



PROJECT TITLE: Economic Impact of Frac Sand Mining on Southern Minnesota

I. PROJECT STATEMENT

Southeastern Minnesota hosts a valuable natural resource that is currently a hot topic and commodity both nationally and internationally - silica sand. The resource, also called Frac Sand, is used as an injection fluid in the production of oil from shale formations. According to the Energy Information Administration, U.S. shale oil production is expected to rise from the current 21% of oil production to 31% of oil production over the next 20 years. The Karst geological formation located in southern Minnesota contains silica sand, which is considered to be the “gold” standard of frac sands. Mining of the sand is expected to have significant economic impacts on the region and the state, overall. Since this industry is relatively new to Minnesota, the potential benefits and costs are not clearly understood. Therefore, this project will provide an initial assessment of the economic impacts to provide information for policy-makers to move forward.

We will assess the socio-economic impacts of frac sand mining with a focus on property values and employment. In collaboration with the Natural Resource and Research Institute (NRRI), we will construct a measure of air quality to be utilized in assessing the social economic impacts on this area. Econometric methods will be utilized to examine the impact of frac sand mining on real estate property values near the specific mines, processing sites, and transportation facilities. The short-term and long-term employment, value added, and output impacts will be estimated using IMPLAN data software.

II. DESCRIPTION OF PROJECT ACTIVITIES

Activity 1: Literature search and data collection

Budget: \$13,325

Conduct project planning meetings. Acquire relevant data, such as real estate, employment, sales, and industry relevant economic data. Conduct initial literature search and compilation.

Outcome	Completion Date
1. Database and synopsis of compiled studies	December 2014
2. Database of Minnesota’s current and potential frac sand mining economic data	March 2015
3. Compilation of economic historical background documentation of frac mining in the region	June 2015

Activity 2: – Data analysis and modeling - assessment of air quality index subject to NRRI results

Budget: \$26,642

Construct econometric model. Develop air quality index. Estimate economic impacts including property values, employment, value added, and output.

Outcome	Completion Date
1. Economic impact effects (direct, indirect, induced)	August 2016
2. Air quality index	December 2016



3. Econometric models	May 2017
4. Report publication	June 2017

III. PROJECT STRATEGY

A. Project Team/Partners

Neil Wilmot, Assistant Professor of Economics
 Labovitz School of Business and Economics
 University of Minnesota Duluth

Chris McIntosh, Associate Professor of Economics
 Labovitz School of Business and Economics
 University of Minnesota Duluth

James Skurla, Director of the Bureau of Business and Economic Research
 Labovitz School of Business and Economics
 University of Minnesota Duluth

Air/Water Quality Impact Study Team
 Natural Resources and Research Institute
 University of Minnesota Duluth

Wilmot (project design and econometric modeling) will lead the team as principal investigator (*PI*). McIntosh (project design and econometric modeling) and Skurla (project design and IMPLAN economic impact modeling) will be providing research support. All three are expected to receive LCCMR funding. The Air/Water Quality Impact Study Team will provide supporting data. That team will have funding separate from this proposal.

B. Timeline Requirements: Approximately 3 years

As this project aligns with the Air/Water Quality Impact Study, the timeframe relatively coincides with that study.

Year 1 - Data Collection and Literature Review – development of methodology and formation of econometric modeling

Year 2 – Data analysis and modeling - assessment of air quality index subject to NRRI results

Year 3 – Compilation of data and report publication

C. Long-Term Strategy and Future Funding Needs

The overall project goal is to provide a comprehensive tool to local citizens, the business community, elected officials, and key stakeholder for balancing socioeconomic growth and environmental protection in decision-making relative to frac sand mines. This analysis could lay the groundwork for additional studies, as other industries could be impacted by frac sand mining. These industries include tourism, eating and drinking establishments, transportation and others. Future research could assess the benefits and costs for these other area support industries. This could lead to future expanded partnership collaboration with the potential to seek further funding. Additionally, this methodology can be replicated for future resource development.

2014 Detailed Project Budget

Project Title: *Economic Impact of Frac Sand Mining on Southern Minnesota*

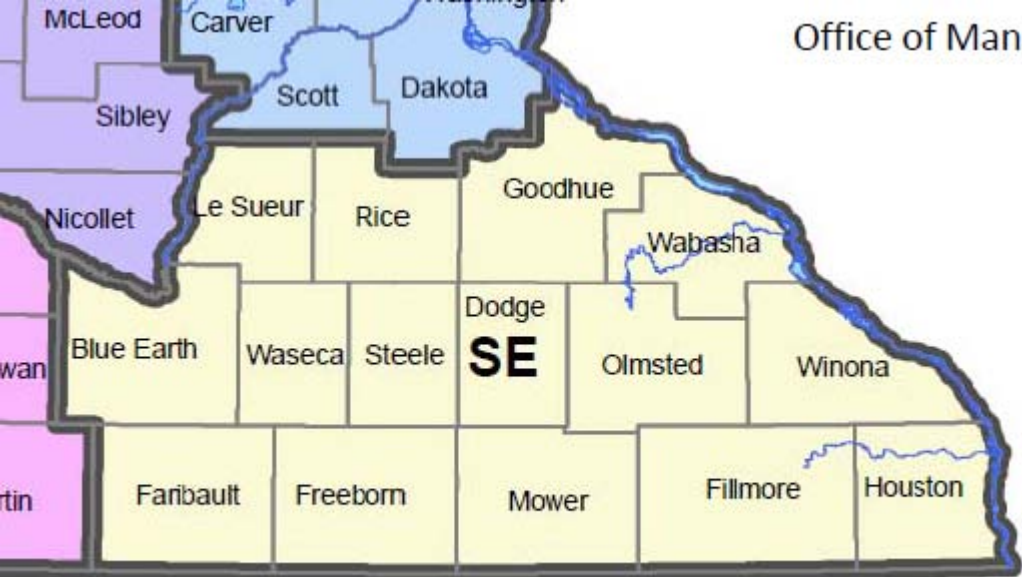
IV. TOTAL ENRTF REQUEST BUDGET

3 years

<u>BUDGET ITEM</u>	<u>AMOUNT</u>
Personnel: Neil Wilmot, (4%), PI	\$ 11,332
Personnel: Chris McIntosh (4%)	\$ 11,405
Personnel: Jim Skurla (3%)	\$ 7,902
Personnel: Gina Gensing (3%)	\$ 4,128
Personnel: Undergraduate Student Researcher (3%)	\$ 1,200
Contracts:	\$ -
Equipment/Tools/Supplies: Data Acquisition	\$ 3,000
Acquisition (Fee Title or Permanent Easements):	\$ -
Travel: In-state travel for research on current frac sand facilities, presentations and meetings with stakeholders	\$ 1,000
Additional Budget Items:	\$ -
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =	\$ 39,967

V. OTHER FUNDS

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
Other Non-State \$ Being Applied to Project During Project Period: University of Minnesota Institute on the Environment grant - Interdisciplinary Exploration of Minnesota Frac Sand Mining	\$ 2,300	Secured
Other State \$ Being Applied to Project During Project Period:		
In-kind Services During Project Period:	\$ -	
Remaining \$ from Current ENRTF Appropriation (if applicable):	\$ -	
Funding History:	\$ -	



Neil A. Wilmot is an Assistant Professor in the Department of Economics at the University of Minnesota Duluth. He received his Ph.D. from the University of Wyoming in December 2010. He received his Honors B.A. in Economics in 1999 and an M.A. in Economics in 2002, both from Lakehead University. Dr. Wilmot's research interests include Energy Economics, Environmental Economics and Applied Econometrics. His research has been published in several economic journals, including the *Energy Journal* and *Tourism Economics*.