2018

Modern Mining in the Community: The Back Forty

EXECUTIVE SUMMARY

The Back Forty Mine, owned by Aquila Resources Inc., and currently in the development stage, is a zinc- and gold-rich deposit located in Menominee County in Michigan's Upper Peninsula. For the past ten years, Aquila and various joint venture partners, including INCO and Hudbay Minerals, have invested more than $90 million in exploring and advancing the Back Forty project. The Back Forty Mine is planning for construction in late 2019 and has an estimated mine-life of eight years. During the life of mine, the project will provide the opportunity for new investments, new jobs, additional income, and community support. If planned properly, these opportunities can last well beyond mine closure.

In the past, other regional mines such as Eagle Mine in the Marquette County area have solicited input from local community residents to gain insights into identifying the benefits and costs associated with mining. Local data gathered from the affected communities in the Eagle Mine area in 2010, 2012, and 2014. A variety of thoughts and views were from community members highlighted the strengths, weaknesses, opportunities, and threats (SWOT) of modern local mining under a project called "Mining and the Community." Input was used to give the community a voice to how Eagle should proceed in a variety of areas including, but not limited to, reporting of local investments, monitoring environmental impacts, focus on hiring local, providing updates on safety performance, maintaining transparent communication, working relationships with local tribes, sponsoring community events, and increasing educational opportunities in the K-16 classrooms.

Aquila and the Back Forty Mine have opted for this methodology to create their community report on the new proposed Back Forty project. As a result, researchers conducted focus groups throughout the region and made direct efforts to open the focus groups to individuals with documentable views in opposition to or support of new mining.

Focus Groups

The focus group methodology provides a systematic way to gather and summarize the perspectives and opinions held by individuals living in the affected communities. This method gives the researchers insights and approaches to confirm what is believed to be generalized facts about modern mining. It provides different associations across important variables that link locals and aspects of mining that are positive, negative, or neutral in importance to them. This method helps the mines and their stakeholders grasp the meaning behind community "facts."

Statistical analysis allows researchers to rank items and draw associations of significance between key variables of importance to community members. These rankings and associations can guide the mines', investors', and other stakeholders' efforts when allocating precious time, talent, and energy toward creating an environment in which the local economy grows in tandem

with the mine. Additionally, by identifying the areas of high importance to the community, both opponents and supporters of the mine can improve in their appreciation of how modern mining can proceed while respecting differing points of views and priorities rather than those held by the single individual who may or may not be a part of a vocal group.

Focus groups held in this style encourage individuals with all views to think freely, consider and respond to others' ideas, and adjust their views in ways that move the discussions across individuals with mixed views on controversial topics smoothly and with the utmost respect for others who hold different views. This style of discussion helps dissipate the tension and emotion that comes with introducing something new with global connections into a local community made up of some individuals and groups that perceive the new force as introducing more challenges than opportunities. Equally as important, focus groups assist those in strong support in understanding and respecting the beliefs and arguments of their opponents and enables them to convey their positions better while acknowledging the opponents' views. Finally, it helps the individuals who remain neutral on the topic to better understand the aspects of the opponents and supporters and whether to change their views in opposition to or support of modern mining in their community.

The announcement of the focus groups was in newsprint and advertisement in local shoppers. Consequently, 60 people came together and joined nine focus groups during March of 2018 across Delta, Dickinson, Menominee counties in Michigan and Marinette County in Wisconsin. Important to note is that this participation number is significantly lower than the number of focus group participants in 2014, 2012, and 2010 studies in the Marquette County region.

Possible explanations provided by community members and interested parties include, but were not limited to, a general lack of trust with respect to the overall mining project, unexpected scheduling conflicts due to local sports and tournaments, lack of understanding of what to expect in the community conversations, and, in at least two instances, personal threats registered online or by phone to do bodily harm to interested parties by opponents of the mine. Of these 60 participants (referred to in the study as "community members") approximately 30% were female, and 70% were male. All participants were at least high school graduates, with almost 85% having at least some level of college education.

Methodology

The methodology used in 2018 was very similar to that used in the 2014 and 2012 Eagle Mine studies in the Marquette area. S.W.O.T. stands for perceived Strengths (present), Weaknesses (current), Opportunities (future), and Threats (prospect) of modern mining. Numbers are assigned to give weight to S.W.O.T. rankings. A value of 10 indicates the item ranked 1st out of the top five. Though still in the top 5, a value of 2 suggests the article ranked 5 out of 5. Computation of "Mean index" values came from the weighted rankings. These values were used to identify the overall placement of the top five items in each S.W.O.T. category. Because of the

smaller number of community members participating in the focus groups, the S.W.O.T. analysis was calculated individually as well as by group (each of the nine focus groups).

Results

2018 Top Five Strengths

1) New Local Jobs
2) Direct Business
3) Infrastructure
4) Multiplier Effect
5) Taxes

New Items for the Back Forty Mine

1) Direct Business

Both the group index means and the individual means list Jobs and Employment at the top of the **Strengths**. The Direct Business Effect falls second, followed by Infrastructure, the Indirect Business (Multiplier) Effect, and Taxes. The group and individual rankings were very similar, especially showing Jobs and Employment as by far the most important strength to most of the community members.

For the group analysis, Lack of Company Transparency was the most critical **Weakness**, although it was much lower ranked when the individuals were analyzed. It is likely a small number of groups focused heavily on this issue during the discussions. The potential for Water Spills and Chemical Spills were also considered to be big weaknesses, in addition to Watershed and Well Impacts, Community Division, Health Risks, and the potential for a Catastrophic Event.

2018 Top Five Weaknesses

1) Lake of Company Transparency
2) Water Spills
3) Chemical Spills
4) Watershed and Well Impact
5) Community Division

New Items for the Back Forty Mine

1) Water and Chemical Spills separated from Environmental Risks
2) Watershed
3) Well Impact

2018 Top Five Opportunities

1) Jobs Across the Board Will Emerge
2) Boost in Tax Revenues
3) Establish Water Monitoring System
4) Scientific Studies Undertaken
5) Mutual Conservation Concerns Unite Region

New Items for the Back Forty Mine

1) Establish Water Monitoring System
2) Scientific Studies Undertaken

In the **Opportunities** first listed were Jobs Across the Board Emerging and Tax Revenues for Starved Local Governments. Establishing a Water Monitoring System for all industries, including water treatment was also a substantial opportunity, especially in group analysis. Other vital opportunities were the potential for studies of industries and their relationships to the environment

and water, the possibility for mutual conservation concerns to unite two states/five counties, and improved internet to connect the local area to global markets.

As with the previous studies, environmental threats are universal, with Environment/Mine ranked as the highest **Threat**. The business side of mining deemed a threat, with Risky Business and Boom/Bust (short life of mines) listed as high threats. Other threats focused on "after" the mine, including the potential for a catastrophe after closure, no exit strategy, and no breakdown of risks.

Although the methodology was slightly different from that used in 2010, we decided to use the 2010 project as a comparison point. The reason is that the Back Forty Mine is currently in the same stage of development as the Eagle Mine was in 2010. In 2010, Eagle Mine still had to overcome the stigma of "dirty mining" and the reputations of the mines of yesteryear. The Back Forty project faces the same stigma with many community feelings actively against it.

Other Analyses

We also examined the relationships between the items that fall under significant strengths, weaknesses, opportunities, and threats through Coefficient Analysis. Coefficients range from a high of +1 (perfect positive association) to a low of -1 (perfect negative correlation). Positive association means that the variables move together in the same direction. Alternatively, when one variable goes up the other variable generally also goes up. Negative correlation implies variables move in opposite directions. So, when one variable rises the other variable falls.

Some examples of exciting **STRENGTH** association include a strong positive relationship between **Infrastructure** and **New Talent** drawn into the area as a result of new, modern mining. These strengths coupled with potential increases in **Tax Revenues** moving alongside **New Investment** in the area. On the matter of **WEAKNESS**, people grouped the **Lack of Company Transparency** with the potential for a **Catastrophic Event**. Some significant associations identified left the researchers scratching their heads. For example, why would rise in concern over **Water Spills** move up the Top 5 list while the concern over a possible **Catastrophic Event** and **Health Risks** move down? Could it be that the people concerned over water spills were only concerned with that possibility and viewed the others as clearly less important or did water spills capture everything of concern to them?

Concerning **OPPORTUNITY**, groups paired **Jobs are Emerging Across the Board** and new **Tax Revenues for Starved Local Governments**. Finally, under **THREATS**, people place high importance on dealing with **Catastrophe After Mine Closure** while, at the same time, are

concerned about the future stress put on their communities as **Lack of Cooperation** between the five counties and two states.

In addition to identifying critical associations through correlation analysis, the report also includes Factor Analysis. Through Factor Analysis, items group together into sets to form factors. This statistical procedure helps us to understand better the data and concepts that exist within the data. Groups of data form elements that represent the key interrelationships among the variables.

Simple patterns in the data emerge. Community members grouped the following items in each of the categories. Under Strengths, people discussed Improved Mining Practices, Overall Regional Economic Impact, Impact to the Local Microeconomy, and A Growing, Vibrant Population together. These themes can easily be linked together, and resources mobilized to advance positive efforts in a community that values these benefits. Topics in the Weaknesses category include Sulfide Mining Concerns, Environmental Concerns, and the Potential for Catastrophe. Similarly, these items are mutually inclusive. So, efforts to address these community concerns could be coordinated, and information or research on one of the three could easily include information on one if not both.

Investing in Local Communities, the Future of Mining, and Opportunities to Help the Environment showed up as important opportunities. While, in the threats category, themes such as Threats to the Mine Itself, Long-Term Threats to the Local Economies, and Cooperation Issues were important, to address these threats, scientific research, validated and authenticated information, links to official permits, how to access those permits, and frequently asked questions about the permits, what they mean, and how to interpret them could be provided by a variety of groups.

1. First and foremost, increase positive public relations widely and broadly. An increase in transparency and frequency in engagement is by far the most important recommendation. Community feelings as represented by the participants of the focus groups are running strong about the Back Forty Mine. At some of the focus groups, the level of anger in the room was high – community members hear "horror stories" about mining and the damage it will do to the environment and the water supply.

Aquila is a modern mine. It has invested in economic impact reports and will employ modern mining techniques. Use this information and make it relatable to a wide variety of groups. Provide a stable *website* with links to applications, reports, Frequently Asked Questions, and sites with information on the high standards in modern mines. Include information on best practices, community relations, and put local faces on the website highlight their role in helping the local economy grow, prosper, and develop through modern mining. Publicize the positive economic impact on the communities and region and use words and terms that everyone can understand.

> COMMUNITY MEMBERS HEAR "HORROR STORIES" ABOUT MINING AND THE DAMAGE IT WILL DO TO THE ENVIRONMENT AND THE WATER SUPPLY. SHARE STORIES ABOUT THE SUCCESSES OF MODERN MINING FROM AROUND THE WORLD.

Communicate frequently and through the media and social media how modern mining is opening opportunities and state-of-the-art technologies to the area that would otherwise be absent.

Find published studies and scholarly articles on modern mining. Translate them into easy-to-understand, one-page infographics. While researching the Back Forty project, nearly all articles the researchers found on the mine were negative. Strongly advise positive publicity! It should be informational and bring in high quality, external resources to educate. For example, extrapolate from the World Bank and International Finance Corporation's Global Mining Report, Large Mines and Local Communities: Forging Partnerships, Building Sustainability (online).

2. As with the previous Eagle Mine project, the focus groups illustrated to us that the environment is vital to residents. However, there is more concern here, understanding is deeper about what is involved, and key events like the Flint Water Crisis has residents concerned about their water. As a result, everyone from the mine to local units of government to community groups must be mindful that are people living, working, recreating, and retiring in the five counties and two state regions actively hold themselves and others accountable for balancing "economic development" and "environmental stewardship." Communicate regularly about the high-quality environmental standards of modern mines. Create visuals and infographics for distribution through high-impact channels.

RESPONSIBLE STEWARDS AND THEIR RESPONSIBLE MINES.

   Engage research-based organizations as soon as possible. Create a partnership with reputable universities such as Michigan Tech's Great Lakes Research Center and Michigan Tech's Innovation Shore or the Property and Environment Research Center. In these types of efforts, directly involve the local educational community and accept input from local environmental groups. Get employees to volunteer in their communities wearing clothes, hats, and backpack with Back Forty logos. Consider donating items with the Back Forty logos to groups looking for back-to-school items, food in bags with the Back Forty logos to food shelters, and the list goes on.

3. As evidenced by the findings of this report, community members are quick to identify the weaknesses of mines. They are ready to discuss the downsides of mining in the region, but they do it without the same intense level of focus and sharpness that they consider the upsides. Provide information that first lists the downside concern, explains them from the perspective of the person without in-depth knowledge about mining, and addresses each concern using everyday language.

   Community members in this region are not as familiar with modern mining, how they benefit from it 24 hours a day and seven days a week, and how it can positively contribute, on net, to a growing and expanding economy through the jobs it creates and its physical, financial, and community investments.

Describe modern mining techniques in comparison to those of the past. Help the community visualize the differences in methods. Eventually, people across the region can chat about modern mining, look at it concerning what was and compare to what is. Currently, mining is not a visible part of the everyday fabric of community life in this surveyed region. The majority of community members do not have multiple points of contact with employees. Only a few neighbors are working at the mine. There exists a discrete number of businesses actively engaged with the mine. Mention of community or school support originating from the mine and associated with its laborers, contractors, and business partners are not regularly in the news. In the Marquette region, there was a regular stream of constant action and interaction, increasing overall awareness of mining's role in the area. Attitudes toward mining will evolve in the Menominee area as more mining activity takes place.

WISE ENVIRONMENTAL STEWARDSHIP AND MODERN MINES MATTER – A LOT!

Information about what modern mining is in Menominee and how it relates to everyday life in addition to how it differs from past mining concerning managing environmental risks, addressing health and safety concerns, interacting with local individuals and governments, and managing investments should be shared often, regularly, and assertively.

Education goes back to publicity and public relations. Share the history of the region with the locals. Draw connections between their current lifestyles in a modern society and the successes of modern mining and the lessons learned from past failures. Provide digital space and physical locations for them to discuss the pros and cons of today's mining and create venues at local events to let people explore how living in a modern society benefits from responsible mining.

Let people see how modern mining works and interacts with water, soil, ground, air, and people. Distribute visually appealing information via social media, print, radio, and television. When possible use local artists, educators, and businesses to create the stories and visuals of modern mining. Always include contact information and identify the means by which community input can submit input identifying, solving, and advancing mining in a modern world with responsible and accountable individuals working with Aquila and the Back Forty team. Provide guidelines on how to engage with the project to encourage responsible and responsible behavior.

4. Find the best community practices and showcase the positive experiences of new mining in other regions. Start by refreshing Back Forty Mine's website. Make the website user-friendly and visually appealing with a narrative that speaks to the general population. List the vital items in each of the four SWOT areas. Dedicate a separate website page to each.

Begin work in populating each page with visuals that resonate with the lives of the people living, working, recreating, and retiring in the mining region. Provide short response answers to crucial questions. Regularly report on the progress and setbacks involved with moving forward in the community embracing new mining.

> *WHAT'S THE WEBSITE?*
> *MAKE IT USER-FRIENDLY!*
>
> *FACEBOOK IS NICE BUT WHAT*
> *ABOUT THE REST?*

Publicize best practices used by other modern mines in communities made up of opponents, supporters, and people who are indifferent or neutral. Illustrate what happens in their backyards.

Emphasize the improvements in health and safety standards along with high environmental standards that that come with modern mining. Compare these modern efforts to past practices.

Share credit for the shift away from previous practices to modern mining. Connect modern methods to those practices now commonplace in other extractive industries.

5. Consider drawing from the community experiences across the Upper Peninsula of Michigan with attention to the improved relationships between community members living in Marquette County and Baraga County and the Eagle Mine. Look for examples in other states or in regions in which community members grew in their appreciation for the additional capital, investments, and jobs other international companies have offered.

Consider adopting "The Community Scorecard" used by Eagle Mine. Use the results of gathering regular input from community groups to identify a growing list of critical items to address with the community.

When launching such an effort, make sure to identify a baseline in the views on where the Back Forty Mine starts and measure changes in viewpoints systematically throughout the years.

6. Improve company transparency. A top weakness was the lack of company transparency. Provide a user-friendly website with information addressing each of the top SWOT items. Let browsers of this site gain access to critical information in no more than two clicks. Be open with the local communities. Gain their confidence and show them you are not hiding anything from them. Again, improved public relations will play a significant role here.

7. Create educational materials that explain the evolution of mining as an industry. Distribute to different audiences ranging from local schools, chambers of commerce, social media ads, and other popular media advertisements.

8. Always keep in mind that community matters deeply to the residents of this region.

9. Conduct another focus group series next year. Plan and announce a schedule at least three months in advance. Identify key advocates to help organize.

There must be some automatic personal response system for people to see their views and those of others is immediately recorded, documented, and summarized relative to others.

OTHER

1. Use community score cards to systematically solicit input.
2. Improve company transparency.
3. Create and distribute educational materials out of an information center and send representatives into community groups to describe what is happening and to form meaningful relationships, even with opponents.
4. Get involved in the community in ways that are meaningful to members of the community.
5. Conduct another round of focus groups in 2020.