

Exploratory Drilling Fact Sheet #1

Mineral Exploration

Since 1966, Minnesota has leased state-managed lands for mineral exploration. As interest in exploration grows, the Department of Natural Resources (DNR) remains committed to providing Minnesotans with clear, science-based information. These fact sheets explain how exploratory drilling is conducted in Minnesota, outline the environmental safeguards in place, and summarize the state laws and regulations that guide the process. They are designed to support informed conversations about exploratory drilling grounded in data, state law, and sound natural resource management practices.

What is mineral exploration?

Mineral exploration is geologic research to find concentrations of minerals, also known as ore bodies or deposits. These methods range from no to low impact studies and include geologic mapping, geophysical surveys, and testing of soil, sediment, or rock for geochemical signatures. Exploratory drilling, while more visible, is a temporary, low-impact activity* that collects rock core samples from deep underground for further study. In summary, mineral exploration is the process of collecting data and information to better understand what is below the ground before any decisions about mining are made.



Is mineral exploration the same as mining?

No. Mineral exploration is not mining. Mineral exploration is the process of collecting data to identify potential mineral deposits underground. It is one of the earliest steps in a long and highly regulated decision-making process. Most exploration activities never lead to a mine.

Through exploration, if a company identifies a potentially economically viable mineral resource, then the next step is for that company to conduct a feasibility assessment to determine whether a mine could be planned. If the potential for a project is deemed feasible, a company would then propose a mine and initiate an environmental review. Environmental review is a detailed, multi-agency regulatory process in which mine plans are proposed, potential environmental impacts and mitigation measures are assessed, and the public has multiple opportunities to comment. If the project advances beyond environmental review, numerous permits will be required, and further details on the proposed project will be available for public input and consideration before any final decisions are made regarding permit applications.

Life Cycle of a Mine



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Why do explorers drill here?

Exploratory drilling takes place in areas where geological evidence suggests that the conditions were ideal for concentrating valuable mineral formations.

Minnesota is home to several world-class mineral deposits containing iron ore, copper, nickel, manganese, cobalt, and other valuable minerals. However, minerals don't form everywhere. Mineral deposits show up where extreme geologic forces once existed. For example, ore bodies containing copper and nickel formed over a billion years ago when North America started to rip apart in an event called the Midcontinent Rift. Luckily, the rifting process failed, and we still get to call Wisconsin our neighbor.

Are there a lot of exploratory drill holes?

Exploratory borings represent 1% of all drill holes in the state. To put exploration drilling activity into perspective, from 2000 to 2020, there were 2,085 exploratory borings drilled compared to 196,657 water and other wells statewide.

Does the State allow exploration on public lands?

Yes. Minnesota has been leasing state-managed lands for mineral exploration since 1966. In addition to managing public lands for habitat, recreation and other activities, many public lands have fiduciary responsibilities to generate income for public purposes. For example, the DNR serves as trustee for 3.5 million acres of minerals for School Trust Lands. For these lands and minerals, the Constitution of the State of Minnesota directs the DNR to generate revenue for the Permanent School Fund (PSF). The interest and dividends from the PSF support K-12 public education, providing funds that are distributed to every public school district within the state. Over the last decade, mineral leasing and royalties contributed an average of \$25.1 million annually to the PSF to fund public education. For other state-administered lands and minerals, income generated from leasing is distributed to universities, local governments, local school districts, or the State's general fund.



The DNR does not lease certain lands and minerals for nonferrous mineral exploration, such as State Parks, Scientific and Natural Areas (SNAs), lands within the Boundary Waters Canoe Area Wilderness (BWCAW), and National Parks.

What is the mineral leasing process?

On private lands, a company and the land and/or mineral owner(s) negotiate private leases to explore for minerals. On state-administered lands, a company must obtain a nonferrous mineral lease from the DNR. A lease sets out the ability to conduct certain activities on state property and the DNR requires certain conditions as the administrator of those state lands. While a mineral lease allows for future exploration and mining, it does not independently authorize a mining project. Before any lessee can explore, the explorer must send an

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Exploration Plan to the DNR for authorization. Before any mining can occur, a proposed mining project must first go through extensive environmental review and permitting as law requires. According to state law, the specifics of any activities associated with a proposed mining project are only required at the time a project is proposed, not during mineral leasing and exploration.

All state leases for nonferrous metallic minerals must be approved by the Executive Council (Minnesota Statutes, section 93.25, Subd. 2). The Executive Council consists of the governor, lieutenant governor, secretary of state, state auditor, and attorney general.

What happens to the core?

Minnesota law requires companies to submit drill core to the DNR when they end their exploration leases on both public and private lands. The DNR archives and preserves the core at the Minnesota Department of Natural Resources Drill Core Library in Hibbing, MN, where it remains publicly available for research and continued study. People from around the world visit the Drill Core Library where over 3 million feet of drill core is stored, making it an invaluable resource.

Recommended sources of information on mineral exploration

For more information and additional factsheets:

https://www.dnr.state.mn.us/lands_minerals/metallic_nf/regulations.html

DNR websites on mineral exploration:

https://www.dnr.state.mn.us/lands_minerals/metallic_nf/explore.html

*U.S. Department of Agriculture, U.S. Forest Service. *Final Environmental Impact Statement: Federal Hardrock Mineral Prospecting Permits Project, Superior National Forest*. May 2012.

https://eplanning.blm.gov/public_projects/nepa/75057/100003/121171/SNF_Fed_Hardrock_Pros_Permits_FEIS.pdf