Midwest Environmental Advocates

April 20, 2015

Chris Willger
Wisconsin Department of Natural Resources
1300 West Clairemont
Eau Claire, Wisconsin 54701.

Re: Comments on Industrial Sand Mining Strategic Analysis Draft Topics Outline

Dear Mr. Willger:

We appreciate the opportunity to submit comments to the Wisconsin Department of Natural Resources ("DNR") regarding its draft topics outline on the scope of the industrial sand mining strategic analysis. Midwest Environmental Advocates, Inc. ("MEA") is a non-profit environmental law center that provides legal and technical assistance to communities and families working for clean air, clean water, and clean government.

Over 1,000 citizens petitioned in favor of this strategic analysis with the help of MEA. We applaud the DNR's willingness to conduct this study and provide much needed answers about the impacts of this industry. Additionally, we hope this will be an opportunity for the DNR to analyze whether its regulations adequately protect the environment and public health from the impacts of industrial sand mining.

We understand that the strategic analysis aims to update the information provided in a previous report on silica sand mining in Wisconsin released by the DNR in 2012. That report failed to address numerous concerns and is out-of-date given the continued growth of the industry and significant new research and data. A comprehensive analysis of the cumulative impacts of this industry is critical as the number of active mines and processing facilities has nearly doubled since 2012, and mines and processing facilities have begun to cluster in areas of the state near existing transportation infrastructure.

We are confident that a thorough, science-based strategic analysis will provide invaluable information to citizens concerned about the health of their families and to local, state and federal decision makers who are responsible for regulating this industry. It is imperative that the scope of the strategic analysis be adequately defined at this stage. Below, we describe a number of important

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impacts and topics that may not be covered under the DNR's strategic analysis scope outline. Further, please consider the citizen petition for a strategic analysis as an addendum to and part of our comments on the scoping process. The citizen petition for a strategic analysis contains a comprehensive discussion of potential impacts of this industry. We hope the DNR modifies the scope of the strategic analysis in order to ensure a comprehensive analysis of the cumulative impacts of this industry.

1. Industrial sand mining

The public as well as local, state and federal decision makers need accurate information regarding the content of the industrial sand being mined in Wisconsin. Industrial sand has many uses, but the primary use that spurred rapid growth in the industry over the past few years is for use in the hydraulic fracturing process. This industrial sand, sometimes called frac sand, is made up of silicon dioxide. Given the quantities of silicon dioxide being mined, it is critical that regulators and the public understand its ability to act as a harmful air and water pollutant when released into the environment. We request that the DNR add a subtopic under the "Industrial sand mining" section to examine the resource being mined: sandstone bedrock containing silicon dioxide. We ask that regarding this item, the DNR include a detailed explanation of silicon dioxide and its byproducts when exposed to air and water. This will inform the public of the risk that the industrial sand mining process may cause harmful air and water pollution.

Section 1.2 Current market – we ask the DNR to examine known information about both the industrial sand market in Wisconsin, as well as the hydraulic fracturing market in which much of this sand is used. There have been stories in the news recently that indicate the market is declining for oil and gas from hydraulic fracturing because of oil and gas prices.[1] A current as well as forecasted picture of the market is relevant to the short- and long- term socioeconomic impacts of this industry.

1.6.11 Reclamation – In regard to assessment of the reclamation process employed after mining operations have been completed, we request specific consideration of the adequacy of financial security required from industrial sand mines. The financial security provided is one of the most important components of the reclamation plan to ensure long-term environmental protection. There is no substitute for adequate financial security to ensure reclamation is done even if the company is no longer solvent. Additionally, the DNR should also evaluate whether local governments responsible for reviewing and approving reclamation plans have the capacity to adequately analyze these complex plans. The DNR should also provide suggestions on how to ensure adequate review at the local level.

2. Environmental Topics – affected environment and primary, secondary and cumulative effects (as appropriate)

The 2011 silica study repeatedly indicated that more information is needed to determine whether crystalline silica emissions from industrial sand mines pose a threat to Wisconsin citizens. Since

[1] David Shaffer, Frac sand industry fells the effects of low oil prices, less drilling, Star Tribune (Apr. 7, 2015), available at http://www.startribune.com/local/298845431.html.

that time, a number of studies have been conducted to explore the impact of crystalline silica emissions from industrial sand mines.[2] These studies show that, contrary to the industry's assertions, industrial sand is not free of fine respirable silica dust.[3] Since the DNR analyzed the industrial sand mining industry in 2012, the industry has continued to expand, and new information regarding potential environmental impacts has raised more questions than answers. The DNR has repeatedly stated that more information is needed to determine the threat of harmful air pollutants related to industrial sand mining. To that end, the scope of the strategic analysis should include subtopics under the "Air quality" section to indicate which specific air quality impacts the DNR will address.

2.1 Air quality – In order to ensure that this strategic analysis addresses the numerous remaining questions regarding harmful air emissions from industrial sand mining, we request clarification of the scope of the "Air quality" section. We request that the DNR include subtopics under the "Air quality" section that will describe areas of interest, such as those subsections used under the "Water" and "Land" sections. Subtopics under air quality should include, at a minimum – PM2.5 emissions, PM10 emissions, crystalline silica emissions, and nitrogen oxide emissions. Each of these subtopics should explore short-term impacts as well as the effect of long-term exposure. This section of the strategic analysis should include all existing research and note where more research is necessary. The air quality section should also include an analysis of the existing PM10 data we have from industrial sand mines, and an analysis of whether this air monitoring is effective in estimating air impacts from these industrial sand mines. Regarding cumulative air effects, this section should outline whether the DNR is currently gathering any data about the cumulative air impacts of industrial sand mines that are located close together and what is known and unknown about cumulative air impacts.

2.2.2 Wetlands – In regard to wetlands, this assessment should include not only direct impacts, but also secondary impacts of wetland fill from related transportation infrastructure—road and railway traffic and construction—as well as cumulative impact of this wetland fill going on in the same region all at the same time.

2.2.2 & 2.2.3 Surface and groundwater quality – In regard to surface and ground water quality, the DNR must address the known and unknown impacts and existence of acid mine drainage

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[2] Michael Ladouceur, Ministry of the Environment, *Air Quality Impacts of Unimin Ltd. On Kasshabog Lake near the Town of Havelock, Ontario* (February 15, 2013), *available at* http://www.pcchu.ca/wp-content/uploads/2013/04/Unimin_Report-of-a-PO-Original-Signed-byMEL.pdf. The Ontario study found elevated levels of PM10, PM2.5, and PM1.0 approaching or exceeding levels of concern near sand mining and processing sites and concluded that the operations were having adverse effects on air quality. The OSHA study measured respirable silica at hydraulic fracturing sites and found airborne concentrations exceeding occupational exposure limits by factors of 10, 20, or more, and concluded that exposure to respirable crystalline silica is an occupational exposure hazard for workers at hydraulic fracturing sites.

[3] *Air Monitoring at Minnesota Silica Sand Facilities*, Minn. Pollution Control Agency (last modified July 1, 2014, 1:12 PM), *available at* http://www.pca.state.mn.us/index.php/air/air-quality-and-pollutants/air-pollutants/silica-sand-mining/air-monitoring-data-at-minnesota-silica-sand-facilities.html#jordan-sands.

from industrial sand mining. It is well-established that serious water quality impacts are associated with acid mine drainage.[4] All mineral extraction activities may cause acid mine drainage by exposing large surface areas of sulfide rock to air and water. This is of particular concern in certain regions of Wisconsin, such as the Cambrian Jordan and Wonewoc sandstone formations, which are located in very close proximity to significant sulfide mineralization areas.[5]

2.3.3. Land – In order to ensure proper assessment of the impact of industrial sand mining on endangered and threatened species, we request a subtopic under the "Land" subtopic dedicated to the on-going and likely future impacts of industrial sand mining on the species that live in regions of the state in which industrial sand mining is proliferating. For example, one such endangered species being impacted by industrial sand mining is the Karner blue butterfly. The DNR should explore in the strategic analysis the limited participation of the industrial sand industry in the Karner Habitat Conservation Plan. Only one sand industry company has joined or applied to the state's habitat conservation plan, despite the fact that the Karner blue butterfly's habitat nearly perfectly overlaps with the location of sandstone suitable for industrial sand mining. In addition to the obvious impacts to the Karner blue butterflies, the DNR should consider the many other potentially impacted endangered and threatened species in the region, including bald eagles. The DNR should also examine whether industrial sand mines may impact the northern long-eared bat, which the U.S. Fish and Wildlife recently listed as threatened.[6] Tree clearing, among other activities, by industrial sand mines may impact this species and the industry will need to ensure that its operations do not endanger this threatened species.

The DNR must include an analysis of secondary and cumulative environmental effects in the strategic analysis. To provide robust information, the strategic analysis must also examine both

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[4] Ata Akcil & Soner Koldas, Acid Mine Drainage (AMD): Causes, Treatment and Case Studies, Journal of Cleaner Production 14, 1139, 1139 (2006).

[5] Minn. Environmental Quality Board, *Report on Silica Sand* 28 (Mar. 20, 2013), *available at* http://www.eqb.state.mn.us/documents/23.%20March%20Final%20Silica%20Sand%20report.pdf; Mining Watch Canada, EMCBC Mining and the Environment Primer: Acid Mine Drainage, *available at* http://www.miningwatch.ca/emcbc-mining-and-environment-primer-acid-mine-drainage; Wis. Geological & Natural History Survey, *Bedrock Stratigraphic Units in Wisconsin* 2 (2011), *available at* http://wcwrpc.org/Frac_Sand/Geology/Bedrock_Stratigraphic_Units_in_WI_1-12-12.pdf; Allen V. Heyl, Jr., Erwin J. Lyons, & Allen F. Agnew, *Exploratory Drilling in the Prairie du Chien Group of the Wisconsin Zinc-Lead District by the U.S. Geological Survey in 1949-1950*, at 5-6 (Nov. 1951), *available at* http://pubs.usgs.gov/circ/1951/0131/report.pdf. ("Sphalerite, pyrite, and marcasite were found in the Franconia sandstone…The sulfides in these shaly sandstone beds occur between the quartz sand grains."). The Franconian formation includes Tunnel City Group. Jennifer D. Eoff, *Sequence Stratigraphy of the Upper Cambrian Tunnel City Group, Upper Mississippi Valley*, 302 Sedimentary Geology 87, 88 (2014). *See also* Lee Clayton and John W. Attig, Wis. Geological and Natural History Survey, Information Circular 67, *Geology of Sauk County* 20 (1990), *available at* http://www.koubadrilling.com/well-drilling/docs/sauk-county-geological-report.pdf.

[6] U.S. Fish and Wildlife Service, Northern Long-Eared Bat (Myotis septentrionalis), *available at* http://www.fws.gov/midwest/endangered/mammals/nlba/.

short-term and long-term effects for the full range of impacts addressed in the strategic analysis. As the DNR has pointed out, the industrial sand industry will continue in Wisconsin for many years. This strategic analysis is critical to provide sound planning to protect the environment and public health as this industry grows.

3. Socioeconomic topics – affected environment and primary, secondary and cumulative effects (as appropriate)

In order to conduct a full strategic analysis, the DNR must identify the specific existing land uses that may or may not conflict with industrial sand mining. The economic, social, cultural and public health impacts related to industrial sand mining will vary from community to community, as well as varying in different regions of the state. In order to ensure this strategic analysis is applicable to the specific communities, industries, and land uses that will be directly (or indirectly) affected by industrial sand mining, we request that the "Socioeconomic topics" section include the following. (1) A catalog of *specific, existing land uses* in the regions of Wisconsin in which industrial sand mining has proliferated and not just a description of the general categories of land uses. This should include a detailed explanation of the prevalence of each land use in the region, and identify land uses that provide a social or economic benefit to the community. (2) A catalog of *specific existing businesses and industries* and how those specific businesses and industries will be impacted by industrial sand mining. Also, in addition to the primary, secondary and cumulative effects, we request that this strategic analysis specifically include <u>both</u> short-term and long-term effects as a part of the evaluation of the primary, secondary and cumulative effects.

3.5 Land use and zoning – In regard to the specific effects of industrial sand mining on land use and zoning, the DNR's assessment should include a sound evaluation of allegations of local government decision-making corruption, lack of transparency during the decision-making process, and failure to follow open meetings laws.

3.9 Human health and safety – In regard to the specific effects of industrial sand mining on human health and safety, we request that the assessment include evaluation of worker safety issues from accidents and exposure to crystalline silica dust.[7] It is also important to note that there is a lot of overlap between environmental impacts and human health impacts. For example, concerns about air emissions of fine particulate matter including silica dust are at their core public health concerns. Further, water quality concerns about potential acid mine drainage that may be causing unsafe levels of metals in private drinking water wells are both environmental and public health concerns.

3.10 Visual and auditory – Neighbors of industrial sand mines report significant and serious visual and auditory impacts from this industry. We request that specific attention be given to

[7] Centers for Disease Control & Prevention, U.S. Dep't of Health and Human Services, *Health Effects of Occupational Exposure to Respirable Crystalline Silica*, NIOSH Hazard Review (Nov. 2002), *available at* http://www.cdc.gov/niosh/docs/2002-129/; *Silicosis*, Occupational Safety & Health Admin., *available at* https://www.osha.gov/Publications/silicosis.html.

visual and auditory effects from transportation (*i.e.*, trucks and trains) in addition to the direct impact of noise and light from mining and processing facilities.

4. Regulatory framework

4.1 State of Wisconsin – Wisconsin's particulate matter regulations in NR 415 have not been updated since the inclusion of ambient air standards for PM2.5 and PM10 to replace the previous particulate matter air standard. Further, the DNR has not yet incorporated the more stringent ambient air standards of PM2.5 and NOx in its ambient air quality standards in NR 404. For these and other reasons, we believe the air permitting program is out dated and not appropriate for industrial sand mines. We request the DNR make a determination regarding the adequacy of the air permitting program to address this industry. Specifically, ambient air monitoring requirements should be reassessed for this industry because PM2.5 emissions are of particular concern.[8]

Wisconsin's storm water permitting program also may be inadequate as it is being applied to industrial sand mines. The results of recent storm water pond sampling by the industry and DNR indicated high levels of metals at many sites and high pH fluctuations. Further, numerous residents and journalists reported serious storm water runoff events stemming from poor practices and noncompliance with permits and regulations.[9] The DNR has also publicly acknowledged that its general storm water permit for industrial sand mines does not work well, and the DNR is currently in the process of revising that permit. We understand that the DNR is currently reviewing its storm water general permit for industrial sand mining. The DNR's review of that permit should be informed by information gathered in the strategic analysis process. It is particularly important to look at current laws, regulations and permits to determine whether changes are needed and what would fix the problems.

4.2 Local – Under the current system of regulation for industrial sand mining, local counties, cities, villages and towns in Wisconsin are currently left with little control over where and how sand mining occurs. This is an important concern because local governments are most affected by the negative impacts of industrial sand mining and may be in the best position to address the quality of life impacts associated with industrial sand mining. Thus, we request further evaluation of the appropriate level of local control and regulation of the industrial sand industry, with particular focus on establishing a better balance between state and local regulations. In this evaluation the DNR should address the related issue of land annexation as a tactic to circumvent local land use ordinances. A number of bills related to industrial sand mining have been

[8] Case No. DNR-13-043, *In the Matter of an Air Pollution Control Construction Permit Issued to FTS International Services, LLC*, Permit Number 12-POY-079.

[9] In response to Midwest Environmental Advocates' request, the DNR provided results of sampling from storm water ponds at fourteen frac sand facilities in Wisconsin. A summary of that data, along with a reference table with Wisconsin's surface and groundwater quality standards and EPA's national recommended water quality criteria, is available on Midwest Environmental Advocates' website; Josephine Marcotty, *Wis. Sand-Mine Spills Cause Call for Penalties Against Minn. Firms*, Star Trib. (June 12, 2012), *available at* http://www.startribune.com/local/158518655.html.

introduced by the legislature in the last few years, with several focusing on local control over this issue.[10] These bills, along with the reasons for public support or opposition to them, may provide valuable informative to the DNR about the need for more local control. Coupled with local control is the ability of local governments to address reclamation after industrial sand mining operations move on. In conjunction with its evaluation of the appropriate level of control, we request that the DNR consider whether local governments can address reclamation under the current system of regulation when local governments are left with the heavy burden of ensuring that their land will be restored after mining operations whether or not the mining company is able to pay for reclamation.

4.4 Tribal – Several tribal nations are particularly affected by industrial sand mines and processing facilities. Given the location of the Ho-Chunk nation, they are particularly at risk from impacts and are already experiencing those impacts. The DNR should consult with the Ho-Chunk nation and other impacted tribes throughout the strategic analysis process to ensure that their interests are adequately addressed.

4.5 Neighboring states – In regard to neighboring states, we request that the DNR give serious consideration to following the lead of states such as Minnesota, which have taken a more cautious approach in the industrial sand mining boom. Minnesota has conducted thorough evaluations of the industrial sand mining industry and has implemented more regulations specific to the industrial sand mining industry. In particular, in an effort to inform Wisconsin state legislators regarding the purpose and the value of the laws enacted in Minnesota, the DNR should assess the following already addressed by Minnesota: environmental reviews for all silica sand projects; extensive water studies by the DNR of any industrial sand mine located near a trout stream; a silica sand mining trout stream setback permit for excavation or mining operations in driftless areas; the development of rules specific to the silica sand industry for the control of PM2.5 and PM10 emissions; and cooperation with local governments to develop model standards and criteria for mining, processing, and transporting silica sand, which take into account unique landscape characteristics of different part of the state, that can be used by local governments when developing local ordinances.

5. Alternative approaches

The DNR's outline for the strategic analysis does not include any information regarding alternative approaches. In the scoping process, the DNR must not only identify issues to be included in the analysis, but also must determine "potential alternative approaches, potentially affected natural resources, and likely effects of the alternatives on those resources."[11] The DNR must examine alternatives to current methods of industrial sand mining and processing and to the current regulatory process.

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[10] Senate Bill 349, 2013-2014 Wisconsin Legislature, https://docs.legis.wisconsin.gov/2013/proposals/sb349; Senate Bill 632, 2013-2014 Wisconsin Legislature, https://docs.legis.wisconsin.gov/2013/proposals/sb632; Assembly Bill 816, 2013-2014 Wisconsin Legislature, https://docs.legis.wisconsin.gov/2013/proposals/ab816.

[11] Wis. Admin. Code § NR 150.10(2)(a).

For example, it has been widely reported that the storm water retention and the permit for storm water discharges are not effective to prevent sediment, storm water and waste water discharges.[12] The DNR should examine alternative methods of storm water retention and treatment and alternative regulatory measures. Alternative regulatory measures could include an improved industrial storm water general permit or individual permits to better address individual facility designs and potential discharges. Thus, we ask that the DNR add a discussion of alternative treatment and sampling methods to 1.6.6 Process water and stormwater management. Further, we ask the DNR to examine alternative water discharge regulatory approaches under 4.1 State of Wisconsin in the Regulatory Framework section.

Another related alternative that the DNR should examine is requiring industry monitoring for air and water pollution. Currently, the DNR requires limited air and water monitoring. Under the Regulatory framework section and the 4.1 State of Wisconsin subsection, the DNR should identify alternative requirements for air monitoring and water sampling, and whether those alternatives would better ensure that environmental standards are met. The DNR should also examine whether additional monitoring would address the significant public concern and uncertainty about this industry.

One of the primary reasons a strategic analysis of industrial sand mining is needed is to identify alternative regulatory strategies and to evaluate the capacity of existing regulations to address the impacts of the industrial sand mining industry. However, the regulatory framework section does not mention alternative approaches and it is not included anywhere else in the draft topics outline.

In order to ensure proper review of the adequacy of the current regulations and policies governing industrial sand mining and their ability to protect public health and the environment, we request that an additional subtopic that focuses on alternative regulatory strategies be added to the list of subtopics under the "Regulatory framework" section. In conjunction with an alternative strategies section, we request clarification that the scope of the "Regulatory framework" section will be more than just a general outline of the regulatory responsibilities of the relevant entities. Analysis of the regulatory framework should evaluate the efficacy of current regulations, identify alternative regulations and policies being used in neighboring states and at the federal level, and the DNR's willingness to adopt such practices in Wisconsin.

Thank you for your consideration of our comments. Attached is the DNR's scoping outline including additions to the outline proposed in these comments. If you have any questions, please let me know.

[12] For example, in May of 2014, a sand mine near New Auburn, Wisconsin discharged an unknown quantity of stormwater from its stormwater pond into nearby wetlands and a dry run 100 yards from Beaver Creek. A concerned citizen sent pictures to Midwest Environmental Advocates showing that a normally dry run was clearly flooded by water that had a high concentration of sediment. The DNR investigated the discharge and determined that it was legally allowed by the permit. Events like this illustrate the need for the DNR to reevaluate whether its storm water policies and permitting procedures are adequately protecting the environment.

Sincerely,

/s/

Sarah Williams
Staff Attorney
Midwest Environmental Advocates

EXAMPLE OF OUTLINE WITH APPROPRIATE TOPICS AND SCOPE:

1. Industrial sand mining
    - 1.1. Historic sand mining in Wisconsin
    - 1.2. Current market
        - *1.2.1. Industrial sand market*
        - *1.2.2. Hydraulic fracturing market*
    - 1.3. Explanation of hydraulic fracturing
    - 1.4. Location of hydraulic fracturing
    - 1.5. Current operations and trends
    - 1.6. Aspects of industrial sand mining
        - 1.6.1. Overburden removal
        - 1.6.2. Excavation
        - 1.6.3. Blasting
        - 1.6.4. Crushing
        - 1.6.5. Processing (including use of chemicals)
        - 1.6.6. Process water and storm water management
            - *1.6.6.1. Alternative treatments and sampling methods*
        - 1.6.7. Spill prevention and response
        - 1.6.8. Storage facilities
        - 1.6.9. Waste Management
        - 1.6.10. Transportation and load-out facilities
        - 1.6.11. Reclamation
            - *1.6.11.1. Mining companies*
            - *1.6.11.2. Local governments*
    - *1.7.The sought after resource: sandstone bedrock containing silicon dioxide*

2. Environmental topics - affected environment and primary, secondary and cumulative effects (as appropriate)
    - 2.1 Air quality
        - *2.1.1. Short-term/long-term effects of PM2.5 emissions*
        - *2.1.2. Short-term/long-term effects of PM10emissions*
        - *2.1.3. Short-term/long-term effects of crystalline silica emissions*
        - *2.1.3 Short-term/long term effects of nitrogen oxide emissions*
    - 2.2. Water
        - 2.2.1. Surface water features and locations
        - 2.2.2. Surface water quality
        - 2.2.3. Groundwater quality
        - 2.2.4. Groundwater quantity
        - 2.2.5. Wetlands
        - 2.2.6. Fish and aquatic species
    - 2.3. Land
        - 2.3.1. Forests
        - 2.3.2. Grasslands

2.3.3. Wildlife

3. Socioeconomic topics – affected environment and primary, secondary and cumulative effects (as appropriate)

- 3.1. Local and state economy
- 3.2. Property values
- 3.3. Population
- 3.4. Transportation
- 3.5. Land use and zoning
- 3.6. Agricultural lands
- 3.7. Public parks and recreational lands
- 3.8. Archaeological, cultural, tribal and historic resources
- 3.9. Human health and safety
- 3.10. Visual and auditory

4. Regulatory framework

- 4.1. State of Wisconsin
  - *4.1.1. Alternative requirements for air monitoring and water sampling*
  - *4.1.2. Alternative water discharge regulatory approaches*
- 4.2. Local
- 4.3. Federal
- 4.4. Tribal
- 4.5. Neighboring states
- *4.6. Alternative regulatory strategies*