

Key Words (put together in advance of the trip)

St. Peter Sandstone

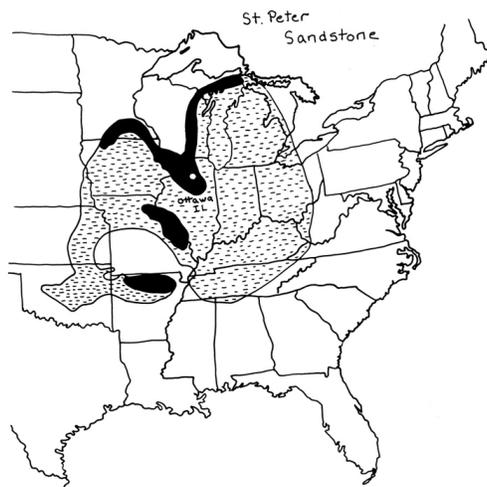
The sand from this four-hundred million year-old deposit is perfectly round, relatively pure, quartz (silicon dioxide). Perfectly round sand is desired for use as “proppant” in oil and gas wells and in hydrofracking, because the flow of oil or gas around the sand grains is not impeded by sharp corners jamming together, while the sturdy, round grains “prop” the well and the fractured rock open, keeping them from collapsing while fuel is pumped out through the sand. The Jordan sandstone formation is older and lies below the St. Peter. Its sand is even more valuable because its grains are larger, but it is harder to access.

When I visited U.S. Silica in 2003, they shipped their desirable “frac” sand all over the world, including to Saudi Arabia, even though you would think Saudi Arabia would have had enough sand. Ten years later, oil and gas companies want the sand from the St. Peter formation to support the hydro-fracking boom here in the states. Texas also produces frac sand, more than any other state as of 2012.

The relatively accessible parts of the St. Peter sandstone deposit take the rough shape of a frog with no arms swimming down from Lake Superior with its head in Illinois, or they resemble a health class diagram of fallopian tubes connecting to the uterus. The fallopian tubes extend into the upper peninsula of Michigan and the lower fifth of Minnesota, with the uterus thickening in Wisconsin where the majority of new frac sand mines have been opened in the last five to ten years. Sand has been mined in Ottawa, Illinois, since the 1860s but a few additional mines have opened in Illinois in response to the fracking boom, with the newest IL mines planned near Starved Rock.

Parts of the St. Peter dip down so far below the surface of the ground that coal, limestone, and other minerals are mined above it—so far that it isn’t reasonably considered “existent,” at least in commercial terms. But extensions of the deposit resurface from underneath these deep folds in Missouri near St. Louis and in northern Arkansas. St. Peter sand has been mined in Missouri for over a hundred years. At the U.S. Silica plant in Ottawa, the St. Peter deposit is anywhere from two to ten feet below the surface, making it one of the cheapest imaginable mining operations because there is so little overburden to remove.

(The darker area is St. Peter nearer the surface; the dotted area is St. Peter too far down to access)



Frac sand mining in Wisconsin and Illinois

Frac sand mining operations in Wisconsin more than doubled in number between 2011 and 2012 (WisconsinWatch.org). In 2013, Wisconsin had 70 active frac sand mines. Illinois has five mines, with three new mines proposed and permitted (WBEZ, July 2013). But the volume of sand produced in Illinois, and in LaSalle County in particular, still surpassed Wisconsin in 2012.

(from WBEZ, July 2013) "A proposed mine next to Starved Rock State Park has been approved. The mine belonging to Mississippi Sand that would be adjacent to Starved Rock received a special use permit from LaSalle County in 2012, and it was also permitted by the IDNR (Illinois Department of Natural Resources) and the Illinois EPA. Coincidentally, the IDNR also manages the state park that activists contend will be at risk. The IDNR said in a written statement to WBEZ, 'During the review process, the IDNR examined potential impacts to threatened and endangered species in the area and made recommendations to the county board based upon that analysis...Since then, the mining company has provided and satisfied all information requirements provided by law and thus, IDNR approved its permit to the company.'

The mine next to Starved Rock is not yet under construction. In December 2012, the Sierra Club, Openlands, and the Prairie Rivers Network filed a lawsuit against the IDNR and Mississippi Sand, contending that the permit fails to comply with state law protecting wetlands and wildlife. Mississippi Sand owner Tony Giordano said in July 2013 that he can't say when operations will begin at the mine, but he believes the permitting process is proof that the mine is neither unique nor hazardous to the area."

Resources:

<http://stopthestarvedrocksandmine.wordpress.com>

The Price of Sand (dvd / documentary), dist. Green Planet films

Hydro-fracking:

The process of injecting water, chemicals, and "proppant" (sand, walnut shells, or man-made ceramic or resin balls) into brittle rock formations. The rapid increase of hydro-fracking in the U.S. is due to two technological innovations (supported by legislation):

1. multifracture horizontal well drilling (developed in the 1980s in the Barnett shale in Texas), the well is drilled vertically first, then the drill bit can turn and drill horizontally through the shale, up to a mile or so. Explosives perforate holes in the horizontal shaft.

2. slickwater fracturing (developed in 1997 by the same company, Mitchell Energy). Chemicals are added to the water and proppants that facilitate fluid flow. This mix of water, chemicals, and proppants are injected at high pressures and as they exit the holes exploded in the horizontal shaft they fracture the surrounding rock, loosening what might be held in its pores.

The main areas of hydrofracking in the US are the Barnett shale in Texas, the Marcellus shale in Pennsylvania and New York, and the Bakken shale in North Dakota. However there are sedimentary basins throughout the US with potential to yield shale oil and/or gas.

Resources:

<http://www.fractracker.org>

Hydrofracking, by Alex Prud'homme, 2014

Hydro-fracking in Illinois

(from the Sierra club website, February 2013)

“Can we stop the industry from bringing fracking to Illinois? When legislators proposed a two-year moratorium on the practice last year, we strongly supported that proposal, and we support continued calls for a moratorium today. However, we also need to acknowledge that fracking is legal today in Illinois, and for all we know, may already be occurring as you read this. We also need to recognize that our current laws regulating oil and gas drilling, originally passed in 1941, are totally inadequate to deal with the range of issues raised by injecting millions of gallons of chemical-laced fluid deep into the earth only to come surging back with gas and potentially oil. In short, Illinois citizens and our environment, at the moment, are virtually defenseless against the problems experienced in other states.

That’s why it is essential that Illinois move quickly to get the strongest possible safeguards in place to protect citizens and their water supplies. Fortunately, discussions in Springfield have produced a basic agreement on what would be the strongest set of protections of any state in the country. The open pits for wastewater in use in other states will be banned here, and there will be none of the dumping the water into wastewater treatment plants, which has overwhelmed sewage plants elsewhere. The discharge of any fracking wastewater into surface water will be a felony offense. The industry must disclose what chemicals are used, and the most toxic ones will be banned.”

Resources:

<http://frackfreeil.wordpress.com/>

<http://sierraclubillinois.wordpress.com/tag/hydrofracking/>

<http://www.dontfractureillinois.net/tell-illinois-legislators-to-stop-fracking-in-illinois/>

(SAFE - Southern Illinoisans Against Fracturing our Environment)

Radium Dial / Luminous Processes

Radium Dial employed high school girls in their watch factory in Ottawa from 1916 until 1930, painting numbers on watch faces with radium-226, a radioactive material. The women were instructed to lick their paintbrushes between each application to point the tip. When complaints of disease, deformity and death began to mount, and citizens of Ottawa pressed for restitution and accountability, the company renamed its business “Luminous Processes” and moved down the street, continuing to operate until 1978, replacing radium with tritium in the mid 1970s.

From 1930 to 1968, the former Radium Dial building was used as a meat-packing plant, and then it became the Farmers’ Coop. It was demolished in 1968.

After Luminous Processes closed in 1978, the building was used as a “meat locker.” That building was demolished in 1985. Contaminated debris was sent to Hanford, Washington, for “disposal.” But “disposal” was not complete, for this building nor the original building. Citizens actively monitored the demolition processes and complained, continuing to monitor the sites with Geiger counters. Eventually Illinois Department of Environment and the Federal EPA identified 14 highly contaminated sites throughout Ottawa, mostly in or near residential buildings. As of 2006, two of the sites continued to be contaminated and were too hot to visit. (POST-SCRIPT: as of 2011, when the Radium

Girl monument was installed on the site of the former Luminous Processes factory, the two remaining contaminated sites had not yet been cleaned up.)

Resources:

Radium City, 1987 documentary by Carol Langer

Deadly Glow, The Radium Dial Worker Tragedy, Ross Mullner, published by the American Public Health Association, 1999

Public Health Assessment for Ottawa Radiation Areas, 2006, U.S. Dept of Health and Human Services Agency for Toxic Substances and Disease Registry, and the Illinois Dept of Public Health

Argonne labs

Tests were conducted on several of the survivors of Radium Dial and Luminous Processes' poisoning by scientists at Argonne Labs in the 1940s and 1950s to determine the effects of alpha particles lodging in bones, because of the invention of the atomic bomb (Plutonium also lodges in bones and emits alpha particles). No treatment was provided to the women. The Argonne Labs study was finalized in 1993.

Resources:

Radium City, 1987 documentary by Carol Langer

Deadly Glow, The Radium Dial Worker Tragedy, Ross Mullner, published by the American Public Health Association, 1999

US Silica:

701 Boyce Memorial Drive



South on Kedzie, right on Ogden, left on Pulaski, south on 55, to 80, west on 80 to IL-23 (exit 90)/Columbus St, right on US- 6/W.Norris Drive, left onto Boyce Memorial drive