SUSTAINABLE MINING CHALLENGES: ALASKA WATER PERMITTING AND THE UNITED STATES GREEN ENERGY TRANSITION

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ABSTRACT

This Note addresses the myriad of legal and regulatory barriers new mining projects face in Alaska at present. These barriers have become increasingly important at a time when the United States has sought to bolster its domestic mineral supply chain. With over 100 newly located critical mineral deposits, Alaska may be the best place in the United States to establish further domestic sources of critical minerals. By streamlining the regulatory process at both the federal and state level, Alaska can better (1) protect domestic supply chains from global disruptions; (2) maximize the economic benefits of meeting increased global demand for these minerals; (3) contribute to a global energy transition towards clean and renewable energy sources; and (4) balance important local environmental policy concerns against global policies addressing climate change. This Note provides an overview of the regulatory landscape at present and outlines proposed reforms for the future.

I. INTRODUCTION

The Pebble Mine project, a “giant cache of copper, gold, and molybdenum,” stands at the crossroads of environmental conservation and economic development.¹ The proposed mine is located about 200 miles southwest of Anchorage, Alaska and situated in the heart of Bristol Bay,² surrounded by Lake Clark to the North, Kenai Fjords across the

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2. History and Location, N. DYNASTY MINS. LTD.,
Cook Inlet to the East, and Katmai National Park and Preserve to the South. Twenty-nine fish, over 190 birds, and more than forty terrestrial animal species call this region home.

Bristol Bay is also home to thirty-one Alaska Native Villages. The potential development of the Pebble Mine has emerged as a pivotal issue in the Bristol Bay communities, where commercial fishing has long been the primary source of economic vitality. While the Bay’s commercial fishing industry produces nearly half of the world’s sockeye salmon and contributes substantially to the region’s economic vitality, the Pebble Mine project harbors the potential to revolutionize and diversify the Bay’s economic landscape. Housing one of the world’s largest reserves of copper, gold, and molybdenum, the site boasts an estimated $400 billion in mineable minerals. According to proponents of the Mine, the project will create 2,000 full-time local jobs, along with several thousand construction positions. The economic boost that the mining venture affords local residents differs from the commercial fishing sector, where a significant portion of the workforce consists of primarily seasonal, nonresident laborers.

Nestled in the heart of Alaska’s pristine wilderness, Pebble Mine has been mired in controversy for years. Most Native Corporation shareholders living in the area oppose it.


5. Id.


7. Id. Bristol Bay’s commercial fishing industry generates $480 million in economic activity and supports 14,000 full and part-time jobs. Id.


10. Id.


12. Dylan Brown, Unending Mine Fight Strains Alaska Villages, GREENWIRE
The hub of the area, tote anti-Pebble Mine stickers on water bottles, laptops, and vehicles. The Mine’s lack of popular support stems from the size of the operation; if approved, it would become the largest open-pit mine in the history of the United States. It is estimated that excavating the Mine alone will produce enough waste to fill 3,900 football stadiums. Opponents harbor additional concerns about the quantity of mine tailings and waste rock deposits Pebble will produce once it becomes operational. Further, governments at all levels agree that the Pebble Mine project would inevitably cause the loss of streams, wetlands, lakes, and ponds, all of which could affect the vitality of the salmon population.

While the State of Alaska is more sympathetic to the mining project than the federal government, its agencies add a host of additional permitting challenges that Pebble has yet to even address. For example, the Alaska Department of Fish and Game (“Fish and Game”) could apply its discretionary authority pursuant to Alaska Statute §16.05.871 to determine that the operation has an impact on the “spawning, rearing, or migration of anadromous fish.” If a mining firm wanted to use a nearby waterway for tailings disposal or another similarly related activity, they must receive a fish habitat permit from Fish and Game.

Pebble Mine aims to extract “critical minerals” that are integral to Meanwhile, the demand for minerals to supply the defense, advanced energy, high-tech electronics, medical, and transportation industries is rising. The Energy Act of 2020 defines a “critical material” as “any non-fuel mineral, element, substance, or material that the Secretary of Energy determines . . . has a high risk of supply chain disruption[,] and serves an essential function in 1 or more energy technologies, including technologies that produce, transmit, store, and conserve energy. Energy Act of 2020, 42 U.S.C. § 7002(a)(2). It further defines the term to include “any mineral, element, substance, or material designated as critical by the Secretary of the Interior, acting through the Director of the U.S. Geological Survey (USGS).” Id. § 7002(a)(3).
contemporary green energy endeavors. For the nation to achieve its energy transition goals under the Inflation Reduction Act ("IRA") and related international agreements, projects like Pebble must at least be given the opportunity to reach the operational stage. The United States Geological Survey ("USGS") has identified twenty critical materials and fifty critical minerals essential for building magnets big enough to power wind turbines and electric vehicles. Demand for critical minerals for use in components other than green technologies is predicted to remain constant or increase as well. Any slowdown or interruption in supply chains risks putting the entire United States’ climate policy goals on hold.

Critical minerals have complex global supply chains. Their supply chains are further sorted into upstream, midstream, and downstream sectors. China dominates the midstream refining and downstream

[22] Some metals, although not true minerals, are deemed critical materials by USGS because they fit under the Energy Act of 2020’s broad definition of a critical mineral. See generally STEVEN M. FORTIER ET AL., USGS CRITICAL MINS. REV. 35 (2023) (explaining that some mine wastes are designated critical minerals due to the trace elements they contain); Mineral Resources Program, U.S.G.S. https://www.usgs.gov/programs/mineral-resources-program (last visited Feb. 16, 2024) (Nonfuel minerals “are important to the Nation’s economic and national security.”).

[23] SNL METALS AND MINING, PERMITTING, ECONOMIC VALUE AND MINING IN THE UNITED STATES 7 (2015), http://mineralsmakelife.org/assets/images/content/resources/SNL_Permittin g_Delay_Report-Online.pdf ("Despite being blessed with a vast reserve of mineral resources, the U.S. only accounts for 7 percent of the world-wide spending on mineral exploration, and production is currently reliant on a population of mature mining projects. Moreover, the average remaining life of active mines in the U.S. and the share of projects in advance development have also fallen in recent years. . . . The increasing likelihood of new mines stagnating at the exploration stage, with far fewer advancing to actual production, puts the security of the country’s mineral supply at risk.").


[26] See generally NAT’L SCI. & TECH. COUNCIL, ASSESSMENT OF CRITICAL MINERALS: UPDATED APPLICATION OF SCREENING METHODOLOGY 3 (2018) (describing federal policy as increasing activity at all levels of the supply chain).


processing sectors.\textsuperscript{29} It holds 78 percent of the world’s manufacturing capacity for EV batteries, 75 percent of the world’s solar panel production capacity, and 75 percent of the world’s lithium-ion battery factories.\textsuperscript{30} In contrast, the United States produces less than one percent of the world’s lithium.\textsuperscript{31} In 2020, its manufacturing capacity amounted to less than eight percent that of China.\textsuperscript{32}

While China still plays a significant role in upstream production, Australia, Chile and the Democratic Republic of the Congo (“DRC”) account for an equally dominant share.\textsuperscript{33} China produces 35 percent of the world’s zinc,\textsuperscript{34} while Australia and Chile provide around 50 percent of the world’s total mineral production and upwards of 70 percent of its mined lithium.\textsuperscript{35} DRC mines nearly 70 percent of the world’s cobalt.\textsuperscript{36} A failure to streamline the permitting process not only hinders economic growth but also perpetuates reliance on foreign sources for critical minerals, compromising national security and economic stability.\textsuperscript{37}

Currently, the United States has no back-up plan to obtain critical minerals if supply chains are interrupted for extended periods of time or severed altogether.\textsuperscript{38} In fact, the United States and Canada, two of the 20 Free Trade Agreement partners, currently produce less than two percent of the world’s lithium.\textsuperscript{39} Even if the United States looked to non-Free Trade Agreement partners for its minerals, global critical mineral production simply cannot keep up with demand.\textsuperscript{40}

\begin{thebibliography}{99}
\bibitem{29} Bazilian & Brew, \textit{supra} note 28.
\bibitem{30} Id.
\bibitem{31} Id.
\bibitem{32} Id.
\bibitem{35} Id.
\bibitem{39} INST. FOR ENERGY RSCH., LITHIUM MINING IN NORTH AMERICA (2022).
\bibitem{40} See Bentley Allan et al., \textit{Friendshoring Critical Minerals: What Could the U.S.
difficulties are sure to compound as demand for critical minerals is predicted to skyrocket between 400 and 600 percent over the next several decades.41

This Note delves into the intricacies of the Alaskan and federal law impeding mining progress and the far-reaching consequences these laws can have when they delay mining operations.42 With over 100 newly located critical mineral deposits, Alaska may be the best place in the United States to establish further domestic sources of critical minerals.43 Recently, Alaska’s legislature has pushed for increased mineral resource production within the state.44 Given the legislature’s recent focus, further development of Alaska’s mining industry can aid the federal government’s renewable energy policy goals.45

This Note argues that there is still time implement a balanced approach to mine permitting in Alaska to weigh environmental concerns against the need for critical minerals that support green energy efforts. The federal government must consider restricting EPA’s Section 404(c) veto authority, promulgating clear regulations that put firms on notice of what information they will need to provide during permitting to successfully obtain each permit, and proceeding with utmost caution if it

and Its Partners Produce?, CARNEGIE ENDOWMENT FOR INT’L PEACE (May 3, 2023) (demonstrating the “unprecedented build-out of the mining industry required to meet clean energy targets”).


42. Alaska provides an illustrative example of state regulatory impediments. It is home to one of the most robust sources of critical minerals in the country. Shane Lasley, Alaska’s Minerals – A National Imperative, MINING NEWS (Sept. 15, 2022), https://www.miningnewsnorth.com/story/2022/09/02/in-depth/alaskas-minerals-a-national-imperative/7514.html. As such, the mining industry is central to the state’s economy. COLUM. CTR. ON SUSTAINABLE INV., WATER RISKS IN THE MINING SECTOR U.S.A. – ALASKA 5–6 (2016). The state’s cities and infrastructure developed to serve the coal and gold mining industries in the 1800s and 1900s. Today, minerals are Alaska’s second-largest export commodity, worth $3.3 billion and accounting for 36 percent of the state’s export total in 2020. EVAN TWELKER ET AL., ALASKA’S MINERAL INDUSTRY 2020: ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS SPECIAL REPORT 76.


45. See id. at 4 (enumerating what critical minerals Alaska provides to the U.S. economy).
chooses to reform the Mining Law of 1872. Alaska itself must provide clearer guidance explaining the extent of its agency’s authority over the permitting process, apply for assumption of its CWA Section 404 program, increase the robustness of its statewide infrastructure, and encourage mining firms to collaborate with tribal entities. By streamlining the regulatory process at both the federal and state level, Alaska can better (1) protect domestic supply chains from global disruptions; (2) maximize the economic benefits of meeting increased global demand for these minerals; (3) contribute to a global energy transition towards clean and renewable energy sources; and (4) balance important local environmental policy concerns against global policies addressing climate change.

Part II briefly describes the United States’ push to meet growing domestic mineral demands amidst its energy transition, the phases of the mine permitting process, and favorable qualities Alaska’s mining industry already possesses. Part III delves into the federal and Alaskan permitting regimes, analyzing both their strengths and deficiencies. Part IV addresses the importance of delineating between mines where streamlined permitting would be beneficial versus mines where the permitting system is required to protect from severe environmental consequences. Finally, Part V suggests areas for reform of federal and state law, emphasizing a “rethinking” of the Alaskan permitting regime and expanding avenues for mining firms to collaborate with local tribal entities.

II. BACKGROUND

A. The Inflation Reduction Act

Demand for minerals is quickly increasing around the world.\textsuperscript{46} Policy advisors predict worldwide mineral requirements for clean energy technologies will double by 2040.\textsuperscript{47} Currently, the United States does not have the production capacity to meet global demand.\textsuperscript{48} As more and more

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\textsuperscript{46} Critical Minerals, INT’L ENERGY AGENCY, https://www.iea.org/topics/critical-minerals (last visited Feb. 19, 2024). Evidence suggests that international demand for critical will more than double by 2030.\textsuperscript{Id.}


\textsuperscript{48} Daniel F. Runde & Austin Hardman, Elevating the Role of Critical Minerals for Development and Security, CTR. FOR STRATEGIC & INT’L STUD. (Sept. 1, 2023),
countries navigate their own energy transitions, U.S. trade partners may also struggle to meet American market appetites while satisfying their own domestic needs.49

In August of 2022, President Joe Biden signed the Inflation Reduction Act (IRA).50 The IRA incentivizes an increase in renewable energy and electric vehicle (EV) production within the United States.51 Specifically, it provides over two billion dollars in “domestic manufacturing conversion” grant money and tax incentives to encourage domestic production and sales of efficient hybrid vehicles.52 Under current law, funding remains available only until September 20, 2031.53 Congress intended for the IRA to help reduce American reliance on foreign countries, such as China and Russia, for materials necessary for


Because of the pressure it places on EV manufacturers, the IRA could spark enough momentum to further expand critical metal mining within the United States. Some mid-sized and large-sized mining firms have orally committed to growing their domestic operations following the federal government’s recent political and economic guarantees. To receive the IRA’s funding, mining firms must comply with the IRA’s provisions. Accordingly, the IRA’s provisions significantly impact the mining industry’s future domestic growth within the United States. Additionally, in order to receive tax credits under the IRA, EV producers must observe increasingly strict requirements when sourcing critical and rare earth minerals for use in their vehicles. For EV batteries, the IRA requires that 40 percent of the critical metals be domestically sourced by 2024. This percentage rises to 80 percent in 2026 and 100 percent by 2030.

The Biden Administration’s recent policy changes are due in no small part to recent global events—namely, U.S. trade disputes with...
China, the COVID-19 pandemic, and the Russo-Ukrainian War. American and Chinese trade disagreements beginning during the Trump Administration culminated in a wave of tariffs from both nations that cost each country billions of dollars in lost trade. These disruptions have increased the cost of critical minerals to the point of delaying the development of clean energy technology innovation and construction, which has bolstered support for the United States’ efforts to “create an industrial policy in support of national security efforts” and “diversify away from complete dependency on sources of supply in politically unstable countries which may cut off U.S. access.”

The United States’ international climate goals also align with expanding mineral production. After Joe Biden won the 2020 presidential election, the United States rejoined the Paris Agreement, which aims to limit global warming to below two degrees Celsius. It expressly calls for a concerted reduction in greenhouse gas emissions, and the Biden Administration has recommitted the United States to reaching 100 percent carbon-pollution-free electricity by 2035 and a net-zero emissions


64. See generally EVDOKA MOISE, THE SUPPLY OF CRITICAL RAW MATERIALS ENDANGERED BY RUSSIA’S WAR ON UKRAINE 3 (Org. for Econ. Cooperation and Dev. ed. 2022) (explaining Russia’s contribution to world production of raw materials).

65. KAREN M. SUTTER, CONG. RSCH. SERV., IF11259, TRADE DISPUTE WITH CHINA AND RARE EARTH ELEMENTS (2019).


68. Id. at 55.


71. Id.
economy by 2050. The IRA alone is expected to help the US curb emissions levels between 31 and 44 percent by 2030.

Mining in Alaska: A Multi-Step Status Quo

The mining industry typically undergoes various phases before mines become operational, each characterized by distinct regulatory requirements. Understanding the difficulty in expanding the United States’ mineral supply chain capacity requires an understanding of the labyrinthine regulatory requirements facing potential mines at every stage of the process, from exploration to production.

Firms begin a mining project by prospecting for minerals. Today, prospecting utilizes geochemistry analysis to locate a region with a high chance of mineral deposition. After prospecting, but before firms step foot on the potential project site, they must apply for and receive permits to explore the mine project site. After initially receiving exploratory permits, firms enter the project site to obtain accurate size estimates of the ore body. If the ore body is large enough, firms begin the advanced exploratory and development phase.

During the development phase, also known as the permitting stage, the firm’s objective is to conduct an exploration program on the project site. A firm must also obtain all necessary permits and environmental analyses. A project’s permitting stage can be lengthy to ensure proper ownership and documentation in compliance with applicable land-use laws. Federal and state governments may also require that firms insure the project properly, inducing them to secure bonds worth millions of

73. Swindells, supra note 54.
75. Id.
76. See generally MEAGHAN CONNORS, MINING LAWS AND REGULATIONS, §§ 7.5, 10.1 (2023), https://iclg.com/practice-areas/mining-laws-and-regulations/usa. Depending on whether the mine project site is located on state, federal, tribal land, or some combination of the three, multiple permits may be necessary to secure a possessory interest in both the surface and mineral estate. Id.
77. See generally SNL METALS & MINING, PERMITTING, ECONOMIC VALUE AND MINING IN THE UNITED STATES 30 (2015) (listing expenditures and revenues by project stage, starting with initial exploration).
78. See generally id. at 23 (outlining the relevant permits and analyses required during exploratory stage).
79. See id. at 23; see also Teck American Inc. v. Valhalla Mining, LLC, 528 P.3d 30, 30 (Alaska 2023) (determining mining company ownership after abandonment of mining claims by previous holders).
dollars. The bond fees collected by state and federal government entities can include financial assurances to be used during the reclamation process after the mine’s mineral resources are exhausted.

Because of the enormous amount of data required to award permits, the development phase is the longest stage of the permitting process and the point at which many mining projects die. Sometimes, a mine can even receive permit approval and subsequently see it revoked. Because mines need all permits approved, one denied permit can kill the project, becoming the mine’s “project stopper.” Sometimes, project-stopper permit denials can be appealed or resubmitted with corrections that allow the permit to be reconsidered for approval. Because other political and legal challenges can arise during this time, the appeal and resubmission process usually takes as much time as the application submission process or longer. For instance, the Donlin Gold Mine has been in the development phase since 2012.

If a mine receives all of the permits required in the development phase, it next moves on to the extraction phase.
A firm must comply with all permits at all times or a permit may be revoked. Continued compliance with permitting based on environmental standards in place during the mine’s earliest stages can pose serious challenges to mine operating given the continuously changing on-site conditions over time. Mines may need to amend permits or incorporate additional mitigation measures into its project to meet the permit’s outdated requirements.

B. Alaska’s Existing Mining Industry and Capacity

Alaska’s mineral industry is currently valued at $4.5 billion—about 4.6 percent of the United States’ total mineral market—and owes much of its success to its large mines. Primarily, five major metal mines contribute to the state’s production value: the Greens Creek, Red Dog, Fort Knox, Pogo, and Kensington Mines.

Of those five mines that have achieved “large mine” status, none began producing mineral commodities until over fourteen years after
III. The Intricacies of Federal and State Permitting

A. The Federal Permitting Regime for Mines

This Section highlights the myriad federal permits that mining projects, like Pebble Mine, must obtain. Each permit plays a pivotal role in a mining project’s failure or success. The process can unfold in a few ways depending on whether the project is located on private, state, or federal land. If the project is located on private land, the mine may acquire the above and below ground rights through state contract and real property law. If the project is located on state land, the process of staking a mining claim is similar to that of staking a claim on federal land, however, the project must also pay annual royalties on any production.
If the project site is located on federal land, the Mining Law of 1872 ("Mining Law") governs. The Mining Law’s self-initiation provision permits mining operations to explore for minerals on most federal lands, even without federal agency authorization. Once a claimant has found a marketable amount of minerals, they can apply for and receive a patent. The patent conveys ownership of the patented land, its surface resources, and the accompanying subterranean minerals in fee simple title to the claimant.

After securing a project’s land and mineral rights, mining firms usually begin the water quality permitting process. Federally, mines must acquire at least two major water permits under the Clean Water Act ("CWA"). The two permits are the National Pollutant Discharge Elimination System ("NPDES") Section 402 permit, which establishes a wastewater management program, and the Army Corps of Engineers ("ACE") Section 404 permit, which regulates the discharge of materials into waterways. The sheer number of agencies involved complicates the water permitting process.

The NPDES Section 402 permit regulates water pollution by monitoring "point sources." The permit regulates any water produced from the mine that the mining firm wants to dispose of via waterways and marshland. A paste tailing disposal method is commonly used in...
Alaskan mining projects because most mines are located in the state’s abundant wetland areas. Some mines determined that paste tailing disposal is the best long-term treatment plan for contaminated wastewater. Paste tailings are leftover mine waste that is thickened with a mine’s impounded water and pumped underground into nearby wetlands. Paste tailings are a preferred method to stabilize areas that were mined out and prevent wetland and groundwater contamination.

The “Dredge and Fill” Section 404 permit regulates discharges of “dredged or fill material” into waters of the United States. Discharging “dredged materials” into protected waterbodies can include both the addition of outside dredged material into a specific discharge site or runoff material from an otherwise contained area. Tailings, or costly solid rock waste that must be discarded by mines, are always subject to Section 404 regulation by both the ACE and EPA.

The Alaska District of ACE administers the federal Section 404 program in Alaska. While the Alaska District has authority to make final decisions on permit applications, its delegated authority is still subject to some restrictions, and the Secretary of the Army may impose
its own conditions on permits at any time. Similar to the CWA Section 402 permitting program, states can apply for and receive primacy over the federal agencies in the administration of Section 404, although Alaska has yet to do so.

Mines’ potential impact on nearby water quality has become another priority for federal regulators, and, today, it is arguably the most scrutinized step in the mine permitting process. For decades, EPA has held mines to increasingly strict standards when using nearby watersheds and aquifers to deposit mining waste. Although the waste is typically leftover rock originating from the same area as where it is deposited, mines sometimes deposit so much waste rock into watersheds that naturally occurring elements in the rock begin to pollute the water and adversely impact the surrounding ecosystem. Alaska continues to suffer from harmful water contamination tragedies stemming from improper mine waste disposal. Many of the communities most affected from mine leaks are indigenous communities. As a consequence, federal regulators have focused more attention on protecting water quality in and around mines.

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120. Id.
121. 33 U.S.C § 1344(g)(1).
122. See Sophie Thomashausen et al., A Comparative Overview of Legal Frameworks Governing Water Use and Waste Water Discharge in the Mining Sector, 55 RES. POL’Y 143, 147 (2018) (“Most interviewees highlighted that getting a water discharge license is an issue in all jurisdictions.”).
123. In 2000, EPA promulgated a final rule that interpreted its authority under the Clean Water Act as disallowing state standards that were less stringent than its previously adopted standards. Thus, states can adopt only standards equal to, or more stringent than its previous standards to satisfy CWA sections 301(b)(1)(C) and 510. See EPA Review and Approval of State and Tribal Water Quality Standards, 65 Fed. Reg. 24,641 (Apr. 27, 2000) (EPA acknowledging its application of more stringent water quality standards to achieve new objectives); see also supra Part III.
127. See generally Johnyve Lewis et al., Mining and Environmental Health Disparities in Native American Communities, 4 CURRENT ENV’T HEALTH REP. 130, 130 (2017) (discussing the impact of the mining industry on indigenous communities).
B. The Alaska Permitting Regime for Mines

Alaska requires mining projects to obtain numerous permits, which are coordinated under the statutorily-mandated Large Mine Permitting Team.129 The Large Mine Permitting Team is housed in the Office of Project Management and Permitting (“OPMP”).130 Although more agencies can be involved, the three main ones are the Alaska Department of Environmental Conservation (“ADEC”), the Alaska Department of Natural Resources (“ADNR”), and Alaska Fish and Game.131 This section discusses their roles in turn.

1. The Alaska Department of Environmental Conservation

Although EPA originally administered the Section 402 NPDES program in Alaska, the ADEC was delegated authority to administer the program in the state.132 Alaska’s commitment to protecting its pristine waters drives the ADEC’s water quality standards.133 Pursuant to the ADEC’s antidegradation policy, “if the quality of a water exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality must be maintained and protected” unless the ADEC provides a short-term variance.134 To obtain such a variance, the applicant must provide enough evidence for the department to conclude a variance is appropriate.135

The ADEC’s latest regulation amendments add to the inconsistency

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129. See generally ALASKA DEP’T OF NAT. RES., PERMITTING LARGE MINE PROJECTS IN ALASKA, https://dnr.alaska.gov/mlw/mining/large-mines/pdf/Permitting-Large-Projects-in-Alaska-2021.pdf (last visited Nov. 12, 2023) (listing permits and approvals that may be required and what agencies are involved in large mine permitting).

130. Id. at 1.

131. See generally id. (discussing permits and processes generally).


134. Id.

135. See id. The applicant must submit evidence that satisfies A-D of 18 AAC 70.015(2). Id.
of the state’s permitting regime. Alaska promulgated its own statewide water quality standards in November 2022. The ADEC notes that these standards have not been approved by EPA, and thus cannot be used for actions regulated under the federal CWA. Under the new regulations, the ADEC has, however, relaxed its short-term variance regulation, now permitting “a one-time, temporary activity that is a nonpoint source of water pollution.” Ultimately, the ADEC’s regulations are critical, as the agency’s water quality determinations impact whether mining projects will be able to remain in compliance with their water permits throughout its active operation.

2. Alaska’s CWA Section 401 Certification Requirement

As noted above, mining firms are required to obtain both Section 402 and Section 404 permits for any tailing’s disposal. To receive these permits from either EPA or ACE, a mining firm in Alaska must first receive a Section 401 certification from the ADEC to demonstrate its compliance with Alaska’s water quality standards. The applicant for a federal license is responsible for requesting this certification from ADEC, at which time the agency’s clock begins to run. The ADEC must issue the certificate within one year or it waives the need for the certification entirely. If the ADEC does take action, it may certify a project with special conditions or deny a project if the agency finds it does not comply with either the CWA, state water quality standards, or other applicable state law. If the ADEC denies a water quality certificate, the project

141. See Alaska Dep’t of Env’t Conserv., Alaska Wetland Program Plan 10 (2015) (noting that ADEC’s primary role in regulating activities in wetlands is through implementation of the CWA Section 401 certification program).
143. Id.
Section 401 water quality certifications can make the water permitting process less predictable and more drawn out. The Donlin Gold Mine, an exploration-phase mining project located in the Yukon-Kuskokwim Delta in southwest Alaska, demonstrates a recent example of the ADEC’s outsized role in the permitting process. Following a challenge from a Native council, a state Administrative Law Judge issued an order recommending that the Commissioner of the ADEC reconsider the environmental impacts of the Donlin Mine on nearby waters. Although the Commissioner ultimately ignored the Administrative Law Judge’s findings and denied the Native council’s request to rescind Donlin’s water permit, the ordeal underscores the issues with Alaska’s permitting system and its unpredictability. For one, the Commissioner’s decision did not take into account tribal opposition to the Mine, leaving it to simmer until further litigation ensued. Moreover, the Commissioner’s decision highlights the battle of the experts which underlie many Section 401 certifications. Because the main issue in Section 401 certification is whether a mining project meets Alaska’s water standards,
quality standards, mines must present models to the ADEC that they believe prove their ability to meet these standards. Opponents then present their own experts to testify that the mine’s reports cannot prove compliance or adequate consideration of the project’s circumstances. The ADEC is ultimately left to review all this evidence before making a determination and responding to ONC’s comments. Because of the dueling experts and conflicting data they present, the ADEC’s review takes time—even though Donlin Gold ultimately secured its Section 401 certification, the process took nearly four years.

Further, it may be difficult for mines to provide the ADEC with data demonstrating compliance with overlapping and inconsistent regulations, resulting in regulatory delays. These unanticipated delays make it even more difficult for both firms and regulators to accurately deduce the mining project’s potential effects on water quality under the permit. Agencies increasingly demand more and more information from mines, further extending the permitting process and adding uncertainty to the process. Thus, “the most common cause of mine permitting delays involves mine plans of operation that were incomplete or vague, which require[] a request for additional information before the review process could continue.” Sometimes, to overcome the delays, mines may need to significantly reduce the quantity of tailings and wastewater they plan to dispose of.

152. See, e.g., id. (finding that on appeal to the superior court, Donlin provided two more reports as evidence of its compliance with the state’s water quality standards).
153. See, e.g., id. at 6.
154. See, e.g., id. (outlining ADEC response to all of ONC’s comments).
155. See generally id. Donlin applied for certification on June 9, 2018, and the letter of approval was sent May 13, 2022. Id.
157. Water quality can change for better or worse near mining projects due to changes in naturally occurring pollutant levels or other developmental activities occurring nearby. See generally EPA, EPA AND HARDROCK MINING: A SOURCE BOOK FOR INDUSTRY IN THE NORTHWEST AND ALASKA 27, 28 (2003), https://www.epa.gov/sites/default/files/2018-11/documents/epa_and_hardrock_miningsec508.pdf (explaining that the long development periods typical of the mining industry make a mine’s beneficial and adverse impacts uncertain). When issuance of a permit is delayed, determining the significance of a mine’s effects may need to be reassessed. See generally id.
158. See COCKLAN-VENDI & HEMMING, supra note 156, at 1 (noting the “ever increasing demands by agencies for more and more information”).
159. RECOMMENDATIONS TO IMPROVE MINING ON PUBLIC LANDS, INTERAGENCY WORKING GROUP ON MINING LAWS, REGULATIONS, AND PERMITTING 6 (2023) (internal quotations omitted).
160. See id. at 94 (noting improved practices for re-processing tailings and
3. The Alaska Department of Natural Resources

The Alaska Department of Natural Resources (ADNR) Division of Mining, Land and Water manages mineral exploration and development on more than 100 million acres of the state’s land.161 The Alaska legislature designated the ADNR the leading agency for “all matters relating to the exploration, development, and management of mining.”162 Accordingly, the ADNR enjoys broad discretion over large-mine permitting,163 and its only limiting mandate is to “provide for maximum use of state land consistent with the public interest.”164 The ADNR must also ensure, however, that Alaskan land is used in a manner that “will be of greatest economic benefit to the state and the development of its resources.”165

The ADNR generally leases land to a mine permittee upon permit approval and payment of an annual rental.166 When acquiring that initial permitting, a mine must also have its site reclamation plans approved by the ADNR.167 Under Alaska’s Reclamation Act, the ADNR ensures that mining operations are conducted “in a manner that prevents unnecessary and undue degradation of land and water resources.”168 Most permits obtained in a mine’s development phase also include post-permit remediation and financial assurance requirements that must comply with the ADNR’s promulgated Reclamation Performance Standards.169 Lastly, the ADNR issues mines water rights permits for water access and rights-of-way permits for roads, pipelines, and powerlines.170

162. ALASKA STAT. § 27.05.010 (2022).
164. ALASKA STAT. § 38.04.005(a) (2022).
165. ALASKA STAT. § 38.05.850(a) (2022).
169. An approved reclamation plan is required before mining commences. See ALASKA ADMIN. CODE tit. 11 §§ 97.300–97.350. The reclamation plan does not become effective until a performance bond is in place, with the exception of certain small operations. See AS 27.19.040; see also ALASKA ADMIN. CODE tit. 11 § 97.200 (describing reclamation performance standards).
170. See generally ALASKA DEP’T OF NAT. RES., PERMITTING LARGE MINE PROJECTS IN ALASKA 2 https://dnr.alaska.gov/mlw/mining/large-mines/pdf/Permitting-
As a result of the ADNR’s wide-ranging responsibilities during the mine permitting process, the agency tends to be at the center of many of Alaska’s permitting controversies. For example, the agency is involved in at least two different lawsuits affecting Donlin Gold Mine. In January 2020, the ADNR granted a 315-mile right-of-way permit that Donlin had applied for back in 2014. The Orutsarmiut Native Council (“ONC”) then challenged the permit in court. After a thorough review of its decision, the ADNR reissued the permit in July 2021. The fight drags on in ongoing litigation, however, as the ONC has now appealed the reissued permit to federal court.

The ONC and other tribes are also suing the ADNR over its decision to issue twelve permits allowing Donlin Gold to appropriate water for use in connection with the construction and operation of its mine. Donlin Gold applied for these permits in 2013. In most of the ADNR’s ongoing litigation, Tribes and environmental groups are not satisfied with the ADNR’s analysis of the mine’s cumulative environmental impacts, including those pertaining to fish habitat. The Tribes do not explain what amount of information would satisfy them, however, just that they are requesting more analyses be done. If a higher court decides to

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177. Id. at Ex. 1, 8.
overturn any of these permits, the ADNR would have to conduct such analyses to address these cumulative effects issues. The big question is how much analysis of the mine’s effects would be required, as Alaska currently has no statutorily set standard. Consequently, this litigation could force ADNR to conduct even more reviews of the mine’s permits based on an uncertain legal standard, further delaying the project’s production date and the permitting process.

4. The Alaska Department of Fish and Game

The Alaska Department of Fish and Game has discretionary authority to intervene when a mining operation might adversely impact the fish lifecycle. Accordingly, if a mining firm wants to use a nearby waterway for tailings disposal, it must receive a fish habitat permit from Fish and Game to denote compliance with fish lifecycle regulations. Permittees are often required to minimize adverse effects on anadromous fish through mitigation measures and permit conditions to receive approval.

Mitigation is particularly important if anadromous fish frequent a nearby waterway, even if the waterway is not specifically identified as needing protection under Fish and Game’s regulations. While Fish and Game has developed a catalog listing the water bodies used by anadromous fish, the agency emphasizes that its limited on-the-ground data collection likely means the catalog does not list all waterbodies where fish can be found. Thus, a project may not have any notice that

specified in the Water Use Act. Id.

180. Id. at Ex. 1, page 14 (outlining tribes’ argument that ADNR should be required to consider the cumulative impacts of the project as a whole).

181. Id. at Ex. 1, page 21 (explaining that a cumulative impacts analysis is only required when there is statutory language mandating it and here, there was no statutory language mandating such an analysis).

182. See ALASKA ADMIN. CODE tit. 16, § 16.05.871 (2023) (requiring mines to notify commissioner if modifying water use is special to anadromous fish).

183. See Alaska Department of Fish & Game, KENAI PENINSULA BOROUGH, https://www.kpb.us/river-center/agencies/alaska-department-of-fish-game (last visited Nov. 12, 2023) (“All activities within or across a specified anadromous waterbody and all instream activities affecting a specified anadromous waterbody require approval from the ADF&G.”).

184. See ALASKA STAT §§ 16.05.87–16.05.901; ALASKA ADMIN. CODE tit. 5, § 95.900 (2023) (imposing upon permittees a duty to “mitigate any adverse effect upon fish or wildlife, or their habitat.”); JOE GIEFER & SCOTT GRAZIANO, ALASKA DEP’T OF FISH AND GAME, CATALOG OF WATERS IMPORTANT FOR SPAWNING, REARING, OR MIGRATION OF ANADROMOUS FISHES–SOUTHCENTRAL REGION, EFFECTIVE JUNE 1, 2023 4 (2023).

185. See JOE GIEFER & SCOTT GRAZIANO, ALASKA DEP’T OF FISH AND GAME, CATALOG OF WATERS IMPORTANT FOR SPAWNING, REARING, OR MIGRATION OF ANADROMOUS FISHES–SOUTHCENTRAL REGION, EFFECTIVE JUNE 1, 2023 5 (2023).

186. Id. at 7.
it needs to acquire a fish habitat permit, other than Fish and Game’s note that a permit may be required if a stream that is used by fish is obstructed during the course of the project.\footnote{Id. at 5.}

Fish and Game’s discretion to consider a mine’s cumulative effects on nearby fish populations further confuses the permitting process. Fish and Game makes clear that it can analyze a mine’s cumulative effects on anadromous fish or their habitats during the permit review process.\footnote{See id. at 4. (“Habitat Section personnel will review the application materials and, where appropriate, issue permit approval for plans and procedures that have minimal or no harmful effects, including cumulative effects, on anadromous fish or their habitats.”).} Nonetheless, there is no specific cumulative effects analysis under any relevant law or Fish and Game policy, so the agency maintains broad discretion when determining a mine’s cumulative effects on nearby fish.\footnote{See id. (stating ADFG, per its regulation, will analyze the cumulative effects of a project, but not providing further detail as to how).} In recent years, some groups have asked the Alaska Legislature to provide more guidance on the state’s fish habitat permitting process “to set clear expectation[s] for permit applicants and to reduce uncertainty in predevelopment planning costs.”\footnote{Alaska Board Issues Recommendations for Fish Habitat Permits, ASSOCIATED PRESS (Jan. 24, 2017), https://www.savebristolbay.org/in-the-news/2017/1/24/alaska-board-issues-recommendations-for-fish-habitat-permits.}

**IV. RECOGNIZING THE DIFFERENCE BETWEEN A “GO” MINE AND A “NO” MINE**

Establishing mines in the United States, particularly in Alaska, is “high risk, high reward.”\footnote{Reuban Gregg Brewer, This Gold Miner’s Troubles Hold a Lesson for Investors, THE MOTLEY FOOL (Jun 19, 2018), https://sports.yahoo.com/gold-miner-apos-troubles-hold-133100508.html (noting the huge opportunity investing in Pebble Mine presents but also noting the high risk of bankruptcy for investors when stock prices collapse due to delays in project approval).} Often the hassles of the permitting process can dissuade firms from starting new mining projects.\footnote{Shane Lasley, Capital as thin as air at Beaver Creek, MINING NEWS (Oct. 6, 2023), https://www.miningnewsnorth.com/story/2023/10/06/in-depth/capital-as-thin-as-air-at-beaver-creek/8145.html (explaining that while metal prices and interest in domestic mining is rising, portfolio managers say mining projects are currently priced for failure due to economic and geopolitical uncertainty).} To help the United States achieve self-sufficiency in domestic mineral production, it is time to tip the scales in favor of domestic mines; the Biden Administration simply cannot achieve its critical metal goals without
more of them.193

Permit denials can be necessary for environmental protection where the impact of mining on the environment cannot be safely managed. But this section draws the dividing line between mines with acceptable and unacceptable environmental impacts, denoting acceptable mining projects as “Go” Mines and unacceptable mining projects as “No” Mines. “Go” Mines are mining project bids with environmental impacts that can be curtailed through proper mitigation measures and that should have their permits approved by regulators. “No” Mines, by contrast, are mining project bids with environmental impacts so severe that they should be denied permitting to protect the environment. Mitigation measures come in many forms.194 By implementing some, it might be possible to increase the number of “Go” Mines, reduce permitting uncertainty, and attract more mining firms to Alaska.

A. Kensington Gold: A “Go” Mine

Sometimes mitigating a mine’s adverse environmental effects involves state agency permitting flexibility and a court’s willingness to uphold that flexibility. In Coeur Alaska, Inc. v. Southeast Alaska Conservation Council, the U.S. Supreme Court held that ACE had authority under Section 404 to issue a permit to Kensington Gold Mine.195 The permit allowed the mine to dispose of 4.5 million tons of tailings into Lower Slate Lake, located in the Tongass National Forest.196 The decision noted that EPA had statutory authority under Section 404(c) to veto ACE’s decision, but because it failed to do so, it had “in effect deferred to the judgement of the Corps on this point.”197 When deciding that ACE’s Alaska District properly exercised its authority under Section 404, the Court relied on an ACE Alaska District finding that without the permit, the tailings would

193. See Recommendations to Improve Mining on Public Lands, Intergency Working Group on Mining Laws, Regulations, and Permitting 2 (2023)(“To meet rapidly increasing demand for minerals, the United States . . . must rapidly and dramatically increase responsible mineral production.”).
196. Id.
197. Id. at 270.
have been dumped in nearby wetlands, ultimately resulting in a permanent loss of that ecosystem. According to the Court, depositing the tailings in a lake, rather than the nearby wetlands, was reasonable because damage to the lake could later be remedied.

*Coeur* evinces a practical way for a permitting agency to uphold environmental standards while also making room for mineral development on federal lands. In *Coeur*, for example, the Court upheld the Alaska District of ACE’s determination that Kensington Gold tailings could decimate a lake’s fish population, so long as the fish were replaced when water quality recovered after the mine was shut down. Essentially, the Army Corps of Engineers deferred to ACE’s Alaska District’s determination that the mining firm's plan was the “least environmentally damaging [means] practicable” to dispose of its tailings. The Court’s opinion implicitly weighed the benefits of the Kensington Gold mine against the possibility of fish population recovery, holding that the possibility of future recovery was sufficient to justify progress on a large mining project in Alaska. Established court precedent endorsing substantial mitigation measures, like the one applied here, may be attractive to mining firms, as it demonstrates adaptability and equity within the United States’ legal system.

B. Pebble Mine: A “No” Mine

In January 2023, after over twenty years of exploration and development, EPA ended the Pebble Mine project after the federal agency blocked Pebble’s dredge-and-fill permit application once and for all. Although EPA has used its veto authority over dredge-and-fill permits fourteen times, it was only the second time it used the authority against a

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198. *Id.* at 269.
199. *Id.*
201. *Id.*
202. *Id.*
203. See generally EPA, FINAL DETERMINATION OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY PURSUANT TO SECTION 404(C) OF THE CLEAN WATER ACT, PEBBLE DEPOSIT AREA, SOUTHWEST ALASKA (2023), https://www.epa.gov/system/files/documents/2023-01/Pebble-Deposit-Area-404c-FD-Jan2023.pdf [hereinafter EPA Final Determination, Pebble Deposit] (summarizing the EPA’s final determination to veto the Pebble Mine through its Section 404(c) power).
mine, and the first time using it in twelve years.\textsuperscript{204} Section 404(c) “authorizes EPA to (1) prohibit or withdraw the specification of any defined areas as a disposal site, and (2) deny, restrict, or withdraw the use of any defined area for specification as a disposal site, whenever it determines … that discharge of dredged or fill material into the area will have an unacceptable adverse effect on municipal water supplies, shellfish beds, and fishery areas, wildlife, or recreational areas.”\textsuperscript{205}

In the case of the Pebble Mine project, the agency looked at the project’s potential adverse effects on anadromous fishery areas around the mine. EPA determined the permanent loss of streams, wetlands, and adverse impacts on hydrologically connected anadromous fish streams were unacceptable.\textsuperscript{206} Notably, EPA does not have a codified definition of “fishery area,” and avoided defining the term in its final determination.\textsuperscript{207} Finally, EPA’s final determination also restricted some of the waterways that it analyzed from ever being considered as disposal sites for tailings ever again.\textsuperscript{208} Resultingly, the veto eliminated nearly all feasible disposal options for the mine, effectively killing the Pebble Mine project.\textsuperscript{209}

Although Alaska state officials have criticized EPA’s unprecedented use of its authoritative veto power,\textsuperscript{210} the final determination is not surprising. Beginning in 2010, before the mine had even applied for federal permits, six Tribes petitioned EPA to intervene and apply its Section 404(c) power and veto the Pebble Mine project.\textsuperscript{211} The movement

\textsuperscript{204} See EPA, CLEAN WATER ACT: SECTION 404(C) VETO AUTHORITY, at 2, https://www.epa.gov/sites/default/files/2016-03/documents/404c.pdf (listing the fourteen instances of final Section 404(c) veto determinations, including the most recent prior veto in 2011) (last visited Feb. 21, 2024).

\textsuperscript{205} EPA FINAL DETERMINATION, PEBBLE DEPOSIT, supra note 203, at 5–1 (emphasis added).

\textsuperscript{206} See generally id. at 4-1 to 4-102 (describing unacceptable adverse impacts on anadromous fishery areas, fish, and their habitat if the mine were to be constructed).

\textsuperscript{207} See generally id. (listing no definition for “fishery area”). In several instances, the EPA final determination does note that fishery areas include “spawning and breeding areas.” See, e.g., id. at ES-16, 2-25 n.38.

\textsuperscript{208} Id. at ES-22.

\textsuperscript{209} See EPA Decision to Protect Bristol Bay Means Pebble Mine Project is All But Dead, ALASKA SPORTING J. (Jan. 31, 2023), https://aksportingjournal.com/epa-decision-to-protect-bristol-bay-means-pebble-mine-project-is-all-but-dead/ (detailing the impact of the EPA determination on future mining prospects in the Pebble Mine deposit).


\textsuperscript{211} See How We Got Here, STOP PEBBLE MINE, https://stoppebbleminenow.org/how-we-got-here (last visited Feb. 23, 2024) (summarizing the timeline of the opposition to Pebble Mine); EPA FINAL DETERMINATION, PEBBLE DEPOSIT, supra note 203, at ES-9 (detailing groups who
gained enough traction that EPA launched an ecological risk assessment (“EA”)
before taking further action. Based on the EA results, EPA published a proposed
determination under Section 404(c) to restrict the use of certain areas within Bristol Bay’s watershed. At that time, EPA had already concluded there was “reason to believe that unacceptable adverse effects on fishery areas (including spawning and breeding areas) could result from the discharge of dredge or fill material associated with mining the Pebble deposit.” As a result, the Pebble Mine project leadership was aware of the risk, or at least the ensuing fight, that could be coming.

The Pebble Mine story exemplifies the quintessential problem of federal permitting “project stoppers” that states are better equipped to handle. For one, even if Pebble Mine had successfully received a Section 404 permit, the mine would still be required to obtain fish habitat permits from Alaska Fish and Game. Second, pursuant to the Bristol Bay Forever Act codified in 2014, Alaska’s state legislature must grant final authorization to any metallic sulfide mining operation located within the watershed of the Bristol Bay Fisheries Reserve. With both public and congressional opposition to the mine growing, it is highly unlikely the project would have received the go ahead.

Essentially, EPA’s veto sidestepped predictable permitting opposed the mine).

214. See EPA PROPOSED DETERMINATION, PEBBLE DEPOSIT, supra note 203, at ES-7 (detailing adverse impacts).
215. Id. at ES-7.
217. Id.
processes already in place to handle situations like Pebble. Although the state would likely have reached the same conclusions as EPA, Alaska did not approve of the agency’s use of its veto authority because of the precedent it sets for future mine project cases. The state’s attorney general lamented that “[i]f [the EPA?] can do it here, it can do it anywhere, from large mining projects such as this, down to a family building their dream home.” Moreover, EPA’s reliance on undefined terms and subjective standards to bypass the regular state and federal permitting process and prevent development was uncalled for.

V. PROPOSED MEASURES TO MITIGATE RISK GOING FORWARD

This section argues that an unpredictable permitting system is not conducive to expansion of the United States’ domestic mining industry. Both the federal government and the state of Alaska can make changes to policies and laws now to align them with the United States’ climate and domestic reliance goals. A decade-long permitting timeframe impedes the IRA’s expedited timeline for critical mining.

Streamlining the Federal Permitting Process

The current federal process features permitting delays, redundancy, and uncertainty that contribute to many mining projects’ protracted limbo. To help achieve America’s climate goals, the federal government must establish a streamlined federal permitting process by (1) restricting EPA’s Section 404(c) veto authority, (2) promulgating regulations that put firms on notice of what information they will need to provide during the permitting process to successfully obtain each permit, and (3) making only carefully considered changes to the Mining Law of 1872. Taking these steps would help ensure mining projects do not end up in unnecessary project-ending or project-delaysing situations.


A. Curtailing EPA’s Section 404 Veto Authority

To streamline the federal permitting process, EPA’s Section 404(c) veto authority must be procedurally restricted so that the agency can begin assessing whether to apply its veto only after a final Section 404 permitting decision has been made. Restricting EPA’s use of veto authority in this way is necessary to ensure the agency is using the best available science to evaluate the mine and is also considering what mitigation measures the mine agreed to or was willing to agree to in order to receive its Section 404 permit. For example, EPA began its assessment of whether to apply its veto authority against the Pebble Mine project in 2014, long before the mine applied for its Section 404 permit. While its application for a Section 404 permit was initially denied by ACE in 2020, the mine has since appealed the decision and also submitted a list of more cumbersome mitigation measures it is willing to incorporate into its mining plan. Without examining these mitigation measures or understanding the scope of a final Section 404 permit, the question becomes whether the information EPA used to make its decision is obsolete. In other words, “it is more appropriate to use well-established mechanisms to raise project-specific issues as the record develops during the permitting process.”

Moreover, the lawfulness of the EPA’s use of its the Section 404 veto authority did not go unchallenged. Alaska argued as much to the United States Supreme Court. Alaska requested that the Court grant its motion to file a complaint against EPA over its use of the veto against the Pebble Mine.

225. Id.
226. Id.
227. Id.
228. Id. (quoting EPA in its 2019 decision to withdraw its 2014 proposed determination, 84 Fed. Reg. 45749 (Aug. 30, 2019)).
229. Original actions are an “extraordinary ask,” but Alaska argues that EPA’s extraordinary decision combined with its limited options to fight EPA’s decision require the Supreme Court to take this case. Moreover, Alaska argues that EPA has clearly overstepped its authority in the case of Pebble Mine. See generally Motion for Leave to File Bill of Complaint at 36–40, Alaska v. United States, No. 220157 (2024), https://law.alaska.gov/pdf/press/230726-Complaint.pdf. Based on the terms of the Land Exchange and the Statehood Act, Alaska argued that EPA breached the United States’ contracts with Alaska, violated federal law by essentially preventing mining from occurring on a large portion of Alaska state land. It also argued that the agency did not consider this consequence when it issued the final determination, and that this loss of value on state lands constitutes a taking by the federal government.
Mine. In January 2024, the Court denied the motion. The Complaint sought a declaration that EPA’s veto is unlawful. In essence, Alaska argued that EPA usurped Alaska’s “ability and responsibility to protect its own natural resources” and that it effectively confiscated state property and created a de facto national park. The state asked the Supreme Court to set aside EPA’s Final Determination under Section 404(c) as an arbitrary and capricious abuse of discretion beyond the scope of its statutory authority.

In addition to the state’s attempted suit challenging EPA’s exercise of authority, the Pebble Mine Partnership, which seeks to develop the mine, has also argued EPA’s use of its veto authority is unlawful here because its authority under Section 404(c) should be narrowly prescribed. The Pebble Mine Partnership argued that the Supreme Court’s decision in Coeur, the only other case where EPA used its authority against an Alaskan mine, “interpreted the CWA to give EPA authority to veto an ACE permit only ‘for a particular disposal site,’” not an entire project area. When EPA makes unprecedented use of its veto authority, it makes the permitting process seem even more disingenuous to firms that hope to comply and build economically productive projects.

B. Addressing Information Gaps in the Permitting Process

Because the CWA and other federal permitting processes usually require mines to provide a generous amount of data at varying levels of detail, the permitting process would be more effective if mining firms...
knew what quantitative standards they were being held to at the beginning of the permitting process.\textsuperscript{238} Moreover, firms would likely save money and better understand the risk of the proposed project by evaluating the potential need for robust scientific studies, models, or other expensive data-gathering to satisfy the agency standards. A preliminary data collection process could be more efficient as it enables a coherent set of data to be collected while avoiding data gaps or overlaps.

To get firms on board with a preliminary data collection process, federal agencies must provide guidance to firms to ensure they will not be required to go back and redo studies and models they have funded based on the varying management priorities of an agency.\textsuperscript{239} Federal agencies should also collaborate with tribal and state agencies to work out a streamlined preliminary data collection process. Inviting all stakeholders to the table at an earlier stage not only increases efficiency but also ensures that all parties have input at the appropriate stage.

In addition, federal agencies should establish their own comprehensive internal record of review that can be shared with other agencies to determine whether a preliminary data collection process was successful and, if so, promulgate regulations to codify such a process. To implement a preliminary data collection process, agencies should develop guidance documents and checklists that detail the components and anticipated level of detail required to support their environmental evaluation processes.\textsuperscript{240} The guidance documents should spell out at the onset what information and environmental modeling the firms will need to do in order to navigate the permitting process. These steps would go a long way to creating a more predictable information review process, reduce both firm and agency costs, and contribute to a streamlined permitting process.\textsuperscript{241}

\textsuperscript{238} As things currently stand, firms have limited knowledge up front regarding how much they will have to spend and what data they will need to provide, even in light of existing guidance. See EPA, EPA AND HARDROCK MINING: A SOURCE BOOK FOR INDUSTRY IN THE NORTHWEST AND ALASKA 3 (2003) (summarizing expectations for completing the permitting process under the CWA and NEPA).


\textsuperscript{240} See id. at 108–09 (recommending consistent policy on application information requirements).

\textsuperscript{241} See generally id. at 49–53 (highlighting the value of a streamlined process).
C. Cautiously Reforming the Mining Law of 1872

The government should proceed with caution if it chooses to reform federal regulations in the Mining Law of 1872. The Mining Law is the federal law governing locatable minerals.\(^\text{242}\) The Mining Law incentivizes mining on federal land by providing low-cost access to mining.\(^\text{243}\) Under the law, the federal government receives no royalty fee for profits earned from mineral extraction on federal lands.\(^\text{244}\) Although some commentators argue that the lack of a royalty-fee system merely subsidizes exploration,\(^\text{245}\) the Department of the Interior previously stressed that the Mining Law was integral for encouraging mining operations to help the United States reach its climate goals.\(^\text{246}\)

Now, however, the current presidential administration has taken aim at the Mining Law, calling for its reform.\(^\text{247}\) Pursuant to Executive Order 14017,\(^\text{248}\) the Biden Administration instructed the DOI to establish an interagency working group ("IWG") with the goal of reforming hardrock mining laws.\(^\text{249}\) The IWG offered guidance to help the legislature, agencies, and states meet domestic mining goals while also mitigating its harmful environmental and cultural effects.\(^\text{250}\) The IWG’s focus was on improving mineral exploration and permitting, increasing engagement with stakeholders, expanding tribal consultation, and obtaining fair compensation from minerals extracted on federal lands.\(^\text{251}\)

Although an important first step, the IWG ultimately failed to make

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245. See EARTHWORKS, supra note 243.
249. See BIDEN–HARRIS INTERAGENCY WORKING GRP. ON MINING L., REGULS., AND PERMITTING, supra note 247.
250. Id. at 15–16
251. Id. at 6–9.
any recommendations to reform the Mining Law that satisfy the mining industry’s concerns or facilitate further natural resource mining in the coming years.252 The IWG’s 2023 report spends significant time exploring opportunities to reform the 1872 Mining Law.253 Particularly, the IWG concludes that a leasing system should replace the Mining Law’s current patent system because it “would best provide access to minerals on Federal lands.”254

A leasing system for mining is not feasible for several reasons. First, as the IWG itself points out, transitioning from a patent to leasing system would be administratively complex and complicate new exploration and development efforts.255 Second, because of the number of resources it would take to create and implement such a system, efforts to meet clean energy and climate goals would be delayed.256 Third, a leasing system would actually disincentivize production because firms would have to commit to leasing land before they know whether there are enough minerals present to make a mine economically viable.257

The IWG’s proposal to place a royalty on commercial production from mines on federal lands may also pose feasibility concerns.258 At one level, royalty fees seem like an appropriate recommendation: for example, the revenues from royalty fees could “be invested to prevent and mitigate adverse environmental and social impacts” of mining projects.259 Royalty fees could also be invested to address legacy hardrock mining impacts on affected communities and fund improvements to the mine permitting process.260 Establishing a royalty fee on commercial production in the mining industry also seems fair, considering the two other extractive industries on federal land both pay a federal royalty fee.261

However, the application of a royalty fee across the board would further frustrate the aim of increasing United States mineral production.

253. See generally BIDEN–HARRIS INTERAGENCY WORKING GRP. ON MINING L., REGULS., AND PERMITTING, supra note 247, at 18-23 (discussing history, successes, challenges and recommendations to improve the Mining Law).
254. Id. at 99.
255. Id.
256. Id.
257. NATIONAL MINING ASSOCIATION, supra note 252.
258. See BIDEN–HARRIS INTERAGENCY WORKING GRP. ON MINING L., REGULS., AND PERMITTING, supra note 247, at 104.
260. BIDEN–HARRIS INTERAGENCY WORKING GRP. ON MINING L., REGULS., AND PERMITTING, supra note 247, at 103.
261. DEP’T OF THE INTERIOR, supra note 259.
To keep domestic mining accessible, Congress will need to address how to apply the royalty fee to new mines, expansions to existing mines, or a combination thereof.\textsuperscript{262} Applying too significant of a royalty fee on a new mining operation, or even a mining operation producing a less lucrative mineral, will inevitably reduce the profitability of a mine and lead to early mine closure.\textsuperscript{263} Mineral-specific royalties could facilitate considerations of the supply and demand aspect of mining.\textsuperscript{264} Ultimately, a royalty tailored specially to a mine and its level of operations is likely best.\textsuperscript{265}

In reforming the 1872 law, Congress must walk a fine line and should consider what exactly those changes will incentivize, especially in light of current hopes to bring about U.S.-sourced green energy.

Rethinking Alaska’s Permitting Regime

Though popular narratives suggest that Alaska’s commitment to environmentalism place it at odds with the mining industry, Alaska’s sentiment towards mining as a state is generally amicable.\textsuperscript{266} The mining industry provides a much-needed economic boost to rural Alaskans.\textsuperscript{267} That reality looms large in the minds of the public and state policymakers.\textsuperscript{268} Thus, Alaska’s conflicting interests create a unique opportunity for the state to reevaluate its mining regulations to ensure mines are able to develop into rural economic opportunities while at the same time preserving baseline water quality and other environmental aims.

Alaska should enhance its permitting process for greater predictability, alleviating firms’ risk concerns. This involves (1) providing guidance to its agencies regarding their authority over the permitting process, (2) applying for assumption of its CWA Section 404 program, (3) increasing the robustness of its statewide infrastructure, and (4)
encouraging mining firms to collaborate with tribal entities.

D. Providing State-Level Guidance to Firms

Alaska’s permitting process would be further enhanced if the extent of its agencies’ roles were more clearly defined, especially when federal involvement in a mining project is inevitable. Even if the federal government is content with a sixteen-year permitting process, the state should not be.269

Alaska already boasts a robust and unique permitting process compared to other states thanks to the ADNR’s Office of Project Management and Permitting. The OPMP recognizes the benefit to firms of having a single primary point of contact when proceeding through a large-scale permitting project.270 Thus, the OPMP appoints a project coordinator responsible for ensuring projects move forward in the permitting process with minimal duplications.271 The OPMP, through its Large Mine Permitting Team, uses an interagency group of regulatory experts to assist the project coordinator.272 The OPMP is better equipped to work with mines because its local expertise provides insight into project-specific’s needs. The OPMP can tailor its permitting process to the needs and demands of the specific project.

However, Alaska’s Large Mine Permitting Team would benefit from publicly sharing more information about the permitting process. For example, creating a mine permitting “hub” to centralize information would help streamline what can be massively complicated. Mine permitting hubs have been proposed at the federal level: Jamie Pleune, a professor at the University of Utah, S.J. Quinney School of Law, highlighted the efficiency value in centralizing information for mining firms during the permitting process.273 As in Pleune’s federal proposal, a state-level permitting hub could feature flow charts and environmental checklists, for example.274 Ideally, this centralized resource would make the legal structures and standards more apparent to mining firms seeking approval.275 A “mine permitting hub” would “provide easy access, in one

271. Id.
274. Id.
275. Id. at 10903.
location, to permitting and regulatory information for project development in order to optimize the regulatory process, lower project costs, and ease investor risk.\textsuperscript{276}

Alaskan regulators can avoid further federal intrusion by clarifying each agency’s environmental standards before a mine enters the permitting process. Regulatory flow charts can help permit applicants understand what legal standards apply and how all the numerous permitting requirements fit together.\textsuperscript{277} Such a flow chart would also make it easier for the state to work with mines on preliminary data collection before beginning the permitting process.\textsuperscript{278} By collecting the support necessary to justify state-level determinations, Alaska can decrease the likelihood of a Section 404(c) veto or other similar federal action.\textsuperscript{279}

Environmental checklists developed at the beginning of a mine’s permitting process create transparency and predictability, which could translate into faster permitting decisions.\textsuperscript{280} Mine permitting checklists should do more than just list all the permits required, which is what existing state agency resources do.\textsuperscript{281} Instead, the checklists should include the environmental standards that the mine must meet, contact information for each agency, and highlight where special land designations require unique attention.\textsuperscript{282} Dynamic checklists such as these could better acknowledge where certain agencies’ regulations may overlap, which could provide opportunities for interagency cooperation.\textsuperscript{283} This in turn could help reduce the likelihood of permitting delays.\textsuperscript{284}

E. Assuming EPA’s Section 404 Permitting Program

Alaska’s should assume primary authority over Section 404 under the CWA. Under the CWA, states may assume authority over the administration of EPA’s Section 404 permitting program through an application process that Alaska has not, as of yet, applied for.\textsuperscript{285} However,

\begin{itemize}
  \item \textsuperscript{276} Id.
  \item \textsuperscript{277} Id.
  \item \textsuperscript{278} Id. at 10904.
  \item \textsuperscript{279} See id. (early scoping analysis would ensure the thoroughness of the checklist and avoid surprises later in the permitting process).
  \item \textsuperscript{280} Id. at 10903.
  \item \textsuperscript{281} Off. of Project of Mgmt. & Permitting, Alaska Dep’t of Nat. Res, supra note 272.
  \item \textsuperscript{282} Id.
  \item \textsuperscript{283} Id.
  \item \textsuperscript{284} Id.
  \item \textsuperscript{285} See Alaska Dep’t of Env’t Conservation, supra note 216, at 5 (explaining that, although Alaska’s legislature authorized the ADEC to seek assumption back
\end{itemize}
Alaska may well be headed down this road. In 2022, Alaska Governor Mike Dunleavy requested nearly $5 million in state funding to apply for primacy.286 The state declined to provide the funding,287 but passed a unanimous resolution supporting Dunleavy’s pursuit of federal funds.288

The main advantage of state primacy over the Section 404 permitting program is that it would curtail the number of players involved in the already overcrowded permitting space. Alaska taking primacy over the administration of Section 404 would promote resource development interest and investment in the state.289 With the right resources, Alaska’s assumption of the Section 404 program would also allow the state to process mining applications more quickly than ACE, which is notoriously overburdened.290

Permitting assumption also eliminates the chance of a firm receiving conflicting permitting decisions, conditions and mitigation requirements that can occur when federal and state jurisdiction overlap.291 Perhaps most importantly, state-assumed Section 404 programs are staffed by local offices.292 Local staff are able to provide on-site review of permit applications, work directly with permit applicants, and work cooperatively with federal regulating agencies when necessary.293 All of these benefits work to improve coordination, collaboration, and efficiency throughout the permitting process.

To assume the Section 404 program, Alaska is required to prove to
ACE that its new protocols have equivalent water permitting, environmental, and compliance standards to the federal Section 404 program. Assumption is not the same as a delegation of federal authority. Instead, assumption allows a state to operate its Section 404 program under state or tribal law, so the federal permit becomes a state or tribal permit. In a delegated program, by contrast, a state or tribe is making permitting decisions on behalf of the federal government. A state actually has broader authority to regulate all waters within its boundaries by assuming the Section 404 program rather than having federal authority delegated to it.

The state’s assumption over the Section 404 primacy program does not come without challenges. Assuming Section 404 authority “is a complex, time-consuming, and expensive process.” Currently, there is no federal funding available to states to develop and fund a Section 404 permit program. Alaska also faces state-specific challenges, includes low staff retention rates and workforce shortages. Fortunately, Alaska has considered these challenges and is ready to tackle them. The ADEC is working with federal agencies and Alaska’s legislature to help the state obtain federal funding for developing and implementing the program. Moreover, the ADEC created a hiring plan to define hiring, recruitment strategies, training, and work assignments.

The benefits to Alaska of assuming the Section 404 program outweigh the drawbacks. States that have received Section 404 primacy have reported its regulatory requirements have remained more stable and predictable compared to states whose programs are administered by the ACE. Alaska should continue to push for obtaining assumption over its Section 404 permitting program.

F. Developing Rural Infrastructure

Alaska must improve its rural infrastructure to ensure viability of mining operations. Alaska’s infrastructure, covering over 663,000 square

294. See id. (describing requirements of a state Section 404 assumption of primacy application).
295. Id.
296. Id. at 1.
298. See ALASKA DEP’T OF ENV’T CONSERVATION, supra note 216, at 6.
299. Id. at 9.
300. Id. at 6.
301. Id.
302. ASS’N OF STATE WETLAND MANAGERS, supra note 291.
miles to support a population of about 730,000 residents, is unique. Due to this vastness, the costs of connecting various modes of transportation is significant. Unlike the Lower 48, where workers can commute daily to and from their homes, mineral extraction employees working on large mining projects often work on rotational schedules and live in remote, generator-powered camps. Many of these remote communities are lagging in infrastructure development on multiple fronts. Thus, firms must account for the cost to design, construct, and maintain infrastructure to support their mining projects. To facilitate development of new mining projects, Alaska must take steps to create access and power solutions.

Climate change has posed significant threats to existing private infrastructure across the state. Melting permafrost on the North Slope has caused millions of dollars in additional costs for mining firms. For example, Teck Resources, the operator of Red Dog Mine, recently increased the height of its tailings pond due to the surrounding climate change, while potentially opening new sea routes, is also changing the structure of seasonal river shipping, weakening existing road systems, affecting runways and shortening tundra travel season.

305. See Dep’t of Nat. Res., Geological & Geophysical Surveys, Bringing Alaska’s Carbon Ore, Rare Earth and Critical Minerals Potential into Perspective, State of Alaska, (last visited Sept. 6, 2023), https://dggs.alaska.gov/energy/core-cm.html (describing the living and commuting habits of mineral-extraction workers). These rotational schedules and generator-powered camps are used even when mining operations are supported by local employees given the remoteness of the sites. Id.
306. See Alaska Section of the Am. Soc’y of Civ. Eng’rs, supra note 303(explaining most of Alaska’s remote communities still lack proper water and wastewater treatment systems).
308. Id.
watershed’s melting permafrost.\textsuperscript{311} It also needed to freeze some of its tailings reservoir’s water into the bottom of its active mining pits.\textsuperscript{312} The mine’s efforts to combat climate change have only led to its decreased productivity and economic viability.\textsuperscript{313} Not only is the project utilizing more water, but the melting permafrost is also releasing other naturally occurring dissolved minerals into the surrounding environment.\textsuperscript{314} Teck reports that the dissolved minerals increase metal concentrations in the mine’s tailings water, limiting its discharge capacity under its Section 402 permit.\textsuperscript{315} The limited discharge has also resulted in water back-ups in the mine’s tailings ponds.\textsuperscript{316} If the infrastructure challenges facing mines are not addressed by the state, they will continue to plague mines with costly delays and possibly result in revocation of permits.

Alaska has taken steps to assess its current and future infrastructure needs and assist mines in working through infrastructure challenges through a series of initiatives and policies. The state has created a comprehensive plan setting forth criteria to prioritize competing infrastructure projects.\textsuperscript{317} However, the plan is merely a series of policy recommendations which the state’s Department of Transportation is mandated to prepare under Alaska Statute.\textsuperscript{318} To achieve any of the plan’s policy objectives, the state must overcome the challenges of funding programs which would enhance and expedite infrastructure improvements.\textsuperscript{319} If Alaska wants to increase mining productivity, it must provide adequate funding to infrastructure projects that are necessary to attract large mining projects to areas all over the state.

In an attempt to overcome funding challenges, Alaska’s Roads to


\textsuperscript{312} See id. (noting the discharge backup and that Red Dog Mine’s problems are “a challenge” for the economy).

\textsuperscript{313} Id.

\textsuperscript{314} Id.

\textsuperscript{315} See id. (explaining that the permafrost than has prevented the mine from discharging wastewater).

\textsuperscript{316} Id.


\textsuperscript{319} NAT’L PETROLEUM COUNCIL, supra note 304.
Resources Program initiative engages Alaskan stakeholders to design and build projects that support mining development. The Program works to identify resource development projects that require a comprehensive approach to infrastructure systems that can include road access, as well as marine, rail, and aviation improvements. It can also assist firms as they navigate federal permitting processes required to build these infrastructure systems. The program has been successful so far; however, permitting issues have delayed some of the projects where these funds have been allocated. The state should prioritize funding the Roads to Resources Program because its goals align with greater mineral resource development and permitting efficiency.

Ultimately, the viability of mining operations in Alaska is intricately tied to the state’s infrastructure. The vastness of the territory, combined with the unique challenges posed by remote communities and climate change, necessitates a concerted effort to improve access and power solutions. As Teck’s issues with its tailings dam exemplifies, the impact of climate change on existing infrastructure is already evident, leading to increased costs and reduced productivity for mining firms. While Alaska has taken steps to address these challenges through initiatives and policies, the crucial factor remains adequate funding. The Roads to Resources Program Initiative stands as a promising avenue, working with various stakeholders to design and implement comprehensive infrastructure projects. Prioritizing funding for this program aligns with the goal of fostering greater mineral resource development and streamlining permitting processes. By committing to these improvements, Alaska can not only enhance the economic viability of its mining industry but also ensure sustainable growth for years to come.

320. See id.
321. Id.
323. See NAT’L PETROLEUM COUNCIL, supra note 304 at 2.
325. Roads to Resources, ALASKA DEP’T OF TRANSP. & PUB. FACILITIES, supra note 322.
326. ALASKA MINERALS COMM’N, supra note 307 at 5.
328. See Herz, supra note 310 (detailing how sheets of layered ice caused a flood and the pipeline’s damages cost over $10 million).
G. Encouraging Stakeholder Collaboration

Establishing new mines in rural areas can have wide-ranging effects on communities, from straining local infrastructure to placing demands on agency resources. Today, Alaska Native Corporation and mining industry partnerships can be excellent opportunities to strengthen relationships between these two key stakeholder groups and build up a mine’s social capital. In mining law and policy, scholars have described the need for firms to have a “social license to operate,” or generalized social acceptance from community stakeholders. Partnerships between mining firms and tribes would be mutually beneficial and could provide partnered tribes with access to funding for roads, hospitals, and community well-being programs.

Mining companies in Alaska should seek to establish tribal partnerships to strengthen community relationships and increase their social licenses to operate. A case study conducted at Red Dog Mine suggests that there are many short- and long-term benefits from collaboration between Native Corporations and mines. Collaboration with tribes not only yields social benefits but also enhances the pre-permitting phase of a mining project, leading to improved site selection that effectively mitigates potential impacts on historic properties. Put simply, Native groups may be less likely to sue mines for noncompliance if they have already developed an open line of communication for alternative means of dispute resolution.

The Donlin Gold Mine illustrates the value of cooperation well. The


332. BERMAN ET AL, supra note 330 (noting that “mining operations have been associated with short-term improvements in job opportunities, incomes, poverty rates, and infrastructure” and the study’s findings of long-term benefits).

Calista Corporation, an Alaska Native regional entity, holds the subsurface rights and leases the project area to Donlin Gold.\textsuperscript{334} The Calista Corporation supports Donlin Gold’s efforts to proceed, as it represents a means to advance the self-determination of Alaska Natives through their active participation in decisions affecting their rights and property.\textsuperscript{335} Calista exercised their participatory rights by meticulously selecting the project area through a multi-step evaluation process spanning several years.\textsuperscript{336} Currently, the Corporation also receives advance royalties from Donlin Gold that benefit its shareholders and families.\textsuperscript{337} These incentives go a long way in further increasing a mine’s social license to operate.

Because of these mutual benefits, Alaska should encourage mines to collaborate with any tribal entity that may be affected by its activity in the area. The establishment of new mines in rural areas can significantly impact local communities across various dimensions, from infrastructure strain to resource allocation.\textsuperscript{338} Collaborative ventures between regional entities and mining industries present a promising avenue to cultivate understanding and enhance a mine’s social standing, encapsulated by its social license to operate.\textsuperscript{339} This cooperative model injects crucial funding into vital community elements such as transportation, healthcare, and well-being initiatives, while also refining the pre-permitting phase for more prudent site selection and reduced impact on historical sites. These examples illustrate successful templates for future mining initiatives, highlighting the importance of inclusive, community-focused strategies.

\section*{VI. CONCLUSION}

The green energy transition has increased mineral demand significantly, but the United States currently has no plan to increase its domestic mineral production. To achieve the country’s climate goals, both the federal government and states can take steps to streamline their permitting processes, increasing the predictability of permitting regimes and actually encouraging mineral production. To accomplish this, the federal government must establish a streamlined federal permitting process by restricting EPA’s Section 404(c) veto authority, promulgating clearer and more accessible regulations and policies, and amending the

\begin{thebibliography}{9}
\bibitem{334} Orutsaramiut Native Council v. Boyle, No. 3AN-22-06374 (2023), at 5.
\bibitem{335} \textit{Id.}
\bibitem{336} \textit{Id.}
\bibitem{337} \textit{See Our Home is Here}, CALISTA CORP. https://www.calistacorp.com/lands/ourhomeishere/ (last accessed Feb. 20, 2024) (noting benefits to all Alaska native shareholders).
\bibitem{338} \textit{AM. PROGRESS, supra} note 329.
\bibitem{339} \textit{See Ablavasky, supra} note 330 (discussing the types of Alaskan Native entities); BERMAN ET AL., \textit{supra} note 330, at 1.
\end{thebibliography}
Mining Law in ways that encourage mineral production, not delay it. Taking these steps would help ensure mining projects do not end up in project-ending or project-delaying situations.

Because of Alaska’s already unique state permitting structure, its legislative support for natural resource development, and need for rural development, the state stands to profit considerably from the green energy transition. The state can enhance its permitting process to increase its predictability by providing more thorough guidance to clarify its agencies’ roles, applying for assumption of its CWA Section 404 program, increasing the robustness of its statewide infrastructure, and encouraging mining firms to collaborate with tribal entities.

The consequences of making these changes both federally and statewide would significantly benefit the mining industry and the United States’ chances of meeting its climate and domestic reliance goals. Moreover, streamlined mine permitting processes protect domestic supply chains from global disruptions arising from overdependence on foreign sources, maximize economic benefits, contribute to a global energy transition towards clean and renewable energy sources, and demonstrate to other jurisdictions how to balance the policy tradeoffs of setting policies that prioritize important local environmental concerns.