



Natural Resources Group

Thursday, May 18th, 2017

3:00 p.m. – 5:00 p.m.

Mining & Reclamation Building

1003 Discovery Drive, Chisholm, MN 55719

AGENDA

- Welcome, Introductions and Safety Share
- Update on status of initiatives as assigned in prior session.
- Update on NRRI Natural Resources Initiatives
- Discussion on Organizing a Broad-Based Economic Study
- Open discussion of potential new opportunities
- Closing Comments and Schedule next meeting

Natural Resources
Mineland Reclamation
May 18th, 2017
3:00 p.m. – 5:00 p.m.

In Attendance: Rolf Weberg, Mike Mlinar, Julie Lucas, Mary Finnegan, Larry Kramka, Dan Jordan, Julie Marinucci, Doug Learmont, Katie Lofquist and Lorrie Janatopoulos

Mike gave a quick overview of the agenda. And then a safety share was shared with the group.

Update on the status of initiatives:

Dan Jordan was the only person present to give an update on the assigned initiative. Dan was doing a periodic update on the School Trust Land Project. He said that it was moving forward slowly. The school trust funds invested to improve end use low grade wood for biomass energy by installing boilers into schools. The final report may generate some possibilities. The report will be submitted by spring 2018.

Rolf gave an update on initiatives from NRRI.

Broad-Based Economic Study Discussion:

Potential on doing an economic study, discussion or workshop that will focus on recreation and natural resource industries. Discuss the need to balance both to sustain families and surrounding areas. Mine well and still have access to the quality of life activities. Suggest a study that will bring data based conversation about the Iron Range economy together and discuss how it needs to be balanced.

Questions moving forward with the study:

- What is the correct economic study? Community conversations should be used to shape the economic conversation. Need to discuss the starting point to develop conversations between people with different views. Convening the right people to start the conversation is important. Developing trust between all of the people prior is important.
- Who could fund the study? Reaching out to Blandin to utilize the community program. Who could also fund the study? We would need to create a concept and present to multiple funder possibilities. Look for national organizations with a history of driving solutions.
- Break down into what is the true goal or accomplishment desired. What are the core values everyone can agree on?
- Think in advance of “what’s next?” What is the future of the state? How do we sustain an ongoing practice?

Moving forward:

A small group will meet with Blandin to discuss the concept and possible funding (Lorrie Janatopoulos, Julie Marinucci and Larry Kramka will be part of that group).

Updated spreadsheet from May's meeting is also attached.

Summary of Strategic Activities - Proposed Focus

May 18, 2017 Engagement Session; Chisholm, MN

Natural Resources Focus Statement

Support natural resource initiatives to address strategies and challenges

GOAL: HELP NATURAL RESOURCE INDUSTRIES EVOLVE

Identified Strategies	Active Programs & Projects					
FERROUS MINING	(NRRI) Construct high-value iron product process simulator to aid industry in optimization of processes to match various ore bodies and various high value product processes (DRI, nuggets, pig, etc.)	(NRRI, others) Optimize and implement high yield flotation technologies for separating all iron from Minnesota ores.	High Value Iron Coalition report (4Q, 2016)			Consider iron ore concentrates as independent market; high value additives to other materials/media/processes; consider as small business opportunities with high value. Need to know market size/value. (Jim Glowacki)
NON-FERROUS MINING	(NRRI) Collaborative development of reduced-impact hydrometallurgical techniques to isolate copper and nickel concentrates.	(NRRI) Kinetic leaching studies of finely ground copper/nickel ores to characterize process timescale-relevant relationships between contact time, acid generation, flotation additives, leaching rates, etc.	(NRRI) Evaluate manganese deposits and approaches to development of value-added products.	(NRRI) Ilmenite processing demonstration project - demonstrate utility of emerging technologies to isolate high purity titanium dioxide, iron oxide, manganese and vanadium from low-sulfur Minnesota Ilmenite deposits.		Wastestream issue solutions. Communicate UofM and other activities and progress in bioremediation, absorption, chemical processes, UF.
SECONDARY MINING PRODUCTS	(NRRI) Deliver road patch compound technology utilizing taconite mining waste materials	Use of taconite waste as roadbed base (St. Louis County)	Export of magnetite filter cake for alternate products (Doug Learmont)			Use slag as concrete aggregate.
FORESTRY AND LAND MANAGEMENT	(NRRI) Deliver red pine thinning study data to deploy new practices to optimize yield.	(NRRI) Develop approaches utilizing LIDAR data to model timber location, quality, quantity and availability. Characterize the "true wood-basket" and availability.	(NRRI) Wildlife & ecosystem characterization to inform sustainable forestry practices (bats, moose, water, etc.)	EAB tree harvest; how to access, quarantine, treat, market.	Private forest education effort currently under way on Range	Regional forest product alliance - provide support for logging industry; financing/business planning/workforce planning

FOREST PRODUCTS AND BIOECONOMY	(NRRI) Material characterization of Minnesota wood species to identify compositional makeup; match with industry desires and requirements for biomass feedstock processes; clarify industry opportunities.	(NRRI) Pursue funding for biofuel gasification and production of liquid biofuels (jet fuel, diesel fuel, chemicals)				Is furniture mfg a possibility in MN? How does MN utilize substandard (structural) wood?
WATER	(NRRI) Development of peat-based absorbants to remove heavy metal contaminants from Minnesota waters.	(NRRI) Collaborate with industrial partners to pilot and demonstrate high volume physical/chemical processes to remove sulfate from Minnesota waters.				How to consider water as an opportunity itself rather than just an enabler for mining, timber, energy, etc. How do we monetize water? Prevention/remediation technologies or other?
ENERGY	(NRRI) Demonstration of compressed air energy storage as means for onboarding renewable energy for industry utilization.	(NRRI) Biomass-based energy laboratory to demonstrate torrefied biomass solid fuels in high volumes for industrial testing.	(NRRI) Develop hydrothermal carbonization processes to convert wet woody biomass to fuels.			Understand true cost of energy to support industries; educate public on cost of "green". Consider existing data and potential speakers. Include tax policy. (Bill Whiteside)
SOCIAL LICENSE	(MCC, IMA, MM) Development of "Social License" approach to mine management.	(NRRI) Develop "Map of Opportunity" overlaying characterized mineral resources and material challenges with water resources, municipalities, utilities, parks, protected areas, forests, industry, etc. to help identify challenges and define mining districts.	RAMS - leading discussions among community leaders; may be a good medium for these conversations.	More grassroots groups made up of technical professionals to forward conversations regarding resource utilization; many groups. Better in our Backyard - multiple industries.	Mineland reclamation innovation and communication.	Harness interest in maintaining MN jobs towards solving the non-ferrous mining impacts on water.
OTHER	Regulatory system adjustments/ evolution to avoid current constraints. Will identify opportunities/gaps.	Mine design to anticipate mine closure and land reclamation; build into planning. Mechanisms. Stay ahead of game to save time and \$\$ (Jim Plummer to compile what project are in play)				Demographic shortcoming; where are the young engineers who will be carrying out these long-term actions? May also want to include operator demographic as well. Engage scam mining participants. Need the collective, entrepreneurial voice. Need the hands-on voice.

Bold additions are new ideas added
Bold, highlighted additions were
Bold additions new ideas added

Gaps & Opportunities

<p>Consider iron ore (concentrate) as additive to materials/concrete as heat sink for construction. Horizontal heat storage/passive heat storage.</p>	<p>Cooperative Minerals Resarch Fund; need to leverage vs. new opportunities. Consider partial application of funds to innovation vs. reinvestment into current operations. (Minerals Coordinating Committee)</p>	<p>LVP: look at land use planning to preserve ore body access for future.</p>	<p>Educate public/stakeholders on energy impact on industry; targeted marketing effort.</p>	<p>Pursue use of Magnetite as passive solar material</p>	<p>Drive MCC external focus. (Brian Hiti/Rolf Weberg)</p>	<p>M</p>
<p>LVP: look at land use planning to preserve ore body access for future.</p>	<p>Continue to support exploration to define opportunity</p>	<p>M</p>	<p>M</p>	<p>M</p>	<p>M</p>	<p>M</p>
<p>Develop/identify wastestream opportunities (future topic)</p>	<p>M</p>	<p>M</p>	<p>M</p>	<p>M</p>	<p>M</p>	<p>M</p>
<p>Join/support efforts for beneficial reuse of minelands for biomass generation; how to better leverage: include tailings basins, buffer lands, etc. How can these opportunities support emerging bioeconomy oportunities? (Kent Jacobsen)</p>	<p>Offer free forest planning to smaller private landowners; need to communicate available programs. How to leverage scarce resources (DNR).</p>	<p>MN Forest Industries (MFI) needs to have a presence in these conversations; MFRC as well. Include American Forestry and Paper Association.</p>	<p>Mining & Forestry have challenges regarding transportation (rail). Note Regional Rail Initiative.</p>	<p>Include Duluth Superior Port Authority in NR discussions</p>	<p>M</p>	<p>M</p>

Periodic update regarding attraction of bioeconomy investment/partners. (Kent Jacobsen)	Identify opportunities for MN wood to be more competitive vs. regional partners; access to markets/labor/energy/etc. Consider industry group engagement to define.	M	M	M	M	M
How to maintain local control of MN waters in terms of water resources? Not applicable to Great Lakes.	Survey best available technology for water reuse/recycle; survey industry needs.	M	M	M	M	M
Periodic updates on School Trust Land project (Dan Jordan)	Fully characterize torrefaction; support with redirect of forest fire control funding	M	M	M	M	M
Non-ferrous communication is difficult. Need to lead discussion on state-wide basis; need comprehensive statewide strategy. Need to engage stakeholders proactively.	Need to carefully identify who delivers the message; makes difference to the reception. Also can look for opportunities to leverage communications proactively.	Drive pride in MN mining industry; doing it right is a differentiator; "Mined in Minnesota" as a brand. Consider creation of a Center of Excellence for Mining via consortium approach with midwest/Canadian collaborators. (All)	Need to be able to tell story of how the industry operates today vs. yesterday; can be a powerful message; address perceptions proactively.	Must develop ambassadors for natural resource industries and target with key messages. Mobilize education approaches.	Consider addition of agriculture/groundwater to Atlas project; check in with other RTR group for input/collaboration. (Doug/Rolf)	M
Changing workforce dynamics in NR industries. More automation/fewer direct jobs; need for technicians.	Promote sharing of investment in environmental protection for new natural resource development by recipients of royalties, payments, etc.	Consider external speakers and/or seminars/forums for discussion (All)	Serious forum to consider how to consider regulation/system evolution; may be ways to work within the system - more of administrative issue. Opportunities at multiple levels.	Fund innovation for mineland reclamation; and find ways to engage in long term. Build in anticipation for future opportunities. Check into opportunities to collaborate with mining companies.		M

ded in February meeting
chosen for action by owners for discussion next time
l in May meeting