NRRI’s Mining & Water Initiative: A progress report

In 2017, the Minnesota Legislature gave NRRI $2.6 million to fund five pilot projects intended to demonstrate promising technologies that will enhance the performance of the state’s minerals industry. Simulating a process to evaluate higher value iron production

This laboratory will give NRRI and industry partners the ability to fully evaluate both commercial and experimental processes for higher value iron products, like direct reduced iron (DRI). It will be used to define critical variables for processing of specific iron ore bodies, identify economically viable options and reduce risk for investment.

Industry partners are engaged in the design of this lab to define collaborative projects. The lab should be fully commissioned in September 2018.

A comprehensive data source: Natural Resources Atlas

Two case studies that are relevant to current Minnesota issues are being used to design a “mega-app” – an online tool to access 176-plus databases. To understand the implications of wetland restoration projects and potential limnetic mining, this atlas will layer data on mineral potential, biology, infrastructure, geology, water resources and more. The interactive platform will improve access to high quality and vetted databases in map format to improve transparency in decision-making.

A focus group will convene for testing and refinement. The public release of this demonstration atlas is slated for July 2018. Continued funding will be sought to expand the scope and content for the entire state.

NRRI Researcher Don Reiser demonstrates a flotation minerals separation process.

Increasing Iron Recovery

Current magnetic separation processes to harvest magnetite do not recover Minnesota’s less magnetic iron resources of hematite and goethite. A new flotation process is being developed to try to recover all three ores at natural pH levels to expand the state’s mineable ores. This will also reduce mining waste.

Testing is focused on ores from the western Mesabi Iron Formation which is high in oxide minerals. Pilot testing will continue to understand the relevance to current and future iron mining in Minnesota.