplemental Environmental Report"i for the Rhyolite Ridge Lithium-Boron Project, Esmeralda County had a population of 729 in 2020. This number of new jobs will be a major contributor in revitalizing an area that has seen consistent population decreases and limited public revenues, and will thus benefit considerably from the uptick in economic activity resulting from the Project. This Environmental Report also correctly indicates that "average weekly mining wages are among the highest for any industry in the Nevada non-metro counties". Jobs within the mining industry produce family-supporting careers, and Esmeralda County's residents and their families will benefit considerably.[6] And as evidenced by letters of support approved by three Nevada County Boards of Commissioners (Mineral, Nye, Esmeralda), Ioneer has done an exemplary job to ensure that they are engaging and actively listening to the nearby local communities to ensure that the Project brings positive benefits to this area of Nevada and its citizens. [5]https://eplanning.blm.gov/public_projects/2012309/200540745/20108267/251008267/Rhyolite%20Ridge%20DEIS%20-%2020240415_508.pdf [6]https://eplanning.blm.gov/public_projects/2012309/200540745/20108276/251008276/11_rr_ser_social_economic_values_20240415_508.pdf	The EIS contains detailed analysis of impacts to social and economic values in Section 4.10.
173	173.5	**Mining at Rhyolite Ridge will Facilitate the Conservation of the Endangered Tiehm's Buckwheat Plant** Over the course of mineral exploration and development activities at the Rhyolite Ridge project, Ioneer has demonstrated great commitment to the responsible management of the Tiehm's buckwheat population, as well as flexibility in the wake of evolving government mandates surrounding it. As an indication of the Project's commitment to responsibly developing this important resource while simultaneously protecting the populations of Tiehm's buckwheat, the proposed quarry in the North and South OSF alternative, has been developed to ensure there will be no direct impacts to any of the plants on site. We commend Ioneer for working with experts and regulators to design their Project responsibly and are supportive of this alternative presented in the Draft EIS. Beyond these revisions to the Project's Plan of Operations, Ioneer has also demonstrated their commitment to ensuring the Tiehm's buckwheat is uplifted as evidenced by their construction of a dedicated greenhouse and the hiring of experts, including a full-time botanist, to oversee the operations which will continue to increase the numbers of plants and seeds to be banked to ensure that the species is protected in perpetuity. These efforts and required expenditures of resources would be unlikely to be replicated in a similar manner by any other party, and as such we believe that Ioneer's efforts will be invaluable and irreplaceable in the preservation of this species.	The EIS contains detailed analysis of the Proposed Action and North and South OSF Alternative and take into consideration the Buckwheat Protection Plans of each alternative.
173	173.6	**Conclusions**	Comment noted.

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		In closing, Rhyolite Ridge will provide significant benefits to the local population and the country, including: the strengthening of critical mineral supply chains by vastly increasing the domestic production of lithium, invigorating the local economy by creating jobs, and facilitating the conservation of Tiehm's buckwheat. Many of the vocal opponents to mine development, who are undoubtedly well-intentioned, view the situation in a purely environmental light without sufficiently considering the benefits Rhyolite Ridge will provide to citizens of the Fish Lake Valley region and the United States. It is clear to the members of the NMEC that the Rhyolite Ridge project will have a decidedly positive impact and that, for the benefit of the general public, its development is an important concern worthy of prioritization. Thank you for this opportunity to submit these comments on the Rhyolite Ridge project. Please do not hesitate to contact me if you have any questions. Sincerely yours, David R. Shaddrick NMEC President	
Fermina Stevens – June 3, 2024			
174	174.1	Please see the attached comments. Thank you, Fermina Stevens	Comment noted.
174	174.2	June 3, 2024 via BLM E-Planning Portal BLM_NV_BMDO_P&E_NEPA@blm.gov US Bureau of Land Management 50 Bastian Road Battle Mountain, NV 89820 RE: Comments on Rhyolite Ridge Draft Environmental Impact Statement Pursuant to BLM's public notice, 89 Fed. Reg. 28803-04 (April 19, 2024), please accept these comments on the Rhyolite Ridge Lithium-Boron Mine (Mine or Project) and BLM's Draft EIS (DEIS), from the Western Shoshone Defense Project (WSDP). The WSDP has been protecting and preserving Western Shoshone traditional land rights and treaty rights for the past thirty (30) years. Over the course of several decades, we have witnessed our once beautiful and plentiful lands depleted under the continued degradation of mineral extraction. Today's comments concern a lithium project near the California border which is within the treaty territory of the Western Shoshone Nation, this project is known as Rhyolite Ridge lithium-Boron project.	Comment noted.
174	174.3	*It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.* This "mission" by the BLM is contradicting and false as the Western Shoshone Defense Project will show in the following comments. The proposed Project violates many federal laws and implementing regulations, including the Endangered Species Act (ESA), the Federal Land Policy and Management Act (FLPMA), the National Environmental Policy Act (NEPA), and laws concerning the protection of Native American cultural and religious resources. The BLM violates international law between the United States Government and the Western Shoshone Nation because of the abuses committed through the denial of our right to property, due process of law and equality under the law. (See e.g. Dann v. U.S., Case 11.140, Inter-A. C.H.R., Report No. 75/02, OEA/Ser.L/V/II.117, doc. 1 rev. 1 (2002) and UN Comm. on the Elimination of Racial Discrimination (CERD), Decision 1 (68), UN Doc. CERD/C/USA/DEC/1 (April 11, 2006), et al). Moreover, the BLM violates Western Shoshone traditional laws that are in place to protect the Land, Air, Water and Spirituality (LAWS) along with the biodiversity, environment and all life for future generations. The BLM claims to sustain the health, diversity, and productivity of "public lands" for the use and enjoyment of present and future generations; however, this couldn't be further from the truth in this proposed project. The BLM has a mission that is in line to be a puppet for a foreign multinational company from Australia. The Western Shoshone have witnessed the blatant abuse and disregard for the rights of the Sogobia (Earthmother) through the negligence to allow the extinction of the flora and fauna through misguided management practices because of their support for multinational corporations that cause harm to the environment instead of protecting the American public, Indigenous Peoples, biodiversity and the environment for future generations. Section 3-8 of the DEIS and section 2.3 of the Native American Values Supplemental Environmental Report both reference a report by Steward 1933 - 1938 and another study by Steward 1938; Jamaldin et al. 2020. Steward has been controversial because of his Justice Department cases against the Paiute, Shoshone and the Ute Tribes' right to property and the reports that came from his fieldwork. Steward's views were and are disputed by Northern and Southern Paiute, Western Shoshone and Ute peoples due to his bias and racist colonial view. His view concerning property was derived from his employment by the justice department that Western Shoshone, Northern and Southern Paiute and Ute peoples didn't have a concept of property and became the basis for the Federal government's view that "these peoples" did not have a strong enough concept of land ownership to warrant calling their land "property". This racist and discriminatory denial of traditional indigenous property rights has been rejected by recognized standards of human rights. And yet again, we are faced with racial discrimination by the BLM because of our religion, the color of our skin and our ethnic origin through outdated reports by a person who developed his theoretical position on hunter-gatherers' property and property rights. Traditional boundaries and property are between the Western Shoshone Nation and Northern Paiute Nation, we have always had our own take on property and property rights. attached, Marc Pinkoski, Julian Steward, American Anthropology, and Colonialism, Histories of Anthropology Annual, Vol. 4, 2008, pp.172-2024. When Steward approached Shoshone, most wanted nothing to do with him for fear of his motives. The 1930s was a time when Indigenous peoples were barely recovering from horrific abuses that were still fresh in their minds - post traumatic stress disorder from extermination policies, rapes, theft of lands and theft of life sources, along with the ongoing kidnaping of their children by the federal government. And, on top of that, another non-indigenous person comes along to steal the soul and knowledge of the people.	The EIS is consistent with U.S. laws including NEPA, NHPA, and the ESA. Government-to-government consultation and coordination for the Project was initiated in 2020 and is described in Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process. During consultation, the Project was redesigned to avoid impacts to culturally significant areas. Tribal consultation is ongoing and will continue through the life of the Project. If avoidance of areas of tribal concern is not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected Tribes to reduce or eliminate impacts. The EIS contains detailed analysis of impacts to vegetation including Tiehm's buckwheat and Tecopa birdbeak, and wildlife species, including desert bighorn sheep and the Tui chub in Sections 3.12, 3.14, and 3.18. Several Indian Claims Commission and federal court cases have addressed alleged taking of land including territory described in the Treaty of Ruby Valley. Judgement on these cases found that a taking occurred and aboriginal title was extinguished. In response to these cases, Congress passed the Western Shoshone Claims Distribution Act to provide for distribution of the settlement funds. The DOE loan program has no effect on environmental impacts associated with the Proposed Action and alternatives and is not considered in the EIS. Man camps are not proposed as part of the Project. Impacts to social and economic values from increased population, are analyzed in Section 4.10 of the EIS.

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		If Steward's 1870 population numbers in Fish Lake Valley (of approximately 100 individuals) are close, that is mostly in line with what Shoshone elders passed down; and that Dyer and his band of murders may have committed approximately 2,900 killings of Western Shoshone men women and children. And the 5 families in Lida are about the right estimate after the introduction of smallpox by Europeans who wanted the water. As we know, colonial anthropologists like Mooney, Kroeber and Steward had a job to do for the American empire and that was to undercount the Indigenous population and give the impression that all indigenous Peoples of the North American continent north of the Rio Grande were wandering aimlessly in search of food. This nonsense has always been debated by Indigenous peoples and other scholars. Shoshone/Paiute Intermarriage Steward gave statements about the Fish Lake Valley, Silver Peak range, Deep Springs as if he really understood the dynamics of the Western Shoshone and Paiute Peoples in this area. He did not fully understand the concept of intermarriage (due to his biased colonial position) and how nationhood worked before the arrival of European trespassers. It is well known that a marriage between the two Peoples was common and it all depended on the marriage. Traditionally, a man went with the woman's family, so if a Shoshone man married a Paiute woman, he then became Paiute and vice versa if it were a Paiute man marrying a Shoshone woman. But it also depended on the traditional territorial boundary of the Western Shoshone and the Paiute. They had their own views of property, and it did not fit with Steward's colonial views. Language and Blood Quantum On the Shoshone and the Paiute territorial boundary and co-use areas, the people were sometimes bilingual, trilingual and even others like chief Kawich spoke seven or eight languages which was not uncommon in the southern region. It is said that Joe Kennedy, born in the late 1800s, spoke seven separate languages - two being Spanish and English. Also, it was reported that Southern Paiute had a similar number of languages. There is no telling how well they spoke these languages, but it is said that they could speak in their own tongue and converse with one another holding a perfect conversation without skipping a beat. However, conversing with Europeans was a bit tricky because most Europeans didn't have more than their own language. Only after the coming of Europeans and forced removal to concentration camps (referred to as reservations) did blood quantum become an issue. Blood quantum was derived by the U.S. government to cause division but was ultimately an attempt to eliminate Indigenous peoples as free, distinct Peoples among nations. Hunting Practices / Kidnapping The report goes into traditional practices about the men hunting deer, antelope and mountain sheep year-round. This started to take place because of Europeans hunting in this manner, the Shoshone and Paiute found themselves competing for meat. Their traditional seasonal hunting practices were being ignored and discouraged by Europeans by way of intimidation. Moreover, continuous moving and relocation was necessary to protect children from kidnappings. Timbisha member and highly respected elder, Pauline Esteves' grandparents, the Bolands, went high in the Panamint mountains in the dead of winter through the cold and snow to protect their children from U.S. government officials that were out to steal their children to incarcerate them in the boarding school institution. The family was mostly successful, however the youngest Boland child, Mimi, was captured when she was between the ages of 12-14. She was finally released and she returned back to her homelands with her family. Another instance, Johnny Kennedy and his sister Nellie Kennedy were kidnaped by U.S. government officials and put onto a train in Lone Pine, this was when Johnny was so young, he was unable to tie his shoes. The train traveled up through the Owens Valley stopping at Independence, Big Pine and Bishop snatching up Shoshone/Paiute children along the way. From Bishop the train ran through Mina and on to Carson City where the Stuart boarding school was located. Johnny was beaten every day for approximately a year because he could not speak English at that time. After a time in this institution, his father was able to take him back home and sent him with his grandmother who moved often to keep him protected. However, the authorities did capture him and he was sent to the Sherman boarding school institute where he spent a number of years. [the attached article is what Paiute and Shoshone parents were fearful of and in many instances, children that were taken by the federal government to these Boarding schools, never came home. Some died from disease, some by heartbreak and others from abuse and neglect] Hunting and Pine nuts This is where Steward is further incorrect in stating that hunting deer, antelope and mountain sheep year-round was a traditional practice. Shoshone and Paiute had hunting seasons that are well documented by traditional peoples. Deer were not taken year-round by Shoshone, the season started around July or later depending how far north or south they were located and/or until they began to mate and that's when they stopped allowing the deer to breed. However, during good years of a pine nut harvest, they would take bucks later in the season because of the excess fat that is put on when they consume pine nuts. Pine nuts are an important food source for Shoshone and shared with the animals as well. When gathering pine nuts, it is customary to knock them down for the deer and other critters. In the cave springs area and among any traditional harvesting area, the deer would follow the people around as they knocked the pine nuts down for critters and humans alike. Big horn sheep and Pronghorn or antelope (Steward reference) were not hunted year-round either, refer to scoping comments. Sage grouse The sage grouse is only hunted when they are mating, the reason is because the difference between the males and the females is easily distinguishable. We fear that this sage grouse habitat near cave springs will be further impacted and/or destroyed if the mining project were to go forward. Traditional stories tell us, before European contact, the sage grouse interacted with the people (almost domesticated but free to roam as they please) and the reason Europeans easily annihilated their population was because they were not used to being hunted out of season. The Europeans did not adhere to the Indigenous hunting season and they hunted both sexes. Quail were similarly fed and managed traditionally as well. Traditional Economy and Disease It is amazing that Steward could take such a biased approach especially during a time of suffering because the traditional economies, social and political infrastructure was destroyed by mass murders, rapes, kidnappings, theft of resources, theft of lands, and racial discrimination by Europeans. European diseases didn't come through just once, they came again and again depopulating the Great Basin of its Indigenous population. This was catastrophic for the economic, political and social framework of Paiute and Shoshones who passed information through word of mouth; many elders and keepers of knowledge were lost during those times. Foods	

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		However, Steward conveniently leaves out that 2/3 of the foods consumed by the world's population today come from Indigenous Americas agricultural systems and were grown in the Americas and nowhere else precontact by Europeans. We can go through a short list of agricultural foods that were grown in the Americas pre-European contact starting with corn, squash, many varieties of melons, chili, potatoes, tomatoes, pumpkins, many varieties of beans, artichokes, okra, pecan's, pineapples, passion fruit, cranberries, blueberries, chokecherries, blackberries, vanilla bean, peanuts, cashews, walnuts, sunflower seeds, and most everyone's favorite, chocolate and cocoa. What Steward conveniently ignores is that traditional economies were devastated and have never recovered from the annihilation of European trespassers. What Steward refers to as "Irrigation without achieving it" is only his point of view. Paiute and Shoshone have their own view on traditional agriculture, native plant-based foods, irrigation systems; and traditional economies that once thrived were taken over by Europeans who committed murder, rape and crimes of intimidation to acquire the best lands and life sources that Shoshone and Paiute peoples depended on. Refer to scoping comments about the pronghorn extermination and the disease that spread through Bighorn and pronghorn brought on by European cattle, sheep and goats. Irrigation systems and plants Irrigation systems were in place in the Owens Valley, Fish Lake, Ash meadows and Timbisha now known as Death Valley. In Timbisha, irrigation systems were in place to water the mesquite trees along with other traditional plants. Ponds were constructed to attract waterfowl and other aquatic life to come into the area, however, the Borax and later the National Park service now occupy traditional economic land bases that were once utilized by Shoshone. Fish Lake Valley's irrigation systems were taken over and replaced by European agricultural systems. The last wiyampi producing trees that were maintained by Shoshone on the Fish Lake Valley floor were eradicated by non-native farmers in the nineteen seventies (1970's) and many plants that were irrigated (that Steward considered "wild") have all disappeared and no longer can be found where they used to grow. Paiute and Shoshone have a different view when it comes to the flora and fauna, and nothing our ancestors utilized were considered "wild". They were maintained in a traditional way and talking to the plants and animals was part of that management, respect and religious practice. Elders from Pyramid Lake to Elko to the Owens Valley and beyond will tell you that plants they once gathered in abundance are now difficult to find and some have gone extinct. It has been told by elders that there used to be two (2) other pine nut birds besides the Blue jay, and from what our elders have said they have not been seen for 40 years or more. Plants are no different, a plant with medicinal value that was applied to cuts on humans and horses has disappeared completely and it was said when applied, you could feel the cut closing and after a day or two, the wound would pretty much be healed. Cultural Assessments / Ethnographic Studies First and foremost, the BLM has never given any consideration to incorporate systematic methods of compliance by determining the cultural and religious significance of the Rhyolite Ridge and surrounding area using Preliminary Cultural Assessments (PCA), systematic ethnographic studies and developing an understanding about the Rhyolite Ridge site and the connection to other areas. Ethnographic studies must take place for at least one year or longer if required for more information and data collection. These ethnographic studies would need to be done at all four seasons of the year if there is any chance of true consultation on a government-to-government relationship. Consultation between the BLM isn't supposed to be just about the BLM sending a letter checking off the box and/or a site visit with tribal representatives. Cave Springs is a traditional cultural Property (TCP), cultural landscape and an Area of Critical Environmental Concern (ACEC) for the Western Shoshone. As mentioned in the WSDP Scoping comments, Cave Springs is an important Traditional Cultural Property (TCP) and has been for thousands of years because of the traditional cultural and spiritual connection that Shoshone have to this Cultural Landscape. As stated, the traditional religious and spiritual connection will forever be diminished or destroyed if the project were to go forward. Religious and cultural practices will come to an end because the view and acoustics that the natural environment allows will be destroyed by loud machinery, explosives, dust, a pit and tailings. All of this combined negatively impacts our overall religious experience. Cave Springs has been an important cultural landscape for vision quests, and religious journeys and more and is an Area of Critical Environmental Concern (ACEC) for Shoshonean Peoples. The quality of the acoustics and view is highly important for religious practices, ceremonial use and for songs and prayers to travel to their intended place and/or supernatural beings. The Cave Springs TCP has been continuously used for spiritual and religious practices for thousands of years. Recommendation: No Action don't commit religious persecution against vulnerable Peoples that you, the BLM claim to have a "trust responsibility". And don't commit crimes against the Earthmother for financial gain and an idea that you have solutions to problems that were created out of arrogance and ignorance to only create more problems for the environment. Importance of the flora and fauna at Cave Springs and surrounding Cultural Landscape The flora and fauna have been utilized for thousands of years by Shoshonean Peoples for food, medicine and spiritual use. The Buckwheat Plant has been an important plant along with many others in the ACEC, however, we will discuss the Buckwheat because of its medicinal value and its endangered status. Just like above, religious, spiritual and ceremonial practices occurred with this plant. We cannot discuss the flora without the fauna, so we must mention the Bighorn sheep that water at Cave springs. The flora and fauna are connected to Shoshonean Peoples religion and spirituality (as mentioned above) because this has always been where our people came and come for religious journeys and one of those is talking with the flora and fauna at this site (Juanita Landas, relevant docs). Moreover, the caves around the area have and are used for vision quests, a spiritual journey where an individual does prayer and ceremony to receive life teaching and fulfillment by spending the night while spirits and visions of rattle snakes etc. try to scare the individual to leave the cave. Talking with the plants and animals is a part of the equation, you must give prayers to the environment and Shoshone LAWS which is the land, air, water and the spiritual. As mentioned in the scoping comments, the pinyon trees are of great importance and the mine will impact them forever, harming the food value of the nut and the medicinal and spiritual connection. Recommendation: No Action, don't put financial gain in front of extinction of a traditional cultural property, the Buck wheat, tui chub and the bird's beak. Not to mention the pine nut trees, bighorn sheep and other flora and fauna that our people have relied on for thousands of years before Europeans occupation of Shoshone lands. Western Shoshone and fish lake valley resident Joe Kenndey traveled to Cave Spring before the monitoring wells were put in and he saw close to a hundred bighorn sheep around this traditional cultural property. After the monitoring wells were put in, Cave Spring went dry. It is his opinion that the monitoring wells punched a hole in the seal causing the water to change its flow. Elders would say that they, Ioneer has disrespected the spring and now it has changed direction. What steps are to be taken because of this catastrophe? DOE $700 MILLION LOAN- DUE DILIGENCE	

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		In January of 2023 the DOE's Advanced Technology Vehicles Manufacturing (ATVM) loan program announced a conditional agreement to provide a loan of $700 million to Ioneer for the development of the Rhyolite Ridge Mine. The DOE reports that the loan comes with due diligence including environmental review, finances, and technical due diligence. • DOE as a cooperating agency should conduct Tribal consultation as part of their due diligence process. This mine would destroy cave springs, a nearby sacred site, and impact other cultural land values such as potentially denying water to pinyon trees. Pine nuts are an essential Indigenous food source and denying water to a local recovering Bighorn Sheep population. The project is sited with Western Shoshone treaty lands. The DOE was one of 17 agencies at Biden's second Tribal Nations Summit in November 2022 to approve new best practices of integrating treaty rights into decision making. • DOE should incorporate Western Shoshone Treaty Rights as enshrined in the Treaty of Ruby Valley 1863 into decision making relating to due diligence. To meet expected due diligence standards the DOE should follow the UN Guiding Principles (UNGP's). The inclusion of Indigenous Human Rights in due diligence is required to meet the UNGPs and OECD guidance which say companies should commit to respecting Human Rights. In the context of Rhyolite Ridge, it is within the Western Shoshone treaty lands detailed in the Treaty of Ruby Valley 1863. The United Nations CERD committee found in 2006 that Western Shoshone treaty rights and thus human rights were being violated by the US federal government. This was upheld in 2022 through inclusion in the concluding observations of CERD's August convening. • DOE should follow these international due diligence standards, and communicate through due diligence how the violation of treaty rights will be considered and mitigated through this due diligence process. Additional due diligence requirements to meet the standards set in UNGP and OECD are that the process is ongoing, and that there is public transparency. • Due diligence must be an ongoing process. • The public has access to information and transparency regarding due diligence. Furthermore, should the current Plan of Operations, dated May 2020, be found to provide undue risks to the Tiehm's Buckwheat or otherwise require updates to further avoid the endangered species, will DOE revisit due diligence in respect to the new plan or will the current conditional agreement carry over without additional approvals? <u>Missing and Murdered Indigenous Peoples and Gender Based Violence.</u> According to section 4.10 of the DEIS, the Rhyolite Ridge mine would require 500 workers for construction and 350 for operations. The project site is in Fish Lake Valley which is a small rural community. It is expected that a majority of workers will have to come from outside of the community Quarrying and processing would generate demand for 230 housing units from non-local labor (direct, indirect, and induced) from up to 402 new, non-local adults (includes single and married). It is expected that many of these workers will live in temporary housing such as trailer parks. This results in worker housing dynamics that are often referred to as man camps- where predominantly non-local temporary workers live. The construction of man camps and coordinating other forms of worker housing is a connected action that must be considered relevant to this NEPA analysis. The EIS must analyze the potential direct, indirect and cumulative effects of proposed man camps, including the potential increase of violence. In February of 2019, the Department of Justice published a report titled, Violent Victimization Known to Law Enforcement in the Bakken Oil-Producing Region of Montana and North Dakota, 2006-2012. This report analyzed increases in violent crime as a result of man camps, or worker housing, associated with extractive industry. The report found that, "From 2006 to 2012, the rate of violent victimization known to law enforcement in the Bakken oil-producing region of Montana and North Dakota increased, particularly the rate of aggravated assault, which increased 70%. There was no similar increase in rates of violent crime in the counties surrounding the Bakken oil region." There is clear documentation from federal sources that a drastic increase in violence is to be expected based on objective evidence. Moreover, it is well understood through the issue of Missing and Murdered Indigenous People (MMIP) that this type of violence provides greater impacts Indigenous people as well has increase gender-based violence, such as rape, human trafficking, murder, and domestic assault. Furthermore, it is the obligation of federal agencies to address environmental justice based on Executive Order 12898. It is the responsibility of federal agencies to mitigate undue and disproportionate environmental impacts affecting historically marginalized communities such as low-income, Black, Indigenous, or communities of color. It is part of the federal government's Trust Responsibility with Tribes to ensure the physical health and wellness of Indigenous Peoples. Therefore, given the available information, it is the role of the federal government to include an analysis of the effects of man camps (or worker housing) on the local community with a specific focus on impacts to Indigenous Peoples According to section 4.10 of the DEIS, Esmeralda county has 44% low-income residents, and Native American residents meeting environmental justice requirements, and that "Overall impacts to communities with environmental justice concerns within the area of analysis are anticipated to be moderate to major, long-term, and regional." Therefore, it is known that the Rhyolite Ridge project would require significant non-local labor in a community with limited existing housing. Research conducted by the federal government clearly shows a connection between worker housing and increases in violence. It is the obligation of the federal government to take a hard look while permitting in NEPA, and therefore the EIS must analyze this predictable increase in community violence with specificity in terms of impacts to Indigenous communities and along gendered lines. This region is known to currently lack adequate funding for basic community safety and this has already resulted in gender-based harm, "Some of the concerns include lacking sufficient medical care, access to legal materials, inmate safety, understaffing, and separation of inmates of different genders (Esmeralda County 2012).", Social and Economic Values Supplemental Environmental Report for the Rhyolite Ridge Lithium-Boron Project April 2024 ES-3. In regards to worker housing, Missing and Murdered Indigenous Peoples, and other forms of gender-based violence, the Federal Government has the following obligations that should be included in the EIS. • The BLM must take a hard look at the pattern of non-local worker housing resulting in increased localized violence and specifically along racial lines with Native Americans and gendered lines.	

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		• Using the best available research, the BLM must predict how their permitting actions for this project will increase violence inflicted upon specific communities which qualify for environmental justice screening. • The BLM must work to mitigate impacts to environmental justice communities. The EIS should analyze not only increases to law enforcement and incarceration which address violence after it happens, but also preventative mitigations. For example, these could be requiring cultural	
174	174.4	Native American Values supplemental report. p. ES-2: Supplemental Environmental Report Rhyolite Ridge Lithium-Boron Project: "Tribal consultation/coordination is ongoing and would continue through the life of the Project. Several areas of tribal concern have been identified including the Cave Springs sacred site and two additional areas that are culturally significant. If avoidance of the areas of tribal concern and sacred sites is not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation/coordination with the affected Tribes to reduce or eliminate impacts." The DEIS contains incomplete information. There was no attempt to consult with the Western Shoshone Defense Project regarding how adverse impacts for Cave Spring due to mining activities could be "reduced or eliminated." The "specific operating procedures, stipulations, or mitigation measures" need to be documented in the DEIS so that the full range of environmental and cultural impacts of the Project can be known before Project approval. Section 106 consultation regarding the Project's adverse effects should have been conducted before the DEIS was issued so that the involved tribes and the general public know the full range of impacts at the earliest possible time. The possibility--which is the actual reality--that the adverse impacts on Cave Spring due to mining activities isn't even mentioned. p. 3-3: Supplemental Environmental Report Rhyolite Ridge Lithium-Boron Project: "Since no sites have been determined to be TCPs, impacts to such cannot be determined at this point. Under the Proposed Action, potential impacts to properties of traditional religious and cultural importance, or sacred sites would be minor to moderate, long-term to permanent, and localized." An ethnographic study for the Project area needs to be conducted, and the Final Environmental Impact Statement can't be completed until this is done. An ethnographic study is a method for determining if a site or area is a Traditional Cultural Property (TCP). The BLM can't conclude that there are no TCPs in the Project area without complete government-to-government consultation, which would include interviews with knowledgeable tribal Elders. The sentence "potential impacts to properties of traditional religious and cultural importance, or sacred sites would be minor to moderate, long-term to permanent, and localized." This somewhat incoherent sentence was not written in consultation with the involved Tribes. p. ES-3: Under the cumulative Impacts section, regarding cultural Resources: "If avoidance is not possible, eligible and unevaluated sites would be mitigated as agreed upon by BLM and State Historic Preservation Office through the development and implementation of a Memorandum of Agreement and Historic Properties Treatment Plan." Where is the tribal involvement? What if there is no mitigation for the impacts of the Project, which is the case here? Although Section 106 consultation is supposed to be incorporated into the draft EIS for the Project, all substantive tribal consultation information is left unknown or incomplete. International / United Nations In its decision, issued in March 2006 under its early warning and urgent action procedure, the guarantee the right of everyone to equality before the law" was "not Committee expressed concern over the United States' treatment of the Western Shoshone and their ancestral lands. Specifically, the Committee found the United States' "obligation to expect" and urged the United States to "pay particular attention to the right to health and cultural rights of the Western Shoshone peoples". The Committee called on the United States to "take immediate action to initiate a dialogue" with the Western Shoshone and to freeze, desist and stop further harmful activities on Western Shoshone ancestral land until a final decision or settlement was reached. <u>Recommendations</u> for the Committee to make to the United States are as follows: a. That the United States review all laws and policies with respect to indigenous peoples to ensure compliance with recognized standards of human rights, in particular, a process to "decolonize" the underlying principles of federal Indian law and to honor and respect Treaties made with Indigenous Nations; b. To address ongoing actions in Western Shoshone territory and to initiate a high- level dialogue with traditional and tribal leadership; and/or c. To develop a process to formally review, under contemporary, non-discriminatory standards, the questions and concerns raised previously by this Committee and the Inter-American Commission on Human Rights (IACHR) in Case No. 11.140, Dann v. U.S., Report 75/02, Inter-Am. C.H.R., Doc. 5 rev. 1 at 860 (2002). These ongoing threats to Indigenous Peoples can be traced directly back to the fundamental principles upon which U.S. Indian law and policy are based. Current U.S. Indian law and policy is rooted in the Marshall Trilogy. The central premise of Justice Marshall's formulation of the doctrine of discovery is that Indigenous Peoples are divested of certain natural rights by the mere arrival of Europeans because of an assumed European superiority	Due to the nature of government to government consultation, it cannot be completed prior to public review of the Draft EIS. Section 106 consultation has been conducted and is ongoing in compliance with NHPA and applicable EOs. Potential impacts to Cave Spring are analyzed and disclosed in EIS Sections 4.5, 4.8, 4.16, and 4.17. The BLM has conducted government-to-government consultation with federally recognized tribal governments. Concerns and issues identified through this consultation are being coordinated between the BLM and Tribes. The effects definitions referenced are defined in Appendix D of the Draft EIS. Government-to-government consultation and coordination for the Project was initiated in 2020 and is described in Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process.
174	174.5	Conclusion: This mine brings a very scary reality, with the loss of biodiversity that has been ongoing since the arrival of Europeans and the threat continues with the possible loss of the Tiems Buckwheat, birds beak and the Tui chub. Indigenous agriculture, irrigation systems, lands and resources have given the world medicine, foods, clothing, fuel, and building material yet, the U.S. government has little respect for traditional knowledge and still commits crimes against the ecosystem and indigenous peoples. To go forward with this project would be desecration of a religious and cultural site that has prayers, songs and teachings of religious practices. The Creator put us here to share this life together in balance and harmony, it is time that this government quit being so arrogant. You do not have all of the answers to the problems that you yourself created. Tears from pain and agony fuel our hearts because you do not listen to the Creator. If you stop the chaos, watch and listen you can hear the earth telling you to stop. This project mine does not meet requirements and is not in line with federal law, policy and guideline. It cannot go forward without meaningful (emphasis added) government-government consultation between the tribes and traditional tribal organizations as recommended by United Nations International bodies. Respectfully,	Resource specific responses provided in responses to comments 174.3-174.5. The EIS has been prepared consistent with United States laws including NEPA, NHPA, and applicable regulations and EOs.

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		Fermina Stevens, Director Western Shoshone Defense Project	
174	174.6	20240603_RR_DEIS_FerminaStevens_WSDF_viaEmail_Attachment_1 20240603_RR_DEIS_FerminaStevens_WSDF_viaEmail_Attachment_2 20240603_RR_DEIS_FerminaStevens_WSDF_viaEmail_Attachment_3 20240603_RR_DEIS_FerminaStevens_WSDF_viaEmail_Attachment_5	Attachments noted.
Linda Williams – June 3, 2024			
176	176.1	Hello, Attached and submitted on June 3, 2024 at 6:33 am PST is my Public Comment regarding the RRLB Project. Thank You. Linda A Williams	Comment noted.
176	176.2	PUBLIC COMMENT RHYOLITE RIDGE LITHIUM-BORON PROJECT DRAFT ENVIRONMENTAL IMPACT STATEMENT DOI-BLM-NV-B020-2021-0020-EIS JUNE 2, 2024 My comments below confirm and explain my UNEQUIVOCAL SUPPORT for the Rhyolite Ridge Lithium-Boron Project here in Fish Lake Valley, Dyer, Nevada. I encourage the BLM to allow Ioneer to move forward with the Proposed Action as outlined. This project led by and vested in by Ioneer has already proven to not only be worthy but vital to the survival and success of the local environment, this community and our County. I have lived in this valley 65 years. I am still a farmer, RV Park owner, museum owner and curator and for 42 years our family owned and operated the only grocery and gas station for 75 miles. I've witnessed the ebb and flow of economic fortunes in our communities and County. One example, several decades ago I was 1 of 4 who stepped up to create a local ambulance service-ultimately becoming a volunteer EMT. With a County developer agreement Ioneer would be a critical partner in all elements of our essential services. My story is always about what do we need to provide a diverse and positive impact to each community resident and our County, while addressing potential risks or impacts to the people, the wildlife and the lands. I won't repeat my past topics of water allocations and usage, endangered species, roads subjected to heavy use, etc. You know my thoughts, these have been well addressed and you can read my recent opinion piece in the **Las Vegas Review Journal, Sunday, June 2, 2024, Linda A Williams.** I have been dedicated to this valley and its growth most of my life serving on the Nye & Esmeralda Economic Development board. Since Ioneer arrived I've attended the Rhyolite Ridge in person and Zoom meetings, the BLM public meetings-recently in Dyer and Tonopah, spoke at the Tiehms Buckwheat hearings as a farmer experiencing destruction to my crops at the same time the Tiehms Buckwheat was being affected and have written an opinion and public comments regarding the positive impact and the minimal risk this project could have on our local environment, our existing infrastructure, our close community and the County. Upon reading the Draft Environmental Impact Statement, now my constant reference manual on this project, I know the involvement BLM and NDOW will have. I see how hard Ioneer has worked towards their honest dedication and commitment to plant life, wildlife and human life. I encourage skeptics to ask themselves if they know of other corporations so dedicated that they invest millions of dollars years before development of their project for the good of the environment and the people living in tiny, remote communities. Why wouldn't you, us, others want to partner with them! My support for this project has not faltered. The Rhyolite Ridge Project is critical to the economic survival of our community. The BLM and Ioneer have navigated the lengthy process. Now its time for the BLM to approve Ioneer to begin putting into action their 7 years of planning for this mining operation. Ioneer has shown that they are agreeable and ready. And at 75, I'm ready to watch this County flourish as it once did. Submitted by Linda A Williams PO Box 354 MM8 Hwy 264 Dyer, NV 89010 775-966-9009 dyerlaw49@gmail.com	Comment noted.
Bishop Paiute Tribe – June 3, 2024			
177	177.1	Dear Mr. Distel, Please find the attached comments on the Rhyolite Ridge Lithium-Boron Project Draft Environmental Impact Statement, submitted on behalf of the Bishop Paiute Tribe. Best regards,	Comment noted.
177	177.2	June 3, 2024 Bureau of Land Management Battle Mountain District Office Tonopah Field Office 1553 South Main Street	The EIS has been prepared consistent with applicable United States laws including NEPA, NHPA, and applicable regulations and EOs.

Comment Letter No.	Comment Number	Comment	Response
		Tonopah, Nevada 89049 Via email: BLM_ NV_BMDO _P&EC _NEPA@blm.gov Re: Comments of the Bishop Paiute Tribe on the Rhyolite Ridge Lithium-Boron Project Draft Environmental Impact Statement, DOI-BLM-NV-B020-2-21-0020-EIS Manahuu (Hello), I submit this letter on behalf of the Bishop Paiute Tribe ("Tribe[1]), a federally recognized tribe with 2,000 members and a land base of 875 acres at the base of the Eastern Sierra Nevada Mountains.[1] By this letter, the Tribe submits its formal written comments on the proposed Rhyolite Ridge Lithium-Boron Project Draft Environmental Impact Statement (DEIS. As discussed in greater detail below, these comments delineate the numerous material failings in the DEIS, including but not limited to its discussion of the project's cumulative impacts to water resources and the mitigation of impacts to cultural resources.[2] Notably, the BLM has fallen far short of its consultation obligations pursuant to Section 106 of the National Historic Preservation Act and as required by the federal trust responsibility to tribal nations.[3] Due to the deficiencies in the DEIS, the Tribe requests that the BLM go back to the drawing board to draft a DEIS that is complete and fully compliant with the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA), and other controlling federal and international laws and regulations.[4] [1]In 1932, the United States unilaterally revoked 67,000 acres originally promised to the Tribe, and later traded it to the City of Los Angles for the current reservation. See About Us-History, BISHOP PAIUTE TRIBE, https://www.bishoppaiutetribe.com/about-us/#histoty (last visited May 29, 2024); Amanda Kapp, Bishop Paiute Tribe, NORTHERN ARIZONA UNIVERSITY (Sept. 2019), www7 .nau.edu/itep/main/tcc/Tribes/sw _ Bishop. [2]In an effort to limit redundancy among commenting parties, the Tribe expressly adopts and incorporates the attached DEIS comments filed by the Center for Biological Diversity on June 3, 2024 in their entirety, emphasizing its discussion of the shortcoming of the DEIS's compliance with the Endangered Species Act and management of impacts to Tiehms Buckwheat. [3]54 U.S.C. § 306018; see also BUREAU OF LAND MGMT., BLM MANUAL 1780 TRIBAL RELATIONS (P) 1-1 (Dec. 2016) (recognizing that "[t]he United States has a unique legal relationship with federally recognized Indian tribes established through and confirmed by the Constitution of the United States, treaties, statutes, Executive orders, and judicial decisions" abd that "the Bureau of Land Management (BLM) is charged with engaging in regular and meaningful consultation and collaboration with federally recognized tribes in the development of Federal policies and decisions that have tribal implications."). [4]"If a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and publish a supplemental draft of the appropriate portion." 40 C.F.R. § 1502.9(b).	
177	177.3	**I. Introduction** The Bishop Paiute Reservation is located in the Owens Valley, approximately 90 miles by car to the proposed Rhyolite Ridge Project location. Owens Valley, known to us as Payahuunadii, is and has forever been the homelands of the Bishop Paiute people, and our traditions and culture are intrinsically entwined with the lands and water of the Valley and our ancestral territories that extend throughout California and Nevada. The Tribe is greatly concerned about the impacts of the Rhyolite Ridge Project, as outlined below. The Tribe understands that this mine is proposed in part to support national efforts to transition to a renewable energy economy.[5] Indeed, our tribal members and ancestral lands are already being impacted by climate change.[6] However, the Tribe stands in opposition to any resource extraction project that perpetuates unjust and disproportionate costs to the health, welfare, and cultural continuity of tribal nations. The transition to renewable energy should not occur at the expense of tribal nations and local communities; in fact, such an approach is in violation of numerous federal policies[7] and the federal trust responsibility.[8] The urgency of the climate crisis cannot be reason to bypass the stringent application of federal law, and doing so will only perpetuate the same cycles of injustice experienced under a fossil fuel economy.[9] BLM must ensure that mining of critical minerals such as lithium is conducted in a sustainable, just, and equitable manner consistent with the law and the federal trust responsibility. Therefore, the Tribe presents the following concerns, and urges the BLM to revisit the DEIS and offer substantial revisions. [5]Notably, many of the critical mineral deposits in the U.S. are located near or within culturally or environmentally important areas to Indigenous Peoples. In fact, "97% of nickel, 89% of copper, 79% of lithium and 68% of cobalt reserves and resources in the U.S. are located within 35 miles of Native American reservation." Samuel Block, Mining Energy-Transition Metals: National Aims, Local Conflicts, MSCI (Jun. 3, 2021) https://www.msci.com/www/blogposts/mining-energy-transition-metals/025 3103 3 94 7. [6]BISHOP PAIUTE TRIBE, INDICATORS OF CLIMATE CHANGE IN CALIFORNIA, IMPACTS OF CLIMATE CHANGE ON THE BISHOPP AIUTE TRIBE (2022), https://oehha.ca.gov/media/epic/downloads/06bishoppaiute.pd[[7] Exec. Order No. 12,898, 32 C.F.R. § 651.17; Exec. Order No. 14,008, 86 Fed. Reg. 7,619 (Feb. 1, 2021). [8] Presidential Memorandum for the Heads of Executive Departments and Agencies on Tribal Consultation, 74 Fed. Reg. 57,881 (Nov. 5, 2009); Presidential Memorandum for the Heads of Executive Departments and Agencies, Tribal Consultation and Strengthening Nation-to-Nation Relationships, 86 Fed. Reg. 7491 (Jan. 26, 2021), hLLp ·://w" v .whitehou e.go / briefirnrroom/presidential-actions/?021/01 / 6/mcmorandum-on-tribal-consultation-and-strengthening-nation-to-nation relationships/; U.S. Dept. of lnterior & U.S. Dept. of Agriculture, Joint Secretarial Order on Fulfilling the Trust Responsibility to Indian Tribes in the Stewardship of Federal Lands and Waters No. 3403 (Nov. 15, 2021). [9]See Ann M. Eisenberg, Just Transitions, 92 S. CAL. L. REV. 273, 280 (2019) ("[T]he shift to a low-carbon economy is an opportunity to rectify the injustices of the fossil fuel economy, and to not do so, or to allow inequalities to worsen, would itself effectuate injustice.").	Comment noted.
177	177.4	**II. Issues and Failures Under NEPA** The National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 et seq., requires review of "the environmental impacts of the proposed action and alternatives" with the goal of requiring agency decision-makers to make fully informed decisions. [10] Environmental Impact Statements are required to provide a "full and fair discussion of significant environmental impacts"; to "inform decision makers and the public of reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment"; and to "be supported by evidence that the agency has made the necessary environmental analyses."[11] Mere identification of other actions affecting the resources which would be affected by the proposed action is only the first step toward an actual analysis, as "[e]nvironmental impact statements shall not be encyclopedic."[12] Here, the DEIS fails to apply the requisite detail of analysis that is required by NEPA, instead cataloguing potential impacts in an encyclopedic manner. The BLM likewise failed to follow NEPA's requirement to take a "hard look" at the project's environmental impacts, including the cumulative impacts for the full life cycle of mining operations and climate impacts. Finally, as discussed in several sections below, the DEIS is incomplete, as several of the "plans" referenced throughout, including the Community Development Plan, Surface Water Monitoring and Contingency Mitigation	The EIS contains detailed analysis of potential impacts associated with the Proposed Action and alternatives. The EIS was initiated in 2020 and has been prepared per the 2020 CEQ. Several alternatives were considered based on input received from public scoping of the Project. Alternatives considered are discussed in the SIR. The EIS contains detailed descriptions of the Affected Environment for all resources carried forward for analysis. Environmental impacts are discussed in

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		Plan, and the Historic Properties Treatment Plan, have not yet been finalized nor included in the DEIS. This is a violation of NEPA's "hard look" standard, and unlawfully deprives the public of the opportunity to review and comment on these crucial plans. For these reasons and those discussed below, the DEIS violates NEPA and must be substantially revised. **A. The BLM should apply the 2024 NEPA regulations to this proiect.** As a preliminary matter, the Tribe urges BLM to apply the forthcoming 2024 NEPA regulations to the Rhyolite Ridge project. The Council on Environmental Quality (CEQ) promulgated implementing regulations for NEPA in 1978 ("1978 Regulations").[13] CEQ amended these regulations in 2020 ("2020 Regulations"), and they apply to actions commenced after September 14, 2020, including the proposed Rhyolite Ridge mine.[14] However, in April 2022, CEQ issued its "Phase 1" Rule, restoring a limited number of provisions from the 1978 Regulations.[15] On June 3, 2023 President Biden signed the Fiscal Responsibility Act into law, resulting in substantial amendments to NEPA. As such, on May 1, 2024, CEQ promulgated the Bipartisan Permitting Reform Implementation Rule, or "Phase 2" of the Biden Administration's NEPA revisions ("Revised Regulations").[17] These regulations will go into effect on July 1, 2024.[18] Agencies may apply the Revised Regulations to ongoing NEPA reviews that began prior to July 1, 2024. The Tribe urges BLM to do so for the Rhyolite Ridge project. The Revised Regulations represent the most comprehensive, updated, and scientifically sound efforts of our current Administration. The Revised Regulations contain enhanced requirements for public participation, directives for agencies to consider climate-related effects of the action, and expand the definition of "communities with environmental justice concerns,"[19] all of which are crucial considerations for this project. As an ongoing action, the BLM has the authority to apply these updated regulations to the Rhyolite Ridge project, which will certainly lead to a more complete NEPA process and achieve "better decisions" and "excellent action."[20] However, even under the 2020 Regulations, the DEIS is inadequate for the reasons explained below. **B. The No Action Alternative is the Onlv Option to Avoid Significant Harm to the Environment, Waters, Wildlife, Public Health, and Cultural Resources.** While these comments discuss the deficiencies in the DEIS, the Tribe's position is that due to the extreme impacts to the environment, water quality and quantity, air quality, cultural resources, and the health and welfare of surrounding communities, the no-action alternative is the only acceptable outcome.[21] While the alternatives address impacts to the Tiehms Buckwheat critical habitat, they do not address impacts to water resources.[22] The North and South OSF Alternative differs from the Proposed Action Alternative exclusively by decreasing impacts to the Tiehm's Buckwheat critical habitat (but not eliminating them). Other than this, the DEIS provides that "[a]ll other details and appendices included in the Plan would apply to the North and South OSF Alternative."[23] Therefore, the remainder of these comments apply to both the Proposed Action Alternative and the North and South OSF Alternative. **C. The "Affected Environment" and "Environmental Consequences" Analysis is .Inadequate and a Violation of NEPA.** CEQ's implementing regulations require the environmental impact statement to "succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration, including the reasonably foreseeable environmental trends and planned actions in the area(s)."[24] The Department of lnterior defines "reasonably foreseeable future actions" as: [F]ederal and non-federal activities not yet undertaken, but sufficiently likely to occur, that a Responsible Official of ordinary prudence would take such activities into account in reaching a decision. These federal and non-federal activities that must be taken into account in the analysis of cumulative impact include, but are not limited to, activities for which there are existing decisions, funding, or proposals identified by the bureau. "[25] Cumulative effects or impacts are defined as "effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. "[26] In addition, these effects "may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effects will be beneficial."[27] As discussed below, the DEIS has failed to meet the level of detailed analysis mandated by NEPA in its discussion of the affected environment pursuant to 40 C.F.R. 1502.15, particularly its failure to adequately discuss the "reasonably foreseeable environmental trends," and in its analysis of the environmental consequences of alternatives as required by 40 C.F.R. §1502.16. In short, this DEIS fails to include meaningful discussion or detail regarding the cumulative impacts of the various aspects of this proposed project. This is a violation of NEPA. [10]COUNCIL ON ENVIRONMENTAL QUALITY EXECUTIVE OFFICE OF THE PRESIDENT, CITIZENS GUIDE To NEPA 17 (2021); 40 C.F.R. § 1508.9; 36 C.F.R. § 220.7(b)(2); 42 U.S.C. § 4332(2)(H). [11]40 C.F.R. § 1502.1; 42 U.S.C. § 4332. [12]40 C.F.R. § 1502.2(a). [13]40 C.F.R. §§ 1500-1508; The regulations' stated purpose is "to tell federal agencies what they must do to comply with the procedures and achieve the goals of [NEPA]," to "insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken," and, "[u]ltimately," to achieve "better decisions" and "excellent action." 40 C.F.R. § 1500.l(a)-(c). [14]40 C.F.R. § 1506.13 (2020). [15]See CEQ, National Environmental Policy Act Implementing Regulations Revisions, 87 Fed. Reg. 23470 (Apr. 20, 2022), http. ://www. fed ralre1!ister.uov/docum nt /2022/04/20/2022-08288/national-environrnental-policy-act-implementing-re!.!ulations-revisions. [16]Amending section 102(2)(C) and added sections 102(2)(D) through (F) and sections 106 through 111. 42 U.S.C. 4332(2)(C)-(D), 4336-4336e. [17]89 Fed. Reg. 35,442 (May 1, 2024). [18]Id. [19]Id. [20]40 C.F.R. § 1500.l(a)- (c) [21]Because "[e]nvironmental impact statements [ ] serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made," the No Action Alternative must be thoroughly considered. 40 C.F.R. 1502.2(g). [22]The only Water Use Alternative, "Pumping from Fish Lake Valley," was considered but dismissed from analysis in the DEIS. BUREAU OF LAND MGMT., RHYOLITE RIDGE LITHIUM BORON PROJECT DRAFT ENVIRONMENTAL IMPACT STATEMENT at 2-22 (April 2024) [hereinafter DEIS]. [23]Id 2-19. [24]40 C.F.R. § 1502.15 (emphasis added). [25]43 C.F.R. § 46.30 (emphasis added); 43 C.F.R. § 46.115. [26]40 C.F.R. § 1508.l(g)(3).	detail in EIS Section 4.0. Additional detail for all resources is provided in the associated SERs.

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		[27]Id	
177	177.5	**1. Cultural Resources & Native American Traditional Values** As noted throughout the DEIS, several tribes have expressed a preference that the project "avoid prehistoric cultural resources."[28] While the Tribe appreciates the BLM's commitment to compliance with the American Indian Religious Freedom Act and Executive Order No. 13007, the DEIS offers incomplete information regarding what mitigation measures will be implemented "[w]here avoidance is not reasonably feasible."[29] Notably, the DEIS does not include the referenced "Memorandum of Agreement (MOA) between the BLM, Nevada State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation," but merely states that it is "currently in preparation."[30] Similarly, the DEIS does not include the "Historic Properties Treatment Plan," but notes that "Ioneer is working with the BLM and SHPO" to develop this plan, which purportedly will detail the process for "data recovery, archaeological and architectural documentation, and report preparation that would be based on the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation."[31] Expressing an intention to draft a plan that is not yet available for comment in the DEIS is not acceptable under NEPA's "hard look" doctrine.[32] CEQ's implementing regulations require that an agency consider mitigation measures within a single EIS.[33] It is unlawful for BLM to omit this crucial information from the DEIS, as it denies the public and impacted tribal nations an opportunity to fully consider and comment on proposed mitigation measures. [28]DEIS at 4-11. [29]Id. at 4-11. [30]Id. at 2-13. [31]Id. at 2-13. [32]See Klamath-Siskiyou Wild/ands Ctr. v. Bureau of Land Mgmt., 387 F.3d 989,993 (9th Cir. 2004) ("A proper consideration of the cumulative impacts of a project requires some quantified or detailed information; ... general statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided." (internal quotations and citations omitted)). [33]40 C.F.R. § 1502.16(a)(8); 40 C.F.R. § 1502.16(a)(9); 40 C.F.R. § 1502.14(e).	The Bishop Paiute Tribe was sent the Draft MOA on April 18, 2024 and July 10, 2024. The BLM sent an email on May 1, 2024 following up with the Bishop Paiute Tribe regarding receipt of the MOA and review. The HPTP was mailed to Bishop Paiute Tribe on June 12, 2024. The BLM will continue to coordinate with the Bishop Paiute Tribe. Table 5-1 in the Final EIS has been updated with additional consultation and coordination conducted.
177	177.6	**2. Climate Change** The DEIS fails to adequately consider and mitigate the cumulative lifetime climate impacts of the proposed Rhyolite Ridge Lithium-Boron Mine Project, as required by NEPA. The impacts of climate change are not only felt locally, but also across jurisdictions, impacting state, tribal, local, private resources, and federally managed public lands.[34] The DEIS states that "the Proposed Action would result in approximately 471,589 tpy of direct GHG emissions and 24,429 tpy of indirect GHG emissions in terms of CO2e."[35] This "approximates the same amount of GHG emissions annually as that produced by 56,713 households (100,134 gasoline-powered passenger vehicles) annually due to energy consumption (USEPA 2022)."[36] Additionally, the proposed action "would result in maximum 8-hour modeled impact of 0.69 ppb of ozone."[37] These are individually significant environmental impacts that could also result in incremental cumulative increases of greenhouse gases globally.[38] Finally, the DEIS should have accounted for mitigation measures for the increased risks associated with climate change, including but not limited to wildfires, toxic spills that might occur due to extreme storms, and prolonged drought. [39] [34]Coordinated Federal Climate Networks to Enhance Adaptation and Resilience at the Regional Scale, U.S. CLIMATE RESILIENCE TOOLKIT, https://toolkit.climate.gov/content/federal-agency-coordination (last visited May 29, 2024). [35]DEIS at 4 -1 [36]Id. [37]Id. [38]According to the California Environmental Quality Act, "a project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national or global emissions. 14 Cal. Code Regs. § 15064.4(b). [39]California is the most "climate-challenged" region of North America and is already being impacted with the adverse effects of climate change, including risks to public health, extreme wildfires, longer and frequent droughts, increased erosion of beaches, and a decline in traditional and cultural lifeways for Tribes. LOUISA BEDS WORTH, CAL. GOVERNORS OFF. OF PLAN. ANS RSCH., ET AL., CALIFORNIA'S FOURTH CLIMATE CHANGE ASSESSMENT: STATEWIDE SUMMARY REPORT (Aug. 2018), https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf; see also Anna M. Phillips et al, Extreme Heat Is One of The deadliest consequences of climate change, L.A. TIMES (Oct. 7, 2021), https://www.latimes.com/projects/california-extreme-heat-deaths-show-climate-change-risks/; Dorany Pineda & Gabrielle LeMee, Household Water Wells Are Drying Up in Record Numbers As California Drought Worsens, L.A. TIMES (Dec. 8, 2022), https://www.latimes.com/cal i fornia/story/2022-12-08/cal i fornia-water-wel ls-are-drying-up-inrecord-numbers; Hayley Smith, Wildfire Burn Areas In California Are Growing Ever Larger Due to Greenhouse Gas Emissions, L.A. TIMES (Jun. 14, 2023), https:/ /www.latimes.com/califomia/story /2023-06-14/wildfire-bum-areas-are-getting-bigger-dueto-climate-change; Dorany Pineda, Drought, Heat Waves Could Worsen Air Pollution For Vulnerable Communities, L.A. TIMES (Mar. 30, 2023), https ://www.latimes.com/california/story /2023-03-3 0/ drought-and-heat-waves-worsen-air-pollution.	Air quality impacts were modeled for the Project and results indicate that air quality standards, including those for ozone, would not be exceeded and that greenhouse gas contribution would be approximately one percent of the total for the state of Nevada. Based on the impact analysis, no impacts were identified that required mitigation.
177	177.7	**3. Water Resources** The DEIS failed to adequately consider and analyze the cumulative impacts to water quantity and quality.[40] The State of Nevada is divided into 256 Hydrographic Regions and Basins ("Regions"), many of which are over-appropriated; thirteen Regions fall within Esmeralda County, including the Fish Lake Valley Hydrographic Basin. Esmeralda County is already experiencing stress on its water resources, and the groundwater levels have been trending in decline. Notably, the DEIS claims that "Ioneer has acquired or leased all necessary water rights, for which the points of use and/or diversion would be transferred to the appropriate locations within the Plan boundary." However, it is the Tribe's understanding[41] that Ioneer submitted two applications "For Permission to Change Point of Diversion, Manner of Use and Place of Use of the Public Waters of the State of Nevada Heretofore Appropriated"[42] ("Change Applications") on June 2, 2023, pursuant to N.R.S. § 533.325, which requires that: > [A]ny person who wishes to appropriate any of the public waters, or to change the place of diversion, manner of use or place of use of water already appropriated, shall, before performing any work in connection with such appropriation, change in place of diversion or change in manner or place of use, apply to the State Engineer for a permit to do so.[43] The Change Applications No. 92731 and No. 92732 seek to transfer "1.35 cfs, not to exceed 400.05 acre-feet per year" and "0.590 cfs, not to exceed 176.14 acre-feet per year," from irrigation use to use for mining and milling, respectively. Both sources of water are listed as underground wells within the Fish Lake Valley Hydrographic Basin.[44] The Change Applications also state that the groundwater will "initially be used for the construction phase of the Project."	The EIS acknowledges that implementation of the Proposed Action would require authorizations from other federal, state, and local agencies with jurisdiction over certain aspects of the Project Approvals of water rights and change applications are identified as required approvals in Appendix B of the EIS. Water quality analysis is provided in EIS Section 4.16 and additional detail is found in the Water Resources and Geochemistry SER. The analysis includes consideration of potential impacts from the Spent Ore Storage Facility. As described in Section 2.1.3, processing is completed using a closed system that would contain the sulfuric acid. Impacts from hazardous materials are discussed in Section 4.5. The EIS contains detailed analysis of environmental impacts associated with the Proposed Action and alternatives. Anticipated impacts from mitigation activities

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		The DEIS is thus based on the incorrect and unsupportable assumption that Ioneer will be granted its water rights change applications currently pending before the Nevada State Engineer. Indeed, the DEIS states that "analysis of pumping for mine water supply assumes the use of active water rights."[45] BLM stated in the Scoping Meeting that it would not issue a permit for the project without water rights in hand.[46] The DEIS's assertion that it has already "acquired or leased all necessary water rights" for the project is misleading to the public and a misrepresentation of the status of its water resources. This is a violation of NEPA. Additionally, the Tribe is concerned that even with the acquisition of these water rights, the water required for the project will prove to be a greater quantity than currently described. In its Water Resource Impact Assessment prepared in May 2023, Ioneer states that "Operational Phase water demand is up to 5,000 acre-feet/year." Will Ioneer be permitted to continue to increase the quantity of water for necessary project actions, such as dust suppression, and where will this water be sourced from? In addition, the Tribe is concerned by the lack of information about mitigation measures included in the DEIS. In particular, the DEIS states that "[t]he mitigation would include the development and implementation of a surface water monitoring and contingency mitigation plan,"[47] however, the plan has not yet been completed and is not available for review and comment in the DEIS. Simply describing what the Plan "would include" is insufficient under NEPA's requirement that the agency take a "hard look" at environmental consequences.[48] The DEIS also fails to include further analysis of the impacts of actions that are listed, such as the construction of the 19-mile water delivery pipeline or the longer-term ecological consequences of the anticipated drawdown, including the destruction of wetlands and springs.[49] For example, the DEIS states that "[c]umulative impacts to groundwater drawdown, including at springs sites, would be a moderate to major, permanent, localized cumulative impact,"[50] but provides no further analysis or explanation. This is insufficient under NEPA. Finally, the DEIS does not sufficiently discuss potential impacts to water quality.[51] For Rhyolite Ridge's mining operations, sulfuric acid is going to be used in the processing of lithium.[52] Sulfuric acid dissolves in water and can leech into groundwater and surface waters if there is a leak, where it can then disrupt plant ecology and biodiversity and harm human health.[53] The DEIS should analyze the potential cumulative impacts to water quality from mining contamination and residue from the vat leach and evaporation processes,[54] rather than focusing solely on erosion and sedimentation.[55] [40]DEIS at 2-8 2-9 3-18 3-19 3-20 4-32 4-33 [41]Bureau of Land Management, Battle Mountain District Office, Tonopah Field Office, Rhyolite Ridge Lithium-Boron Project Draft Environmental Impact Statement Virtual Public Meeting, BUREAU OF LAND MANAGEMENT (May 9, 2024) 44:00-45:00), https://eplanning.blm.gov/public_projects/2012309/200540745/20110298/251010289/20240509_ RhyoliteRidge DEIS_ VirtualPublicMeeting_ Recording.mp4. 42 See Application Nos. 92732 and 92731 (Attachment 2). [43]N.R.S. § 533.325 (emphasis added). [44]Hydrographic Regions and Basins, STATE OF NEVADA DIVISION OF WATER RESOURCES, water.nv.!.wv/hydrograph icregions.a px?region=E ·mcralda (last visited May 30, 2024). [45]The DEIS also correctly recognizes that "[t]he BLM has no jurisdiction over State Engineer permitted water rights and regulations applicable to those water rights." DEIS at 4-33. [46] Bureau of Land Management, Battle Mountain District Office, Tonopah Field Office, Rhyolite Ridge Lithium-Boron Project Environmental Impact Statement Public Scoping Meeting, BUREAU OF LAND MANAGEMENT (Jan. 5, 2023) 39:30-40:45, https://eplanning. blm.gov/public projects/2012309/2005407 45/20072069/250078251/20230105_ RhyoliteRidge EIS_ PublicScoping_ VideoOfScopingMeeting2.mp4. [47]DEIS at 4-77. [48]See Kern v. US. Bureau of Land Mgmt., 284 F.3d 1062, 1066 (9th Cir. 2002) (noting that NEPA "establishes 'action-forcing' procedures that require agencies to take a 'hard look' at environmental consequences."). [49]The DEIS claims that "No springs or seeps would be covered by the proposed facilities. Therefore, impacts to springs and seeps from Project surface disturbance would not occur." Id at 4-33. However, this fails to analyze the potential cumulative impacts on seeps and springs from overall water use. [50]Id. at 4-71. [51]Id at 3-20, 4-33, 4-34, 4-35 [52]Id. at 2-4. [53] Sulfuric Acid, AUSTRALIAN GOVERNMENT, https://www.dcceew.gov.au/environmentlprotection/npi/substances/fact-shects/sulfuric-acid (last visited May 30, 2024); Reporters from the Howard Center for Investigative Journalism, Lithium Liabilities: The Untold Threat To Water In The Rush To Mine American Lithium, LITHIUM LIABILITIES (Jan. 25, 2024), https://cronkitenews.azpbs.org/howardcenter/lithiurn/stories/lithium-liabilities.html. [54]Residue includes spent ore, sulfate salts, and filter cake, all of which will be dewatered at the Processing Plant area and then transported by truck to the on-site Spent Ore Storage Facility. [55]DEIS at 4-70.	associated with the surface water monitoring and contingency mitigation plan are discussed in EIS Section 4.21.
177	177.8	**4. Air Quality & Environmental Justice** As directed by Executive Order 12898, "each Federal agency shall make achieving Environmental Justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."[56] Similarly, Executive Order 14008 requires agencies "to make achieving environmental justice part of their missions by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as accompanying economic challenges of such impacts."[57] For Tribes, self-determination is a crucial component of environmental justice.[58] The DEIS fails to adequately consider the environmental justice impacts of the project. NEPA requires an analysis of the cumulative effects of a federal action, defined as "the impact on the environment which results from the incremental impact of the action when added with other past, present, and reasonably foreseeable future actions, regardless of what agency ... or person undertakes such other action."[59] Accordingly, BLM must consider the impacts of the proposed Rhyolite Ridge Lithium-Boron Mine on the existing baseline condition of the Bishop Paiute Tribe and environment nearby.[60] Potential cumulative public health impacts and environmental impacts need to be adequately identified, communicated, and mitigated. The DEIS fails to adequately consider the environmental and potential public health impacts to environmental justice communities near the proposed Rhyolite Ridge Lithium-Boron Mine.[61] In particular, the DEIS fails to adequately discuss the disproportionate impacts of the proposed Rhyolite Ridge Lithium-Boron Mine Project on the Bishop Paiute Tribe. The DEIS states that, "data was gathered for all sources within the 50-km radius which included Esmeralda, Mineral, Nye, and Mono counties."[62] However, data should have also been gathered beyond this range to include the community of Bishop, particularly given that "it is anticipated that most of the work force would live in these [Census Block Groups listed in footnote 67] and commute to the OPA due to the proximity to the Project, availability of commercial and public facilities, services, and housing. "[63]	The air quality area of analysis includes the local airshed (a 50-kilometer buffer of the OPA) which is the area that may be subject to potential impacts of the Proposed Action and alternatives. The EIS contains detailed discussions of environmental justice populations in the area of analysis and discusses air quality impacts. As noted in the air quality analysis, the area of maximum impact near the OPA would be in compliance with air quality standards and impacts would decrease with distance. Because of the distance of the Bishop Paiute Tribe to the OPA, no air quality impacts are anticipated and, therefore, no discussion was included in the environmental justice analysis.

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		As defined under California law, "disadvantage community" ("DACs") (see Figure 1 below) is defined as those that reside in areas disproportionately affected by environmental pollution and other hazards that can lead to negative public health effect, exposure, or environmental degradation.[64] The California Environmental Protection Agency uses the OEHHA CalEnviroScreen 4.0 Tool to identify and rank all census tracts in the state using 21 statewide indicators, such as air quality, that measures communities' exposure burden to pollution and population characteristics.[65] Even though the proposed Rhyolite Ridge Lithium-Boron Project is located in Nevada, approximately 90 miles away by car, the potential impacts associated with the project will extend beyond the Project's immediate area- and will further expose and exacerbate public health risks in the Bishop Paiute community, which is already designated as a disadvantaged community. The areas in Figure 1 represent the DACs (Bishop Paiute) as designated by the California Environmental Protection Agency for the purposes of SB 5 3 5.[66] The potential health effects associated with the projects should be fully considered by the DEIS, especially where many residents in Bishop Paiute community already experience the higher rates of asthma,[67] low birth weight,[68] and cardiovascular disease[69] than 74, 90, and 61 percent of California, respectively.[70] Therefore, the DEIS must take into account the potential health impacts on the Bishop Paiute Tribe and outline measures to mitigate these impacts. [56]Exec. Order No. 12,898, 32 C.F.R. § 651.17. [57]Exec. Order No. 14,008, 86 Fed. Reg. 7,619 (Feb. 1, 2021) at Sec.219. [58]Rebecca Tsosie, Indigenous People and Environmental Justice: The Impact of Climate Change, 78 U. COLO. L. REV. 1625, 1631 (2007). [59]40 C.F.R. § 1508.1 (g)(3). [60]See Council on Environmental Quality, Considering Cumulative Effects Under the National Environmental Policy Act, 1977. 61 In the DEIS, "the area of analysis for environmental justice includes Census Block Groups 320099501001 (Esmeralda County, Nevada), 320219707001, 320219707002, 320219707003, 320219708001, 320219708002 (Mineral County, Nevada), 320239601001, 320239602001, 320239602002 (Nye County, Nevada), 60270001001, 60270001002, 60270002001, 60270002002,60270003001,60270003002,60270004001,60270004002,60270004003, 60270005001 (Inyo County, California), and 60510001011 (Mono County, California)." [62]DEIS at 4-49 [63]Id at 3-4. [64]Cal. Health & Safety Code§ 39711 [65]LAUREN ZEISE, OFF. OF ENV'T HEALTH HAZARD ASSESSMENT, & JARED BLUMENFELD, CAL. ENV'TPROT. AGENCY, CALENVIROSCREEN 4.0 (Oct. 2021), https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf20? 1.pdf [66]See SB 535 Disadvantaged Communities, OEHHA, https://oehha.ca.gov/calenviroscreen/sb535 (last visited May 30, 2024). [67]See Asthma, OEHHA, https://oehha.c,U!.OV/l:alenviro creen/ indicaL r/asthma (last visited May 30, 2024). The causes of asthma are unknown but genetic and environmental factors can be involved. Outdoor air pollution can trigger asthma attacks, make asthma worse, or make people with asthma more susceptible to pneumonia, flu and other illnesses. [68]See Low Birth Weight Infants, OEHHA, https://oehha.ca.gov/calenviroscreen/indicator/lowbirth-weight-infants (last visited May 30, 2024). Low birth weights are linked to exposure to pollution from traffic, industry or agriculture, and low weight babies are more likely to die as infants or develop asthma or other chronic diseases later in life when compared to babies who weigh more. [69]See Cardiovascular Disease, OEHHA, http·://(ehha.ca.gov/calen ·iro creen/indicator/cardiovascular-cl.i ea e (last visited May 30, 2024). Cardiovascular disease is linked to exposure to air pollution, and the effects of air pollution may also be greater in elderly and people with other preexisting health conditions. [70]OEHHA, CalEnviroScreen 4.0 Tool (Census Tract No: 6027000400).	
177	177.9	**III. The Project's Closure Plans Must Include Sufficient Funding for Remediation.** The DEIS describes how toxic byproducts produced by the leaching and mineral extraction process such as "spent ore, sulfate salts, and neutralization filter cake" will be permanently stored on-site at the spent ore storage facility.[71] The DEIS also states that final reclamation of the site "would occur over a minimum of six years of phased reclamation after Project facilities are closed, or until the reclamation of the site or component has been accepted by the BLM and NDEP" and that "[a]dditional environmental monitoring (including the quarry lake) is expected to extend beyond the date of revegetation release, as guided by final closure plans."[72] The Tribe is concerned about this plan for the waste to remain on-site, and by the lack of analysis of thecumulative impacts of this reclamation plan. Additionally, the closure plans should be available for review and public comment and should include funding set aside that is sufficient for a thorough site reclamation and ongoing monitoring. [71]DEIS at 2-4. [72]DEIS at 2-10, 2-11.	The EIS contains analysis of the spent ore storage facility during operation and after closure. The direct, indirect, and cumulative effects analysis in the EIS considers impacts associated with reclamation. A reclamation bond will be in place as required by federal and state law and regulations. The closure plans for specific facilities will be prepared in accordance with applicable agency regulations.
177	177.10	**IV. There are inadequate housing resources and a lack of planning and support for the necessary public infrastructure to support the influx of workers to this rural area.** The DEIS failed to analyze the cumulative impacts of an influx of hundreds of workers to the communities of Bishop, California, Hawthorne, Nevada, and Tonopah, Nevada. **A. The BLM Did Not Adequately Evaluate Potential Impacts of Housing Stock Availability and Affordability for Rural Communities Surrounding the Proiect.** The DEIS fails to clearly mention, evaluate, or analyze the impact that bringing hundreds of employees into the Dyer/Rhyolite Ridge area as required by NEPA. In most areas surrounding the project site, the housing is already limited. An influx of hundreds of mine workers will only aggravate the issue of housing stock availability and affordability for local communities. The lack of analysis is a violation of NEPA because the DEIS does not properly inform or identify cumulative risks to the residents of the communities surrounding the Rhyolite Ridge Lithium-Boron Project. The DEIS states that "Ioneer would work with local communities to develop temporary and long-term housing accommodations for the construction and quarrying and processing phases," and "Ioneer is reviewing various housing options on private land, including use of recreational vehicle parks, local hotels, and home rentals."[73] However, there is no attempt to discuss the potential impacts of these "housing options" for the Project's 350 plus work force over the 23 years Rhyolite Ridge proposes to be in operation. During the DEIS virtual public meeting on May 9, 2024, a member of the public asked where the potential employees of the Rhyolite Ridge Project were going to live.[74] The representative answered that it was expected that project workers would live in Tonopah, NV, Hawthorne, NV, and Bishop, CA, but that no housing would be provided for them. [75] The Tribe is extremely concerned about the impacts to these communities, particularly Bishop, and the lack of analysis included in the DEIS. The potential for population increase combined with a limited number of available homes could lead to the current residents being priced out of their homes or unable to acquire housing in their own communities. The omission is analysis a violation of NEPA. **1. Bishop, California**	Impacts on housing availability and pricing are described in EIS Section 4.10. The potential for disproportionate impacts to environmental justice communities, including those in Bishop, Hawthorne, and Tonopah, are disclosed in EIS Section 4.3.

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		Bishop, California, is home to the Bishop Paiute Tribe Reservation, and about two hours by driving from the proposed Rhyolite Ridge Lithium Boron Mine. During the public DEIS meeting, it was proposed as a place where employees for the Rhyolite Ridge Lithium Boron Mine would be housed.[76] Bishop, as of 2020, has a population of 3,821.[77] The population of Bishop has increased by 7.8% in the past 20 years, with an even smaller growth of housing stock.[78] If 3 50 workers, just a portion of the 500 workers necessary during the construction and quarrying phase of the mining project, moved to Bishop, the city would see a 9% increase in population. There is not enough housing stock available to serve this increase in population. According to a survey from the City of Bishop asking citizens what their largest housing concerns were,[79] 78.9% ofresidents were concerned about insufficient affordable housing and 77.5% were concerned with the potential for existing residents to be displaced by rising costs of housing.[80] There was a 7% decrease in housing stock between 2018 and 2020, with an available housing stock of 2,080 dwellings as of2018 and a decrease to 1,938 dwellings in 2020.[81] There was only an increase of 12 newly built housing units between 2010 and 2020.[82] Bishop has a housing vacancy rate of 6.96%.[83] With the low housing stock available for those who already live in Bishop, the potential increase in population brought about by Rhyolite Ridge employees would further stress available housing stock, potentially leading to a housing shortage.[84] Additionally, the Tribe is concerned about the potential for displacement of current residents due to Rhyolite Ridge Lithium Boron Project employees moving to Bishop. As of 2020, 48% of renters in Bishop were overburdened, or putting more than 25% of their income towards housing.[85] For homeowners, 22% suffer from an overburden in housing expenses.[86] This overburden disproportionately effects low-income and extremely low-income communities in Bishop, where 100% of low income and extremely low-income people overpay for housing.[87] Finally, employees from the Project may contribute to rental market saturation in Bishop, increasing housing prices and pricing out low-income residents and other renters who are already paying more than 25% of their income towards housing expenses. The DEIS fails to discuss or analyze these impacts of the Rhyolite Ridge Lithium Boron Project on the City of Bishop, California. Moving hundreds of people to Bishop, California could have large impacts on the community by adding stressors onto an already impacted and limited housing market. The DEIS is incomplete without this analysis. **2. Hawthorne, Nevada** Hawthorne, Nevada is located two hours by driving from the proposed Rhyolite Ridge Lithium Boron Project site in Mineral County, NV. Ioneer proposed Hawthorne as a place where Rhyolite Ridge employees would be housed.[88] The DEIS did not analyze the potential impacts of an increased population on the city of Hawthorne. Hawthorne has a population of 4,686 and 2,176 households.[89] Currently, 23.98% ofresidents in Hawthorne rent their homes,[90] and 51.7% of residents own their homes outright.[91] There is an average vacancy rate in Mineral County of 28.1 %.[92] It is in the 49th percentile of low-income communities for adults.[93] The median home price is $99,900, and the median rent is $582.[94] The area, notably, is also in the 92nd percentile for cancer in adults.[95] Hawthorne, Nevada is in the 98th percentile nationally for housing vulnerability.[96] The area faced a higher rate of foreclosures before the 2008 housing crisis than the rest of the country, according to the Climate Vulnerability Index. This is pertinent because, as an economically disenfranchised community, it could face higher rates of gentrification, and higher competition for rental homes or homes for sale. Higher home prices could displace low-income communities in Hawthorne. Located within the largest food desert in Nevada, Hawthorne residents have limited access to healthy food and grocery stores.[97] There is only one grocery store in Hawthorne to support its population of 4,686.[98] Lack of access to healthy food can lead to higher rates of obesity, diabetes, cardiovascular disease, and micronutrient deficiencies.[99] These resources could be further strained by the population increase proposed by the Rhyolite Ridge Project. Overall, the local housing market and economy of Hawthorne is not sufficiently discussed or analyzed in the DEIS. **3. Tonopah, Nevada** Tonopah is an hour and fifteen minutes from Rhyolite Ridge Lithium Boron Mine in Nye County, NV. It is the final community that the representatives of BLM/ioneer highlighted during the May 9th public meeting as a potential housing site for its 350-500 employees over the lifetime of the mine.[100] The DEIS did not sufficiently discuss the potential impacts of a rapid growth in population from an influx of employees from Rhyolite Ridge in the DEIS. The current population of Tonopah is 1,777 as of 2022.[101] There are a total of 1,058 housing units in Tonopah.[102] Of all housing units, 52.4% are owner occupied, while 47.6% are renter occupied.[103] In Tonopah, 32.3% of renters are overburdened, while 9.4% of homeowners are overburdened.[104] The median income of Nye County is $39,420.105 Over the past ten years, housing stock in Tonopah has only increased by twelve units.[106] The vacancy rate of Tonopah is 21. 7%.[107] The median home price is $90,700, and the median rent cost is $709.[108] [73]DEIS 2.1. 7 (pg 2-7); In the "Social and Economic Values" section, there is a brief discussion of the current housing climate in surrounding areas of the proposed mine. DEIS at 3-10. [74]Bureau of Land Management, Battle Mountain District Office, Tonopah Field Office, Rhyolite Ridge Lithium-Boron Project Draft Environmental Impact Statement Virtual Public Meeting, BUREAU OF LAND MANAGEMENT (May 9, 2024) 56:00-56:30, https://eplanning.blm.gov/public _projects/2012309/200540745/20110298/251010289/20240509_ RhyoliteRidge DEIS_ VirtualPublicMeeting_ Recording.mp4. [75]Id. [76] Id [77] CITY OF BISHOP CALIFORNIA, GENERAL PLAN HOUSING ELEMENT, CITY OF BISHOP GENERAL PLAN (2021-2029) at 25. [78] Id. at 8 [79] The survey had a 2% response rate. [80] CITY OF BISHOP CALIFORNIA, GENERAL PLAN HOUSING ELEMENT, CITY OF BISHOP GENERAL PLAN (2021-2029) at 9-10. [81] Id at 31. [82] Id. at 25. [83] Id. [84] The U.S. Department of Housing and Urban Development defines a housing shortage as housing availability with a 3% or less vacancy rate. Id. at 32. [85] Id. at 28. [86] Id. [87] Id.; The Bishop Paiute Tribe reservation, which borders the City of Bishop to the east, had 519 households as of2014 and a median income of $22,362. Of the 519, 34% were below poverty rate set by the Health and Human Services Poverty Guidelines, with 81 % below the HUD Low Income Guideline. Bishop Paiute Tribe CULTURE Project Application, 2, https:/ /imls.gov/sites/default/files/project-proposals/ng-03-17-0245-17-proj ect-proposal. pdf.	

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		[88] Bureau of Land Management, Battle Mountain District Office, Tonopah Field Office, Rhyolite Ridge Lithium-Boron Project Draft Environmental Impact Statement Virtual Public Meeting, BUREAU OF LAND MANAGEMENT (May 9, 2024) 56:00-56:30, https://eplanning.blm.gov/public projects/2012309/200540745/20110298/251010289/20240509_ RhyoliteRidge DEIS_ VirtualPublicMeeting_ Recording.mp4. [89] Mineral, NEVADA RURAL HOUSING AUTHORITY, https://nevadaruralhousingstudies.org/county/mineral/ (last visited May 30, 2024). [90] Hawthorne, NV Housing Data, BEST NEIGHBORHOOD, https://bestneighborhood.org/housingdata-in-hawthorne-nv/ (last visited May 24, 2024). [91] Id. [92] Mineral County, Nevada, UNITED STATES CENSUS BUREAU, https://data.census.gov/table/ ACSDP5Y2020.DP04 ?q=DP04&g=050:XX00US32023 ,06027 ,32009 ,32021 _ 160:XX00US3273600 040:XX00US32&tid=ACSDP5Y2020.DP04 (last visited May 26, 2024). [93] EJScreen, EPA, https://ejscreen.epa.gov/mapper/ (last visited May 24, 2024) [94] Mineral County, Nevada, UNITED STATES CENSUS BUREAU, https://data.census.gov/table/ ACSDP5Y2020.DP04 ?q=DP04&g=050XX00US32023,06027 ,32009,32021 _ 160:XX00US3273600 040XX00US32&tid=ACSDP5Y2020.DP04 (last visited May 26, 2024). [95] Id. [96] Tract 32021970700, Hawthorne, NV, U.S. CLIMATE VULNERABILITY INDEX, https:/ /map.climatevulnerabilityindex.org/report/social_ economic_ housing_ type_ transportation/tract-32021970700-hawthorne- [97] Id. [98] Grocery Hwy 95, SAFEWAY, https://local.safeway.com/safeway/nv/hawthorne/1095-hwy-95.html?utm_source=G&utm_medium=Maps&utm_campaign=G+Places (last visited May 26, 2024). [99] Marie Lorraine Johnson, What Are Food Deserts, and How Do They Impact Heath?, MEDICALNEWSTODAY (Mar. 8, 2024), https://www.medicalnewstoday.com/articles/what-arefood-deserts. [100] Rhyolite Ridge Lithium Boron Project Draft Environmental Impact Statement Virtual Public Meeting (May 9, 2024), 56:00-56:30, https://eplanning.blm.gov/public projects/2012309/200540745/20110298/251010289/20240509_ RhyoliteRidge DEIS_ VirtualPublicMeeting_ Recording.mp4. [101] Tonopah, DATA COMMONS, https://datacommons.org/place/geoid/3273600 (last visited May 24, 2024). [102] Nye, NEVADA RURAL HOUSING AUTHORITY, https://nevadaruralhousingstudies.org/county/nye/ (last updated Apr. 5, 2023). [103] Id. [104] Id. [105] Id. [106] Tonopah, DATA COMMONS, https://datacommons.org/place/geold/3273600 (last visited May 24, 2024). [107] Tonopah CDP, Nevada, UNITED STATES CENSUS BUREAU, HTTPS://DATA.CENSUS.GOVITABLE/ACSDP5Y2020.DP04?Q=DP04&o=050XX00US32023,06027,32009,32021 160XX00US3273600040XX00US32&no=ACSDP5Y2020.DP04. [108] Id.	
177	177.11	**B. The DEIS Did Not Take into Account The Public Safety Concerns For Populations Living Near The Project.** The DEIS does not properly evaluate the impacts of on public safety that could arise during the construction, quarrying, and remediation processes. **1. Missing and Murdered Indigenous Women** The DEIS and Social and Economic Supplement touch on impacts to local law enforcement due to the increased population of 358 non-local people and 574 new non-local adults to the area.[109] The analysis of impact on law enforcement discusses only economic ramifications of an increased population and impacts for Esmerelda County.[110] It does not discuss the risk of transient non-community members entering the area. By omitting an analysis of potential increases in crime, such as violence against Indigenous people, the DEIS fails to meet NEPA standards. Relatedly, the DEIS fails to discuss the potential impacts of the Rhyolite Ridge Lithium Boron Project on rates of violence against Indigenous people, particularly Indigenous women. The only risk to public safety discussed in the DEIS was the overall increase in population in Esmerelda County.[111] During the DEIS Public Meeting held by BLM on May 9, 2024, a member of the public asked about how Rhyolite Ridge Lithium Boron Mine plans to address the crisis of Missing and Murdered Indigenous Women (MMIW). The representative, Steve Morton, answered, stating it would all be found in the DEIS and in the Social and Economic Values Supplement for the Rhyolite Ridge Lithium Boron Project.[112] Nowhere in the DEIS or in the Supplement is this crisis discussed. The MMIW crisis is a foreseeable impact that should have been analyzed in the DEIS. There is a recognized link between extractive industries and violence against Indigenous people; the U.S. State Department has acknowledged this risk, stating extractive industries near or on Tribal lands have "triggered violent conflicts, degraded the environment, worsened gender and other inequalities, displaced communities, and undermined democratic governance."[113] According to one case study of the Bakken oil region of Montana and North Dakota, Indigenous communities in the area experienced a 70% increase in violent crimes and a 30% increase in sexual assault over six year after the introduction of extractive industry based "man camps," or the influx of predominately male industry workers, as is proposed for Rhyolite Ridge.[114] Moreover, Indigenous women are murdered at a rate more than ten times higher than the national average, and female survivors of violence overwhelmingly experience that violence at the hands of a non-Indigenous perpetrator.[115] These rates of violence in extractive industries are not limited to the Bakken region but have been catalogued nationally and globally. In Canada, this violence has been experienced all around the Yukon and northern British Columbia.[116] In a report cultivated by the Liard Aboriginal Women's Society states that 73% of respondents (all of whom were Indigenous women living around and working on extractive operations) have experienced sexual and racial harassment, discrimination, and violence. Further, in 2019 a report titled "National Inquiry into Missing and Murdered Indigenous Women and Girls" found similar outcomes to the Bakken case study. It found that man camps developed from the extraction industry are "implicated" in higher rates of violence against Indigenous women both in communities neighboring the camps and at the camps. [117] These risks posed to Indigenous people should have been analyzed as a cumulative impact of the mine under NEPA. [109] DEIS at 4-16; Social and Economic Values Supplemental Environmental Report for Rhyolite Ridge Lithium Boron Project, BLM (Apr. 2024), 3-9. [110] Id. [111] DEIS at 4-16; Social and Economic Values Supplemental Environmental Report for Rhyolite Ridge Lithium Boron Project, BLM (Apr. 2024). [112] Rhyolite Ridge Lithium Boron Project Draft Environmental Impact Statement Virtual Public Meeting (May 9, 2024), 50:36-51 :45. [113] OFF. TO MONITOR AND COMBAT TRAFFICKING IN PERSONS, The Link Between Extractive Industries and Sex Trafficking, U.S. DEP'T OF JUST. (June 2017) https://www.state.gov/wpcontent/uploads/2019/02/272964.pdf	Workers would be required to comply with all State and Federal laws. No Man Camps are proposed under this Project.

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		[114] Violence Against Indigenous Women and the Extractive Industry, PAVE, https :/ /www.shatteringthesilence.org/blog/violence-against-indigenous-women-and-theextractive-industry, (last visited May 26, 2024) [115] Id. [116] Julien Gignac, Reporting Documents 'Degrading ' Treatment of Indigenous Women at Yukon and B.C. Mines, CBC (Aug. 4, 2021), https://www.cbc.ca/news/canada/north/yukon-minesindigenous-women-l .6128059. [117] Brett Forester, Hold Resource Sector Accountable for Violence Against Indigenous Women, MPs Urge Feds, CBC (Dec. 14, 2022), https://www.cbc.ca/news/indigenous/committee-resourceextraction-mmiwg-report-1.6685802.	
177	177.12	**2. Traffic Increases** The DEIS and Social and Economic Values Supplemental both mention traffic increases as a potential public safety concern.[118] The focus surrounds the rerouting of Cave Springs Road and Argentine Canyon Road around the Project.[119] The remainder of the traffic section discusses the projected increase traffic patterns on U.S. 6 and U.S. 95, which would be the primary routes around the Project. The DEIS does not discuss the impacts of the traffic on potential air pollution or on the potential for an increased rate of crashes. The DEIS also fails to identify areas outside of Esmerelda County that would be impacted by commuters, such as Bishop. Under the proposed action, traffic would increase by 230-280 vehicle trips per day during the quarrying phase and 186-248 trips during the quarrying phase.[120] The DEIS does not take into account increase traffic running between the Project site and the communities that workers would be commuting from, and the impacts those commuters would have on the day-to-day transportation of local community members. Comparing average daily traffic from 2022 with a prospective increase in traffic by 100 vehicles to Bishop, CA, Hawthorne, NV and Tonopah NV shows a drastic traffic increase in some areas. Typical traffic, for example, on U.S. 6 to Bishop averaged 480 cars on the most direct route through Esmerelda County.[121] The increase of 100 cars would lead to a 20.8% increase in traffic on U.S. 6. This is not a negligible increase. This would likely cause increased travel times for anyone seeking to travel from Bishop through Esmerelda County. The lowest calculated impact would be in Nye County on U.S. 95 in Nye County to Tonopah, where the average daily travel was 6700 in 2022. [122] One prospective impact outside of travel times would be an increase in traffic accidents. On average, half of fatal car accidents happen on rural roads. [123] A 2020 study found that crashes on rural roads had a 62% increased likelihood of death. [124] With the prospective travel increase on these rural roads such as U.S. 6 and U.S. 95, there will inevitably be more crashes. Overall, the DEIS fails to take into account the safety risks posed by the increased traffic. [118] DEIS at 4-25 - 4-27, Supplement at 3-9. [119] DEIS at 4-25. [120] Id at 4-26. [121] Annual Average Daily Traffic Count Stations: Esmerelda County, State of Nevada Department of Transportation (2022), https://www.dot.nv.gov/home/showpublisheddocument/21762/638206014113 700000. [122] Annual Average Daily Traffic Count Stations: Nye County, State of Nevada Department of Transportation (2022), https:/ /www.dot.nv.gov/home/showpublisheddocument/21778/638206015074870000. [123] Rural Road Are Disproportionately Deadly, New GHSA Study Finds, GOVERNORS HIGHWAY SAFETY ASSOCIATION (Sept. 1, 2022).	Impacts from increased traffic on transportation systems is described in EIS Section 4.13. Air quality impacts from increased vehicle emissions associated with the Project were modeled and analyzed Section 4.1.
177	177.13	**3. Hospitals** The DEIS briefly addresses which hospitals would serve Rhyolite Ridge workers in case of medical emergencies: Northern Inyo Hospital in Bishop, California and Mt. Grant General Hospital in Hawthorne, Nevada. [125] Northern Inyo Hospital has twenty-five inpatient beds, three operating rooms, eleven preoperative and post operative beds, and eight emergency room beds. [126] Mt. Grant General Hospital has eleven licensed acute beds and twenty-four long term care beds. [127] Mt. Grant states it serves the Hawthorne residential area of 4500 citizens. Concerns about overburdening an already overburdened hospital system should have been considered in the DEIS. Reflecting patterns across the country, Nevada is suffering from a lack of medical professionals. [128] As of 2023, Nevada would need 4,000 more registered nurses to meet the medical needs of residents, and two out of every three Nevadans live in an area that suffer from medical care shortage. [129] The shortage is only expected to worsen as older nurses retire from the profession without new nurses filling their roles. [130] Extractive industries like lithium mining poses health risks to workers that could further overburden the medical system in Nevada. Extractive industries have been linked to health risks such as silicosis from dust inhalation, musculoskeletal disorders, overexertion, and trauma, hearing loss from noise, heat stroke due to extreme temperature and humidity, and death from a variety of workplace accidents. [131] This means that the 350-500 people working for the Rhyolite Ridge Lithium Mine may have an increased risk of poor health from the workplace, and need to seek medical care. The DEIS inadequately considered the potential effects of the project on an already overburdened hospital system. [125] DEIS at 3-12. [126] Northern Inyo Hospital, NORTHERN INYO HEALTHCARE DISTRICT, https://www.nih.org/locations/northern-inyo-hospital/ (last visited May 26, 2024). [127] About Us, MGGH, https://mgghnv.org/one-page-express/about-us/ (last visited May 26, 2024). [128] Jacob Solis, Tabitha Mueller, Nevada Needs More Nurses and More Physicians, But What Will Make That Happen?, #NVLEG (Feb. 24, 2023), https :/ /thenevadaindependent.com/article/nevada-needs-more-nurses-and-more-physicians-butwhat-will-it-take-to-make-it-happen. [129] Id. [130] Id. [131] Franklin W. Schwartz, Sangsuk Lee, Thomas Darrah, A Review of the Scope of Artisanal and Small-Scale Mining Worldwide, Poverty, and the Associated Health Impacts, AGU (Jan. 15, 2021), https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2020GH000325.	The EIS describes the existing healthcare systems available in the area of analysis and potential impacts associated with increased population in Sections 3.10 and 4.10. Additional information is provided in the Social and Economic Values SER.
177	177.14	**V. Tribal Consultation has been Inadequate.** The DEIS states that the BLM sent a letter to the Tribe dated January 27, 2023, and that the BLM then "carried out follow up consultation ... from February 3, 2023, through April 26, 2023," and that prior to this, the BLM "met on different occasions" with the Bishop Paiute Tribe "to discuss this Project as well as others."[132] In addition, below is a synthesized table of the BLM's purported tribal consultation actions with regard to the Bishop Paiute Tribe. **Date** | **DEIS Table 5-1 Language**	Government-to-government consultation and coordination for the Project was initiated in 2020 and is described in Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process. During consultation, the Project was redesigned to avoid impacts to culturally significant areas. Tribal consultation is ongoing and will continue through the life of the Project. If avoidance of areas of tribal concern is not feasible, specific

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4/26/2022	BLM met with the Bishop Paiute Council on April 26, 2022 to present on the BMDO and why the District is expanding its sphere of influence with respect to both the Rhyolite Ridge and Esmeralda 7 Solar proposals
12/19/2022	Scoping Letter from BLM. Correspondent included a link to the project's ePlanning website, direct links to register for the Zoom meetings, and a copy of the news release
1/27/2023	Letters and consultation emails from BLM to all affected tribes regarding the updated Rhvolite Ridge POO and request for tribal consultation and inout.
4/27/2023	Coordination email/Outlook invitations to all affected Tribes for implementation of a field meeting for consultation/communication with Ioneer and the BLM TFO Field Manager held on April 27, 2023.
5/17/2023	Letters sent by the BLM to all affected Tribes for an invitation request for additional opportunity to communicate/consult in proposed Microsoft Teams or Zoom on a monthly basis
8/08/2023	Meeting between Scott Distel (BLM) and Brian Adkins (Environmental Director at Bishop Paiute Tribe) regarding cooperating agency status and government to government coordination and consultation. Follow up discussion via email between Brian and Scott on January 30, 2024 regarding Project update and status.

While the actions described above may be described as outreach, they fall far below the standard required to engage in meaningful tribal consultation, by the Department of lnterior's own definition:

> A Tribal consultation is a formal, two-way, government-to-government dialogue between official representatives of Tribes and Federal agencies to discuss Federal proposals before the Federal agency makes decisions on those proposals. The Federal agency provides sufficient advance notice to appropriate Tribal leaders of upcoming consultation sessions and, following the consultation sessions, explains to those Tribal leaders how the final agency decision incorporates Tribal input.[133]

As sovereign nations, tribes have a role and a relationship with the federal government that makes them distinct from other other stakeholder groups throughout the NEPA process, as the "[fJederal government and Indian tribal relationships reflect the political and historical development of the Nation."[134] Here, the BLM failed to conduct outreach to the Tribe until the DEIS was already being drafted; it has made no attempts to host separate meetings for tribal nations, instead inviting tribes to public meetings; and, the BLM has also provided no information regarding how tribal input has been and will continue to be incorporated into their decision-making process. Further, tribes must have the opportunity to shape their own forms of engagement; what works for one tribe may not work for another.[135] For these reasons, and for those discussed in detail below, BLM has failed to meet its burden under the "good faith" government-to-government consultation standard, its burden pursuant to the requirements of the National Historic Preservation Act, and its burden under international law.

A. Government-to-Government Consultation

Government-to-government consultation by the BLM is mandated by its own governing documents.[136] This consultation responsibility is also affirmed by Executive Order No.13175 (Consultation and Coordination with Indian Tribal Governments dated November 6, 2000, which requires all agencies, bureaus, and offices within the Federal Government to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications). In addition, Presidential Memorandum for the Heads of Executive Departments and Agencies on Tribal Consultation dated November 5, 2009 (74 Fed. Reg. 57881), Presidential Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships dated January 26, 2021 (86 Fed. Reg. 7491),[137] and Joint Secretarial Order on Fulfilling the Trust Responsibility to Indian Tribes in the Stewardship of Federal Lands and Waters No. 3403 dated November 15, 2021,[138] serve to strengthen and supplement Executive Order No. 13175.

In short, the BLM failed to follow its own policies for tribal consultation. Pursuant to the BLM's own Tribal Relations Manual, the following eleven principles should be applied to "all tribal consultation situations"[139]:

1. The BLM formally engages federally recognized Indian tribes on a government to-government basis. These formal interactions are complemented by informal working relationships between BLM managers and tribal officials, and between BLM and tribal staffs.
2. The BLM conducts government-to-government consultation with Indian tribes to improve collaborative and informed Federal decisionmaking. The BLM understands government-to-government consultation to be an ongoing relationship between BLM officials and elected tribal officials that educates both parties and results in the best informed BLM land use decisions.
3. The BLM intends government-to-government consultation to be an open and ongoing dialogue between BLM line officers and elected tribal officials regarding both specific projects and general issues related to policy, planning, and other long-term concerns.
4. Information, opinions, or recommendations may be provided to the BLM from individual tribal members or traditional tribal religious leaders. In cases where such comments conflict with positions taken by official tribal representatives, the BLM will defer to the opinions and positions adopted by the tribal government. Should this occur, the comments will be treated as those received from the public. They will be handled accordingly by the BLM and tribal members notified. Only where specified in particular statutes (e.g., NAGPRA gives legal precedence to MS-1780 - TRIBAL RELATIONS (P) 1-15 BLM MANUAL Rel. No. 1-1780 Supersedes Rel. 8-74 12/15/16 lineal descendants) will the BLM consult with and give precedence to individuals other than official tribal government representatives.
5. Only BLM line officers are authorized to speak for the agency and will exercise their delegated authority in the conduct of government-to-government consultation and decision-making.
6. The BLM consults with tribes for all actions where consultation is specifically required by statute, regulation, or policy and for any additional action that will have a substantial direct effect on tribal planning issues, including regulations, rulemaking, policy, guidance, or operational activities.
7. The BLM understands that project-specific consultation between the BLM and tribal technical staff should be established early in the planning cycle and continues during project implementation and afterward during long-term monitoring and reclamation.
8. When amending and revising land use plans the BLM seeks to be consistent with tribal land use and resource allocation plans (including Alaska Native village or regional corporation plans, as applicable) and other tribal resource planning documents to the extent consistent with the laws governing the administration of the public lands per 43 CFR 1610.3-2.
9. The BLM recognizes that it has a broad trust responsibility that in some cases includes a fiduciary duty related to Indian trust assets and property or interests reserved by or granted to Indian tribes or Indian individuals by treaty, statute, and Executive orders. The BLM also recognizes that Indian tribes may have reserved rights granted by treaties or authorized by specific legislation that applies to water, fish, wildlife, or vegetative resources.
10. The BLM recognizes that Indian tribes are knowledgeable sources and experts concerning their own cultures. They can provide unique insight and explanation of tribal history and land uses. When provided with such information, the BLM will take this into account when making decisions related to the identification, evaluation, treatment, and management of natural and heritage resources.

operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected Tribes to reduce or eliminate impacts.

The Bishop Paiute Tribe was sent the Draft MOA on April 18, 2024 and July 10, 2024. The BLM sent an email on May 1, 2024 following up with the Bishop Paiute Tribe regarding receipt of the MOA and review. The HPTP was mailed to Bishop Paiute Tribe on June 12, 2024. The BLM will continue to coordinate with the Bishop Paiute Tribe. Table 5-1 in the Final EIS has been updated with additional consultation and coordination conducted.

The NEPA process has been conducted in accordance with applicable United States laws including NEPA, NHPA, and FLPMA, CEQ regulations, and BLM regulations. The process includes Tribal consultation and public involvement throughout development of the EIS. The EIS is compliant with plain language requirements in the CEQ regulations.

While the United States government supports UNDRIP, the declaration is not legally binding but is an inspirational international instrument that includes a broad range of provisions regarding the relationship between nations, organizations and indigenous peoples and individuals.

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		11. The BLM recognizes Indian religious and cultural values as an important, living part of our Nation's heritage. The BLM commits to addressing and, where practicable, minimizing potential disruption of the traditional expression or maintenance of these values that might result from BLM land use decisions. Sending notification letters and providing baseline information about the NEPA process does not constitute tribal consultation and does not accomplish the goal of educating both parties to achieve the best-informed management decision. The BLM should therefore go back to the drawing board to revise the DEIS to incorporate thorough and meaningful input from tribal nations, in accordance with its own policies. **B. NHPA Section 106 Consultation** Pursuant to Section 106 of the National Historic Preservation Act, federal agencies are required to consider the effects of an undertaking on historic properties.[140] Agency officials should plan consultations appropriate to the scale of the undertaking and scope of federal involvement. Section 106 Consultation begins with a formal letter from the agency official to the Tribal leader with a copy also sent to the Tribal Historic Preservation Officer (THPO). Consultation must occur with any Tribe that attaches religious and cultural significance to historic properties that may be affected by an undertaking.[141] The agency is required to make area reasonable and good-faith effort to identify Tribes that might attach religious and cultural significance to these properties.[142] Importantly, the consultation process applies to ancestral and ceded lands outside of reservation boundaries. The following are the general principles of the Section 106 NHPAprocess[143] : 1. Agencies must ensure the Section 106 process is "initiated early in the undertaking's planning, so that a broad range of alternatives may be considered during the planning process for the undertaking." 2. Consultation on these historic properties of significance to Native American Tribes should start early in the process to identify and discuss relevant preservation issues and resolve concerns about the confidentiality of information. 3. The consultation shall provide Tribes a "reasonable opportunity" to: 1. identify their concerns about historic properties 11. advise on identification and evaluation of historic properties, including those of traditional religious and cultural importance 111. articulate its views on the undertaking's effects on such properties IV. participate in resolution of adverse effects 4. The process must respect Tribal sovereignty and represent the government-to-government relationship between Tribes and the federal government.[144] 5. Tribes may enter into an agreement with the agency regarding any aspect of Tribal participation in the review process.[145] 6. Finally, the agency is required to consult with the Tribal Historic Preservation Officer (THPO), "as appropriate," and provide the THPO or Tribe with the opportunity to review and concur with or object to the federal agency's findings and determinations.[146] The project should be paused until the BLM can satisfy its obligations under Section 106 to consult with all affected tribes, and the Memorandum of Agreement (MOA) between the BLM, Nevada State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation has been completed and is available for review. **C. Free, Prior, and Informed Consent[147]** As a procedural mechanism, mere consultation does not adequately equate with meaningful consent by Tribal Nations. International law is instructive where the laws of the United States fail to secure the rights of lndigenous Peoples and Tribes. The Supremacy Clause of the U.S. Constitution, Article VI, Clause 2 states: "This Constitution, and the Laws of the United States ... and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby ... " Accordingly, international treaties that have been signed and ratified by the United States, such as the International Convention on the Elimination of All Forms of Racial Discrimination ("ICERD") (1994) and the International Covenant on Civil and Political Rights ("ICCPR") (1992), are binding law on the United States and carry the same weight as the Constitution itself. International law states that Indigenous Peoples have the right to Free, Prior and Informed Consent ("FPIC") concerning projects, laws, regulations, and other State actions that would affect them. FPIC is defined as a "framework for ensuring that the rights of Indigenous Peoples are guaranteed in any decision that may affect their lands, territories or livelihoods." FPIC "recognizes [I]ndigenous [P]eoples' inherent and prior rights to their lands and resources and respects their legitimate authority to require that third parties enter into an equaland respectful relationship with them based on the principle of informed consent. Procedurally, [FPIC] requires processes that allow and support meaningful choices by indigenous peoples about their development path." FPIC is intrinsically tied to the concept of self-determination: that "human beings, individually and as groups, are equally entitled to be in control of their own destinies." As stated in the Charter of the United Nations (United Nations 1945) (treaty ratified by the United States in 1945) and in Article 1 of the ICCPR, self-determination is to be provided to "all peoples." The Committee on the Elimination of Racial Discrimination ("CERD"), the monitoring body of the ICERD, issued General Recommendation 23 in 1997, noted that State parties should "ensure [that] Indigenous Peoples have equal rights in respect of effective participation in public life and that no decisions directly relating to their rights and interests are taken without their informed consent." The United Nations Declaration on the Rights of lndigenous Peoples ("UNDRIP"), adopted by the United Nations General Assembly in 2007 and recognized by the U.S. State Department as having both moral and political force, recognizes, is the clearest and most widely adopted articulation of FPIC. The U.N. Declaration speaks to the rights Indigenous Peoples hold via their unique status and the obligations country States must uphold those rights. Articles 19 and 32(2) state clearly that country States must engage in good faith and engage in these processes before projects are undertaken: **Art. 19** - States shall consult and cooperate in good faith with the Indigenous Peoples concerned through their own representative institutions in order to obtain their free, prior and informed consent before adopting and implementing legislative or administrative measures that may affect them.	

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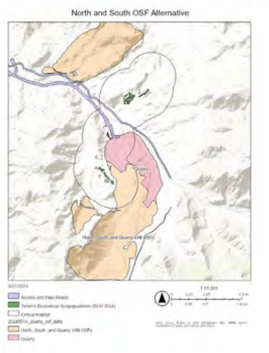
		Art. 32 - States shall consult and cooperate in good faith with the Indigenous Peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources. Most recently, in November 2023, the Human Rights Committee ("CCPR"), the monitoring body of the ICCPR, renewed its support and recommendations to the United States to facilitate and ensure the free, prior and informed consent of Indigenous Peoples in its concluding observations and stated: [The State party] should also ensure meaningful and good faith consultation with Indigenous Peoples, ensuring their active and effective participation, in order to obtain their free, prior and informed consent before adopting and implementing any measures that may substantially affect their rights, way of life and culture, including in related to infrastructure or development projects. Free, Prior and Informed Consent demands an ongoing exchange between a governing body-here, the United States-and directly impacted Indigenous Peoples and communities. This form of cooperation goes beyond Tribal consultation and must begin at the outset at the planning stages .. .Information provided to Indigenous Peoples and Tribal Nations must be done in a manner that is accessible with plain language that is commonly spoken by the Peoples in question and devoid of technical jargon. Indigenous Peoples have the right to withhold their consent for extractive projects such as the Rhyolite Ridge project. The United States and the BLM have not engaged in the free, prior and informed consent as they are obligated to under international law. [132] DEIS at 5-1. [133] What is Tribal Consultation, U.S. DEPARTMENT OF THE INTERIOR INDIAN AFFAIRS, https://www.bia.gov/service/tribal-consultations/what-tribal-consultation#what-defines-a-tribalconsulLa.lion- (last visited May 30, 2024). [134] BUREAU OF LAND MGMT., BLM MANUAL 1780 TRIBAL RELATIONS (P) (Dec. 2016) at 1-3 (hereinafter "Tribal Relations Manual"). [135] The BLM Tribal Relations Manual at 1-3 states that the BLM "recognizes each tribal government is unique in its views, concerns, and capacities," and that "[t]he BLM will endeavor to establish government-to-government relationships with each tribe that are responsive to the unique nature of each tribal government." [136] See id.; BUREAU OF LAND MGMT., BLM HANDBOOK (H) 1780-1, IMPROVING AND SUSTAINING BLM-TRIBAL RELATIONS (Dec. 15, 2016), https://www.bim.gov/sites/bim.gov/fiies/upioads/H-1780-1 0.pdf. [137] Presidential Memorandum for the Heads of Executive Departments and Agencies, Tribal Consultation and Strengthening Nation-to-Nation Relationships, 86 Fed. Reg. 7491 (Jan. 26, 2021), https ://www.federairegister.gov/documents/202 l/O 1 /29/2021-02075/tribal-consultationand-strenutJ1enim.?.-nalion-Lo-- nation -re la1ion hip [138] U.S. Dept. oflnterior & U.S. Dept. of Agriculture, Joint Secretarial Order on Fulfilling the Trust Responsibility to Indian Tribes in the Stewardship of Federal Lands and Waters No. 3403 (Nov. 15, 2021), https://www.doi.gove/sites/doi.gov/files/elips/documents/so-3403-joint-secretarial-order-on-fulfilling-the-trust-responsibility-to-indian-tribes-in-the-stewardship-of-federal-lands-and-waters.pdf. [139] BLM Tribal Relations Manual at 1-14, 1-15. [140] 54 u.s.c. § 306108. [141] 36 C.F.R. § 800.2(c)(2)(ii). [142] ADVISORY COUNCIL ON HISTOR. PRES., CONSULTATION WITH INDIAN TRIBES IN THE SECTION 106 REVIEW PROCESS: THE HANDBOOK (2021). [143] 36 C.F.R. § 800.l(c). [144] 36 C.F.R. § 800.2(c)(2)(ii). [145] 36 C.F.R. § 800.2(c)(2)(ii)(E) (This agreement may specify a Tribe's geographic area of interest, types of projects they wish to be consulted on, or provide the Tribe with additional participation or concurrence in agency decisions under Section 106.) [146] 36 C.F.R. § 800.3(c)(3). [147] Language in this section was taken verbatim, with permission, from the comments submitted by the Water Protector Legal Collective on the Dakota Access Pipeline Lake Oahe Crossing Draft EIS - Reg. No. FRL OP-OFA-085.	
177	177.15	**VI. Conclusion** The Bishop Paiute Tribe appreciates this opportunity to provide comments to the BLM on the Draft Environmental Impact Statement. In short, the DEIS failed to apply the requisite detail that is required by NEPA. Due to the numerous failures and inadequacies, the Tribe recommends that the BLM make substantial revisions and additions to produce a proper DEIS which fully complies with the requirements of NEPA, the NHPA and other applicable federal and international laws. The Tribe specifically requests an opportunity to review and provide comment on the currently in-development "Memorandum of Agreement (MOA) between the BLM, Nevada State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation," and the "Historic Properties Treatment Plan." Meryl Picard Tribal Chairwoman Bishop Paiute Tribe CC: Honorary Tribal Council, Bishop Paiute Tribe Kody Jaeger, Chief Operations Officer, Bishop Paiute Tribe Brian Adkins, Environmental Director, Bishop Paiute Tribe Tribal Environmental Protection Agency, Bishop Paiute Tribe Darren Delgado, Tribal Historic Preservation Officer (THPO), Bishop Paiute Tribe Mia Montoya Hammersley, Director, Vermont Law & Graduate School Environmental Justice Clinic Attachment 1 – Application for Permission to Change Point of Diversion, Manner of Use and Place of Use of the Public Waters of the State of Nevada Heretofore Appropriated. Application No.'s 92732 and 92731	The Bishop Paiute Tribe was sent the Draft MOA on April 18, 2024 and July 10, 2024. The BLM sent an email on May 1, 2024 following up with the Bishop Paiute Tribe regarding receipt of the MOA and review. The HPTP was mailed to Bishop Paiute Tribe on June 12, 2024. The BLM will continue to coordinate with the Bishop Paiute Tribe. Table 5-1 in the Final EIS has been updated with additional consultation and coordination conducted.
Naomi Fraga – June 3, 2024			

Comment Letter No.	Comment Number	Comment	Response
178	178.1	To whom it may concern, On behalf of 100 scientists, I am submitting a letter regarding the Rhyolite Ridge Lithium-Boron Project draft EIS and associated impacts to Tiehm's buckwheat. Thank you for the opportunity to comment. Sincerely, Naomi Fraga	Comment noted.
178	178.2	June 3, 2024 U.S. Bureau of Land Management (BLM) 50 Bastian Road Battle Mountain, NV 89820 BLM_NV_BMDO_P&EC_NEPA@blm.gov Re: Rhyolite Ridge Lithium-Boron Mine EIS and Impacts to Tiehm's buckwheat To BLM Officials: We, the undersigned scientists, are writing to express our deep concern regarding the Draft Environmental Impact Statement (DEIS) for the Rhyolite Ridge Mine, proposed by Australian mining company Ioneer. The Mine will cause significant impacts up to and including the potential extinction of Tiehm's buckwheat (*Eriogonum tiehmii*), a rare plant species endemic to the Silver Peak Range in Esmeralda County Nevada. No mitigation measures will sufficiently address these impacts to appreciably reduce the risk of extinction. We are opposed to this mine moving forward within or directly adjacent to the designated critical habitat of this rare and endangered plant. The BLM must select the No Action Alternative to prevent its extinction. *Eriogonum tiehmii* is a single-site endemic that occurs on just 10 acres of public land. It has one of the most restricted ranges and specific habitats of any plant in Nevada. The entirety of E. tiehmii habitat lies within the project area for Rhyolite Ridge Mine. On December 16, 2022, the U.S. Fish and Wildlife Service listed E. tiehmii as endangered under the U.S. Endangered Species Act and 910 acres of critical habitat was designated to protect it. The critical habitat is defined as areas with physical or biological features essential to the conservation of the species. The primary threat identified is the curtailment of its habitat and range from mineral exploration and development due to the Rhyolite Ridge Mine. The agency preferred alternative in the Rhyolite Ridge Mine DEIS, also called the North and South OSF Alternative, includes the construction of a 200-acre, 960-foot deep open pit; over 1,200 acres of waste rock dumps; a sulfuric acid processing plant; a dewatering well field; and extensive ancillary facilities and infrastructure. A haul road would have over 1,000 one-way truck trips per day moving material out of the pit. All of this activity would be within a few dozen to a few hundred feet of five of the eight subpopulations of Eriogonum tiehmii that constitute over 60% of the global population (Figure 1). The pit, haul road, and waste rock dump would directly and irreparably destroy 22% of the designated critical habitat for Eriogonum tiehmii. This would result in a significant loss of pollinator habitat, which is essential for the conservation of E. tiehmii. However, the preferred alternative would in all actuality degrade the entirety of the critical habitat to the point that it would no longer support the conservation of E. tiehmii. The haul road and the wall of the open pit come within 15 feet of E. tiehmii populations. Putting mine infrastructure in such close proximity to the plant is putting it on a path to extinction.  **Figure 1**: Tiehm's buckwheat and proposed mine plan elements in the agency preferred alternative from the DEIS. Map credit: Naomi Fraga; data courtesy of BLM. Dust deposition is a major concern. Over 1,000 truck trips per day on the haul road, and numerous other vehicle and machinery trips around the mine site which were not documented in the DEIS, will produce substantial dust. Ioneer's dust control techniques are speculative and will cause adverse impacts to the native habitat – they propose to deposit up to 400 inches of water per year on the haul road, sending a water truck every 25 minutes. This will provide a substantial vector for invasive plant species, and potentially destabilize the slope. And if the dust control measures fail to be as effective, E. tiehmii and its pollinator habitat would be coated in a thick layer of mine dust that would impact plant health by limiting reproduction, reducing light availability, CO2 uptake, and photosynthetic capacity.	The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat in Section 4.12 and 4.20.12.3. The impact analysis includes consideration of dust deposition and proximity to the pit and other facilities. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the Endangered Species Act, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.

Comment Letter No.	Comment Number	Comment	Response
		The stability of the pit wall is also a significant concern. Eriogonum tiehmii populations are perched within a few dozen feet of the lip of the open pit, but experience at other mines shows that pit wall failure and erosion rates often result in areas hundreds of feet from a pit wall eventually eroding into the pit. Whether in just a few years or whether across the centuries, the preferred alternative will inevitably result in E. tiehmii ending up at the bottom of an open pit. In general, proximity to a large industrial open-pit mining operation will cause detrimental impacts to a highly specialized and narrowly endemic species like Eriogonum tiehmii. Studies have found that geographic range size may play an outsized role in determining extinction risk, suggesting that reductions in geographic range size and available habitat can lead to pronounced increases in extinction risk even if local populations are relatively large. This magnitude of impact would compromise and fundamentally alter habitat integrity, pollination, and dispersal which is further exacerbated by the species' limited habitat availability (e.g. suitable soil) and inherent poor dispersal capabilities, ultimately affecting the long-term survival of the species. The Endangered Species Act requires that BLM not take any actions which jeopardize the continued existence of a listed species, nor adversely modify its critical habitat (50 CFR §402). The best available science demonstrates that the agency preferred alternative mine plan, through direct destruction of 22% of the critical habitat and complete degradation of the remaining 78% of the critical habitat, will both jeopardize the continued existence of Eriogonum tiehmii and adversely modify its critical habitat. On behalf of the many people who study, work with, and love plants everywhere we urge the BLM to use the best available science and to select the No Action Alternative and not to allow this mine to move forward as proposed to ensure that Tiehm's buckwheat is not adversely impacted and can continue to survive and thrive in its habitat where it has lived for millenia. Sincerely, Naomi Fraga, Ph.D., California Botanic Garden, Claremont, CA; Peter H. Raven, Ph.D, Missouri Botanical Garden, St. Louis, MO; Ben Grady, Ph.D., Ripon College President, Eriogonum Society Ripon, WI; Mary O'Brien, Ph.D., Project Eleven Hundred, Castle Valley, Utah; Amanda Fisher, Ph.D., California State University, Long Beach, Long Beach, CA; Peter Breslin, Ph.D., University of Arizona, Tucson, AZ; Kristen Hasenstab-Lehman, Ph.D., Santa Barbara Botanic Garden, Santa Barbara, CA; Katherine Waselkov, Ph.D., California State University, Fresno, Fresno, CA; Seema Sheth, Ph.D., North Carolina State University, Raleigh, NC; Joan Dudney, Ph.D., University of California, Santa Barbara, Santa Barbara, CA Carrie Kiel, Ph.D., California Botanic Garden, Claremont, CA; Thomas J. Rosatti, Ph.D., University of California, Berkeley, Berkeley, CA; Susan Fawcett, Ph.D., University of California, Berkeley, Berkeley, CA; Colin Hoag, Ph.D., Smith College, Northampton, MA; Rosa Cerros-Tlatilpa, Ph.D., Universidad Autónoma del Estado de Morelos, Cuernavaca, Morelos, Mexico; Guy Nesom, Ph.D., Academy of Natural Sciences, Philadelphia, Philadelphia, PA; Rachel Martin, Ph.D., University of California, Irvine, Irvine, CA; Barbara Brydolf, Ph.D., California Native Plant Society, Springville, CA; James Ojascastro, Ph.D., Missouri Botanical Garden, St. Louis, MO; Ingrid Jordon-Thaden, Ph.D., University of Wisconsin Madison, Madison, WI; Christopher Moore, Ph.D., Colby College, Waterville, ME; Leif Richardson, Ph.D., The Xerces Society for Invertebrate Conservation, Riverside, CA; Clarissa Rodriguez, Ph.D., San Diego State University Research Foundation, La Mesa, CA; Grant Godden, Ph.D., University of Florida, Gainesville, FL; Hollis Woodard, Ph.D., University of California, Riverside, Riverside, CA; Laura Foster Huenneke, Ph.D., Northern Arizona University (emeritus), Flagstaff, AZ; Loraine K. Washburn, Ph.D., Colby College, Waterville, ME; Jessamine Finch, Ph.D., Native Plant Trust, Wayland, MA; Brent Mishler, Ph.D., University of California, Berkeley, Berkeley, CA; Bruce MacBryde, Ph.D., BioConservation Support, Drake, CO; Erika Moore-Pollard, Ph.D., University of Memphis, Memphis, TN; Marc Baker, Ph.D., Arizona State University, Tempe, AZ; Dylan Cohen, Ph.D., Chicago Botanic Garden, Chicago, IL; Steven Crum, Ph.D., Rogue Community College, Grants Pass, OR; Marion Andrews Holmes, Ph.D., Chatham University, Pittsburgh, PA; Dr. Patricia Holmgren, Ph.D., New York Botanical Garden, retired, Logan, Utah; Denise Knapp, Ph.D., Santa Barbara Botanic Garden, Santa Barbara, CA; C. Matt Guilliams, Ph.D., Santa Barbara Botanic Garden, Santa Barbara, CA; Isaac Lichter Marck, Ph.D., California Academy of the Sciences, San Francisco, CA; Isabela Lima Borges, Ph.D., Santa Barbara Botanic Garden, Santa Barbara, CA; Heather Schneider, Ph.D., Santa Barbara Botanic Garden, Santa Barbara, CA; Erika Moore-Pollard, Ph.D., University of Memphis, Memphis, TN; Lea Richardson, Ph.D., California State University Northridge, Glendale, CA; Jacqualine Grant, Ph.D., Utah Native Plant Society, Salt Lake City, Utah; Emily Roberson, Ph.D., Native Plant Conservation Campaign, San Francisco, CA; Robert Douglas Stone, Ph.D., Consulting botanist, Sacramento, CA; David Zaber, Ph.D., Homewood, IL; Cheryl Crowder, Ph.D., Los Angeles, CA; Sula Vanderplank, Ph.D., San Diego, CA; Nick Jensen, Ph.D., Sacramento, CA; Kristina Gill, Ph.D., Cambria, CA; Trevor Faske, Ph.D., Flagstaff, AZ; Marko Spasojevic, Ph.D., Riverside, CA; Robert Steers, Ph.D., Corte Madera, CA; Jared Meek, M.S., Columbia University, New York, NY; Kristen Nelson, M.S., California Native Plant Society, San Luis Obispo, CA; Evan Frost, M.S., Wildwood Consulting LLC, Bishop, CA; GT Wharton, M.S. Johns Hopkins University, Baltimore, MD; Diana Cosand, M.A., Chaffey College, Rancho Cucamonga CA; Steve Schoenig, M.S., University of California – Davis, Davis, CA; Alexandra Seglias, M.S., Denver Botanic Gardens, Denver, Colorado; Maria Jesus, M.S., California Botanic Garden, Bishop, CA; Ileene Anderson, M.S., Center for Biological Diversity, Los Angeles, CA; Sheryl Creer, M.S., San Francisco State University, San Francisco, CA; Matt Wang, M.S., Santa Barbara Botanic Garden, Santa Barbara, CA; Margriet Wetherwax, M.S., UC/Jepson Herbarium, Berkeley, CA; Joy England, M.S., California Botanic Garden, Claremont, CA; Laura K Hollister, M.S., Turlock Unified School District, Turlock, CA; Sonia Nosratinia, M.S., University of California, Berkeley, Berkeley, CA; Barbara Keller, M.S., University of California, Berkeley, retired, Berkeley, CA; Michelle Balk, M.S., San Diego Botanic Garden, Encinitas, CA; Sophia Warsh, M.S., University of California Botanical Garden at Berkeley, Berkeley, CA; Morgan A. Stickrod, M.S., San Francisco State University, San Francisco, CA; Kevin Alison, M.S., Catalina Island Conservancy, Avalon, CA; Brianna Collis, M.L.A., Consulting botanist, British Columbia, Canada; Lyell Buttermore, M.S., Consulting biologist, Oceanside, CA; Nina House, M.S., Berkeley, CA; Saskia Raether, M.S., Berkeley, CA; Selena Vengco, M.S., San Jose, CA; Nathaniel Raizen, M.S., Dublin, CA; Sarah Ratay, M.S., Silver Lake, OR; Imeña Valdes, M.S., Chicago, IL; Sarah Canham, M.S., Bend, Oregon; Christina Feng, M.S., Carbondale, IL; Eli Balderas, M.S., San Luis Obispo, CA; Jane Cipra, M.S., Eureka, CA; Frances Grace Stark, Ph.D. candidate, University of California – Berkeley, Berkeley, CA; Duncan S. Bell, B.S., California Botanic Garden, Claremont, CA; Holly Forbes, B.A., University of California, Berkeley Botanic Garden, Berkeley, CA; Michelle Cloud-Hughes, B.S., Desert Solitaire Botany and Ecological Restoration, San Diego, CA; David Greenberger, B.S., California Native Plant Society, Oakland, CA; Daniel R. Patterson, B.S., US Department of Interior, retired, Boulder City, NV; Jeremy Bugarchich, B.S., San Diego Botanic Garden, San Diego, CA; Annie Ayers, B.S., Santa Barbara Botanic Garden, Santa Barbara, CA; Aaron Sims, B.S., California Native Plant Society, Weaverville, CA; Hannah Swarthout, B.S., Consulting biologist, Encinitas, CA; Marina Lavender, B.A., Consulting biologist, San Diego, CA; Michael Heine, B.S., Field botanist, Felton, CA; Tristan Ray, B.S., Consulting biologist, San Juan Capistrano, CA; Dylan Neubauer, B.S., Santa Cruz, CA.	
State of Nevada Assembly, District 40 – June 3, 2024			
179	179.1	May 31, 2024 Bureau of Land Management Scott Distel, BLM Project Manager 50 Bastian Road Battle Mountain, Nevada 89820	The EIS contains detailed analysis of environmental impacts associated with the Project and considers the implementation of ACEPMs to reduce impacts. Economic impacts are described in Section 4.10.

Comment Letter No.	Comment Number	Comment	Response
		RE: Rhyolite Ridge Lithium-Boron Mine Project Dear Bureau of Land Management, I am writing to express my strong support for the Rhyolite Ridge Lithium-Boron Project in Esmeralda County, Nevada, being developed by Rhyolite Ridge LLC. This project presents a significant opportunity for sustainable development and economic growth, not only for the local community but also for the broader region and the nation. The Rhyolite Ridge project is particularly important due to its potential to supply a substantial amount of lithium, a critical element in the production of batteries for electric vehicles and renewable energy storage systems. As the world transitions to cleaner energy sources, the demand for lithium is projected to increase significantly. This project positions the United States as a key player in the global lithium supply chain, reducing dependency on foreign sources and enhancing national security. Moreover, the inclusion of boron extraction in this project adds further value, as boron is essential in various industrial applications, including agriculture, glass production, and advanced materials. The dual extraction approach maximizes the resource utilization and minimizes waste, aligning with principles of environmental stewardship. Rhyolite Ridge LLC has demonstrated a commitment to responsible mining practices, incorporating comprehensive environmental management plans to mitigate potential impacts. The use of advanced technologies and sustainable practices in the project design ensures minimal disruption to the surrounding ecosystem and water resources. Additionally, the company's engagement with local communities and stakeholders highlights its dedication to social responsibility and economic development in Esmeralda County. The economic benefits of the Rhyolite Ridge project are significant. It is expected to create numerous job opportunities during both the construction and operational phases, providing a much-needed boost to the local economy. Furthermore, the infrastructure improvements and ancillary businesses stimulated by this project will have long-lasting positive effects on the region's development. In conclusion, the Rhyolite Ridge Lithium-Boron Project is a forward-thinking initiative that aligns with national priorities for sustainable energy and economic resilience. I urge the Bureau of Land Management to approve and support this project, recognizing its potential to contribute substantially to both local and national interests. Thank you for considering my comments. I look forward to the successful advancement of this vital project. Sincerely Philip "PK" O'Neill Nevada Assembly, District 40	
Nevada State Clearinghouse – June 3, 2024			
186	186.1	Attached please find a copy of the comments received through the Nevada State Clearinghouse for BLM EIS Rhyolite Ridge Lithium-Boron Mine Project - Esmeralda County (Clearinghouse ID: E2024- 290). If you have any questions or need any additional information about these comments please feel free to contact me. Thank You Kevin Wichman Nevada State Clearinghouse Department of Conservation and Natural Resources	Comment noted.
186	186.2	Comment # 1 From: Brendon Grant Agency: Nevada Division of Environmental Protection NDEP Title: Phone: 7756879524 Email: bgrant@ndep.nv.gov Date Received: 05/14/2024 If this mine will serve at lease 25 of the same persons six months out of the year, it will need to be permitted as a Non-Transient Non-Community (NTNC) public water system by the Bureau of Safe Drinking Water (BSDW). Prior to construction of any water system infrastructure, plans and specification shall be reviewed and approved by BSDW. Please contact Brendon Grant at 775 6879524 or bgrant@ndep.nv.gov regarding any public water system questions.	The NTNC permit has been added to the list of required permits in EIS Appendix B.
186	186.3	Comment # 2 From: AJ Jensby Agency: Nevada Division of Water Resources Title: Supervisor III Associate Engineer Phone: 7756842887 Email: ajjensby@water.nv.gov Date Received: 05/24/2024 *See Attached*	Comment noted. The EIS acknowledges that implementation of the Proposed Action would require authorizations from other federal, state, and local agencies with jurisdiction over certain aspects of the Project. Approvals of water rights, change applications, and permits to construct dams are identified as required approvals in Appendix B of the EIS.

Comment Letter No.	Comment Number	Comment	Response
		DATE: 5/24/2024 Division of Water Resources **Nevada SAI # E2024-[290]** Project: BLM EIS Rhyolite Ridge Lithium-Boron Mine Project - Esmeralda County ☐No comment on this project ☒Proposal supported with comments AGENCY COMMENTS: **NRS – Nevada Revised Statutes** **NAC – Nevada Administrative Code** **General:** Compliance with Nevada water law is required. All waters of the State belong to the public and may be appropriated for beneficial use pursuant to the provisions of NRS Chapters 533 and 534 and not otherwise. Water shall not be used from any source unless the use of that water is authorized through a permit issued by the State Engineer. For underground sources, certain uses of water may be authorized through the issuance of a waiver pursuant to NRS Chapter 534 and NAC Chapter 534. Any surface or underground water developments constructed and utilized for a beneficial use must be done so in compliance with the referenced chapters of the NRS. The basin in which the project is located is a designated basin pursuant to NRS 534.030. The State Engineer is authorized to make rules, regulations, and orders when groundwater is being depleted in the designated area. Orders 704, 1220, 1221, and 1223 were issued establishing rules for the Fish Lake Valley Hydrographic Basin 117. **Water for Construction Projects:** Any water used on the described lands for the project for any manner of use shall be provided by an established utility or under permit or temporary change application or waiver issued by the State Engineer's Office with a manner of use acceptable for suggested project's water needs. **Water Rights Ownership:** Any ownership transfer of water rights shall be sufficiently documented through a chain of title and a report of conveyance submitted to the State Engineer's Office as provided by NRS 533.384. The State Engineer is authorized and is responsible for maintaining water right files and accompanying documents as per NRS Chapters 111, 240, 375, 532, 533 and 534. **Wells:** All wells must be noticed, drilled, constructed, and plugged in accordance with NRS Chapter 534 and NAC Chapter 534, and the work must be completed by a licensed well driller as provided by NRS Chapter 534. Pursuant to NRS Chapter 534 and NAC Chapter 534A, a water right or waiver is required prior to drilling a well in a designated basin. A waiver to drill a well must comply with the provisions of NRS Chapter 534 and NAC Chapter 534 and the terms of the waiver approval. The use of water issued under a waiver must comply with the provisions of NRS Chapter 534 and NAC Chapter 534 and the terms of the waiver approval. (oil, gas, geothermal, or mineral exploration other than dissolved mineral exploration). Monitoring wells require a waiver from the State Engineer's Office pursuant to NRS Chapter 534 and NAC Chapter 534 and must comply with the provisions of NAC Chapter 534. All replacement wells shall comply with NRS Chapter 534 and NAC Chapter 534. The replaced well must be plugged and abandoned as required in NAC Chapter 534. Any unauthorized or unpermitted drill holes/wells (water wells, monitor wells or geotechnical soil borings) that may be located on existing, acquired or transferred lands, are ultimately the responsibility of the owner of the property and must be plugged and abandoned as required in NAC Chapter 534. Abandoned wells need to be reported to the State Engineer's Office and must be plugged in accordance with NAC Chapter 534. If artesian conditions are encountered in any well or borehole it shall be controlled as required by NRS Chapter 534 and NAC Chapter 534 and plugged in accordance with NAC Chapter 534. **Geotechnical Soil Borings:** All geotechnical soil borings must be drilled, constructed, plugged, and reported in accordance with NRS Chapter 534 and NAC Chapter 534; borings must be plugged within sixty (60) days after being drilled. **Dewatering:** Dewatering for alleviation of hazards caused by the rise of ground water from secondary recharge is provided by the provisions of NRS 534.025, NRS 534.050(2), and NAC 534.448.	

Comment Letter No.	Comment Number	Comment	Response
		Dams: Any impoundments, dams, or diversion structures must comply with the provisions of NRS Chapter 535 and NAC Chapter 535. Any person proposing to construct, reconstruct, or alter in any way any dam must comply with the provisions of NRS Chapter 535 and NAC Chapter 535. The removal or decommissioning of a dam requires approval of an application and plans for the decommissioning of the dam pursuant to NAC 535. **Mining:** If the mining process encounters a water source, whether that source is spring water or groundwater, any and all necessary permits to account for the water loss shall be applied for and issued by the State Engineer for the duration of the project and after the life of the mine. This includes but is not limited to evaporative losses related to pit lakes. Dissolved mineral resource exploration must comply with NAC Chapter 534B.	
Michael Ketterer – June 4, 2024			
187 and 188	187.1 and 188.1	Comments of Michael E. Ketterer, PhD on the proposed Rhyolite Ridge Lithium-Boron Project DOI-BLM-NV-B20-2021-0020-EIS I have reviewed the EIS for this proposed project in Esmeralda County, NV. The project will entail disturbance of 7166 acres (more than 10 square miles) near SR 264. The document estimates the following annual particulate matter emissions: PMtotal = 2900 tons per year; PM10 = 1278 tons per year; PM2.5 = 228 tons per year. My remarks concern the anticipated particulate emissions and their impact upon air quality in western Nevada and in particular, on the lands of the Western Bands of the Shoshone Nation of Indians. US Government research and that conducted by additional parties all indicates that this location, near the Nevada Test Site, will contain elevated activities of radionuclides in the surface soil from 1951-1962 above ground tests conducted at NTS. The radionuclides include plutonium-239, plutonium-240, cesium-137, and strontium-90. Each of these radionuclides is dangerous to humans for very long periods of time. The plutonium isotopes are most dangerous when inhaled, and this will be the exposure route to humans, owing to the enormous land surface disturbances. The proposal involves development of 7166 acres of presently undisturbed desert land; much of the NTS fallout contained on the disturbed areas will become entrained into the air and dispersed regionally, affecting population living in the region. Examples of how fallout radionuclides from the NTS were dispersed throughout the southwest are given in the following papers: Cizdziel et al., 1998, Plutonium anomalies in attic dusts and soils at locations surrounding the Nevada Test Site, https://doi.org/10.1016/S0045-6535(98)00107-6. Cizdziel et al., 1999, Resolving Nevada Test Site and global fallout plutonium in attic dust and soils using 137Cs/239+240Pu activity ratios, Health Physics 77(1): p 67-75, July 1999. Cizdziel et al., 2007, 239,240,241Pu fingerprinting of plutonium in western US soils using ICPMS: solution and laser ablation measurements, https://doi.org/10.1007/s00216-007-1741-x. Simon et al., 2004, The geographic distribution of radionuclide deposition across the continental US from atmospheric nuclear testing, https://doi.org/10.1016/j.jenvrad.2004.01.023. The maps shown in the Simon et al. (2004) study clearly show that the Rhyolite Ridge project is located well within the NTS-affected zone. Disturbance of this land will generate dust clouds that will impact local communities. The quantities of PM released into the air are not small, and their impacts on regional residences needs to be reconsidered.	The surface disturbance under the Proposed Action (2,306 acres) and North and South OSF Alternative (2,271 acres) is detailed in EIS Sections 2.1 and 2.2. According to the EPA (https://www.epa.gov/radtown/radioactive-fallout-nuclear-weapons-testing#about-radioactive-fallout-from-nuclear-weapons-testing), "fallout typically contains hundreds of different radionuclides… Very little radioactivity from weapons testing in the 1950s and 1960s can still be detected in the environment now… The EPA maintains a system of radiation monitors throughout the United States. These monitors were originally designed to detect radionuclides that were released after a nuclear weapon detonation… Since the end of aboveground nuclear weapons testing, the day-to-day radiation in air readings from monitoring sites has fallen. For many years, analysis of air samples has shown risk levels far below regulatory limits. In fact, results are now generally below levels that instruments can detect." Section 2.1.13.2 of the EIS includes commitments of Ioneer for managing dust, including implementation of fugitive dust control per Bureau of Air Control. Additionally, fugitive dust would be controlled on roadways and other areas of disturbance with water or NDEP/BLM-approved dust suppressants, where appropriate. Fugitive emissions at the crusher and material drop points would be minimized through application of water sprays or other dust control measures as per accepted industry practice and permit stipulation. Disturbed areas would be seeded with an interim seed mix developed in conjunction with the BLM to minimize fugitive dust emissions from exposed, unvegetated surfaces.
Ken Moss – May 18, 2024			
190	190.1	Good Evening, I would like to add to the public comment on Ioneer's project in Nevada, i do make disclosure that i am an active investor in this area .Firstly i am very impressed by Ioneer's work with BLM to protect Tiems Buckwheat , to firstly propagate and protect it they have done a first class job .This project and it's location is critical to the USA in it's fight to detach itself from reliance on China , the wealth and growth it will bring to Nevada should not be understated .I would urge BLM not to be swayed by activist groups that are anti mining rather than pro conservation, if this project does not go ahead what will they do to protect it? I look foward to the coming record of decision. Yours Sincerely Ken Moss	Comment noted.
Jack Hamm – April 22, 2024			
191	191.1	Sirs: This is to voice support for the Rhyolite Ridge project. America needs lithium and boron (and many other elements such as copper, iron, nickel, aluminum, gravel etc.) in order to supplement, continue and improve our society and related standard of living. We cannot depend on foreign sources to supply our needs, if that is even possible. The Rhyolite Ridge mining and all attendant recovery facilities must be allowed to be developed. Thank you for this opportunity to comment. Jack C. Hamm	Comment noted.
Chris Earle – May 24, 2024			
192	192.1	BLM should deny the permit for the Rhyolite Ridge Lithium-Boron Project. This permit denial is necessary due to an inadequate and conclusory environmental analysis, presented in the project's draft Environmental Impact Statement (DEIS) that misrepresents impacts to the Tiehm's Buckwheat (Eriogonum tiehmii),	The EIS includes detailed analysis of effects to Tiehm's buckwheat and designated critical habitat in Section 4.12 and 4.20.12.3. The effects analysis considers impacts from surface disturbance, changes to soil characteristics, invasive plants, herbivory, impacts to pollinators, and herbicide drift. Additional

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		a plant listed as endangered under the Endangered Species Act (ESA). Impacts would occur affecting both individual plants (incidental take), and its designated critical habitat. Moreover, due to the inadequacy of the DEIS, neither impacts nor mitigation have been specified with sufficient detail to substantiate the DEIS conclusion that the project the avoids and minimizes impacts to buckwheat and its designated critical habitat. Impacts affecting individual plants are treated in the "Threatened and Endangered Species Supplemental Environmental Report Rhyolite Ridge Lithium-Boron Project" and its appendices, presented at https://eplanning.blm.gov/public_projects/2012309/200540745/20108286/251008286/13_rr_ser_tes_20240415_508.pdf. As not all parts of this document are paginated, page references in these comments refer to the PDF file page numbering. The proposed alternative described in the project's draft Environmental Impact Statement would directly affect over 354 acres designated critical habitat for the Tiehm's Buckwheat (page 38). Although a portion of this area would eventually be "reclaimed", over 257 acres of impacts would last for an extended period of time, during which that habitat would be unavailable for colonization by the species. Such habitat availability is necessary if the species is to recover from its Endangered status. Moreover, the "reclaimed" habitat would not resemble the impacted habitat and no evidence is presented that it would remain suitable for the species. On the contrary, the alterations to the habitat (pages 38-39) would include conversion from a shrub to an herb community, decimation of soil microbial populations, introduction of saline and alkaline materials, introduction of new plant species not currently found on the site, changed patterns of herbivory (a known factor in the species' health), altered pollinator relationships, and incidental effects of herbicide applications targeted to invasive species. None of these impacts are discussed in the analysis, which simply leaps to a conclusory determination that impacts would be negligible to major, long-term to permanent, and localized. The potential for major, permanent impacts is especially concerning given that the entire extent of Tiehm's buckwheat is localized, occurring within the project vicinity, and that the project would substantially reduce connectivity between the extant populations, and thereby reduce the potential for seed dispersal to either maintain existing populations or establish new ones. This indicates a substantial risk that the project would jeopardize the continued existence of Tiehm's buckwheat, leading to its extinction. These concerns and many others have been cited by the U.S. Fish and Wildlife Service (USFWS) in their prior communications with BLM and the permit applicants, noting that many of their comments on draft DEIS text have not been addressed, including (page 89) inadequate discussion of how the project will minimize and mitigate grounddisturbing activities in critical habitat; statement of specific threshold criteria to trigger specific actions to reduce impacts; monitoring methods to assess exceedance of threshold criterial; reclamation and restoration plans are vague; and impact minimization measures are vague. USFWS (page 89) also notes that important available information is not used, thus the project is not meeting the NEPA standard of using "best available science", further evidence that the environmental analysis is conclusory and actions based upon this analysis are arbitrary and capricious. Sincerely, Christopher J. Earle	details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm’s buckwheat and its designated critical habitat.
Derick Unger – May 23, 2024			
193	193.1	All, I strongly support the development of the Rhyolite Ridge Project. Developing domestic supplies of metals, rather than relying on foreign suppliers, is critical to national security and transitioning to green energy. Denying a project such as this is simply exporting pollution to a foreign country with weaker environmental standards and supplying money to foreign countries that may be hostile toward the US and our interests. Regards, Derick -- Derick Unger, CPG Geologist	Comment noted.
Edward Wells – May 22, 2024			
194	194.1	Statement in Support of the Rhyolite Ridge Mine Development May 22, 2024 Whereas: The Rhyolite Ridge mine would be an important and sustained boost to the local and regional economy, help lessen the nation’s dependence on imported minerals and oil and would probably encourage and lead to other similar developments, I am strongly in favour of the project. It also appears that mitigation of the impact on the endangered Tiehm’s buckwheat plant and habitat is already underway and that it will be an effective solution to the problem. Cordially Yours, Edward Wells	Comment noted.
Ken Brook – May 22, 2024			
195	195.1	Please consider this message a very POSITIVE vote for letting Rhyolite Ridge go into production. They have shown AMAZING patience in dealing with all of the obstacles and the bureaucracy of permitting. The have also shown a great willingness to protect the plant everyone is so concerned about. regards Ken Brook	Comment noted.

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Jeanne Goss – May 22, 2024			
196	196.1	I am excited to hear that the BLM is moving forward with this “green” mining project in my home state! We should be proud to be responsibly mining resources on our soil instead of relying on other countries to fill our needs. Cheers, Jeanne	Comment noted.
Mac Jackson – May 22, 2024			
197	197.1	Ioneer’s Rhyolite Ridge Lithium-Boron Project should be supported and fast tracked through the permitting process. It is an important resource for energy transition, local and national economy. On the local level, it will be a huge boost to a depressed area. Regards, Mac Jackson Mac Jackson Jackson Exploration Series LLC	Comment noted.
Foster Wilson – May 21, 2024			
198	198.1	boron and lithium are critical elements, let's quit the hand wringing and get this site permitted thanks Foster Wilson	Comment noted.
Robert Schafer – May 21, 2024			
199	199.1	It would be the height of government hypocrisy if this project is not permitted to go to production. Nevada and the US need a mine like this. Robert W. Schafer Salt Lake City, UT	Comment noted.
Jade Roubideaux – May 17, 2024			
200	200.1	Hello In 4.2 Cultural Resources, section 4.2.1 Proposed Action, towards the end of the section, it states that there will be 100 sites destroyed during the process of this operation. What sites does this entail? The document wasn't exactly clear about which 100 sites out of those described would be destroyed. The North and South OSF Alternative doesn't have a much better plan and still proposes that a majority of the sites would be destroyed. The No Action Alternative sounds much better overall, as we prefer that cultural sites be left alone and not disturbed. So, again, out of the sites described in this section, what sites are to be destroyed? The non-disturbance preference is noted throughout the other sections of Cultural Resources and Native American Traditional Values. But the above noted section did not follow the other sections. Sincerely, Jade Roubideaux Cultural Preservation Director Shoshone-Paiute Tribes	The specific details of cultural sites is intentionally excluded from the EIS and supporting documents to avoid illegal collection or vandalism. The 100 sites referenced are those that were determined not eligible for the NRHP.
Mike Neumann – May 13, 2024			
201	201.1	As a biologist who has spent 40 years helping mining companies plan and permit mineral projects throughout the west I know that modern mines can be and are operated in ways that minimize environmental impacts. Unlike mines in many other countries, all mines on federal lands in the US are subject to a comprehensive umbrella of environmental laws and reviews that protect ecological resources to the extent possible. My opinion is that the Rhyolite Ridge project as described in the DEIS can help reduce American dependence on foreign suppliers of critical materials essential to modern life and a healthy economy in the US. For those reasons I advocate expeditious completion of the NEPA review for this project. Sincerely, Michael Neumann	Comment noted.
Edward Gates – May 26, 2024			
203	203.1	To Whom It May Concern, I am completely behind the Rhyolite Ridge Lithium-Boron Project. I grew up in Mina, Nevada, just a few miles north of the project. I believe that this will be an important asset for the region, state and country. Good-paying jobs will always be a great benefit. We need to bolster the domestic production of battery metals, and this is a perfect place to do it. Sincerely, Edward E. Gates Professional Geologist	Comment noted.
Acid Piping Technology – May 7, 2024			
205 and 206	205.1 and 206.1	To Whom it May Concern: We here at Acid Piping Technology in Arnold, Missouri - USA - are in full support of the Rhyolite Ridge Lithium-Boron Project for a variety of reasons.	Comment noted.

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		The United States of America as a country has learned recently that we can no longer depend on foreign sources of supply for our basic needs. We learned this during COVID, and with all of the conflicts currently going on around the world, it is now more important than ever that the United States of America has our own domestic sources of critical items such as computer chips and essential chemicals required for our needs. The mining of lithium and boron in the United States will be critical for us in the development of lithium batteries for the emerging electric vehicle market coming in the near future. The Rhyolite Ridge Lithium-Boron Project will be absolutely essential in our efforts to obtain self-sufficiency in regards to the lithium battery requirements that our nation will be experiencing very soon. As a result, we are 100% in favor and in support of this Rhyolite Ridge Lithium- Boron endeavor! Best Regards, Chuck Lindley	
Douglas McGibbon – June 7, 2024			
208	208.1	Douglas H. McGibbon 5075 Weikel Drive Winnemuccca NV 89445 Mr. Scott Distel Project Manager US Bureau of Land Management Battle Mountain District 50 Bastian Road Battle Mountain, NV 89820 Dear Mr. Distel, This letter is written in support of permitting loneer's Rhyolite Ridge Lithium-Boron Project in Esmeralda Co. NV. I am a consulting Economic Geologist and a resident of Nevada from 1979-present. I am familiar with lithium deposits in general and have reviewed the DEIS and news related to the project since development activities were initiated. I support development of the mine for the following reasons: • loneer has committed to mining in an environmentally responsible manner, with little impact on the land, ground water and the endangered Tiehm's buckwheat plant. • The unique characteristics of the Rhyolite Ridge deposit will allow for extraction of lithium using much less water when compared with other lithium deposits and most other metal mines. • The recovery of lithium from the mineralized rock will be by a vat-leaching process with no leach pads, tailings ponds or tailings dams, and therefore ground water contamination is minimized. • A weak sulfuric acid solution, that is required to dissolve lithium from the ore will be produced on site. The heat produced as a by-product of sulfuric acid production will supply more than enough energy to power the entire operation for the life of the mine, making it independent of Nevada's power grid. • Currently, the US depends almost entirely on importing lithium, mainly from Argentina, Chile, China and Russia, making our country dependent on imports from generally unreliable nations, thus creating a supply chain which can be interrupted at any time. Production of the lithium and boron from the Rhyolite Ridge deposit will provide a reliable domestic supply chain for materials needed to boost domestic production of batteries for a cleaner, more energy efficient future. • The European Union, Canada, Australia and China have all listed lithium as critical to energy needs of their own nations, resulting in a reduction of their exports of lithium, and an increase in worldwide competition for this critical mineral. • Once the project is in production, it will increase domestic lithium production by 400% and provide enough lithium to power approximately 370,000 vehicles per year for at least 20 years. • The Boron produced from this project will be used in items such as touch screens for smart phones and computers and in the production of semiconductors, medicinal grade glass vials, abrasives, cleaning products, insecticides, and insulation. • The financial impact on Nevada and Esmeralda County will be significant. The project will employ up to 500 people during the construction phase, and then 350 people throughout the life of production. The median annual income of loneer's employees, including a generous benefits package, will be approximately $141,000. • Financial benefits to Esmeralda County from sales taxes, property taxes and it has been estimated that Net Proceeds of Mines revenues will range from approximately $600,000 in the first year of construction to between $5.2 and $11.6 million during the estimated 26 years of planned lithium-boron production. This is a very significant amount for a small-population rural county. In summary, this project is an opportunity to capitalize on Nevada's mineral wealth to the benefit of the county, state, and our national security with minimal environmental impact. Thank you for your consideration of my comments. Regards, Douglas H. McGibbon	Comment noted.
31 Letters from everyactioncustom.com with additional comments regarding Alternatives			

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209-239	209-239	Letters include request to select No Action Alternative due to impacts to Tiehm's buckwheat, groundwater and wildlife, as well as request obtaining lithium from alternative sources, finding new alternatives, or using new technology to reduce impacts.	EIS Section 1.2 describes the purpose and need for the action which is to respond to the Plan of Operations submitted by Ioneer to develop a mineral resource on public lands. The Project proposes development of a locatable mineral resource. Relocating the Project is not possible because the proposed activities must occur on the mining claims held by the proponent where the resource deposit is located. The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat, including impacts from dust, in Sections 4.12 and 4.20.12. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. Effects to groundwater and wildlife are discussed in Sections 4.16 and 4.18 respectively. As described in Section 2.1.3, processing is completed using a closed system that would contain the sulfuric acid. Impacts from hazardous materials are discussed in Section 4.5.
6 Letters from everyaction.com with additional comments regarding Climate Change			
240-245	240-245	Letters include request to select No Action Alternative due to impacts to Tiehm's buckwheat, groundwater, and wildlife, as well as requesting that climate change be addressed.	The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat, including impacts from dust, in Sections 4.12 and 4.20.12. ACEPMs have been designed to reduce impacts to Tiehm's buckwheat and additional mitigation measures are described in Section 4.21. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. The Project's impact on climate change and the impacts of climate change on the surrounding area are discussed in the EIS in Sections 4.1 and 4.20.1. Additional information is available in the Air Quality including Climate Change SER.
4 Letters from everyactioncustom.com with additional comments regarding Human Health and Safety			
246-249	246.1-249.1	Letters include request to select No Action Alternative due to impacts to Tiehm's buckwheat, groundwater, and wildlife, as well as concerns regarding generation of toxic waste, poisoning, and health impacts.	The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat, including impacts from dust, in Sections 4.12 and 4.20.12. ACEPMs have been designed to reduce impacts to Tiehm's buckwheat and additional mitigation measures are described in Section 4.21. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. Effects to groundwater and wildlife are discussed in Sections 4.16 and 4.18 respectively. As described in Section 2.1.3, processing is completed using a closed system that would contain the sulfuric acid. A description of hazardous substances used for the Project and ACEPMs to reduce impacts are discussed in Section 4.5 and the Hazardous Materials and Solid Waste SER.
2 Letters from everyactioncustom.com with additional comments regarding Native American Traditional Values			
250-251	250.1-251.1	Letters include request to select No Action Alternative due to impacts to Tiehm's buckwheat, groundwater, and wildlife, as well as concerns regarding input and consent from Tribes.	Section 4.8 of the EIS contains the analysis as related to Native American Traditional Values. Government-to-government consultation and coordination for the Project was initiated in 2020 and is described in Section 5.0. Sections 3.8, 4.8, 4.20.8, and the Native American Traditional Values SER discuss the consultation process. During consultation, the Project was redesigned to avoid impacts to culturally significant areas. Tribal consultation is ongoing and will continue through the life of the Project. If avoidance of areas of tribal concern is

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			not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected Tribes to reduce or eliminate impacts. The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat, including impacts from dust, in Sections 4.12 and 4.20.12. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. Effects to groundwater and wildlife are discussed in Sections 4.16 and 4.18 respectively.
20 Letters from everyactioncustom.com with additional comments regarding Regulations and Reclamation			
252-271	252.1-271.1	Letters include request to select No Action Alternative due to impacts to Tiehm's buckwheat, groundwater, and wildlife, as well as requests for the BLM to adhere to regulations and concerns on reclamation.	The EIS was prepared in accordance with NEPA, FLPMA, NHPA, CEQ regulations, and BLM NEPA regulations. The Project is consistent with United States mining laws and BLM surface management regulations. In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. Proposed reclamation activities are described in Section 2.1.11. Effects to Tiehm's buckwheat, groundwater and wildlife are discussed in Sections 4.12, 4.16, and 4.18 respectively.
2 Letters from everyactioncustom.com with additional comments regarding Soils			
272-273	272.1-273.1	Letters include request to select No Action Alternative due to impacts to Tiehm's buckwheat, groundwater, and wildlife, as well as concerns about native soil impacts and erosion.	As described in EIS Section 2.0, no direct disturbance of Tiehm's buckwheat subpopulations or the soils it relies upon is proposed. ACEPMs described in Section 2.1.13 to limit erosion. EIS Section 3.12 and the Threatened and Endangered Species SER present a comprehensive discussion of Tiehm's buckwheat, its habitat, and relationships with pollinators and other fauna. The current available scientific data does not show that Tiehm's buckwheat has a unique association with any fungus. The analysis for Tiehm's buckwheat in Section 4.12 includes a discussion of its habitat including the unique soils it requires. The North and South OSF Alternative includes a Buckwheat Protection Plan that has an in-depth description of reclamation activities that would provide pollinator habitat in reclaimed areas. As part of the analysis, a pit stability analysis was conducted that used a conservative approach which ensures that the safety factors used are robust and account for any potential variability in the quarry. Effects to groundwater and wildlife are discussed in Sections 4.16 and 4.18 respectively.
1 Letter from everyactioncustom.com with additional comments regarding Visual Resources			
274	274.1	Letters include request to select No Action Alternative due to impacts to Tiehm's buckwheat, groundwater, and wildlife, as well as concerns about impacts to the area aesthetics.	The BLM manages public land in accordance with applicable laws and regulations including FLPMA. Visual resources are one aspect of public land management that BLM considers during the planning process. EIS Sections 3.15 and 4.15 describe the visual resource management classes for the Project and anticipated impacts. Effects to Tiehm's buckwheat, groundwater and wildlife are discussed in Sections 4.12, 4.16, and 4.18 respectively.
17 Letters from everyactioncustom.com with additional comments regarding Water Resources			
275-291	275.1-291.1	Letters include request to select No Action Alternative due to impacts to Tiehm's buckwheat, groundwater, and wildlife, as well as concerns regarding water use and water quality impacts.	The air quality impacts were modeled for the Project and no pollutants are projected to exceed national or state standards. Section 4.1 of the EIS includes additional air quality information and impacts analysis. A numerical groundwater flow model was used for assessing potential impacts due to proposed dewatering activities. Detailed analysis of water quality and

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			groundwater drawdown impacts is presented in EIS Sections 4.16 and the Water Resources SER. Mitigation measures are included in Section 4.21 to address surface water and groundwater impacts. The EIS evaluates effects to Tiehm's buckwheat and designated critical habitat, including impacts from dust, in Sections 4.12 and 4.20.12. Additional details are provided in the Threatened and Endangered Species SER. In accordance with the ESA, BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. Effects to wildlife are discussed in Section 4.18. Effects to the transportation system from increased traffic is discussed in Section 4.13.
1 Letter from everyactioncustom.com with additional comments regarding Wild Horses and Burros			
292	292.1	Letters include request to select No Action Alternative due to impacts to Tiehm's buckwheat, groundwater, and wildlife, as well as concerns about wild horse and burro management by the BLM.	The EIS contains detailed analysis of impacts for air quality, hazardous materials, Tiehm's buckwheat, water resources, and wildlife in Sections 4.1, 4.5, 4.12, 4.16, and 4.18 respectively. In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat. Wild horse and burro management is outside the scope of the analysis for this Project. The BLM does not slaughter wild horses or burros.
2 Letters from everyactioncustom.com with additional comments regarding Wilderness Areas			
293-294	293.1-294.1	Letters include request to select No Action Alternative due to impacts to Tiehm's buckwheat, groundwater, and wildlife, as well as concerns about management of wilderness and remote areas.	The EIS describes the location of the Silver Peak Wilderness Study Area (WSA) in relation to the Project in Section 3.9. There are no proposed activities that would occur within the WSA. Potential impacts to WSA visitors are described in Section 4.9. The EIS contains detailed analysis of impacts for air quality, hazardous materials, Tiehm's buckwheat, water resources, and wildlife in Sections 4.1, 4.5, 4.12, 4.16, and 4.18 respectively. In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.
6 Letters from everyactioncustom.com with additional comments regarding Wildlife Resources			
295-300	295.1-300.1	Letters include request to select No Action Alternative due to impacts to Tiehm's buckwheat, groundwater, and wildlife, as well as additional concerns regarding birds, pollinators, insects, reptiles, habitat, and extinction.	The EIS contains detailed analysis of impacts for plants and wildlife in Sections 4.14 and 4.18. The analysis includes consideration of impacts to birds, insects and pollinators, reptiles, and wildlife habitats and discloses the anticipated impacts. The Project is not anticipated to lead to extinction of any species. The EIS contains detailed analysis of impacts for air quality, hazardous materials, Tiehm's buckwheat, water resources, and wildlife in Sections 4.1, 4.5, 4.12, 4.16, and 4.18, respectively. In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.
15,322 Letters from everyactioncustom.com			
301-15,622	301.1-15,622.1	Dear Bureau of Land Management, I urge the U.S. Bureau of Land Management to select the no-action alternative for the Rhyolite Ridge lithium-boron mine environmental impact statement. The mine would result in the extinction of the rare wildflower Tiehm's buckwheat, or Eriogonum tiehmii, and shouldn't be allowed to proceed.	The effects analysis anticipates negligible to major impacts to Tiehm's buckwheat but does not predict a trend toward extinction. As required by the ESA, the BLM has initiated formal consultation with the USFWS for Tiehm's buckwheat.
301-15,622	301.2-15,622.2	Tiehm's buckwheat is protected by the Endangered Species Act. The BLM isn't permitted to take actions that would jeopardize the species' existence or cause adverse modification to its critical habitat — and the proposed Rhyolite Ridge mine will clearly do both those things. The mine — and the heavy industrialization of the site — will outright destroy 22% of the plant's critical habitat and severely degrade the rest.	In accordance with the ESA, the BLM has initiated formal consultation with the USFWS through preparation and submittal of a Biological Assessment that evaluates the potential effects on Tiehm's buckwheat and its designated critical habitat.
301-15,622	301.3-15,622.3	It will pollute the environment with toxic mining dust and sulfuric acid mist, interrupt the movement of pollinators and wildlife, and drain precious Nevada groundwater, significantly harming Tiehm's buckwheat over the long term.	As described in Section 2.1.3, processing is completed using a closed system that would contain the sulfuric acid. A description of hazardous substances used for the Project and ACEPMs to reduce impacts are discussed in Section 4.5 and the Hazardous Materials and Solid Waste SER.

Comment Letter No.	Comment Number	Comment	Response
			Impacts from dust are analyzed in the air quality analysis, and analyses for other resource areas that could be impacted by dust generation. A numerical groundwater flow model was used for assessing potential impacts due to proposed dewatering activities. Detailed analysis of groundwater drawdown impacts is presented in EIS Sections 4.16 and the Water Resources SER. Mitigation measures are included in Section 4.21 to address surface water and groundwater impacts. Dewatering is not anticipated to affect Tiehm's buckwheat because it is not dependent on groundwater for water.
301-15,622	301.4-15,622.4	The mine will put this rare wildflower on a trajectory toward extinction, and the proposed mitigation measures do nothing to change that. Tiehm's buckwheat is a fragile species. Transplanting it and growing new populations elsewhere almost certainly won't work. And even if it did, it wouldn't make up for destroying the species' native range. Tiehm's buckwheat is one of a kind. We need to protect native wildlife — not eliminate it. I urge the Battle Mountain District Office to comply with the Endangered Species Act and protect Tiehm's buckwheat by choosing the no-action alternative for the Rhyolite Ridge mine environmental impact statement.	The analysis presented in EIS Section 4.12 considers the implementation of ACEPMs and the Buckwheat Protection Plans to reduce impacts to Tiehm's buckwheat and its critical habitat. The effects analysis anticipates negligible to major impacts to Tiehm's buckwheat but does not predict a trend toward extinction. As required by the ESA, the BLM has initiated formal consultation with the USFWS for Tiehm's buckwheat.