# REDUCING CRITICAL MINERAL PROJECT LEAD TIMES: THINKING OUTSIDE OF THE PERMITTING BOX

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## 1. INTRODUCTION

Efforts to start up new U.S. mines and mineral processing facilities require a policy landscape that can compete with other countries in terms of the ability to attract industry investment. Industry surveys consistently show that proposed U.S. mines and processing plants face long lead times, a dynamic that may continue to drive companies abroad if they can reach commercial production more quickly elsewhere. The U.S. must improve its competitive position by reducing domestic critical mineral project development timelines.

Despite broad bipartisan interest in building critical mineral projects, policymakers have taken relatively limited actions to try to reduce lead times, beyond making mining eligible for the FAST-41 expedited permitting program. Moreover, by design, FAST-41 only supports a small number of high-priority projects costing at least $200 million, a limited pipeline which alone cannot lift U.S. competitiveness at the scale needed to meet demand. Furthermore, FAST-41 only supports projects through environmental reviews under the National Environmental Policy Act (NEPA), highlighting the need for initiatives that engage with earlier and non-NEPA phases of project development.

Mine construction, for example, first requires extensive exploration to find mineral deposits and detailed planning to design operations before companies even begin the permitting process. In extreme cases, reaching commercial production can take more than 30 years from first discovery of a deposit, while environmental impact statements take on average roughly 4 years.

Looking beyond NEPA, policymakers must prioritize tailored reforms that reduce lead times across the entirety of project development timelines, and reform permitting bottlenecks unique to the minerals industry. These benefits can in turn work alongside broader NEPA-wide changes that seek to, for instance, limit judicial review or improve efficiency of data sharing, as proposed in the ePermit Act. Some of these efficiency-boosting opportunities fall to agency regulators to implement, while others would have to be enacted through new Congressional legislation.

In any case, to begin meaningfully reducing project lead times, policymakers must embrace aggressive mineral exploration and proactive data collection that can inform mine planning and expedite environmental reviews. Together, such policies would greatly overhaul how the U.S. critical minerals project pipeline works and rapidly facilitate development. A competitive future U.S. critical minerals sector requires nothing less.

**Key recommendations:**

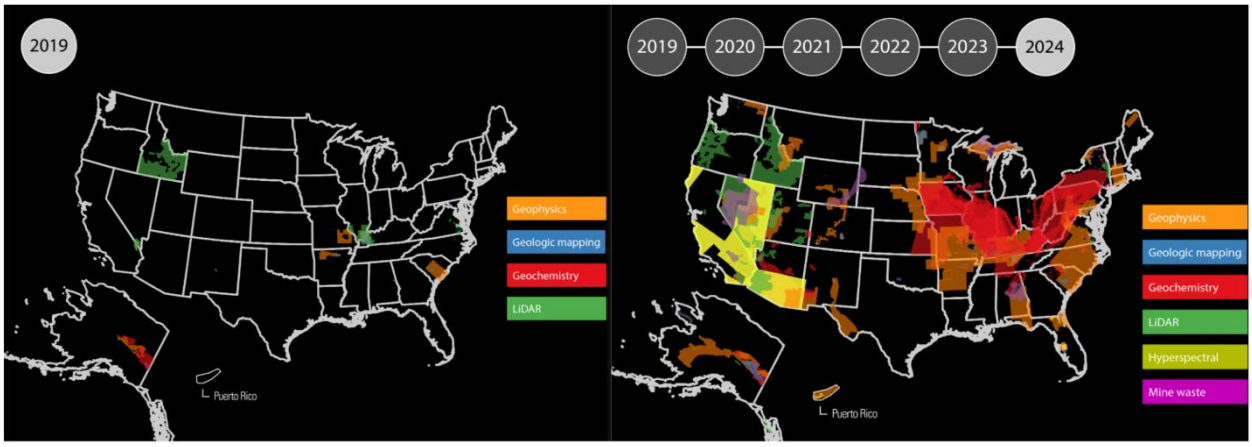
- Maintain and enhance federal spending on the Earth Mapping Resource Initiative (Earth MRI) at $100 million for the next 7 years to continue robust domestic discovery of new mineral resources and additionally perform subsurface drilling and mine waste recovery feasibility studies.
- Remove cost sharing caps for rock sample data preservation programs at state geological survey facilities to expand analyses of historic samples that could identify critical mineral deposits.
- Construct roads in strategic areas to facilitate mineral project development.
- Ban mine claim patenting to permanently eliminate the risk of mine claim speculators squatting on and purchasing federal land at unreasonably low prices.
- Amend the General Mining Law to enable more flexible and efficient mine design planning and revision.
- Fund federal nationwide siting consultations for key mineral processing and refining facilities.
- Offer critical minerals project developers federal cost sharing opportunities to hire third-party environmental contractors to complete field work and environmental permitting.
- Task permitting agencies such as the Bureau of Land Management to proactively collect data relevant to National Environmental Policy Act (NEPA) reviews well before developers apply for mine permits.

- Increase the maximum acreage to 25 acres for notice-level mineral exploration activities that do not require environmental assessments or environmental impact statements, such as basic drilling for rock samples.
- Improve consistency of Bureau of Land Management and U.S. Forest Service regulations to reduce developer confusion and eliminate unnecessary bureaucratic hurdles.
- Clarify regulatory definitions of mining activities such as "reasonably incident" in greater detail to expedite agency oversight of developer submittals and ensure that low impact activities do not unnecessarily require NEPA reviews due to ambiguity.
- Promulgate a categorical exclusion under NEPA that covers minor modifications to mine plans of operations, such as changes to operational sequences.
- Rescind General Mining Law regulations that require developers to occupy each 2.5-acre segment of mill sites.
- Promote an efficient workforce culture at permitting agencies such as the Bureau of Land Management with pre-consultation meetings, independent liaisons, and public-facing websites.
- Expedite the reclamation bond process by establishing pre-approved financial assurance amounts for developers.

# 2. LEGISLATIVE RECOMMENDATIONS

## Maintain and expand annual federal spending on the Earth Mapping Resource Initiative (Earth MRI) to $100 million for 7 years to continue domestic mineral discovery and additionally perform subsurface drilling and mine waste recovery feasibility studies

Earth MRI represents an indispensable opportunity to reduce lead times at the exploration stage of the mine development process. Led by the U.S. Geological Survey, this program performs preliminary exploration activities such as airborne geophysical surveys that can detect potential mineral deposits. Industry surveys suggest that the resulting geologic data can reduce project lead times by 20% by allowing developers to advance to subsequent stages of development and target more promising locations. These benefits in turn stimulate industry investment and expand the number of potential mines the U.S. can construct.




The Earth Mapping Resource Initiative (Earth MRI) conducts a variety of preliminary exploration techniques including airborne geophysical surveys and field sampling of surface samples for geochemical assessments. This valuable data can indicate the presence of mineralization that may yield a critical mineral deposit if further assessed. The program has admirably collected geophysical data for 23% of the U.S. since it began in 2019. Source: U.S. Geological Survey.

Policymakers must continue Earth MRI and expand annual funding to $100 million for a period of 7 years. This amount would maintain preliminary exploration activities at $75 million per year, avoiding a currently-scheduled fall to $11 million per year once appropriations from the Infrastructure Investment and Jobs Act expire after fiscal year 2026. The expanded $25 million per year would allow Earth MRI to additionally perform subsurface drilling and assess the feasibility of extracting critical minerals from historic mine waste and tailings.

Subsurface drilling would seek to confirm the presence of mineral deposits at locations that preliminary exploration activities indicated. Promising results would in turn allow industry to advance to more extensive drilling campaigns to determine economic viability and inform mine designs. The more drilling the better, though funding on the order of $15 million per year would allow the U.S. Geological Survey to persistently assess upwards of 5 sites per year that may yield a critical mineral deposit.


Industry uses a number of subsurface drilling methods to confirm the presence of minerals indicated by preliminary exploration techniques like airborne geophysical surveys. Reverse circulation drills, for example, quickly and cheaply produce rock chips for geochemical analyses. Diamond core drilling, while more costly, maintains the in-place features of bedrock to indicate the structure of subsurface formations. Either technique carefully encases drill holes to prevent any interaction with groundwater while leaving a small foot print at the surface that drillers can easily reclaim. Image sources: Kentucky Geological Survey.

Meanwhile, feasibility studies at historic mine sites would assess the viability of recovering trace amounts of critical minerals from old mine wastes and tailings. Earth MRI currently identifies historic mine sites, but mine wastes possess contaminants or low enough concentrations of critical minerals that may render extraction economically unviable. Annual funding of $10 million would allow the U.S. Geological Survey to perform pilot studies at historic sites to assess the feasibility of waste extraction and determine mineral recovery rates. Results would focus industry attention on promising sites while highlighting types of waste that require further research to develop.

Studies of similar programs conducted by competing countries like Canada and Australia show that spending on public exploration data provides positive returns on investment by boosting tax revenue from increased mining activity. Furthermore, the program has already proven its capabilities with new discoveries, including a potential rare earth element deposit in Maine. U.S. failure to properly support mineral exploration cedes important advantages to other minerals-rich countries.

## Remove cost-sharing caps to expand rock sample data preservation programs

State geological surveys possess a wealth of historic drill core samples accumulated over decades. Similar to drilling new cores, geologic data gained from reanalyzing historic cores can stimulate exploration activity by pointing industry to promising locations, and reduce project lead times by allowing developers to skip more preliminary exploration activities.

Congress can boost the amount of core data that state surveys produce through the National Geological and Geophysical Data Preservation Program by removing the 50% federal cost sharing cap imposed by the Energy Act of 2005. Removing the cap should not constitute significant public spend, based on recent annual contributions totaling roughly $5 million.

For academic purposes, state geological surveys store rock samples collected from water well, oil, gas, and mineral exploration drilling. The Kentucky survey, for example, hosts samples from more than 20 million feet of drilling across 22,400 sites which cost $535 million to produce at the time they were drilled. Reanalyzing these samples for the presence of critical minerals that industry did not originally look for could quickly and cost-effectively indicate potential mineral deposits across the U.S. Image sources: Kentucky Geological Survey.

## Construct roads in strategic areas to facilitate mineral project development

Mineral exploration and mining often occur in remote locations that require developers to construct roads. The federal government can speed up project development by taking on this task on federal land in areas with high potential for critical mineral mining. Roads could facilitate exploration in areas highlighted by Earth MRI surveys by facilitating construction and ore haulage during commercial operations. Road construction on federal land requires an environmental

review under NEPA, but proactive federal initiatives could take on permitting work and litigation risk otherwise borne by project developers.

The federal government used strategic road construction across the southwest to help create a domestic uranium mining industry from the 1940s through the 1960s. Meanwhile, the Ambler Road project in Alaska offers a contemporary example that will open up an otherwise inaccessible source of critical minerals. Here, NEPA-wide reforms such as limits on judicial review would further aid project development, as lawsuits can seriously delay large projects like Ambler Road.


Under the Ambler Road project, the Alaska Industrial Development and Export Authority would construct a 211-mile access road to the Ambler mining district. Developers have managed to explore the remote district and discovered extensive belts of critical minerals, including cobalt, copper, germanium, and gallium. Full-scale mining, however, would require basic infrastructure to facilitate construction and ore haulage. Image source: Mining Weekly

## Ban mine claim patenting to avoid needing to pass annual moratoriums

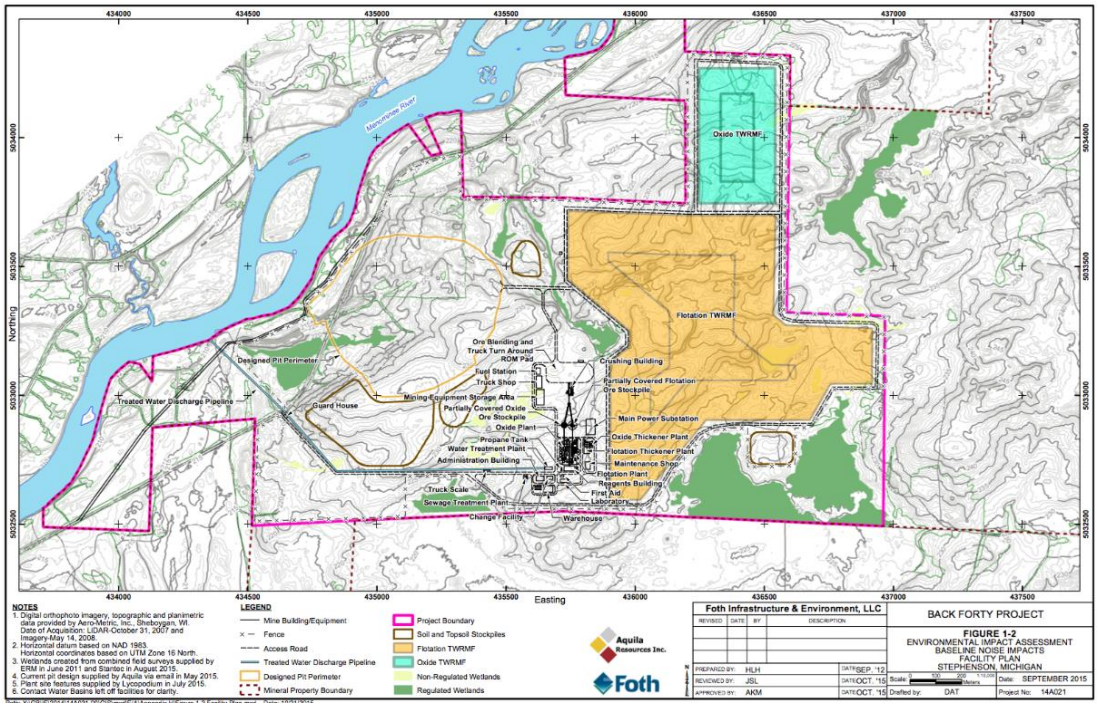
Historically, the General Mining Law allowed mine developers to purchase mining claims located on federal land through a process known as patenting. This practice originally intended to promote mineral development in the west by small scale miners and serves no purpose in modern

industry. Today, claim patenting would stymie mineral project development by allowing speculators to squat on land with mineral potential and complicate land management agencies' ability to effectively oversee natural resources. As such, Congress has banned the practice of claim patenting via moratoriums included in annual appropriation bills since 1994.

Congress should permanently ban claim patenting, promoting legislative efficiency, protecting public interests from counterproductive risks, and establishing consistent policy going forwards for the minerals industry.

## Amend the General Mining Law to allow more efficient mine planning and revision

The General Mining Law governs how developers claim and use parcels of federal land for mining activities, such as by distinguishing between mining claims for mining activities and mill site claims for auxiliary operations like storing waste rock. Some provisions stem from outdated considerations of small-scale mining in the 19th century, which serve no purpose in modern industry and needlessly complicate mine site planning. Planning often involves revising mine designs, a process which agency surveys have indicated can delay reviews by weeks to years. Amending outdated General Mining Law regulations would make planning more efficient and expedite revisions prompted by environmental review, such as resiting of a tailings pond to avoid impacting wildlife.




As shown by this map of the proposed Back Forty project in Michigan, developers must take many factors into account when designing intricate mine sites, such as where to place a mill so that it has conveyor belt access to mine shafts. General Mining Law regulations arbitrarily force developers to declare whether they will use claims of federal land for mining purposes versus milling or storing waste rock. This delays the permitting process if developers need to make minor adjustments to designs. Image source: Great Lakes Now

- As proposed in the Mining Regulatory Clarity Act, amending the General Mining Law to let developers change claims between mining and mill site claims could speed project development by making it easier for developers to adjust their site designs during permitting. Developers, for example, may need to relocate a tailings pond to avoid ecological impacts discovered during NEPA reviews. Note, however, that the Mining Regulatory Clarity Act would only empower developers to change a mining claim to a mill site claim. Further legislative reforms should ensure that developers can also change a mill site claim to a mining claim.
- Also as proposed in the Mining Regulatory Clarity Act, Congress should clarify that developers do not need to limit the number of mill site claims based on the number of mining claims they file, as long as mill site claims support actual mining operations. The General Mining Law remains ambiguous as to the number of mill site claims a developer can file, a grey area which agency guidance has historically abused by at times directing

regulators to limit developers to one mill site claim for each mining claim. Explicit statutory confirmation would prevent future cases of agencies imposing limits and ensure that developers can design auxiliary aspects of their mine sites as needed.

- Congress should remove provisions of the General Mining Law that restrict developers from locating mill site claims adjacent to mining claims filed by the same developer. Provisions like this historically intended to prevent small-scale miners working in close proximity from dumping waste on each other's claims. In modern large-scale operations, this provision needlessly complicates mine design and opens avenues for anti-development administrations to reject mine plans based on arbitrary technicalities.
- Congress should clarify the responsibility of land management agencies to verify the presence of minerals within a mining claim. The General Mining Law requires that developers can only file mining claims if they have discovered a mineral deposit. However, land management agencies do not routinely verify proof of discovery and instead rely on regulating allowable uses. Historically, verifying discovery prevented people from patenting public land with no intention of actually mining on it—a bureaucratic step which now serves no purpose given consistent annual bans on federal mine claim patenting (addressible via a permanent ban) while introducing regulatory inconsistency. Congress should specify that agencies only need to verify discovery in scenarios where developers claim pre-existing rights in areas withdrawn from mining.

## Fund siting consultations for mineral processing facilities

Unlike mines which must follow mineral deposits, developers can more freely choose where to construct mineral processing facilities. Here, federal support can reduce project lead times by funding third-party consultations that optimize facility locations with respect to project economics and regulatory compliance. Consultations, for example, could avoid siting facilities in states with water and air quality standards more stringent than EPA national standards. Meanwhile, potential project sites may occur near wetlands or non-attainment areas that require more stringent permitting requirements under the Clean Water Act and Clean Air Act, respectively. Funding on the order of $10 million per facility could greatly support developers in navigating these complex, intersecting considerations.

## Offer project developers cost sharing to hire third party environmental contractors

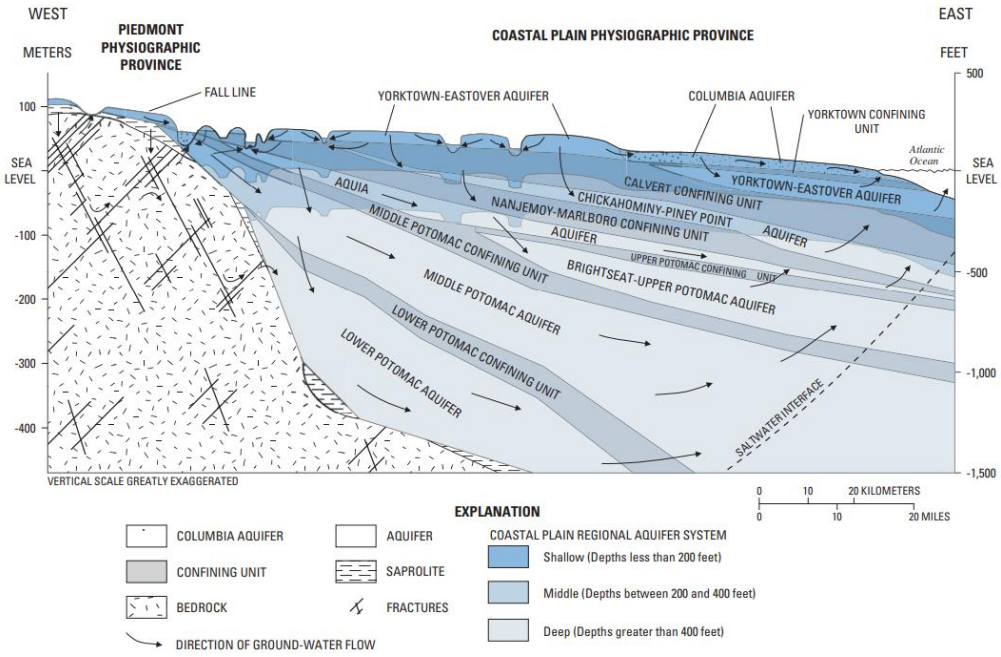
The pace of permitting heavily depends on the ability of developers and agencies to perform field work in collecting relevant data for NEPA reviews. Policymakers could double efforts on this front by providing funding to share the cost with developers in hiring third party environmental contractors. This allows projects to benefit from extra help and apply funds and personnel only when needed, rather than being forced to hire full-time agency staff.

## Proactively collect data relevant for permitting and NEPA reviews

During permitting, regulators review an extensive amount of environmental data that environmental contractors and agencies begin collecting once developers submit their plans, such as baseline water conditions and wildlife assessments. Agencies could reduce the time that developers spend during environmental reviews by proactively collecting data at locations with potential for critical mineral projects before developers apply for permits. Identifying specific sites would also allow agencies to compile relevant information previously accrued during programmatic reviews conducted when developing resource management plans and other land management activities.

Congress should provide land management agencies with $20 million annually to proactively collect data relevant to NEPA reviews at sites with potential to host critical mineral projects. Such funding would allow agencies to collect valuable data for upwards of 5 sites a year.

Industry surveys show that access to site-specific data would additionally reduce project lead times by informing developers during the planning stage. Even after discovering a deposit, planning can easily take 3 or more years before developers apply for permits. More information would expedite that process and let developers start the NEPA process sooner. Site-specific data would also help developers optimize their plans for regulatory compliance, thereby limiting the need for revisions during NEPA reviews and potentially limiting otherwise extensive alternative analyses. Rock characterization gained by core drilling, for example, can inform tailings pond designs and necessary water treatment. Meanwhile, cultural resource assessments can avoid needing to relocate open pit excavations or other infrastructure.

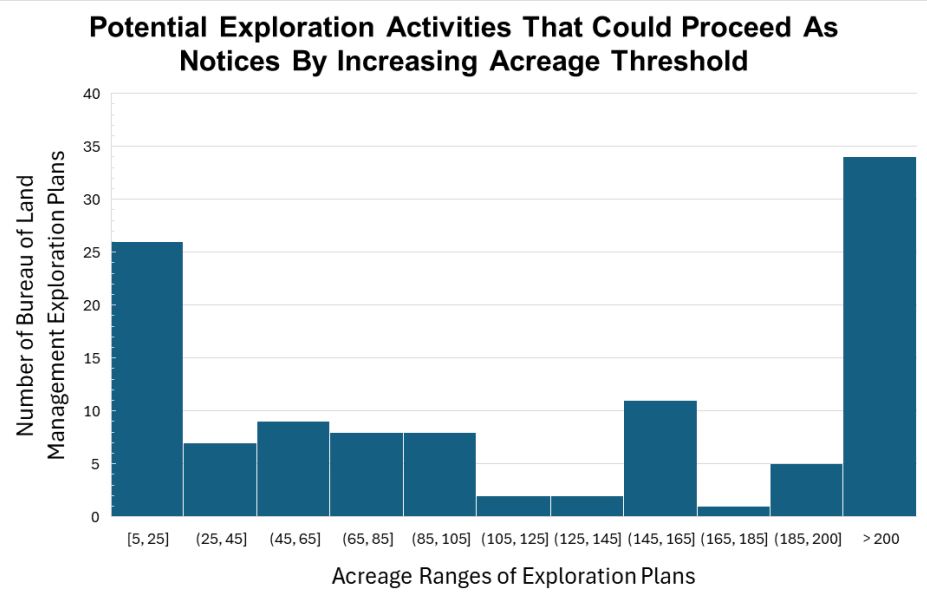



National Environmental Policy Act reviews require collecting extensive amounts of baseline data to evaluate potential environmental impacts. For example, developers must establish groundwater profiles as shown above to identify water resources and potential flow paths for the discharge of treated water permitted under the EPA's National Pollutant Discharge Elimination System. Agency efforts to collect this information ahead of time would greatly speed up reviews once developers apply to permit, and let developers optimize mine designs to limit environmental impact. Image source: U.S. Geological Survey.

# 3. Regulatory Recommendations

## Increase the maximum acreage for notice-level exploration activity

Regulations allow developers to perform exploration activities on Bureau of Land Management (BLM) land by submitting notices if activities cause surface disturbances affecting less than 5 acres. Activities that affect larger areas require a plan of operations which involve time consuming environmental assessments or environmental impact statements. Increasing the threshold beyond 5 acres would speed project development by allowing more activities to proceed with simple notices that agencies can more efficiently process. Based on current submissions, a threshold of 25 acres, for instance, would reduce the number of exploration campaigns that require a plan of operations by roughly 25%.




Regulations require exploration activities that use more than 5 acres of land to obtain agency approval under a Plan of Operations before starting. Expanding the acreage threshold beyond 5 acres would allow for more exploration activities to proceed under simple Notices of Operation that agencies can process more efficiently. Data source: Bureau of Land Management Mineral and Land Record System.

## Align Bureau of Land Management and U.S. Forest Service regulations

The Bureau of Land Management and U.S. Forest Service collectively manage the public land that developers use to explore and mine. They administer different land management functions and thus have different sets of regulations. With respect to mining, however, different regulations can cause confusion for developers, especially for smaller, less experienced companies. Furthermore, either agency may have regulations that impose unnecessary burdens that the other has successfully managed public lands without.

The two agencies should revise their respective regulations to adopt the other agency's approach should it impose less of a burden on project development. The U.S. Forest Service, for example, does not specify acreage criteria for determining if exploration activities require a plan of operations or simple notice, leaving open the possibility that low-impact exploration campaigns may arbitrarily require more extensive agency review to approve plans.

## Specify regulatory definitions of "allowable uses," "reasonably incident," and "operations" in greater detail

Bureau of Land Management and U.S. Forest Service regulations use terms such as "mining operations" and "reasonably incident" to ensure that developers responsibly use mining claims for their intended purpose and conform to land management laws. Defining these terms in greater detail with examples of developer activities would streamline agency oversight of developer submittals. U.S. Forest Service regulations, for example, define "reasonably incident" using "methods, structures, and equipment," where greater detail could specify, among other examples, diamond core drilling and borehole cementation.

Additionally, greater clarity would limit scenarios where agencies inadvertently elevate developer submittals to plans of operations which require prior agency approval and environmental assessments or environmental impact statement reviews. The U.S. Forest Service estimated that such clarifications would allow an average of 62 activities per year to avoid needing plans of operations.

## Revise General Mining Law regulations

Similar to the statutory changes to the General Mining Law recommended above, the following changes to regulations that implement the General Mining Law would speed project development by making it easier for developers to plan mine designs. Congress could alternatively implement these changes through statutory changes, which would avoid the potential for future administrations to reverse course.

- Agencies should promulgate a categorical exclusion that covers minor modifications to mine plans of operations for critical minerals. The Bureau of Land Management currently employs such a categorical exclusion for exploration activities that require full plans of operation, but not for full-scale mining. Establishing the categorical exclusion could avoid needlessly initiating new reviews for minor changes to approved plans that do not cause any environmental impact, such as changes in construction or operational sequences.
- The Bureau of Land Management should rescind regulations that require developers to occupy each two-and-a-half-acre portion of a mill site in order for that portion of the mill site to be valid. Separate regulations already empower the Bureau of Land Management to limit mill sites to those reasonably necessary for operations and to ensure that developers

use mill sites as intended. The provision introduces a technicality that obligates unnecessary agency oversight and arbitrarily complicates mine designs.

## Promote an efficient permitting workforce culture with independent liaisons, pre-consultation meetings, and developer-focused websites

- Conducting NEPA reviews for minerals projects involves a number of agencies working in a technical capacity, similar to the Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the Environmental Protection Agency. Agencies have noted that a lack of interagency coordination can add months to projects. While NEPA statute assigns a lead agency to each review, this agency still ultimately operates in a technical capacity, coordinating, for example, alternative analyses proposed by cooperating agencies. The federal government should establish an office that provides project developers with a liaison independent of lead or cooperating agencies. Working outside of a technical capacity, the liaison would focus on encouraging technical staff to complete NEPA review milestones, and coordinating with the project developer to ensure effective communication and manage timeline expectations.
- While informally encouraged in the past, agencies should promulgate regulations that require staff to contact developers and offer pre-consultation meetings. Agency staff have indicated that these early-stage meetings, conducted before NEPA reviews formally begin, expedite permitting by avoiding delays caused by incomplete application information when developers submit plans for review. An agency survey of 21 NEPA reviews for mines indicated that delays from incomplete plan information extended permitting lead times from 1 month to 7 years.
- Land management agencies should update their NEPA registers to provide clearer status of projects to the public. Easily accessible timelines noting current NEPA milestones would promote an efficient workforce culture aimed at completing reviews more quickly, discouraging a culture of bullet-proofing reviews against litigation while maintaining thorough work.

## Expedite the reclamation bond process by establishing pre-approved financial assurance amounts for developers

The Federal Land Policy and Management Act and the National Forest Management Act respectively require the Bureau of Land Management and U.S. Forest Service to prevent developer

activities from unnecessarily damaging public land. This mandate empowers the agencies to require developers to a post lump-sum financial assurance that covers mine site reclamation costs before they can begin operations.

The financial assurance process adds to project lead times since developers must estimate reclamation costs for the project and site under consideration, then wait for agency review and approval. The process can lengthen further should agencies deem the developer's initial estimate insufficient. New regulations could speed this process by establishing pre-set brackets of acceptable reclamation fund contributions, cautiously set with a safety margin to ensure satisfactory reclamation. Using past projects to determine such brackets based on factors such as acreage and tonnage, developers could voluntarily submit financial assurances that clearly overestimate reclamation costs, in exchange for consistently expedited agency review.