

## Benefits of Preserving Michigan's Geological Samples and Data at MGRRE Three Recent Examples

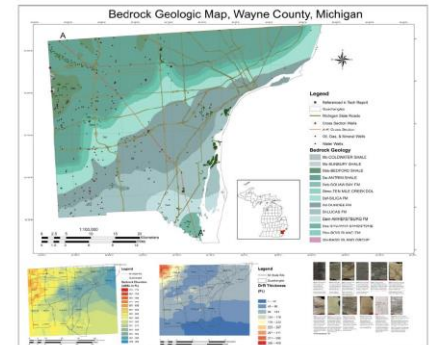
### 2018—Wayne County geologic resources and risks were reassessed and the bedrock map was revised

Why MGRRE resources were essential: Previous maps, prepared in 1913 and 1969, were based on much less available well data. Drs. Voice and Harrison relied on a large collection of cores from recent highway and public works projects to provide direct data to revise the bedrock map and assess geological formations.

Background: People living in these densely populated areas need to find nearby natural resources for infrastructure and construction projects. To complete these projects, they need large quantities of sand, gravel, crushed stone, glass sands, and rock gypsum. Industries in Wayne County have produced these resources from both glacial sediments and bedrock formations. Although production levels are lower today, some resources continue to be produced. However, unplanned and uncoordinated urban development may threaten access to these remaining natural resources.

Geologic risks also threaten sustained development. Risks identified in Wayne County include sinkhole development and land subsidence associated with certain rock types and structures. Understanding bedrock formation characteristics and fracture patterns is critical to abating those risks. For example, core samples from the site of the new Gordie Howe Bridge connecting Detroit with Canada were examined to make sure that the land surface would not subside beneath the bridge after construction.

Benefits provided: Urban planners and regulators as well as property owners can now rely on current and complete geological data about both resources and risks in Wayne County in order to maintain a sustainable balance between land use for residential and commercial development as well as for natural resource production. The [full report](#) and [map](#) are publicly available.

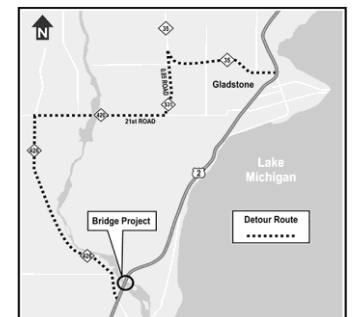


### 2016—US-2 Bridge over the Escanaba River replaced using cores preserved at MGRRE since 2008

Why MGRRE resources were essential: In February 2016, MDOT asked to borrow bedrock geological cores from the area that it had given to MGRRE 2008. They needed to use the cores in pre-bid events so that consultants and engineers could examine the rocks that would support the bridge.

Background: MDOT proposed this project in 2008. Architects and engineers were hired and a large number of geological cores were drilled to investigate subsurface rock stability. Funding was not approved then and the project was terminated. Because the cores were no longer needed, they were given to MGRRE. Funding was approved years later, and MDOT estimated it would invest \$20.5 million to replace the US-2 and the E&LS Railroad Bridge for this [two-year project](#).

Benefits provided: The new bridge, supported by structurally sound geologic formations, is essential to the economy of the Upper Peninsula. As the main thoroughfare in the southern part of the Upper Peninsula, this highway serves industry from mining, aggregates, building materials and logging. As a scenic highway, it also serves tourism. Our preserving those cores saved the additional expense and delay that would otherwise have been required to redrill these cores and provided the raw data needed to evaluate subsurface stability.



### 2012-2018—Potash deposit assessed; a world-class critical mineral source in Michigan

Why MGRRE resources were essential: Samples and data from these cores were essential to document the quality and extent of this rare and large potash deposit.

Background: In 2008, MGRRE acquired 75 pallets of cores drilled in Osceola and surrounding counties. After the inventory was listed on our Web pages, a company approached MGRRE researchers about the potential of an economic potash deposit in that area. Together they sampled those cores to verify the deposit's asset grade and quality. The company estimates its value at \$65 billion.

Benefits provided: [This deposit](#) could provide US farmers with a less expensive domestic source of this unique fertilizer component, for which there is no substitute. Michigan Potash and Salt Company continues its plans to bring this asset to development.



**All these cores would have gone to landfills if MGRRE had not preserved them.**