Planning and Zoning for "Frac Sand" Mining

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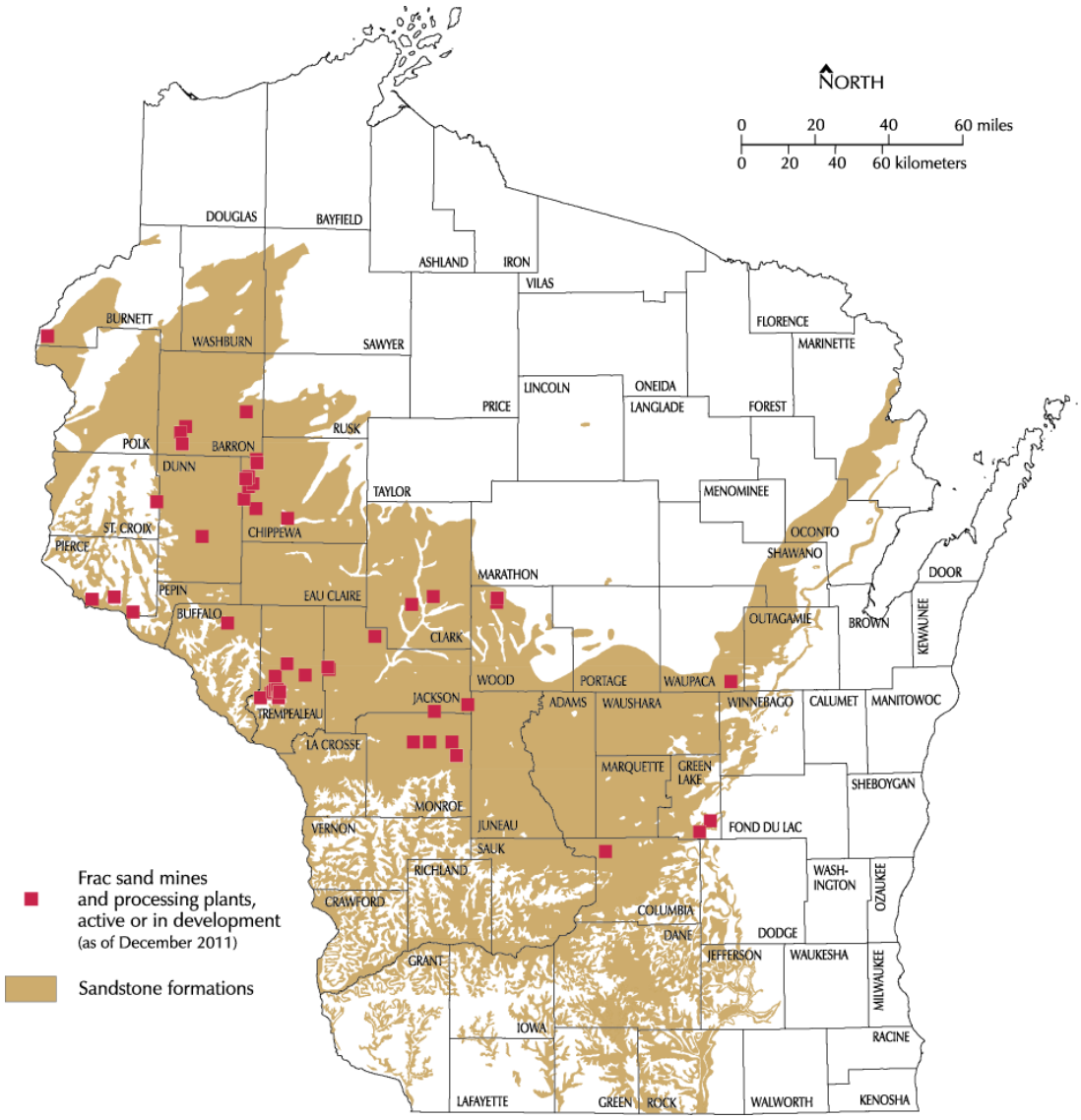
Wisconsin is in the midst of a sand mining boom. The natural gas and oil industries use a method of extraction called hydraulic fracturing or fracking. A slurry of sand, water, and chemicals is injected into shale formations that creates fractures in the rock and the sand holds the fractures open so the natural gas or oil can flow to the wellhead. The sand injected into these fractures are referred to as a proppant. Fracking is occurring in places where there are deposits of natural gas and/or oil that cannot be produced with more conventional means. This new extraction technique has opened up new sources of petroleum resources in Pennsylvania, Texas and North Dakota among others. Wisconsin has no formations known to contain oil and/or gas, but the state has lots of sand – and the right kind of sand. Because of the large sand demand for the fracking industry, Wisconsin has seen many out-of-state and in-state companies developing new sand mines and expanding others. There are about 60 mining operations involved in extracting frac sand with another 40 or so being proposed (WCA p.25). Many communities and their residents are concerned about what this means. This article focuses on the planning and zoning aspects of sand mining.

Wisconsin has no known petroleum deposits, but the state has lots of sand – and the right kind of sand.

Map 1: Frac Sand in Wisconsin
Source: WGNHS, Factsheet 05, 2012



WHAT IS "FRAC SAND" MINING?

Frac sand is a type of sand perfect for fracking. Characteristics of frac sand include: spherical shape, high silica (quartz) content, hardness (can withstand high pressure), uniform particle shape and size. Wisconsin's sands, especially from the bedrock of western and central Wisconsin, have all the right characteristics in addition to being near the surface and easy to mine. Glaciation in Wisconsin led to the deposition of sand as melting and glacial retreat occurred, but those sands are too impure to make frac sand. The frac sand industry in Wisconsin involves removal of the sand and processing it. The map on page 1 shows where sandstone formations are located. Sand in Wisconsin is suitable for a variety of uses including frac sand, foundry sand, glass sand, bedding sand, filter sand or aggregate (gravel and sand) for roads and other types of construction, and other types of uses. West Central Wisconsin has an abundance of easily accessible sand perfect for the fracking industry, but which is also used for many of the uses mentioned above. Many operations may be mining sand for multiple uses.

HOW IS THE SAND PROCESSED?

As sand is extracted from the earth, it needs to be processed and graded. Raw material is transported from a mine site to a sand processing facility. There are two ways in which Wisconsin companies process sand – a wet and a dry process. In the wet process, the sand is washed through a series of screens to separate or grade the different size sand particles. In the dry process, the sand is kiln dried and sieved again for size. In some instances the necessary properties to make for a good proppant can be enhanced by coating with a resin in a separate process. Once processed, the sand is loaded onto trucks, barges or rail cars and sent to other states.

Characteristics of frac sand include:

- ✓ ***spherical shape***
- ✓ ***high silica (quartz) content***
- ✓ ***hardness (can withstand high pressure)***
- ✓ ***uniform particle shape and size***

Photo 1: Marshfield: Sand Processing Facility
Source: Haines: CLUE

HOW IS SAND MINING REGULATED?

The increased interest in sand mining has created a number of concerns and issues to local and state regulators. This section provides a brief review of the regulations pertinent to non-metallic mining in Wisconsin. Planning and zoning at the local level – in particular for counties and towns – is the primary emphasis.

STATE LEVEL

DNR is the primary state agency regulating environmental impacts of sand mining and processing plants. Companies generally need to apply for and receive three permits. Many non-metallic mines, including sand mines, use water and must receive a high-capacity well[1] permit. A high proportion of the water is recycled. Non-metallic mine owners or operators need a stormwater permit to manage both storm water and well water from the processing and from the site itself. Often a flocculant is used to settle out suspended solids in the water. Because of the nature of non-metallic mining, the potential to generate dust is ever present. Mines regularly water their internal roads and sand/gravel piles to decrease the amount of dust blown around. To deal with fugitive dust and truck exhaust, for examples, an air quality permit is required to assure ambient air quality standards are met to protect human health and the environment. As part of the air management permit a particulate monitor is required unless a variance from the Department is granted. Monitors may be placed at the edges of the mines. If a mining site is located adjacent to wetlands or surface waters, DNR water and wetland regulations may need to be addressed (WCA. 2011). The DNR also will conduct an endangered and threatened species, and archaeological review on all mine and processing facility sites.

LOCAL LEVEL

Local governments play an important role in regulating non-metallic and sand mining. One key role of counties is to review and approve reclamation permits and plans. Wisconsin Administrative Code NR 135 – non-metallic mining operations – requires reclamation of non-metallic mining sites. Reclamation of sites must comply with the standards set forth in this administrative rule. However, while this is a State administrative rule, in order to pursue non-metallic mining, a company/operator must apply for and receive a permit from the responsible unit of government (usually the county) in which the mine operation is located. In addition, the operator must submit a reclamation plan that meets the minimum standards set forth in NR 135 to the County in which it will operate (see Endnote 1, p. 9).

Other tools used by local governments are also important. These tools include comprehensive plans, zoning ordinances, developer's agreements, road use agreements, and moratoria. Box 1 (p. 4) lists a variety of tools and some of the advantages and disadvantages of each one. Some of these tools can be important to communities that do not have zoning.

Box 2: Comprehensive Planning Law

Section 2(e) *Agricultural, natural and cultural resources elemen*t. A compilation of objectives, policies, goals, maps and programs for the conservation, and promotion of the effective management, of natural resources such as groundwater, forests, productive agricultural areas, environmentally sensitive areas, threatened and endangered species, stream corridors, surface water, floodplains, wetlands, wildlife habitat, metallic and **nonmetallic mineral resources** consistent with zoning limitations under s. 295.20 (2), parks, open spaces, historical and cultural resources, community design, recreational resources and other natural resources.

[1] A high capacity system is defined as any well, or combination of wells on a single property, that in aggregate has a combined pumping capacity of 70 or more gallons per minute. http://dnr.wi.gov/org/water/dwg/hicap.html Retrieved Dec. 16, 2011.

BOX 1: LOCAL TOOLS

Tools	Advantages	Disadvantages
Planning tools		
Non-metallic mining: Reclamation permits (NR 135)	Legal Mandatory Reclamation plan is required for post-mining land use	The reclamation permit is required before mining can begin It applies immediately because the removal of topsoil during site development is covered in NR 135 (.03 and .07)
Comprehensive plan and/or amendment to plan	Legal Zoning and other implementation tools would be consistent with plan Provides guidance to decision makers	Political approval could be challenging Involvement from towns is necessary Takes time
Regulatory tools		
Zoning: Conditional Use Permit	Specific to particular operation Normal and routine for staff and elected and appointed officials	Challenging to come up with all possible conditions prior to operations
Zoning code amendment as a comprehensive rewrite	Legal precedent All towns under county zoning participate	Takes a long time Towns can drop out of county zoning
Zoning code minor amendment	Legal precedent Quick	Potential lack of participation from towns with village powers
Development moratoria (see Resources: WTA)	Legal precedent County board decision Allows time to amend ordinances and "get it right"	Political approval could be challenging Possibility of chasing businesses away Need public health official or engineer to write a report verifying rationale
Non-metallic mining ordinance	Legal precedent (Zweifelhofer v. Town of Cooks Valley, 2012 WI 7, Wisconsin Supreme Court) Non-metallic mining ordinance is not a zoning ordinance An important non-zoning tool which can specify conditional uses An unzoned town with village powers may use this tool	It applied equally across the jurisdiction
Incentive Tools		
Development agreement	Legal; although not expressly authorized by the State of Wisconsin Specific to particular operation	Takes time and willingness to negotiate by both parties
Road use agreement	Legal Wis. State Statute 349.16 Can contain terms for payments for roadway improvement and maintenance	Often through the Highway Department rather than Zoning Department Collaboration is necessary

The Role of the Comprehensive Plan

One of the key tools used by communities to identify future land uses is comprehensive planning. Non-metallic mining should be addressed within the natural resources element of a comprehensive plan (Box 2: Element language). Maps that show locations of mineral resources in a community and possible appropriate locations for metallic or non-metallic mining are important. It's also important to discuss the role of non-metallic mining in the community as goals and objectives are formulated. Because the comprehensive plan guides decisions, goals and objectives should provide direction to decision-makers, including elected and appointed officials, and staff. If a community's comprehensive plan does not explicitly discuss non-metallic mining, the community can go through a process to amend the plan (CLUE 2012). Box 3 provides an example from the Town of Stockton, Portage County. The town recognizes the non-metallic mining industry and the gravel and sand resource, and also provides direction for decision-makers at the town and county level.

Box 3: Town of Stockton, Comprehensive Plan, Agricultural, Cultural, and Natural Resources Element

Section D. Nonmetallic Mining Resources / Sand and Gravel Extraction

The central portion of the Town of Stockton contains a large, high-quality supply of sand and gravel (See Map 5.8). This has resulted in numerous sand and gravel extraction operations in the Town over many years. It is currently estimated that 8 of 11 major pits in Portage County, either currently active or intermittently active, are located in the Town of Stockton.

Readily accessible sources of sand and gravel are needed for roads and other types of construction. The Town of Stockton works with sand and gravel extraction operations to up keep and maintain roads to current industrial road standards. The gravel operations should work with the Town of Stockton and Portage County to maintain and beautify the boundaries of their extraction areas to keep down dust, noise, land use conflicts, and for safety reasons as well as reclaim the spent portions of their pits according to NR 135.

Sand and gravel extraction operations are regulated under the County's Zoning Ordinance as special exception uses in the Agricultural and Industrial Districts. Special exceptions uses require a public hearing before the County's Board of Adjustment, at which time specific conditions of operation are typically applied to the proposed use.

The Stockton Town Board has been proactive in recommending more stringent conditions of operation to the Board of Adjustment than have traditionally been required.

As part of NR 135, Wisconsin Administrative Code, Portage County adopted a Nonmetallic Mining Reclamation Ordinance in June of 2001. The purpose is to establish a local program to ensure the effective reclamation on nonmetallic mining sites. Please see Ordinance for complete detail. Table 5.2 below is a listing of nonmetallic mining operations in the Town of Stockton, along with date of their reclamation plan. The Town currently has about 750 acres of active nonmetallic mining operations.

Objectives from plan:
6. Monitor non–metallic mining operations through Portage County Ordinances.
7. Support a tipping fee for non-metallic mining operations in the Town for general revenue and infrastructure maintenance.

The Role of Zoning

The comprehensive planning law requires consistency between the plan and zoning among other implementation tools. Counties, towns, cities and villages regulate land use through zoning, including industrial uses.

A zoning ordinance identifies districts (residential, agricultural, commercial, and industrial) and the types of uses permitted under each district. Uses are permitted provided certain criteria are met, or permitted as a conditional use. If a particular use is not listed as a conditional or permitted use, it is generally prohibited in that particular zoning district. Most zoning ordinances list land uses that qualify as conditional uses. A conditional use permit (CUP) allows the local government to consider the specific operation, determine whether or not it meets the ordinance standards, and apply conditions for how the business/use operates. Truck traffic, blasting, lighting, hours of operation, noise levels, dust, odors, and other impacts on nearby property can be considered when conditions are placed on a CUP. Endnote 2 (p.9) provides an example of a portion of a CUP from Columbia County.

Counties and towns with village powers can also amend their zoning ordinances. These amendments must go through the necessary approval process. Endnote 3 (p. 10) is an example of a non-metallic mining regulation from Shawano County.

The Role of Development Agreements

"A development agreement is a consensual, binding contract between two or more parties, typically between a land owner/land developer and a government agency(ies)" (MDA). However, the State of Wisconsin does not expressly authorize local governments to enter into development agreements (Ohm).

Cities regularly use development agreements. The City of La Crosse has a development agreement checklist. Box 4 provides the checklist. Two examples of communities that have used development agreements with the sand mining and processing industry are the City of Marshfield and the Town of Greenfield (Monroe County). The City of Marshfield issued a conditional use permit with a development agreement for a sand processing facility in its south-eastern industrial park. The Town of Greenfield entered into a development agreement with Unimin Corporation for sand mining.

Box 4: General Considerations or Provisions of Development Agreements

a. Employment requirements, including duration
b. Investment and maintenance of assessed value requirements
c. Property insurance requirements
d. For TIF projects, guarantee tax increments
e. Require proof of financing
f. Public share comes in last
g. Adequate enforcement mechanisms
h. Personal guarantees

Source: La Crosse

The Role of Development Moratoria

Cities, villages and towns have express authority to enact a development moratorium (see Wis. Stat. §§ 62.23(7)(da) and 66.1002 created by 2011 Wisconsin Act 144). Counties do not have express authority under State Statutes to impose a moratorium. A development moratorium may be used to limit development while preparing or revising a comprehensive plan or land use ordinance. The purpose of a moratorium is to prevent nonconforming or incompatible uses from developing that would be at odds with the new plan or ordinance.

While municipalities have express authority to enact a development moratorium, they may do so only under certain circumstances: if it has "enacted a comprehensive plan, is in the process of preparing its comprehensive plan, is in the process of preparing a significant amendment to its comprehensive plan in response to a substantial change in conditions in the municipality, or is exempt from the consistency requirement (s.66.1001 (3m)). The municipality also must

adopt a resolution stating that a moratorium is needed either to prevent a shortage in, or the overburdening of, local public facilities or to address a significant threat to the public health or safety that is presented by a proposed or anticipated activity due to a request for rezoning, a plat or certified survey map, or a subdivision plan or other land division. This resolution must be accompanied by a written report from a registered engineer or a public health professional that states that the moratoria is justified based on overburdened public facilities and/or a threat to public health or safety.

OTHER ISSUES TO CONSIDER

In considering any of the local strategies outlined above, there are a number of local issues to consider when a non-metallic or sand mine applies for a permit in a community. Box 5 (p. 8) lists three types of considerations (environmental/public health, neighborhood, and community) and accompanying issues. Many of the environmental considerations are handled through DNR permits or through NR 135. Many of the neighborhood consideration issues can be included in a conditional use permit. The community considerations should be discussed and examined prior to making a decision (see UWEX).

SUMMARY AND CONCLUSION

While frac sand mining is creating a variety of challenges for many communities in Wisconsin, there are a number of land use tools to use some of which are regulatory in nature and others that are not. In addition, more and more counties and towns are gaining valuable experience in handling new non-metallic mining inquiries and permitting.

RESOURCES

- CLUE. Center for Land Use Education. 2012 (Forthcoming). Plan Commission Handbook. Chapters on Planning and Zoning.
- Columbia County. Conditional Use Permit. Zoning staff.
- La Crosse, City. Development Agreement Checklist. http://www.cityoflacrosse.org/index.aspx?NID=93 Retrieved December 29, 2011.
- MDA (Model Development Agreement Bylaw). www.umass.edu/masscptc/docs/DevAgree_CC.doc Retrieved December 29, 2011.
- (NCI) National Cancer Institute at the National Institutes for Health. **Acrylamide in Food and Cancer Risk,** http://www.cancer.gov/cancertopics/factsheet/Risk/acrylamide-in-food Retrieved December 29, 2011.
- Ohm, Brian. 1996. Vested Rights. http://urpl.wisc.edu/extension/perspectives/VestedRights.pdf Retrieved December 29, 2011.
- Ohm, Brian. 1999. Guide to Community Planning in Wisconsin. Section 2.42 Local Authority to Impose a Moratorium. http://www.lic.wisc.edu/shapingdane/resources/planning/library/book/chapter02/chap2_2-4.htm Retrieved January 24, 2012.
- Shawano County. Non-metallic mining ordinance language. Zoning staff.
- UWEX. 2012. Frac Sand Mining Fact Sheets. http://buffalo.uwex.edu/land-owner-network/economic-stability-of-mining-fact-sheet
- Wisconsin Counties Association. Dec. 2011. Wisconsin Counties. "Mining." Vol. 75. No.12. p.22.
- Wisconsin Department of Natural Resources. Dec. 2011. Frac Sand Issue Brief. http://wisctowns.com/uploads/ckfiles/files/DNR%20handout.pdf Retrieved December 16, 2011.

Resources continued on page 12

BOX 5: LOCAL ISSUES TO CONSIDER

Environmental and public health considerations	• Groundwater usage and potential for contamination
	• High capacity well permit may be necessary
	• Air quality
	  o Air quality permit is necessary particularly for fugitive dust (sand that blows off site)
	• Stormwater runoff
	  o Stormwater runoff permit is necessary
	  o Use of flocculants to settle clays, etc. from the water in stormwater ponds
	  ▪ Polyacrylamide is often used – possible carcinogen (NCI) that may enter groundwater, lakes or streams
	  o Use of coagulants such as ferric chloride used in the treatment process
	• Post-mining
	  o Reclamation plan is required by NR 135

Neighborhood considerations	• Truck traffic • Blasting • Noise level • Lighting • Hours of operation • Dust • Odors

Community considerations	• Supply and demand for sand and boom and bust economies
	• Boom economy
	  o Currently, high demand = lots of competition and new mines
	  o New jobs
	• Bust economy
	  o Bankruptcy
	  o Lost jobs
	• Taxes
	  o On the sale of sand the State (5%) and county (0.5%) sales tax
	  o Manufacturing assessment determined by DOR and whether there is an exemption or not for machinery and equipment from local real estate tax
	• Local roads: local governments can monitor weight limits, direct traffic and bond for damage (see Wisconsin Transportation Information Center)

ENDNOTES

ENDNOTE 1: NR 135

According to NR 135, a reclamation permit is required before mining and a reclamation plan is required and needs to be submitted to the regulatory body – since counties are required to have NR 135 reclamation permitting programs, it is most likely the county; however, cities, villages and towns may opt to enact a reclamation ordinance and secure control from the county in their jurisdiction.

The plan must contain certain information. In part it should contain the following:
(a) Maps of the nonmetallic mining site including the general location, property boundaries, the areal extent, geologic composition and depth of the nonmetallic mineral deposit, the distribution, thickness and type of topsoil, the location of surface waters and the existing drainage patterns, the approximate elevation of ground water as determined by existing hydrogeologic information. In specific instances where the existing hydrogeologic information is insufficient for purposes of the reclamation plan, the applicant may supplement the information with the opinion of a licensed professional geologist or hydrologist.
NR 135.19(2)(am) (am) Topsoil or topsoil substitute material, if required to support revegetation needed for reclaiming the site to approved post-mining land use, can be identified using county soil surveys or other available information including that obtained from a soil scientist or the University of Wisconsin soil science extension agent or other available information resources.

(3) Post-mining land use.
NR 135.19(3)(a)(a) The reclamation plan shall specify a proposed post-mining land use for the nonmetallic mine site. The proposed post-mining land use shall be consistent with local land use plans and local zoning at the time the plan is submitted, unless a change to the land use plan or zoning is proposed. The proposed post-mining land use shall also be consistent with any applicable state, local or federal laws in effect at the time the plan is submitted.
NR 135.19 Note Note: A proposed post-mining land use is necessary to determine the type and degree of reclamation needed to correspond with that land use. The post mining land use will be key in determining the reclamation plan. Final slopes, drainage patterns, site hydrology, seed mixes and the degree of removal of mining-related structures, drainage structures, and sediment control structures will be dictated by the approved post-mining land use.
NR 135.19(3)(b) (b) Land used for nonmetallic mineral extraction in areas zoned under a farmland preservation zoning ordinance pursuant to subch. III of ch. 91, Stats., shall be restored to agricultural use.

ENDNOTE 2: EXAMPLE OF COLUMBIA COUNTY CUP FOR A NON-METALLIC MINE[2]

- ✓ The buffer zone at the west edge of the quarry area, as described in the submittal …, shall be maintained in a natural state on its west/southwest facing slope. Said buffer shall be a minimum of 100 feet wide, measured in a horizontal direction to the west, southwest, and south from the 1,000 foot contour line. Within this buffer there shall be no timber harvesting except upon approval of a cutting plan by the Planning and Zoning Committee. In addition, there may be timber removal but there shall be no soil stripping, in a direction toward the quarry interior, for a horizontal distance of 50 feet as measured from the 1,000 foot contour, for the protection of existing trees and other vegetation within the buffer area.
- ✓ The entrance to the quarry shall be limited to an opening not exceeding 150 feet, measured at the top the walls at the quarry entrance, in width so as to maximize the maintenance and preservation of the sideslope as a buffer area.
- ✓ No fuel shall be stored in the mine site area or initial processing area other than truck-mounted storage tanks or tanks located within a spill containment structure.
- ✓ The operator shall require all trucks, excavation and processing equipment to have exhaust systems that meet or exceed current industry standards to ensure that noise levels are kept at or below allowable limits. The level of noise or sound generated by the facility shall not exceed 65 decibels at the property line.

[2] Extracted out a portion of the conditions. There are a total of 33 conditions. This is not an unusual number of conditions for this type of use.

- ✓ The owner and operator shall minimize the generation of airborne dust resulting from excavating, screening, processing and hauling operations within the mine site and on the driveway. Water trucks shall apply water around the quarry as needed or upon request of the Town or County to reduce dust, weather permitting.
- ✓ Installation of a well for the purpose of serving the mine site shall be subject to the approval of the Planning & Zoning Department. At the time of installation a baseline sample shall be taken tested for the presence of petroleum, petroleum compounds, and or distillates. Subsequent testing shall be done at the request of the Department.
- ✓ Hours of operation, including, but not limited to, excavating, blasting, crushing, screening, stockpiling, loading and hauling are limited to the hours between 7:00 a.m. to 6:00 p.m. Monday through Friday and 8:00 a.m. to 2:00 p.m. on Saturdays. Necessary maintenance such as welding, tire repair, or changing of engine fluids may be conducted at other times provided such activities do not constitute a nuisance.
- ✓ Nighttime lighting of the site or initial operations area is permitted only for the purpose of making emergency repairs or during special hours of operation as approved by the Zoning Administrator. All such lighting shall be placed such that lighting elements or transparent shield are not visible from adjacent property or road right of way.
- ✓ The site operator shall install a locked gate at the site entrance on CTH E.
- ✓ The harvesting, cutting, trimming or other disturbance of oak trees is permitted only during the period between October 1 and April 15 in order to minimize the potential for the spread of oak wilt.

ENDNOTE 3: NON-METALLIC MINING CODE LANGUAGE FROM SHAWANO COUNTY

(1) **Non-Metallic Mineral Extraction (land use):** Any land use involving the removal of soil, clay, sand, gravel, rock, non-metallic minerals, peat, or other related material. May include on-site processing of extraction material if part of the application and conditional use permit approval. Does not include relocation of materials required for domestic use on the same lot or a contiguous lot under the same ownership, approved on-site development grading, excavations within public road rights-of-way or easements, agricultural grading, or any soil removal activities on a hazardous waste site. Any "asphalt or concrete rock crushing facility or batch/ready-mix plant" associated with such a facility shall be allowed as separately listed under this Zoning Ordinance and subject to the performance associated with such land use. This use shall meet the following performance standards:

(a) In addition to the submittal information required under Section X.8.09(4)(h), the application for conditional use permit and land use permit shall include the following information:

1. A written description of the proposed operation, including the types and quantities of the materials that would be extracted; proposed dates to begin extraction, end extraction, and complete reclamation; geologic composition and depth and thickness of the mineral deposit; existing use of the land and proposed use after reclamation; existing natural and archaeological features on and adjacent to the site; where extracted materials would be hauled and over what roads; types, quantities, and frequency of use of equipment to extract, process, and haul; whether and how frequently blasting, drilling, mining, crushing, screening, washing, refueling, fuel storage, asphalt batching, or concrete mixing would be performed on site; whether excavation will occur below the water table and, if so, how ground water quality will be protected; description and elevations of all temporary or permanent structures; proposed hours and days of operation; any special measures that will be used for spill prevention and control, dust control, or environmental protection; and assurances that the site will be developed, operated, and reclaimed in accordance with all approved plans and all county, state, and federal regulations, including a listing of all applicable regulations.
2. A site/operations plan map, drawn to scale by a qualified professional, and including site boundaries; existing contour lines; existing roads, driveways, and utilities; existing natural features including lakes, streams, floodplains, wetlands, and shoreland areas; all residences and private and municipal wells within 1,000 feet; location of the proposed extraction, staging areas, fueling, fuel storage, and equipment storage areas; proposed location and surfacing of roads, driveways, and site access points; proposed phasing plan, if any; proposed fencing of property and gating of access points; proposed locations of stockpiles; proposed location and types of

screening berms and landscaping; and proposed temporary and permanent structures, including scales and offices.

3. An erosion control plan, drawn to scale by a professional engineer, meeting all applicable state and county requirements.
4. A reclamation plan prepared in accordance with the Wisconsin Administrative Code and the Shawano County Non-metallic Mining Reclamation Ordinance.

(b) The appropriate County approval authority shall require a landscaped bufferyard in the yard where the use abuts a residential use or a residential zoning district, per the standards in Section X.5.06(1).

(c) The appropriate County approval authority may place limits on the amount of time the non-metallic mineral extraction use shall remain in operation.

(d) The nearest edge of all buildings, structures, and surface activity areas, including pit edges, shall be located a minimum of 200 feet from all dwellings on adjacent properties, and no less than 10 feet from any lot line.

(e) To prevent tracking of mud onto public roads, access driveways shall be paved within 100 feet of public roads, unless the adjacent road is unpaved.

(f) All public roads shall be kept free of all mud, debris, and dust by sweeping or other means as necessary, or as requested by the applicable town.

(g) Access to the site shall only be through points designated as entrances on the site/operations plan; such access points shall be secured when the site is not in operation.

(h) Provisions for the upgrade, repair, and maintenance of town and county roads shall depend on the intensity of the operation and the existing condition and capacity of such roads. A bond or other performance guarantee for such work may be required provided that a clear relationship is established between the operation and the need for road upgrades, repair, and maintenance. If any town or county road is damaged or destroyed as a result of owners operations, the owner shall restore or pay for the restoration of the same to an acceptable condition and value. The owner shall have the right to show and bear the burden of proof in showing that the indicated damage was not the result of its operations.

(i) Spraying of the site and driveways shall be conducted to control dust, except when the temperature is below freezing. The applicable town may request that water be applied in and around the excavation pit to further reduce dust.

(j) On-site bulk fuel storage areas and appropriate places for fueling of equipment (e.g., above the water table) shall be located to minimize the potential for groundwater contamination and in accordance with the Wisconsin Administrative Code and Wisconsin Statutes.

(k) Hours or days of operation may be limited as deemed appropriate by the Planning, Development, and Zoning Committee.

(l) Expectations for any blasting, drilling, screening, and asphalt batching shall be clearly understood, and separate acceptable hours for these activities may be established. Blasting is also regulated under Wisconsin Statutes and Wisconsin Administrative Code. The conditional use permit may specifically restrict such activities from occurring if the conditional use permit standards cannot be met.

(m) If blasting or drilling is requested, additional standards or conditions may be applied with relation to frequency, noise and vibration levels, notice to neighbors, pre-inspection of neighboring basements and wells, and claims procedures in accordance with the Wisconsin Administrative Code.

(n) All trucks, excavation, and processing equipment shall have exhaust systems that meet or exceed current industry standards to ensure that noise levels are kept at or below allowable limits. The mine operator shall demonstrate that the level of noise generated by the facility or equipment does not exceed 65 decibels at the property line.

(o) Unless the extraction site is inaccessible, the area of extraction shall be completely enclosed by a safety fence or maintained at a slope not to exceed 3:1.

(p) The applicant shall furnish a certificate of insurance before operations commence.

(q) Approval shall be subject to amendment or revocation if non-compliance with approved plans, this Section, or approval conditions is identified.

(r) Approval shall be subject to periodic review of the operation to ensure compliance with the conditional use permit, and to specific limitations over the portion of the lot or parcel where extraction may occur.

(s) The conditional use permit shall expire 5 years from the date of approval except where the Planning, Development, and Zoning Committee in its conditional use approval grants otherwise. In order to

continue operation beyond the specified time frame, the applicant must apply for an extension to the original conditional use permit which shall follow the normal conditional use permit process every 5 years or the timeframe granted by the Planning, Development, and Zoning Committee.

(t) Additional Performance Standards for lands zoned FP-1 and FP-2:

1. The operation complies with Wisconsin Statutes subchapter I of Section 295, and rules promulgated under that subchapter, with applicable provisions of the local ordinance under Section 295.13 or 295.14, and with any applicable requirements of the WisDOT concerning the restoration of nonmetallic mining sites.
2. The operation and its location in the farmland preservation zoning district are consistent with the purposes of the farmland preservation zoning district.
3. The operation and its location in the farmland preservation zoning district are reasonable and appropriate, considering alternative locations outside the farmland preservation zoning district, or are specifically approved under state or federal law.
4. The operation is reasonably designed to minimize the conversion of land around the extraction site from agricultural use or open space use.
5. The operation does not substantially impair or limit the current or future agricultural use of surrounding parcels of land that are zoned for or legally restricted to agricultural use.
6. The farmland preservation zoning ordinance requires the owner to restore the land to agricultural use, consistent with any required locally approved reclamation plan, when extraction is completed.

RESOURCES CONTINUED

- 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 statues 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://wisconsingeologicalsurvey.org/pdfs/frac-sand-factsheet.pdf
- Wisconsin Natural Resources Administrative Rules, Chapter 135, Non-Metallic Mining Reclamation, https://docs.legis.wisconsin.gov/code/admin_code/nr/135/I/01 Retrieved December 29, 2011.
- Wisconsin Supreme Court. 2012. Zweifelhofer v. Town of Cooks Valley. http://wicourts.gov/sc/opinion/DisplayDocument.pdf?content=pdf&seqNo=77767 Retrieved March 3, 2012.
- WTA (Wisconsin Towns Association). Frac Sand Mining Workshop. Materials including Sample Moratorium Ordinance. http://wisctowns.com/ Retrieved December 29, 2011.
- Wisconsin Transportation Information Center. Using Weight Limits to Protect Local Roads 2003, #8, http://tic.engr.wisc.edu/Publications.lasso Retrieved March 6, 2012

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