

# The Frac Sand “Gold Rush” is based on logistics



## Managing Railroad Capacity for Future Success

Grand Geneva Resort & Spa

Lake Geneva, W.I. 53147

July 15, 2014

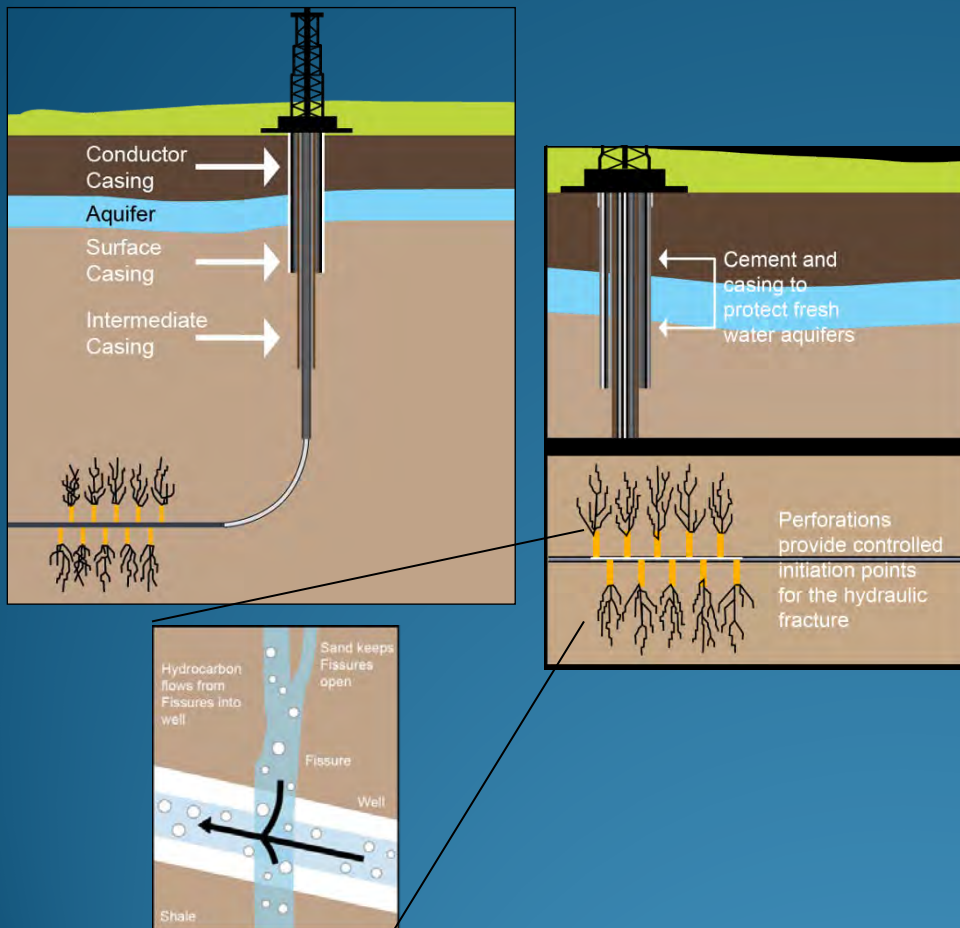


**Rick Shearer**  
**President & CEO**  
**Superior Silica Sands**

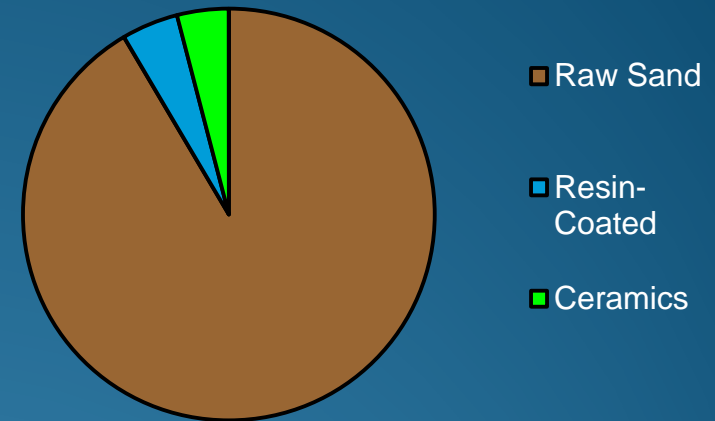
# Drilling Technology and the Proppant Boom.

- *Frac sand, or “proppant,” is used to prop open fissures in hydraulic fracturing*
- *Demand expected to continue its strong growth into the near future*

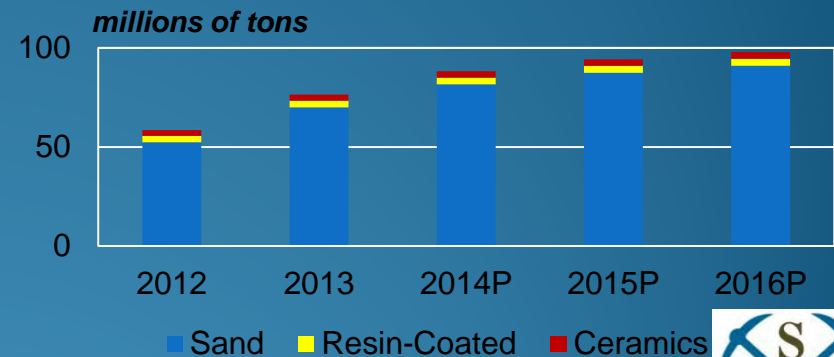
## • Hydraulic Fracturing



## • 2013 US Land Proppant Consumption



## Historical & Projected US Land Proppant Demand



Source: PacWest Consulting Partners



**Well** Stimulation and fracturing technology has changed dramatically in the last 2 years, increasing proppant demand.

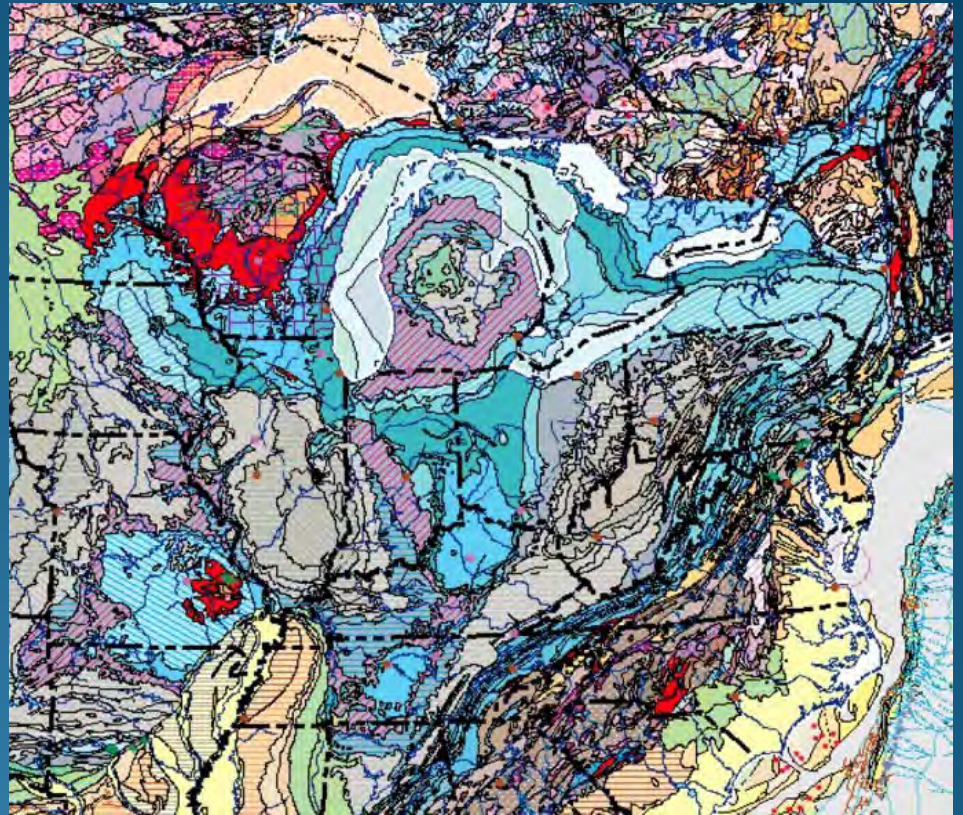
- Drilling rigs are more efficient.
- More pads per well site.
- More laterals per well .
- More stages.
- “Over Packing” improves well yields.





# SAND GEOLOGY

- St. Peter's
- Jordan
- Wonawoc
- To date, no high quality frac sand deposits found on the globe better than Wisconsin and Southeastern Minnesota





# UNITED STATES SHALE DEVELOPMENT

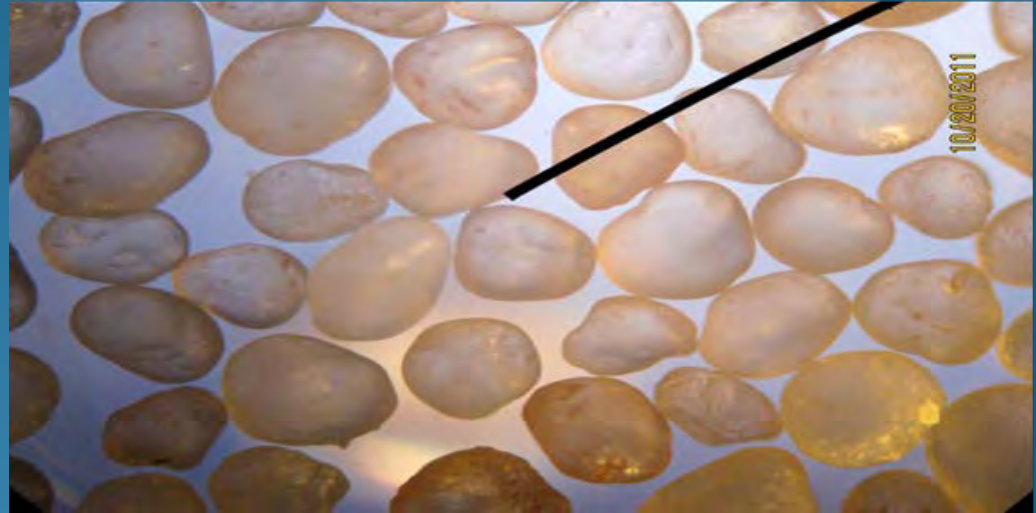


Source: Energy Information Administration based on data from various published studies.  
Updated: May 9, 2011



# QUALITY FRAC SAND MUST MEET API SPECIFICATIONS

- Grain Roundness
- Hardness Crush Strength
- Turbidity
- Color
- Size
- Acid Solubility
- Conductivity





# MINING PROCESS



Initial Mine Face



Crusher



Slurry System



# Operations – Wet Sand Processing



Hydrosizer



Stockpiles





# Operations — Dry Sand Processing



Rotary Dryer



Rotex Screens



Storage Silos





# LOADOUT





# FRAC SAND MARKET (GOING FORWARD)

- Looking into the future
- Opportunities
- What it means to you



# The Oil & Gas Frac Sand Industries are “Changing the World.”

- Annual water usage:
  - Equals one day of agricultural usage.
- Reducing Carbon Emissions:
  - Natural Gas = 48% of coal CO2
  - More than all windmills and solar panels worldwide
- Better than Ethanol:
  - 1mm BTU = 3 gallons of Shale Gas vs 15,000 gallons of Ethanol
- Reducing Energy Costs:
  - Reduced electricity costs by 9.5% & gas costs by 21.6%
  - \$1200.00 saved annual per household.
- Positive Impact to Wisconsin:
  - Air quality 10x's cleaner
  - 3-1 support
  - 22,000 jobs created in WI.

- 1) U.S. EPA
- 2) Breitling Energy Corp
- 3) U.S. Dept of Energy
- 4) ANEF Study
- 5) Wisconsin M&C





# FRAC SAND:

## LOOKING INTO THE FUTURE

- Dramatic proppant growth 28% increase in 2013; 20%-30% per annum growth in 2014 & 2015
- Projected increase in capacity not keeping pace with demand.
- Frac Market will be cyclical, but with milder peaks and troughs
- International Markets will begin to show significant frac sand demand
- Sand producer base will diversify as Service Companies and E&P's back integrate
- Logistics will drive economics



# WHAT IT ALL MEANS TO YOU

## ... the Railroads

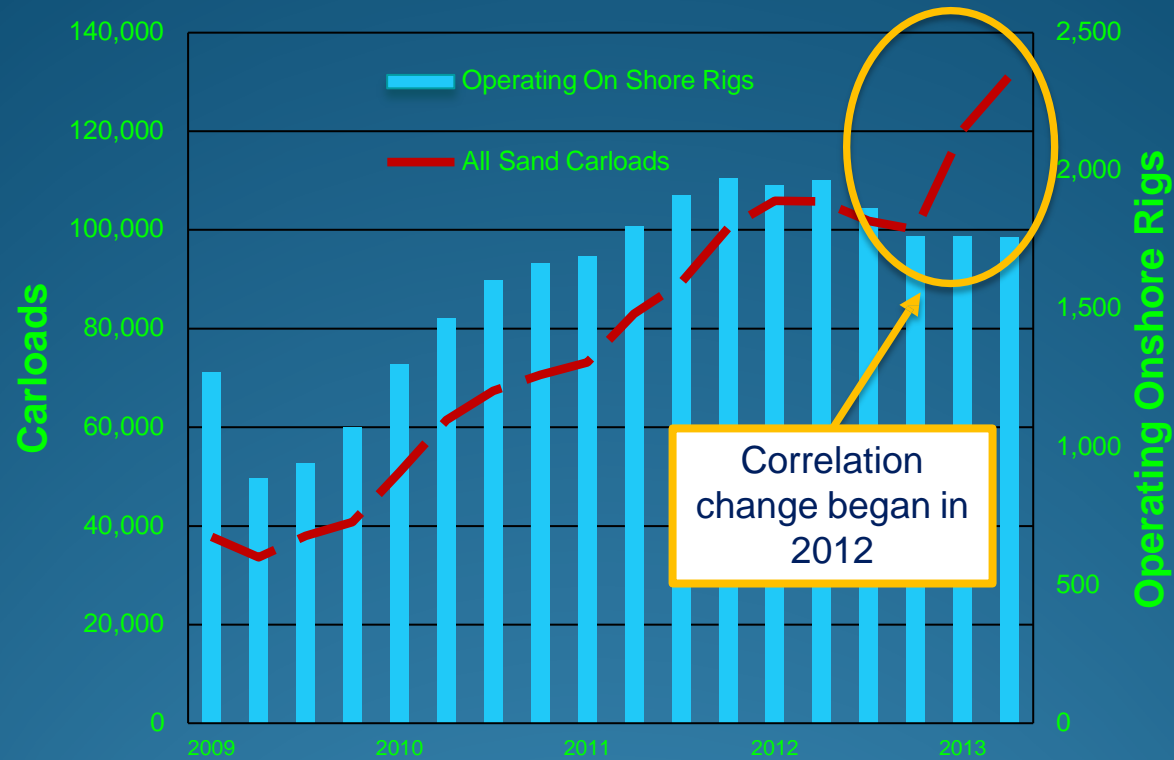
- Shipping more sand to numerous new destinations;
- Unit train shipments more common; 25% of 2014 shipments increased 500% from 2013
- Managing volume bottlenecks and turnaround times becomes more crucial
- With freight prices not dropping, service is king. Weather challenges must be mitigated.
- Storage and Transload sites are over populated in some locales
- Railroad partnerships with “The Major” sand suppliers.





# Correlation of Operating Rig Count with Sand Shipments

## Historical vs Recent



### Reasons for correlation change

- Drilling productivity – leads to more wells drilled per rig
- Mesh size, mix changes and volume per well
- Liquids wells use more frac sand, less ceramics
- Longer lateral lengths with more stages



# Frac Sand Supply Chain Definition and Industry Trends to Date.

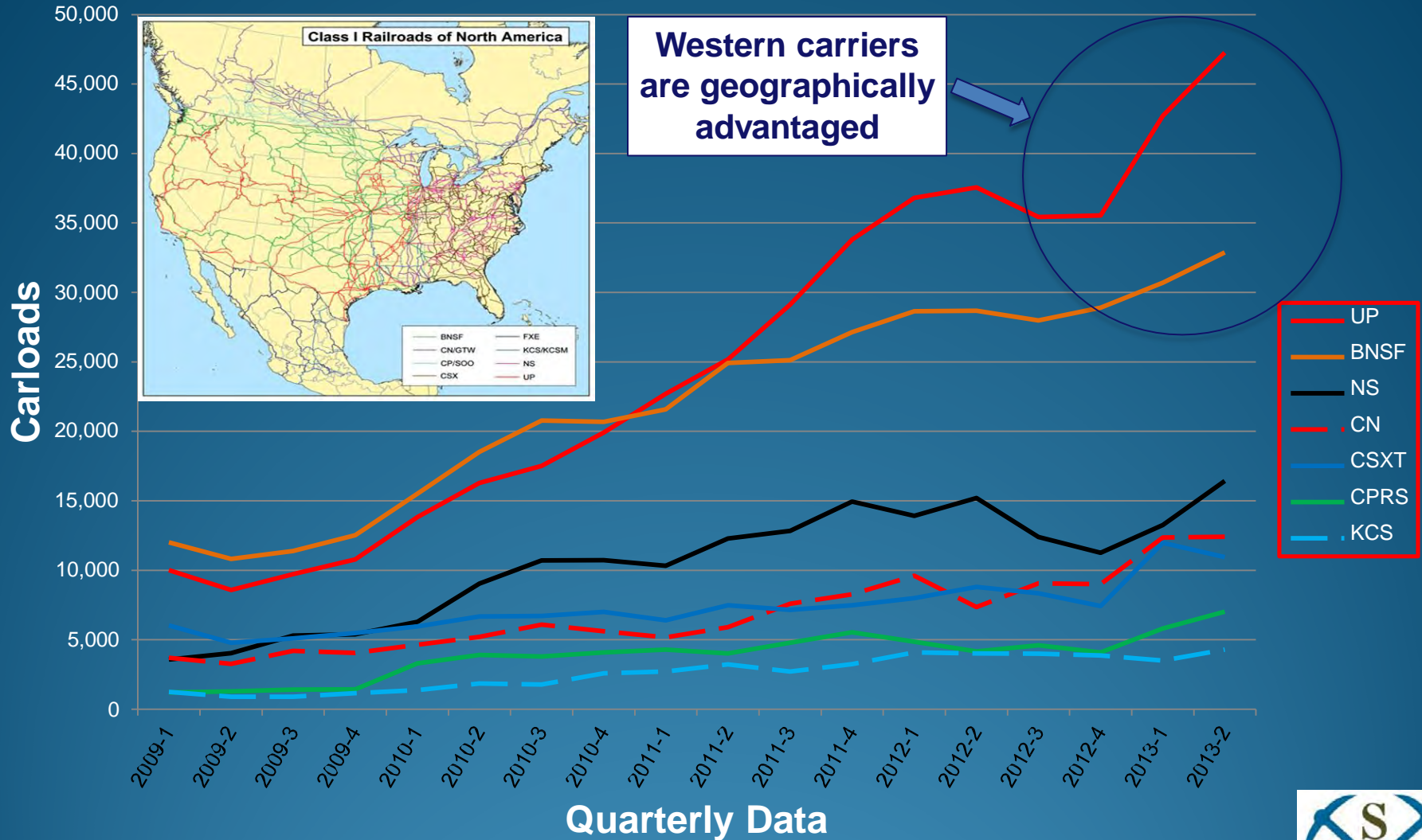


- Rapid growth and maturation of both industries over the past 5 years – hydraulic fracturing and frac sand production
- Ownership shifting supply chain responsibilities – reduced tasks by end customer
- Sand supply base growing and consolidating at the same time
- Unit train shipping is the game-changing logistics development – spurring investment in larger load-out and transload facilities
- Trucking market remains regional and disaggregated





# Frac Sand Handled by Railroads



# # 1 Key to Winning Most Efficient Supply Chain.



- “Never shut down a well” – supply availability of quality product remains “given”
- Total cost “down the hole” by the end customer will become more precise and accurate
  - Logistics cost is the highest portion of total delivered cost – best freight and handling cost structure
- Winners will turn the supply chain into a conveyor belt – smooth, predictable, synchronized
  - Find ways to tighten relationship with customers – schedule synchronization
  - Utilize supply chain technology to further improve their performance and increase efficiency
  - Invest in strengthening supply chain teams
  - Cash flow importance – Inventory management critical.



# Looking Ahead: What will the Frac Sand Industry Look Like in 3 to 5 Years

- Frac sand industry will likely have significant growth in the coming years
- “Survival of the fittest” supply chain – the evolution will continue.
- Heavy focus on cost reduction will continue
- Logistics expertise becomes as critical as sand expertise.
- This frac sand market is a once in a life time opportunity!

