COMMITTEE ON MICHIGAN'S MINING FUTURE
Virtual Teams Meeting
October 13, 2020 – 9:00 a.m. to 3:00 p.m.

DRAFT MEETING MINUTES

ROLL CALL

Commission Members and Affiliation
Richard Becker (Aggregates) – present
Snehamoy Chatterjee (Research Faculty) – present
Timothy Eisele (Rep. Cambensy) – present
Harold Fitch (Sen. McBroom) – present
Sean Hammond (Environmental Nonprofits) – present
Matthew Johnson (Metallic Nonferrous) – present
Stephen Kesler (Research Faculty) – present
James Kochevar (Ferrous Mining) – present
Chad Korpi (Ferrous Mining Unions) – present
Jerome Maynard (Environmental Nonprofit) – present
Deborah Pellow (Municipality Affected by Mining) – absent
Evelyn Ravindran (Native Americans) – present

State Agency Members
Liesl Eichler Clark (EGLE) – absent
Adam Wygant (EGLE) – present
Dan Eichinger (DNR) – absent
Sharon Schafer (DNR) – present
Amanda Bright-McClanahan (MEDC) – present
Mike Sweat (EGLE) – present
Susan Bishop (EGLE) – present

Others Present
Anna Ediger – Cleveland Cliffs
Conner Loftus – Aid to Representative Sara Cambensy
John Yellich
Dough Needham
Horst Schmidt
Shannon DesRochers -KBIC
Nicko – State Representative_____office

The meeting began at 9:03 a.m. with roll call.

The Open Meetings Act was discussed. Gongwer reported that virtual meetings cannot be held at this time, and that is incorrect. Motions and decisions cannot be made at this time until we know this has been confirmed.

Since each subcommittee met, they will each report and comment.

RESEARCH AND MINERAL MAPPING – TIM EISELE

Research and Mineral Mapping Committee [Voting Members: Tim Eisele (Chair), Steve Keslar, Snehamoy Chatterjee; Ad Hoc Members: Adam Wygant, Sharon Schafer, Peter Rose, John Yellich]

Areas where action by the state would be beneficial can be categorized into three general areas:

Area 1 – Research Infrastructure and Funding

Michigan has a very high potential for discovery and production of mineral resources and an impressive range of expertise to encourage both of these. However, most of these assets are not well connected or funded. Among the most obvious shortcomings are the Michigan Geological Survey, which provides basic information on the geologic and mineral potential of the state, and the geological, civil engineering, and chemical engineering branches of Michigan Tech that carry out direct mineral-oriented research. Additional resources include the many universities with faculty and students who are actively engaged in carrying out research on mineral deposits, mining and other activities. These need to be linked by some basic funding. The most obvious would be to provide a better basic funding to the Michigan Geological Survey, including funds that could be disbursed to enlist faculty and students in other institutions around the state.

There is currently inadequate state funding to conduct mining research. A statewide research fund would provide needed stable funding for the Michigan Geologic Survey and for maintaining research laboratories at universities that do statewide mineral and geological research. These laboratories are critical for support of mapping activities, for developing the processing methods that will be needed to extract valuable resources, and to help design environmental mitigation and reclamation techniques.

A stable mining research program will allow us to maintain information on what mineral resources exist in the state and develop methods for processing these minerals at a profit that can be used by industry in an environmentally acceptable way, using a mixture of industry sponsorship and state-provided funding. Leveraging existing (or new) research opportunities would “level the playing field” relative to other states and countries.

Research and ultimate implementation of technologies to process Michigan’s reserves more effectively and efficiently would be helpful. Support of the existing iron industry, for example by conducting research into more efficient silica and phosphorus rejection, would encourage iron mining activity in the state to continue. Development of new technologies that would allow mining of resources that are currently inactive in the state would allow a greater diversity of mining activities. For example, new biomining

processes could recover manganese in an environmentally-sound manner from the low-grade ores that are known to exist in the state, and that are not economically recoverable with existing technology.

Ideally, there would be a network of research groups coordinating with the state Geological Survey. This would promote cooperative work. Potential models for this approach could be the geological surveys from other states or countries. For example, Finland is broadly comparable to Michigan in population, economic activity, and mineral resources, and the Finnish Geological Survey (GTK) combines government and industry funding to coordinate a broad range of research activities (http://gtk.fi/en/research/).

Area 2 – Accessibility of Data, Interactive Mapping, and Coordination of Activities

Michigan also has a wide array of information and documents that are directly related to mineral exploration and production. Some of this information is available to the public through the DEQ and the U.S. Geological Survey. Unfortunately, these sites are not linked, and much information remains unavailable, especially information from the Michigan Geological Survey and from university research. This information needs to be pulled together and made available in a single web site, it could be done by students and faculty working on small grants provided by a central authority, possibly the Michigan Geological Survey.

Improving availability of information on mineral potential in Michigan is key to a healthy minerals industry. While maps, drill cores, and other geological data exists for the state, access to much of it is not straightforward. Online access to interactive maps that link to data resources would make it much easier to determine where resources may exist. The USGS lists numerous “critical minerals” that are not currently produced domestically in sufficient quantities, and Michigan has potential to produce many of these, particularly those that are associated with Precambrian rocks in the Upper Peninsula, and that are associated with evaporites in the Lower Peninsula. It is also desirable to identify the current use of the land associated with mineral deposits, and make long term plans for how the need to explore for and produce mineral deposits can be balanced against other uses of the land.

A starting point for this type of resource would be the GeoWebFace site hosted by the DEQ (http://deq.state.mi.us/geowebface/) , which provides interactive map overlays for oil and gas, historical mining activity, geology, and land ownership. This data on GeoWebFace is currently limited, may not include recent developments, and particularly in the case of the land ownership data it is not accurate. With appropriate funding, the site could be greatly expanded with updated and corrected information, and also to include more mineral resources, higher resolution data, categorization of land by mineral potential, brownfield locations and their potential for additional resource recovery, and links to additional data sources.

Improved data on land and mineral rights ownership is crucial. For much of the state, determining who owns what rights on a case-by-case basis is an expensive, protracted process. Mapping of the mineral rights for the entire state would be a major undertaking, but once completed would remove a major hurdle for planning recovery of mineral resources.

Data should include not only target minerals, but also information on the associated minerals that could have an impact on processing. For example, iron ores vary greatly in their content of acid generating rock, and therefore have very different requirements for controlling acid mine drainage. The mapping activities in the state should build on USGS maps, follow GeMS standards per the National Cooperative Geologic Mapping Program, and classify potential deposits according to favorability of mining and processing.

Industry must provide some of the funding for specific projects/research, particularly for mineral resources that are currently being mined. Industry/State partnerships would be beneficial for exploration for new ore bodies and research into mine waste and reclamation. Compiling borehole data and making it available for reassessing could help to identify resources that are different from the ones that were being looked for when the boreholes were originally made.

Area 3 – Fostering Industry Specific Research and Strategic Future Mining Techniques

Since mineral exploration, mapping, and processing research are expensive, the state needs to take advantage of work that is being done by industry as much as possible. It is necessary to encourage industries that do mining-related research to make their results available to other companies, even those who may be their competitors. This will require thinking strategically about anticipating future mineral needs and then linking up with potential mining and manufacturing companies to translate that future need into research to understand Michigan ore chemistries and innovate specific mining processes to fill those needs.

In the case of the aggregates industry, their primary customer is likely to be the state DOT, which has very specific quality requirements. Specific testing to meet these requirements, such as Freeze Thaw testing, is done by MDOT in their laboratories to certify specific sources as meeting their various criteria. It would be helpful to expand this testing to give a broader view of the aggregate resources that can potentially be mined.

The steel industry in the US is particularly important to Michigan, and it is changing significantly. Market share of production from conventional blast furnaces is declining and being replaced by production of steel in electric arc furnaces (which do not utilize taconite pellet feed-stock). This long-term trend has reduced markets for iron ore pellets like those made at Michigan's Tilden Mine. If state-supported laboratories and subject matter experts are available for contract research to develop technologies for converting

the state's iron resources into suitable electric arc furnace feed, they would allow iron mines in the state to remain competitive.

The Regulatory and Policy subcommittee also identified mineral ownership as an issue.

John Yellich, President of the Association of Site Geologists – Area 1 comments – The Ohio survey was going broke six years ago. Michigan has no mechanism in mineral productions flowing to a survey. Oil and gas has nothing; it goes to a trust fund. Would the legislature put fees on this? Overall, funding of research and Michigan Geologic Survey will be included.

John Yellich – Area 2 comments – Have a clearing house of data. Alaska and Texas provide data to Geologic survey. The data is kept confidential for a period of time. The company supports the funding after a certain period of time. Oil and gas is dormant right now. Oil and gas companies sold seismic surveys to company, and it can be purchased right now. Good seismic data does not grow old. In Michigan, companies are looking for sweet spots. What is the glacial thickness in areas in Michigan?

John Yellich – Area 3 comments – Mineral mining companies are very proprietary in what they do. I would like to see them share geology. Minnesota, Wisconsin, New York, and Michigan are in favor of doing this. You don't have understand basic geology. Companies should be willing to share geology with other companies. It is a key for success. There is an airborne survey called Dickinson County Survey. It is available now. We are working on a mapping area. There is a second survey in a temporary hold right now. We are waiting for funds to be able to complete this. Revenues from oil and gas royalties goes to the State Park Endowment Fund as Michigan natural resources trust fund reached $500M in 2012.

Evelyn – Area 1 comments – Knowing land use activity is important. State resources are being used and we need to recognize the need for funding. When collecting that data, we need to talk about all the land uses to make sure all data is important and funded and accessible. Were best management practices discussed? No, they were not. Is there thoughts regarding ore bodies to be considered practical for current use before being mined? Mapping comes in here to help with this. We need to be clear with what is accessible and not accessible. A lot of zoning can be planned ahead. High dominance is mineral rights with implied mineral rights. We don't choose where metal, ore, or gas exists but have an understanding of zoning and land use would help companies know what they're up against.

John Yellich – Area 1 comments – I understand the Federal Critical Miners Act USGS made funding available to pull data out. EGLE had files, and we accepted them to come back to MGRRE. Some mines are shut down. We are taking chemical analysis, and data was in some minerals. We are doing a compilation for USGS and will be an open file. Sister states are doing this as well.

REGULATORY POLICY – HAL FITCH

This outline is derived from the "Regulatory Policy Subcommittee Topics". The topics have been consolidated and refined; some have been modified to align with the purposes and scope of the Committee. Two topics are recommended for reassignment to another subcommittee. The outline may be refined and revised based on input from interested parties.

Section 1 (Incorporates Topics 1, 2, 3, 6, 7, 8, part of 9, and 10). Review and evaluate current regulations and environmental requirements for mineral exploration and extraction. Describe concerns, identify options, and make recommendations as appropriate covering the following issues:

a. Categories of regulation: nonspecific (air, water, soil erosion, etc.) and specific to mining and reclamation operations.
b. Types of mining covered by regulations: ferrous metals, nonferrous metals, industrial minerals (which includes aggregates).
c. Need for balanced, reasonable, and effective regulations.
d. Cultural resources at proposed extraction sites.
e. Mine idling, shutdown, and reclamation.
f. Alternatives analysis, to include greenfield/brownfield options.
g. Mining of tailings, waste rock, and mill wastes.
h. Updating of administrative rules.
i. Potential for administrative and legal challenges.
j. Comparison to requirements in other states.

Note: these issues overlap significantly with topics of the Mining Methods, Environment, and Reclamation Subcommittee.

Section 2 (Incorporates Topics 4 and 5). Review and evaluate Act 163 of 1911, Copper and Iron Mine Inspectors. Describe concerns, identify options, and make recommendations as appropriate covering the following issues:

a. Duties and compensation of county mine inspectors.
b. Applicability of statute in today's environment.
c. Applicability to beneficial reuses of old mine workings.

Topics recommended for reassignment:

Topic 9. Tax assessments on mineral reserves (inferred to be part of "Permitting the correct reserves" topic) – recommend reassignment to Social, Economic, and Labor Opportunities Subcommittee.

Topic 11. Sensitivities from regulators, elected officials, and community towards mining – recommend reassignment to Social, Economic, and Labor Opportunities Subcommittee.

We felt the topic regarding tax assessment and minerals should be moved to the Social, Economic, and Labor Opportunities Subcommittee. There was no topic on the list regarding tax structure.

John Yellich comments – Many companies don't want to identify their total resources. They held tiles for the land, but the value can go up and down, so taxes will too. It is hard to say what value is as we are looking at it. There is concern for the industry and pubic. People have viewpoints on how taxation should be calculated. Mineralization is not considered an ore body and may not have value. The severance tax collected by the state from Eagle Mine goes to MDARD to promote rural communities.

MINING METHODS, ENVIRONMENT, AND RECLAMATION – JIM KOCHEVAR

We met on Friday, October 9, 2020, and we felt there was some overlap with topics in the Regulatory Policy subcommittee. We reviewed the duties of the committee and decided this subcommittee would focus on: reclamation tied to mining methods to leave land usable when done.

The Laurentian Vision Partnership has a public/private partnership. Operationally, companies will act in a responsible manner. The Laurentian Vision has been operational for many years. They are having a meeting on October 28, 2020, and we are trying to get invited to this. The next meeting for this subcommittee is November 6, 2020, and we are hoping to invite Laurentian to our meeting to give us a presentation. We can learn from them. We would like to learn how to get into a sustainable partnership.

In addition, we would like to know the potential reuse for land along with residential/recreation development. Stimulating public and private conversations can help. The UP Energy Task Force committee has three proposed solar development being challenged, because nobody wants them around. We need to stay away from issues like end use of products and focus on reclamation with process of end use in mines.

There is no representation from two of the large mining areas. Core value should go on all of the subcommittees list.

We decided to focus on items 2,3,4, and 7 for this subcommittee. What category does climate change this fit into? the company must identify the risks and how they operate. Climate change fits in the electronification implication category. This is more reclamation and a practical piece. Climate change is all around us. Operationally, what

can we do. The only standard is to design it for a 100 year storm, but in reality, it is designed for a 100 year storm in three days. We need to take a look at the history of mining in Michigan. We need to look at what to do at the tale end of mining. Rain events are a lot different than 10ror 20 years ago. We need to work with companies in the final stages of mining.

Committee took a break at 10:25 a.m. and returned at 10:35 a.m.

SOCIAL, ECONOMIC, AND LABOR OPPORTUNTIES – MATT JOHNSON REPORTING

We had three areas of concern.

Area 1 – There is research opportunity for mapping. We need to show where mineral sources are in Michigan and what we use them for on a daily basis. At Eagle Mine, we rely on sand, gravel and limestone to stay in operation.

We need to look at the sustainable/supply chain and need supplies closer to operations. How dependent are we on other industries? The video regarding a day in the life of minerals needs to educate the community on the importance of minerals.

Whose role is it to promote mining and mineral industry? It should be promoted by partnerships with private companies and universities.

Area 2 – we need to be energetic and bright workforces including students, researches, and faculty members. In addition, we need to explore opportunities for transferable credentials which allow for skill development, develop a framework for the mineral resource industry, and build a sustainable design practice into university curriculums. We need to development skilled trades by supporting funding for the middle college program throughout the state. One is in Marquette and is very popular. How can we work with the legislature to produce skilled trade mining needs?

Area 3 – What is the benefit of improving unemployment? We need to retrain workers. We cold promote remote working; it is bigger than before, but the UP doesn't necessarily have broadband available for job need infrastructure there to support it. In Big Bay, Paul Township, they developed a new recreation opportunity and had a ribbon cutting for the new mountain bike trail.

Post mining isn't the end of mining. There is a need for overreach from the committee to encourage communication to get people interested in recreation and everyone interest in the land. If you get them together, it will work better. If we get everyone involved early in the process, how far can we expand it? We need to identify risks and opportunities for post mining economy and look for future opportunities. Careers would

be wide-ranging due to people involved through the whole process. Are we looking at careers through the reclamation period?

Adam shared the video regarding the day in the life of minerals. It would be more powerful to show a video or photo of how many minerals go into making one cell phone and what it takes to actually make it. There are 70 elements to make one phone.

NEW OR OLD TOPICS

None.

REPORT FOR GOVERNOR/LEGISLATURE STRUCTURE

The report should include the topics, concerns, and opportunities and recommendations.

Each committee should stick to their topics and if they overlap, we can combine. The report is preliminary, and we can work on the final commendation. Each subcommittee should keep working on their topics and we'll put it all together in the spring.

Should we include taxation? It can be included with the questionnaire we send. We should just mention that taxation is a concern, but we aren't prepared to address it. IF we do a questionnaire, what would it look like? Mike, Adam, and Susan can work on it. The subcommittee members can think of questions they want include and then figure out who should be included on it.

How you structure a questionnaire matters a lot. We would need to identify the key issues for constituents and limit input from the local government. One on one communication with groups who are poorly represented is important. It should be open to invite additional people to meetings. We need nickel and gravel miners invited. We need to include everyone not just hand-picked people. It should include meaningful data and align with purpose as far as engagement and transparency. Amanda will help develop a survey. We need stakeholders that matter. The questionnaire should only have 15 questions to make it meaningful. We would try to include everyone , both individual and organizations to have as a broad of a group as possible even though groups are easier to target.

PUBLIC COMMENTS

Horst Schmidt – I sat in on the Mining Methods subcommittee. Sustainable mining was not discussed to see if there are ways to reduce reclamation. We need to develop a sustainable plan for the UP and take a look at business and industry and make it long-term. WE also need to look behind extractive industry and need to get families in the

UP to look at the whole picture up there. Can we use the UP Energy Task Force to build an economy? People object to anyplace where there are minerals and they are open game. We want the public's trust. We need to review the initiatives being created by the Department. Senate Bill 431 forces aggregate mining anywhere it's found. This has been a national trend. WE need to work to help sustain the local government. People don't feel like it's their place anymore, and we should take a broader look at mining.

Meeting adjourned at 11:49 a.m.

NEXT MEETING

The next meeting will be January 12, 2021, Michigan Environmental Council, 602 W. Ionia Street, Lansing; 9:00 a.m. to 3:00 p.m. If needed, this meeting will be converted to a Microsoft Teams meeting.