

Evaluating Non-Metallic Mining: County Zoning Ordinances

Part 3 of a 4 Part Series



Center for Land Use Education

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Non-metallic mining for silica sands has seen a recent boom in the state of Wisconsin. This sand is essential in the process of hydraulic fracturing for natural resources. The process and some local tools for managing the resource were discussed in a previous publication, “Planning and Zoning for Frac Sand Mining.” In this publication, we evaluate Wisconsin’s county zoning ordinances to understand how non-metallic mining (NMM) is addressed. A general county zoning ordinance addresses the zones within which NMM and many other land uses are permitted, allowed as a conditional use, or prohibited. It is possible for additional regulations to be placed in the reclamation ordinance under NR 135, but most counties have not pursued that option. In all but two cases, we did not review the NMM ordinances that focus on reclamation plans as these are required by Chapter NR 135 of Wisconsin Statutes. While these reclamation codes have value, they are nearly identical between counties making a review unnecessary.

40 of Wisconsin’s 72 counties, just over half, have non-metallic mining standards in their county zoning ordinance.

Method

We compiled a list of county zoning ordinances available through the internet. Our evaluation process was comprised of the following steps: 1) evaluate whether NMM was addressed in the code, 2) compile a list of standards that are required or need to be considered through the permitting or conditional use approval process, 3) count the number of standards present in each code. If a county only addressed reclamation in its ordinances, it was not included in this analysis.



Sand Grader, Photo by Anna Haines

Findings

In 32 counties there was either no mention of NMM requirements or we were unable to locate the zoning code on-line. Some counties discussed non-metallic mining in their ordinances, but listed no standards. St Croix and Marathon counties included additional standards within their reclamation ordinances in addition to the requirements of NR 135. A total of 40 of 72 counties have NMM standards in their county zoning ordinance. There are 24 types of standards in county zoning codes to address NMM (see Figure 1 on page 3). Some counties may have had unique standards which were not included in the final list. Figure 1 also shows the frequency of standards. Water quality/drainage requirement and an equipment list are two examples of standards.

We also examined the results based on the number of standards present in each code. Figure 2 shows the results. Eleven counties (15%) have 9 or more standards in their zoning code. Five counties, Calumet, Kenosha, Shawano, Columbia and Jackson, have 13+ standards and describe each standard in some detail. Calumet had 18 standards, the most of any county. The map shows the number of standards present in each code with an overlay of Wisconsin's sandstone formations which have the potential for frac sand extraction. Twenty-five counties do not have any sandstone formations, so are not candidates for frac sand mining. Twenty-seven counties that have sandstone formations within their boundaries also have NMM standards in their zoning code. Eighteen counties that have sandstone formations either do not have standards or we could not find a county zoning code on-line. Monroe County has a number of frac sand mines and processing plants that are active or in development and has no county zoning ordinance.

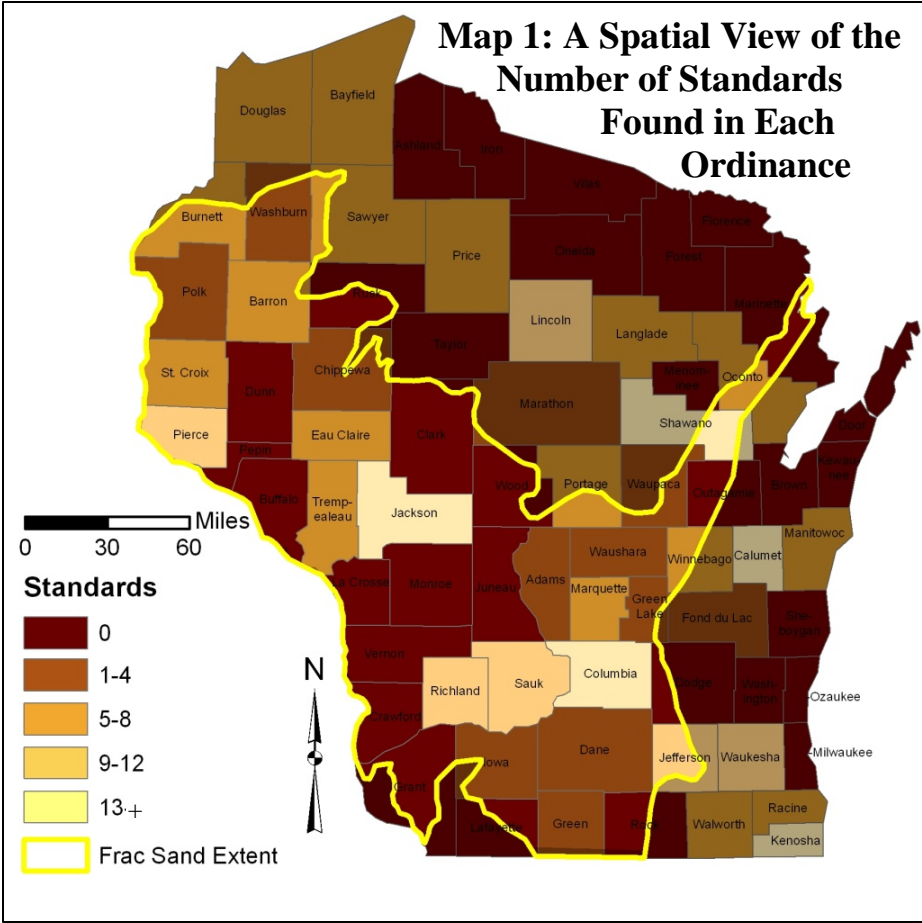
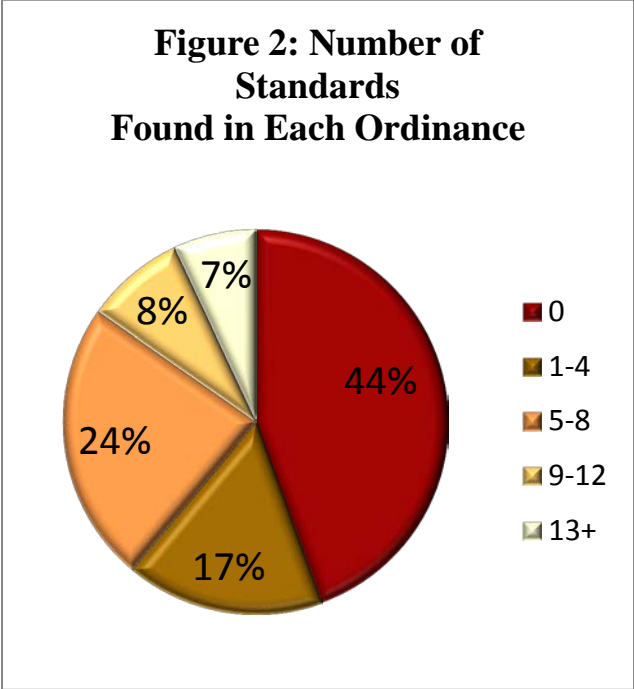
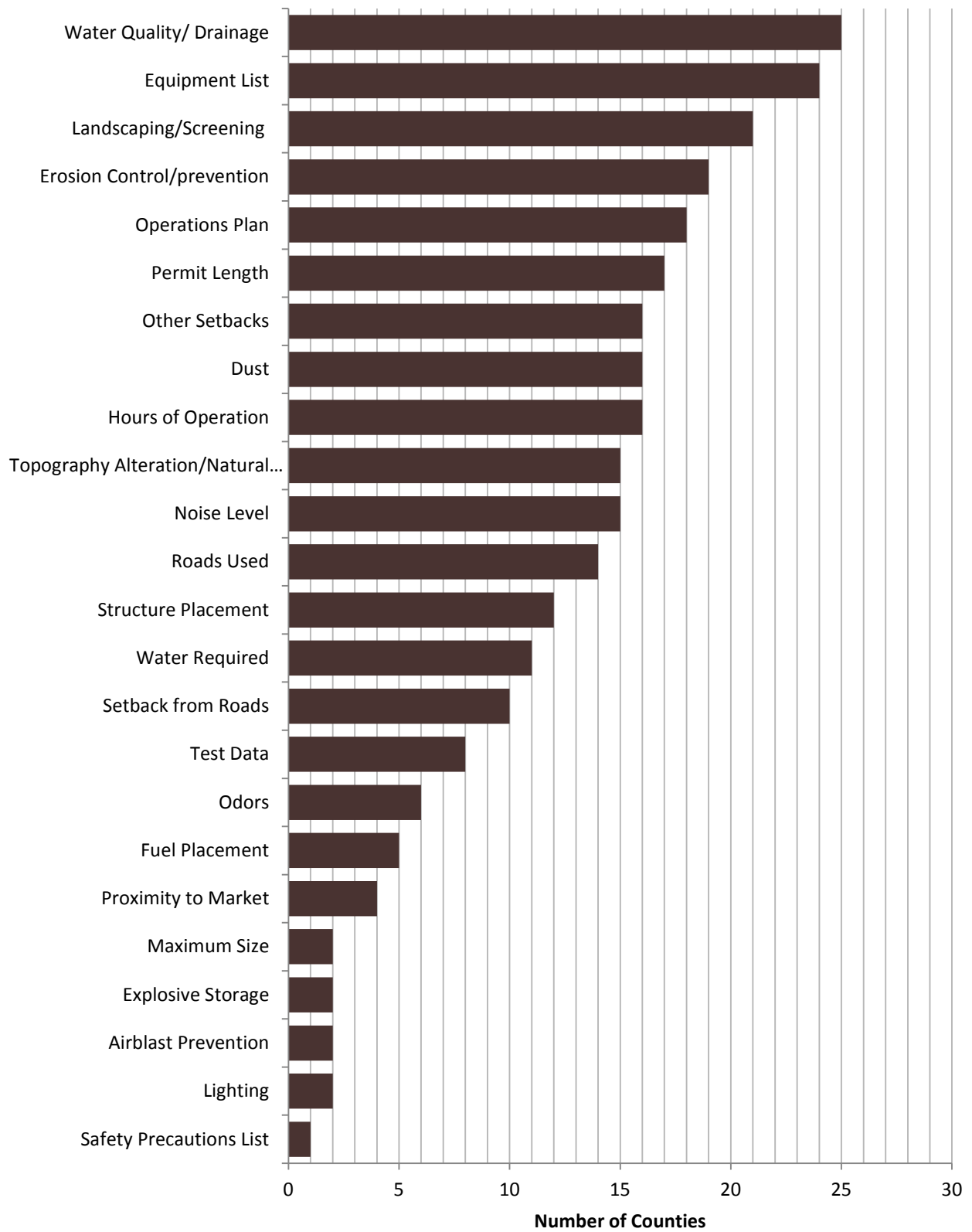


Figure 1: Standards for Non-Metallic Mining



Chippewa and Trempealeau counties both have zoning ordinances that address NMM, but few standards (3 and 7). These counties also appear to have the most frac sand mines and processing plants that are active or in development.

Conclusion

Our review of county zoning ordinances shows that a number of counties are ready and able to handle newly proposed non-metallic mines through a zoning approval process. However, a number of counties have few or no standards for NMM. It is up to each county, and towns within a county, to decide how to regulate NMM including frac sand mining. Refer to a previous publication entitled, “Planning and Zoning for Frac Sand Mining” to review the types of planning and zoning tools available.

Wisconsin Example

Kenosha County has a separate district for mining called a “mineral extraction district.” It is defined as follows: “The M-3 Mineral Extraction District is intended to provide for the orderly continuation of existing quarries and related operations and to provide for new operations that provide maximum protection to the natural environment. This district further provides for the restoration of quarries in a manner that will not deteriorate the natural environment of Kenosha County. All new structures and uses and changes or additions to existing structures and uses shall be in compliance with the site plan review requirements of this ordinance (See Section 12.08-2).”

The ordinance provides a list of requirements, some of which are extracted: “Section 97a – Quarrying and other nonmetallic mining in the M-3 District provides a list of requirements including the following, which shows how water issues are addressed:

- 16) Observed or estimated depth of groundwater, together with a description of the location(s) and date(s) of any observations and the basis for any estimates.
- 17) A detailed description and explanation of how the operator will avoid a drawdown of groundwater that will affect nearby wells and of all methods used to monitor the effects of the operation on the groundwater table.
- 25) A plan describing and explaining in detail the handling of all water on the site, including, without limitation, the following:
 - a) Existing and proposed drainage on the site, showing contours at two-foot intervals.
 - b) The location and dimensions of all settling, retention or detention ponds, together with calculations demonstrating that such ponds are of adequate design to eliminate downstream sedimentation, erosion, or water pollution.
 - c) The estimated volume of water to be pumped out of the operations area, together with the assumptions, observations, and calculations on which such estimate is based.

Resources

- Haines, A. 2012, “Planning and Zoning for Frac Sand Mining.” Center for Land Use Education. April. www.uwsp.edu/cnr-ap/clue/Documents/PlanImplementation/Planning%20and%20Zoning%20for%20Frac%20Sand%20Mining.pdf
- Kenosha County. “Chapter 12 of the Municipal Code of Kenosha County,” Section 12-23-3. www.co.kenosha.wi.us/corpc/ordinances/MCKC12.pdf
- Wisconsin Department of Natural Resources. Jan. 2012. “Silica Sand Mining in Wisconsin.” Non-Metallic Mining in Wisconsin. <http://dnr.wi.gov/org/aw/wm/mining/nonmetallic/> This resource has an exhaustive list of applicable statutes and administrative codes.
- Wisconsin Geological and Natural History Survey, 2011. Frac sand mines and processing facilities, active or in development as of December 2011, compiled by Bruce Brown. <http://wisconsin geological survey.org/pdfs/frac-sand-factsheet.pdf>

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Table 1: County NMM Score and Standards (County titles link to zoning ordinance)

County	Noise Level	Landscaping/Screening	Lighting	Airblast Prevention	Hours of Operation	Dust	Odor	Test Data	Permit Length	Road Setback	Other Setback	Proximity to Market	Equipment List	Topography Alteration/Natural	Roads Used	Fuel Placement	Water Required	Explosive Storage	Erosion Control/prevention	Structure Placement	Safety Precautions List	Operations Plan	Maximum Size	Water Quality/ Drainage	Final Score
Calumet	1	1	1	1	1	1	1	1	1	1	1		1	1	1			1	1			1		1	18
Kenosha	1	1		1	1	1		1	1	1	1	1	1		1		1	1	1	1		1		1	16
Shawano	1	1			1	1		1	1	1	1		1		1	1			1	1		1		1	15
Columbia	1	1			1	1		1	1	1	1		1		1	1			1	1		1		1	14
Jackson	1	1				1	1			1			1	1	1		1	1	1	1		1	1	1	14
Jefferson	1	1				1			1		1		1	1	1		1			1		1		1	12
Lincoln	1	1			1	1		1					1		1	1			1	1		1		1	12
Sauk	1	1			1	1			1			1	1		1				1	1	1	1		1	12
Pierce		1				1			1				1	1	1		1		1	1				1	10
Richland		1							1	1	1		1	1			1		1					1	9
Waukesha	1	1			1	1							1		1		1		1					1	9
Eau Claire		1			1								1	1	1		1			1		1			8
Walworth	1				1	1			1				1	1			1					1			8
Winnebago	1	1			1	1				1	1		1									1			8
St. Croix									1	1	1			1		1			1			1		1	8
Barron	1					1		1			1	1	1									1			7
Bayfield		1			1			1		1	1								1				1		7
Manitowoc	1	1			1						1		1		1					1					7
Marquette		1			1						1			1	1				1					1	7
Portage	1					1	1							1					1	1					7
Trempealeau	1	1	1		1								1						1					1	7
Burnett		1									1		1				1		1					1	6
Douglas										1	1		1	1			1					1			6
Price						1	1							1	1				1					1	6
Langlade					1				1				1										1		5
Oconto		1							1		1		1											1	5
Racine									1				1	1					1						5
Sawyer								1	1		1	1										1			5
Fond du Lac		1							1					1										1	4
Marathon									1					1					1					1	4
Chippewa																1			1					1	3
Dane									1	1												1			3
La Crosse															1				1					1	3
Waupaca					1																	1		1	3
Adams										1														1	2
Green Lake													1							1					2
Washburn													1				1								2
Waushara						1	1																		2
Green		1																							1
Iowa											1														1
Polk																								1	1
TOTAL	15	19	2	1	15	15	6	7	13	8	14	4	22	12	12	4	10	1	15	11	1	16	2	22	