

Planning, Zoning and Drilling in West Broward

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BROWARD COUNTY



Planning for oil and gas

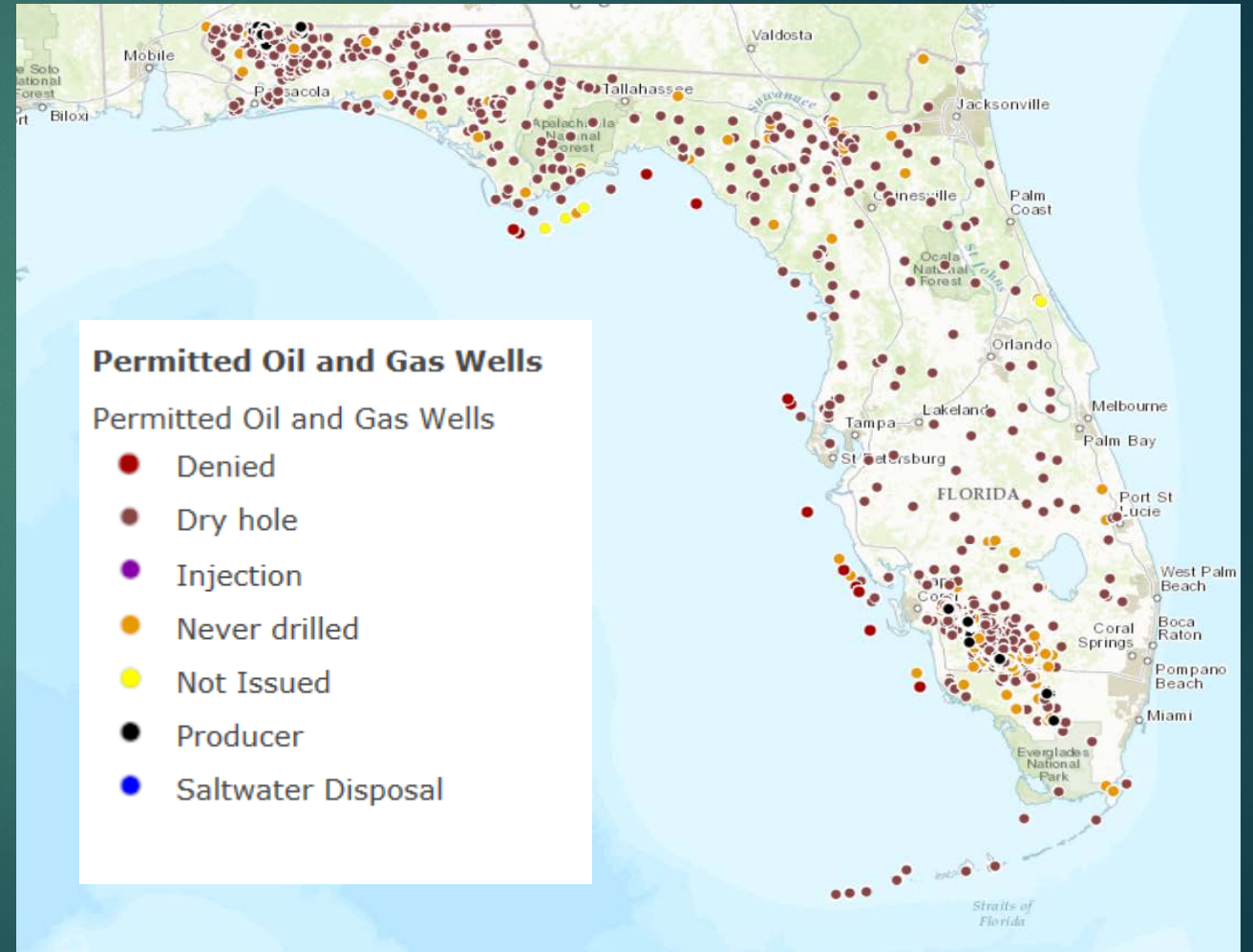
- ▶ State Permitting
- ▶ Broward County Conservation Area
- ▶ Kanter Application
- ▶ Local Land Use
- ▶ Local Zoning
- ▶ Experience in other states



Big Cypress Preserve

1,370 Permit Applications for Oil & Gas Wells

- ▶ 1943 Humble Oil Company (Big Cypress Preserve)
- ▶ 160+ wells produce oil in Florida
 - ▶ Panhandle – Escambia & Santa Rosa
 - ▶ Southwest - Collier, Henry, & Lee
- ▶ Most permits are not active

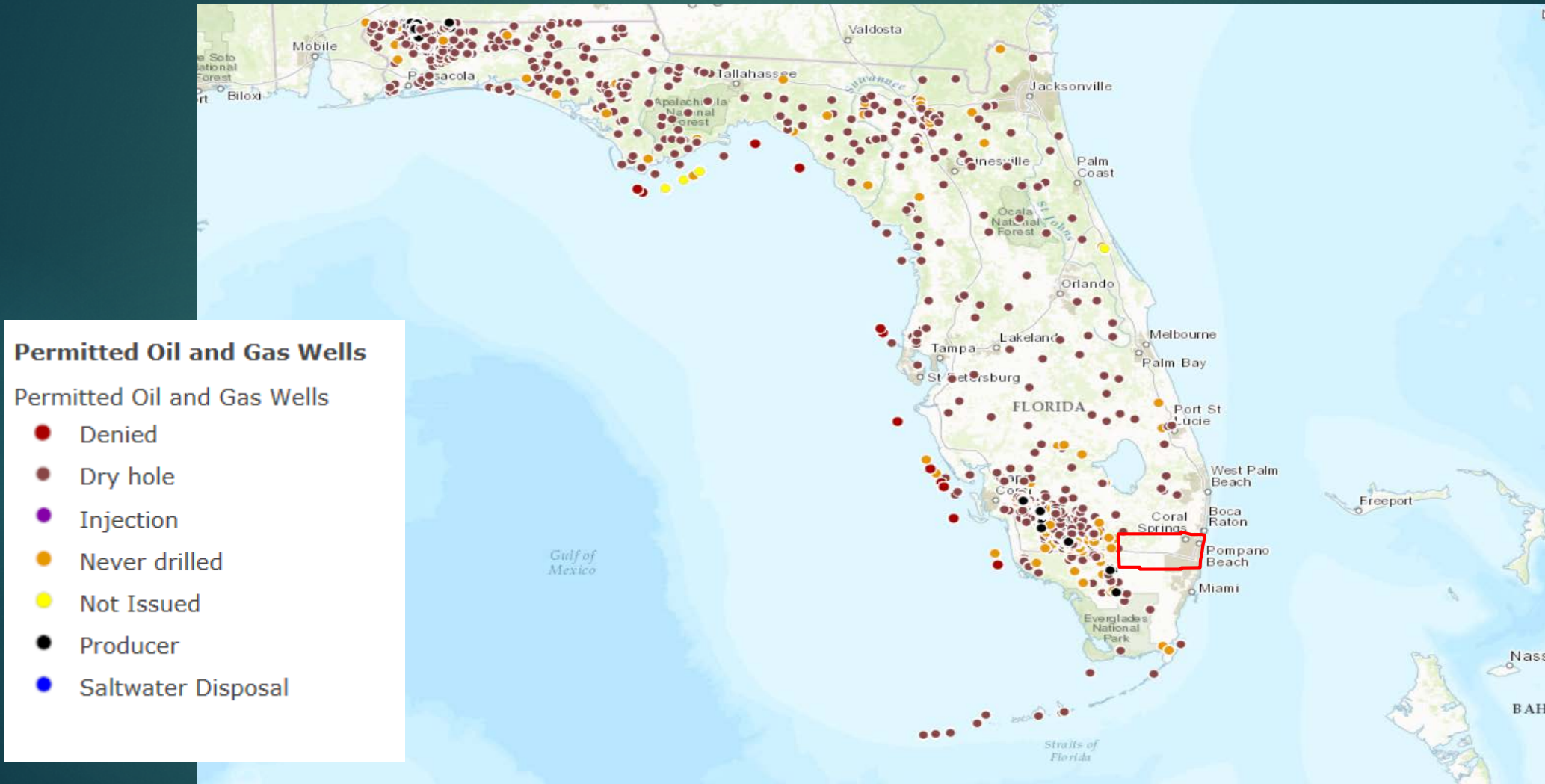


Source: FDEP

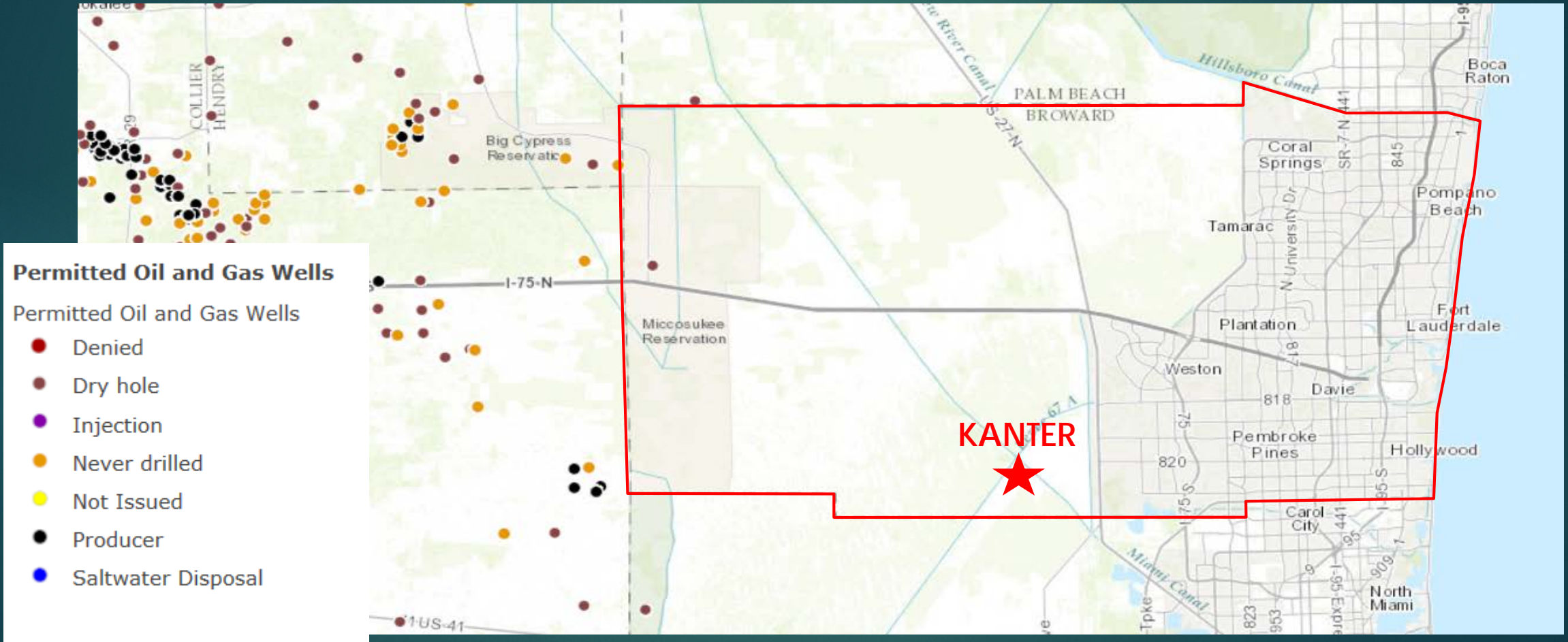
Florida Regulations

- ▶ “Oil and Gas Program” Ch. 377 F.S. and Rule 62C-25 thru 30 F.A.C.
- ▶ State has permitting authority:
 - ▶ Conserve oil and gas resources,
 - ▶ Protect related rights to oil and gas,
 - ▶ Maintain human health and safety, and
 - ▶ Protect the environment.
- ▶ Criteria to issue permit:
 - ▶ Whether impacts are minimized.
 - ▶ Ownership of surface and mineral rights.
 - ▶ Potential to strike oil.
- ▶ Pollution is prohibited, spills must be reported, and that the driller is liable for damages.

Broward County: The big picture

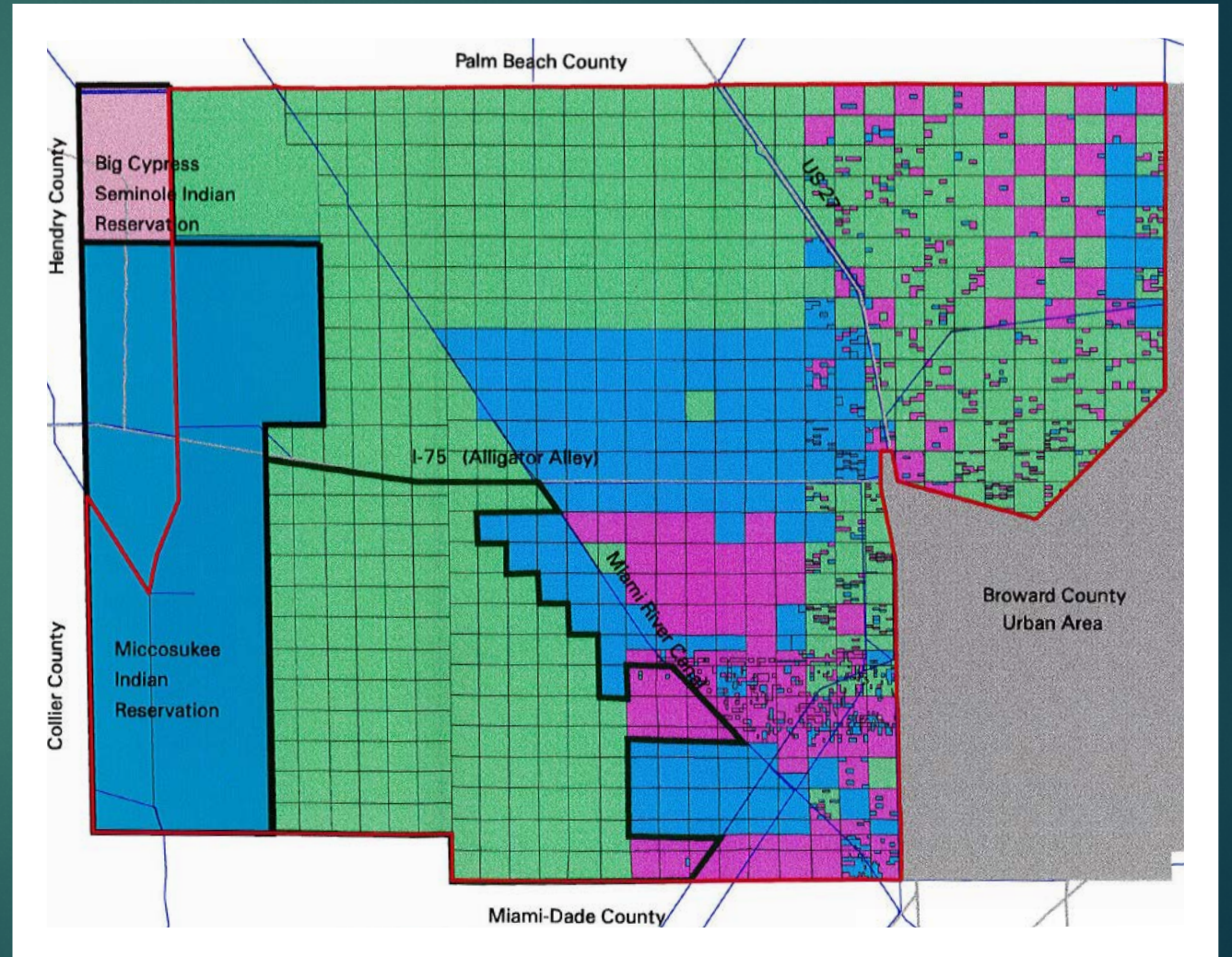


Broward County: The big picture



Private Ownership and Mineral Rights

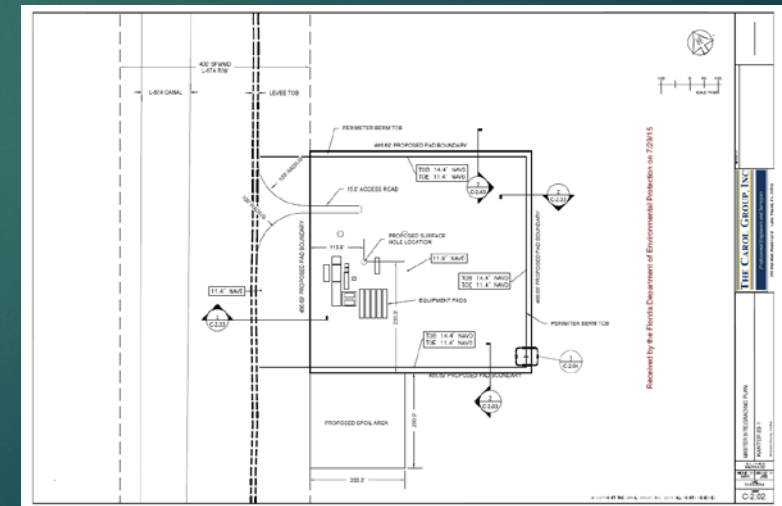
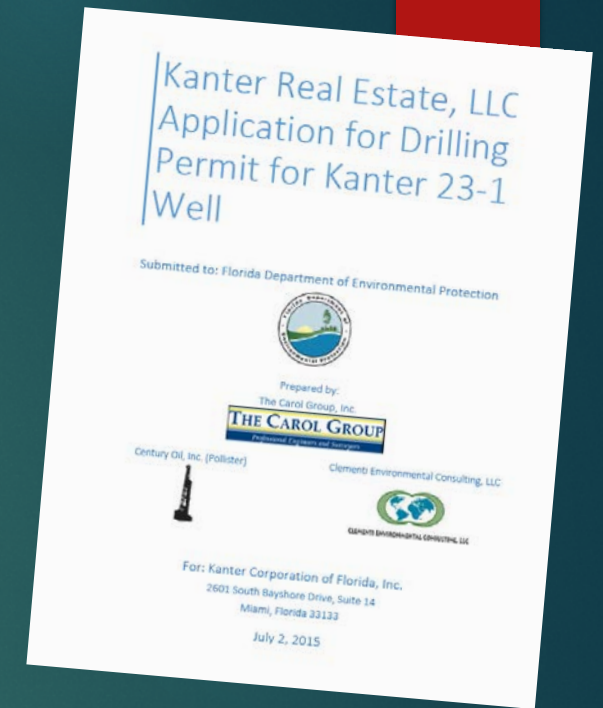
- ▶ Private land ownership
 - ▶ Kanter LLC owns 20,000 acres fee simple in Broward
- ▶ Private Mineral Rights
 - ▶ D.R. Horton, home builder, has mineral rights under 10,000 lots in Florida



Source: Broward County

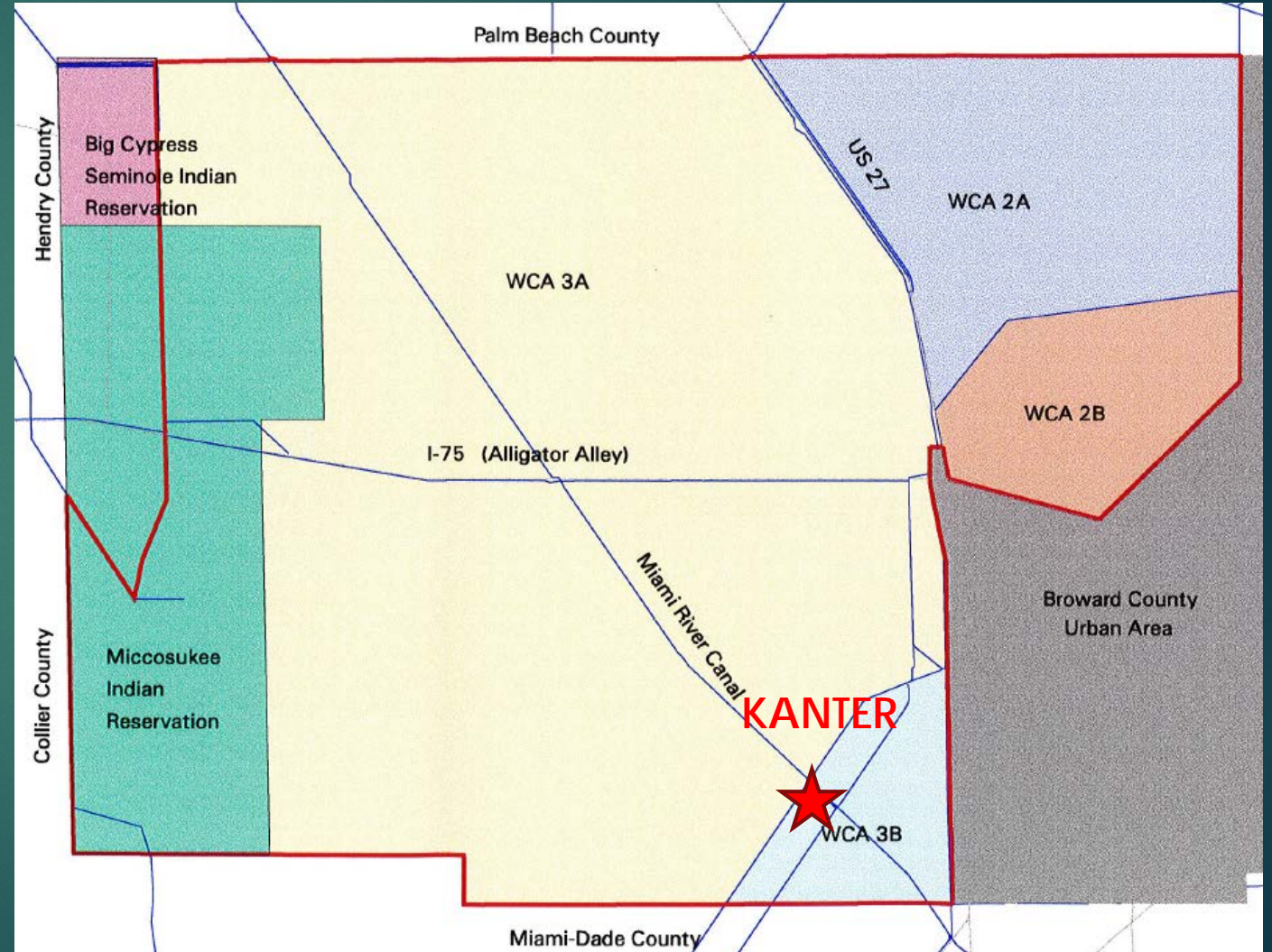
Kanter 23-1 Well

- ▶ 2015 – Application for Drilling Permit
- ▶ 5 acre site in Water Conservation Area 3B
- ▶ Adjacent to the L-67A levee
- ▶ Access from U.S. 27 and U.S. 41
- ▶ Kanter proposes that pilot hole depth be 11,800 feet
- ▶ May drill horizontally
- ▶ Exploratory well only
- ▶ Hydraulic fracturing is not specifically proposed



Water Conservation Areas

- ▶ 1993 SFWMD Resolution
- ▶ 2015 Broward County & many municipal partners oppose drilling



CITY OF MIRAMAR
MIRAMAR, FLORIDA
RESOLUTION NO. 13-03

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF MIRAMAR, FLORIDA, OPPOSING THE OIL DRILLING PERMIT APPLICATION SUBMITTED BY KANTER REAL ESTATE LLC, A FLORIDA FOR PROFIT LIMITED LIABILITY CORPORATION, TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION SEEKING OIL DRILLING RIGHTS ON PROPERTY LOCATED IN THE MIRAMAR CITY LIMITS, AND SUPPORTING EFFORTS OPPOSING FLORIDA EVERGLADES, APPROXIMATELY SIX MILES WEST OF MIRAMAR CITY LIMITS, AND SUPPORTING EFFORTS OPPOSING EXTREME WELL STIMULATION, HYDRAULIC FRACTURING, ACID FRACTURING, AND ANY FORM OF EXTREME WELL STIMULATION FOR PURPOSES OF RESOURCE EXTRACTION AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the City recently learned that Kanter Real Estate LLC, a Florida for profit limited liability corporation ("Kanter"), has submitted an application for an oil drilling permit to the Florida Department of Environmental Protection seeking authorization to conduct exploratory oil well drilling operations on property owned by Kanter located approximately six miles west of Miramar's City limits in the Florida Everglades, and

WHEREAS, if granted, the oil drilling is anticipated to exceed 11,000 feet in depth, well below the area known as the Biscayne Aquifer, which provides the water supply for Miramar residents and many residents of Broward County; and

WHEREAS, the City, along with many local agencies, have expressed substantial concerns about the potential harmful effects of the proposed drilling, including potential

Rev. No. 13-03

RESOLUTION OPPOSING EXPLORATORY OIL WELLS
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
RESOLUTION NO. 93-18

A RESOLUTION BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT OPPOSING CONSTRUCTION OF EXPLORATORY OIL WELLS IN ADJACENT TO, OR UNDER ANY EVERGLADES WATER CONSERVATION AREAS.

WHEREAS, Over the past few months the issue of oil exploration in and around the water conservation areas has been discussed and the SFWMD has presented formal written access or transportation facilities that may be required for this use; and

WHEREAS, The Governing Board is against the use of the District's property for any purpose other than that which is authorized by law; and

WHEREAS, This exploratory well and any subsequent production wells will pierce aquifers in the region which include the surficial aquifer system (consisting of the water table and intermediate aquifers which contain fresh and brackish quality water used for drinking and irrigation purposes); at greater depths, the well will pierce the producing zones of the middle Florida aquifer system (these zones contain brackish water used for domestic and AGR production purposes); the well, if constructed will pierce the aquifer which is used exclusively for disposal of waste water in south Florida; and

WHEREAS, The Governing Board is concerned about the protection against oil-related South Florida's water resources; and

Land Use and Zoning



Broward County	Designation
Broward County Land Use plan	Conservation - Reserve Water Supply Areas
Unincorporated Area Future Land Use Map	Conservation
Broward County Zoning Code	Conservation-1 (CON-1)

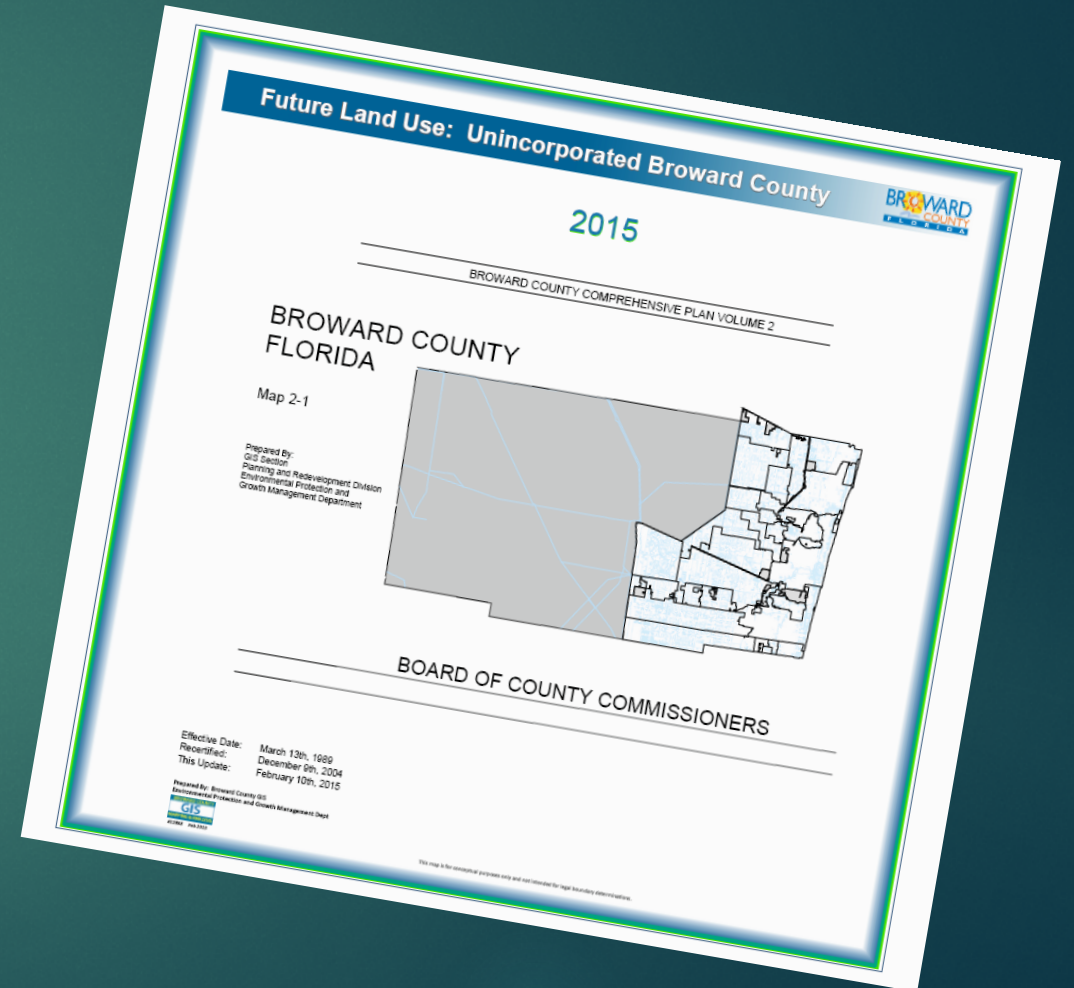
Broward County Land Use Plan: Conservation - Reserve Water Supply Areas

- ▶ Utilities, transportation and communications facilities, specifically **excluding** hazardous liquid pipelines and electrical power plants, which do not impair the natural environment or disturb the natural ecosystem of the area and which are not in conflict with applicable water management and wildlife protection policies of local, state and federal agencies.
- ▶ Requires authorization by the SFWMD
- ▶ Oil drilling is NOT a permissible use



Unincorporated Area Future Land Use: Conservation

- ▶ Permitted uses identified in the Broward County Land Use Plan
- ▶ Oil drilling is NOT a permissible use



Broward NEXT

- ▶ **POLICY 2.24.3** Designate and protect Broward County west of Levees 33, 35A, 36, L-37 and L-35 for Conservation Use in order to promote groundwater recharge and prevent salt water intrusion.
- ▶ **NEW POLICY 2.9.3** Broward County continues to oppose the use of hydraulic fracturing, acid fracturing, and any form of extreme well stimulation for the purposes of resource extraction.

#BROWARDNEXT



Zoning –

CON-1: Conservation District-Water Supply Areas

- ▶ **Zoning: Sec. 39-401. - Purpose and intent...**to provide protection to the reserve water supply area...

- ▶ **Sec. 39-402. - Permitted uses.**

Utilities, transportation and communication facilities, specifically **excluding** hazardous liquid pipelines, which do not impair the natural environment or disturb the natural ecosystem of the area and which are not in conflict with applicable water management and wildlife protection policies of local, state and federal agencies.

- ▶ Oil drilling is NOT a permissible use

- ▶ Contrast to Collier County where permitted use, when FDEP permit issued

Permits & Licenses

- ▶ FDEP Oil and Gas Permit
- ▶ Army Corps of Engineers permit
- ▶ Broward County Environmental Resource License (ERL)
- ▶ Surface Water License
- ▶ Hazardous Material Management Facility
- ▶ Consumptive Use Permit for proposed water supply on-site
- ▶ Building Permit for temporary on-site housing
- ▶ Additional permits required to extract oil

To move forward...

- ▶ State has not preempted local regulatory, land use, or zoning authority
- ▶ Kanter project would need Broward County Commission approval:
 - ▶ Land Use Plan Amendments (2)
 - ▶ Impacts on Environment (water supply, wetlands, surface water, etc,)
 - ▶ Compatibility with surrounding land uses
 - ▶ Rezoning
- ▶ FDEP complete permit review
- ▶ Obtain Broward County permits & licenses

Emotions run high

HYDRAULIC FRACTURING



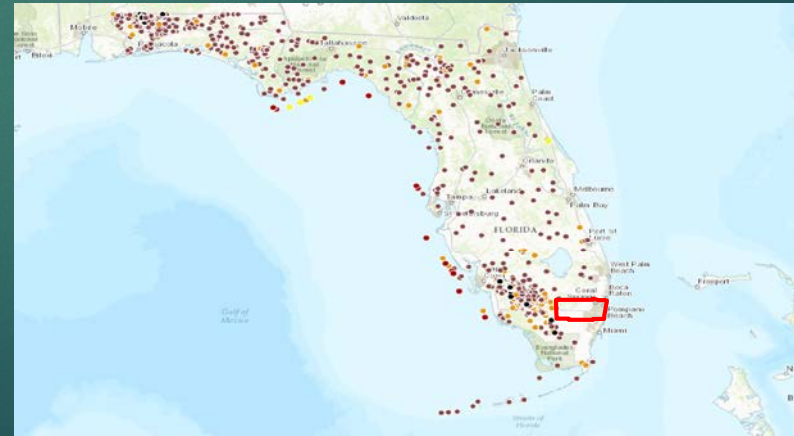
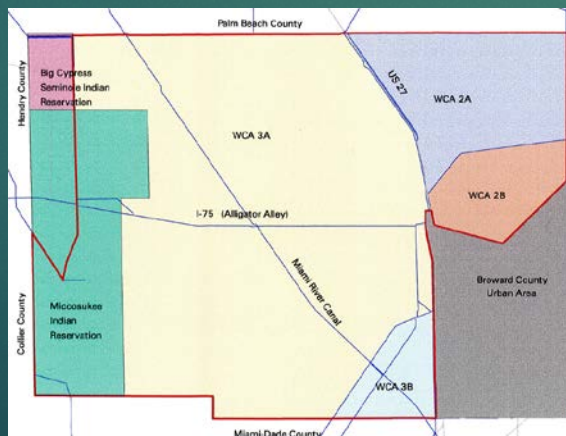
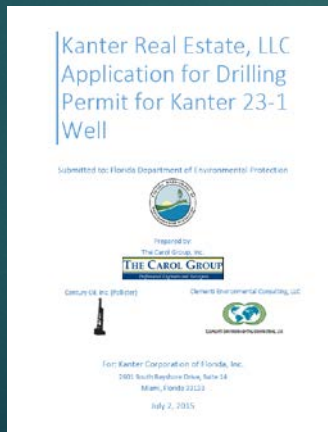
Photo Credit Center for Advanced Research and Teaching

Recent cases outside Florida - Preemption of local zoning

- ▶ **Ohio Supreme Court** ruled that the state has “exclusive authority” and that cities and counties can neither ban nor regulate fracking through zoning laws or other restrictions.
- ▶ **Pennsylvania Supreme Court** struck down Act 13 law preventing local governments from passing zoning ordinances prohibiting natural gas drilling.
- ▶ **Texas** cases have argued that local restrictions amount to regulatory taking.

Take aways...

- ▶ Land in Western Broward has private mineral rights
- ▶ Kanter, LLC has applied for State Permit Oil & Gas Permit to explore
- ▶ Land Use and Zoning do not permit drilling
- ▶ Broward NEXT will strengthen polices
- ▶ State and National context – economics and environment



A Brief Overview of Extreme Well Stimulation

Jason Liechty

Environmental Planning and Community Resilience Division

September 8, 2016

Click here to deliver the Tampa Bay Times Tampa Bay Times

Texas oil company used acid in Florida wildlife sanctuary soil, denies fracking



Craig Pittman, Times Staff Writer

Thursday, April 24, 2014 5:57pm

701 701

6

The Texas oil company fined \$25,000 for violating its state permit while drilling a well amid a wildlife sanctuary was not doing any hydraulic fracturing, also known as "fracking," according to Dan A. Hughes Co. spokesman David Blackmon.

RELATED NEWS/ARCHIVE

Richard Corbett resigns as Florida Fish and Wildlife commissioner
5 Months Ago

Wildlife officials approve weeklong bear hunt in Florida
7 Months Ago

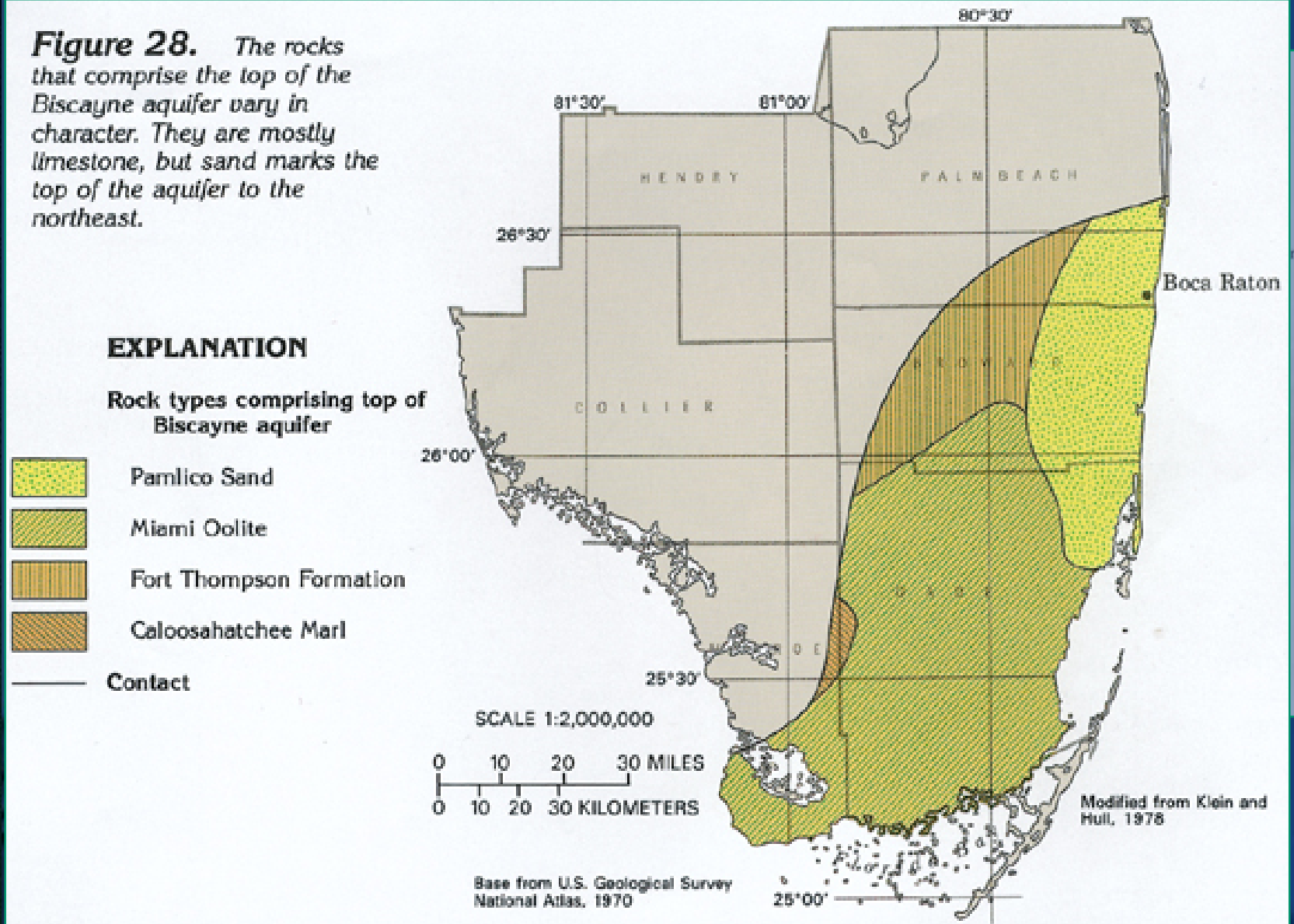
Instead of using water mixed with chemicals to create fractures, as is common in fracking, it was using acid, Blackmon said, adding that company officials don't see anything wrong with what they did.

"We were never sure," he said. "We have never really been told what the objection was."

Department of Environmental Protection spokeswoman Dee Ann Miller said the company got in trouble because it had done one



Figure 28. The rocks that comprise the top of the Biscayne aquifer vary in character. They are mostly limestone, but sand marks the top of the aquifer to the northeast.



Dollar-Bay Shoal-Reef Dolomite Play



Everglades sawgrass prairie



image credit: Wikipedia

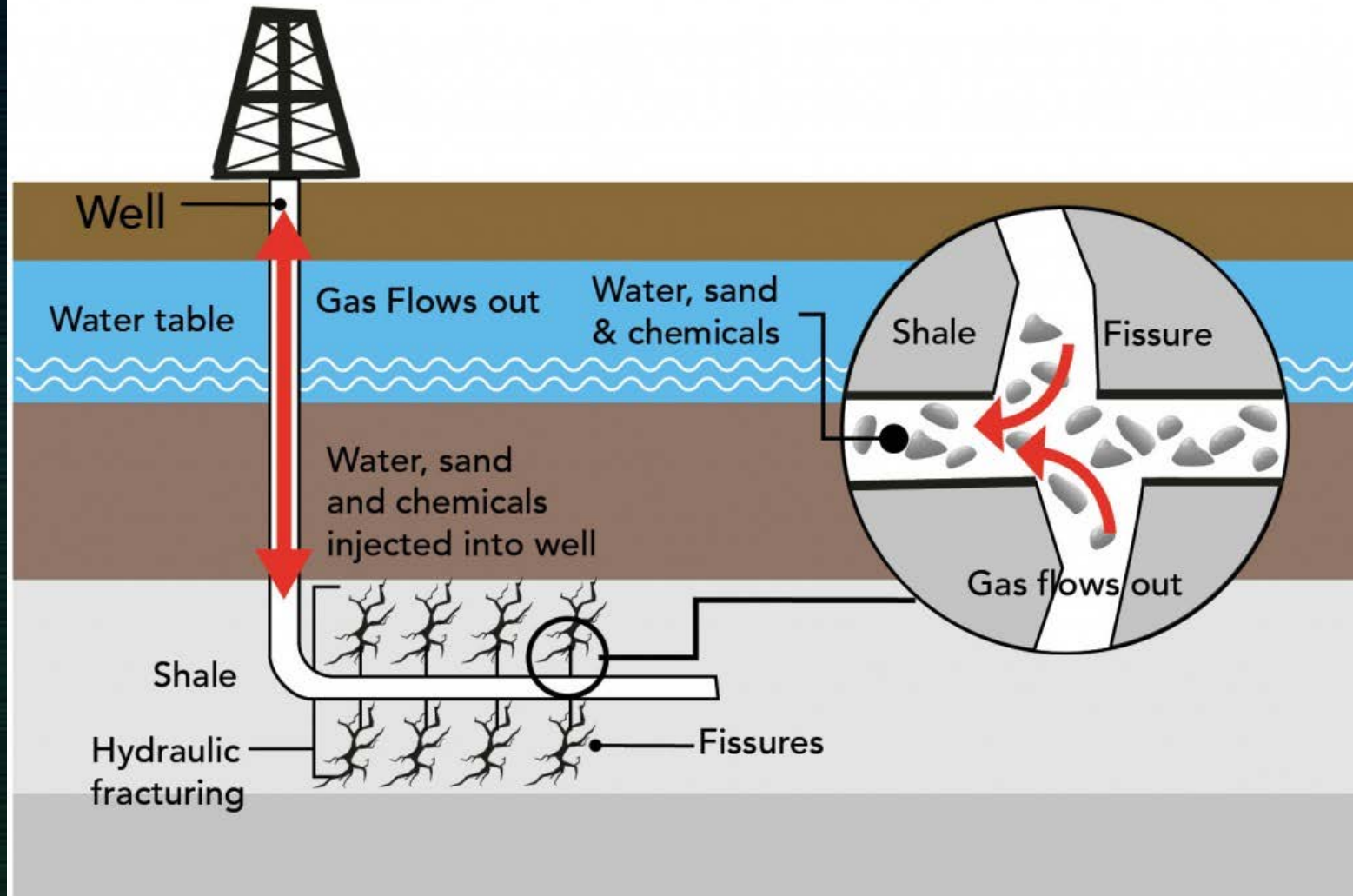


image credit: Tomasz Sienicki

Extreme Well Stimulation

- Recovery of oil and gas using unconventional techniques involving the injection of fluids underground to fracture rock formations and release oil and gas deposits trapped within
- Fluids typically consist of water, sand, and chemicals
- Registries of chemicals do exist, but companies often claim “trade secrets” and keep chemical compositions private

Shale gas extraction

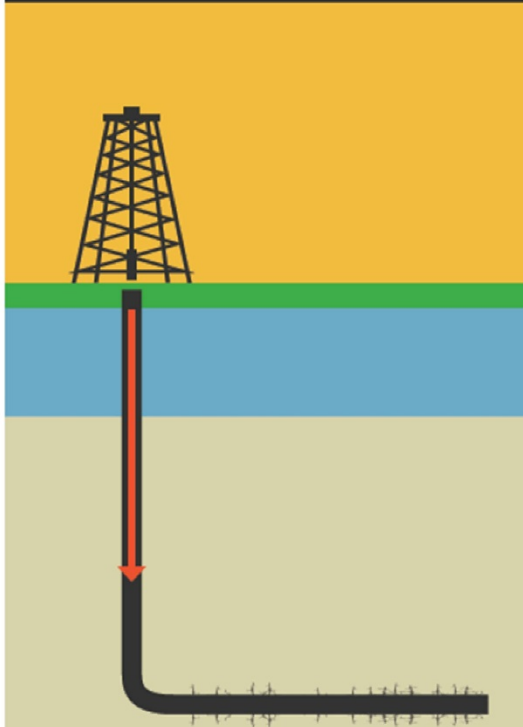


Extreme Well Stimulation Techniques

- Hydraulic fracturing
- Matrix acidization
- Acid fracturing
- Steam injection
- Carbon dioxide flooding
- Dry/waterless fracking

WELL CLEANING

Acid Cleaning

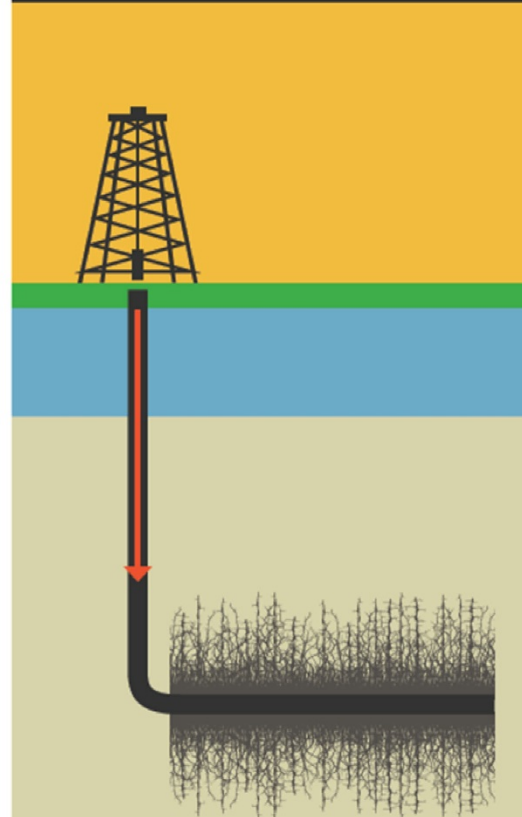


- Acid dissolves buildup on well casing
- Acid mixture stays within or very near wellbore (within 36 inches)

VS

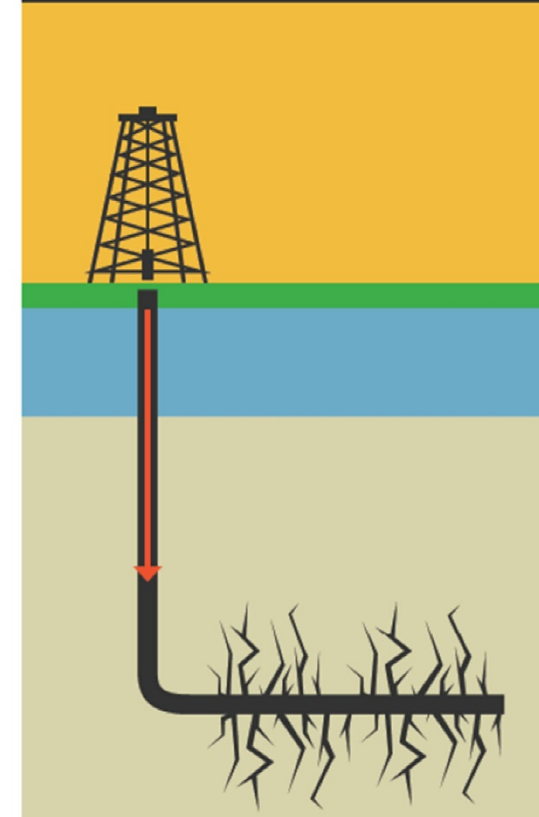
OIL WELL STIMULATIONS

Acid Stimulation



- Acid mixture dissolves 36 inches or more of rock to increase oil flow

Acid/Hydraulic Fracturing



- Acids and/or other fluids injected under high pressure to fracture rock to increase oil flow

Concerns

- Chemical contamination
 - Surface spills
 - Poor well construction
 - Underground migration
 - Poor disposal
- Amount of water used
- Disposal of fracking water

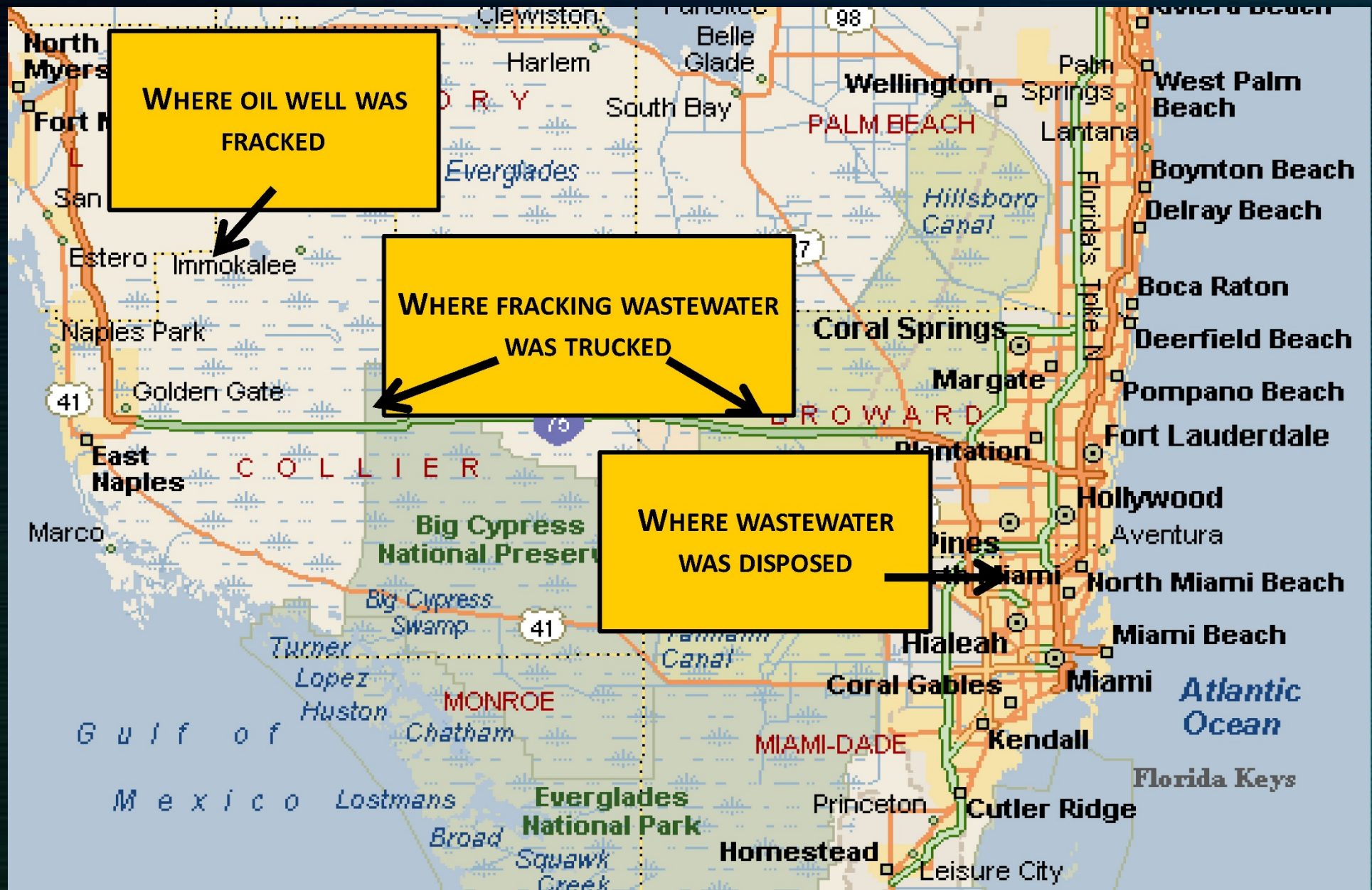
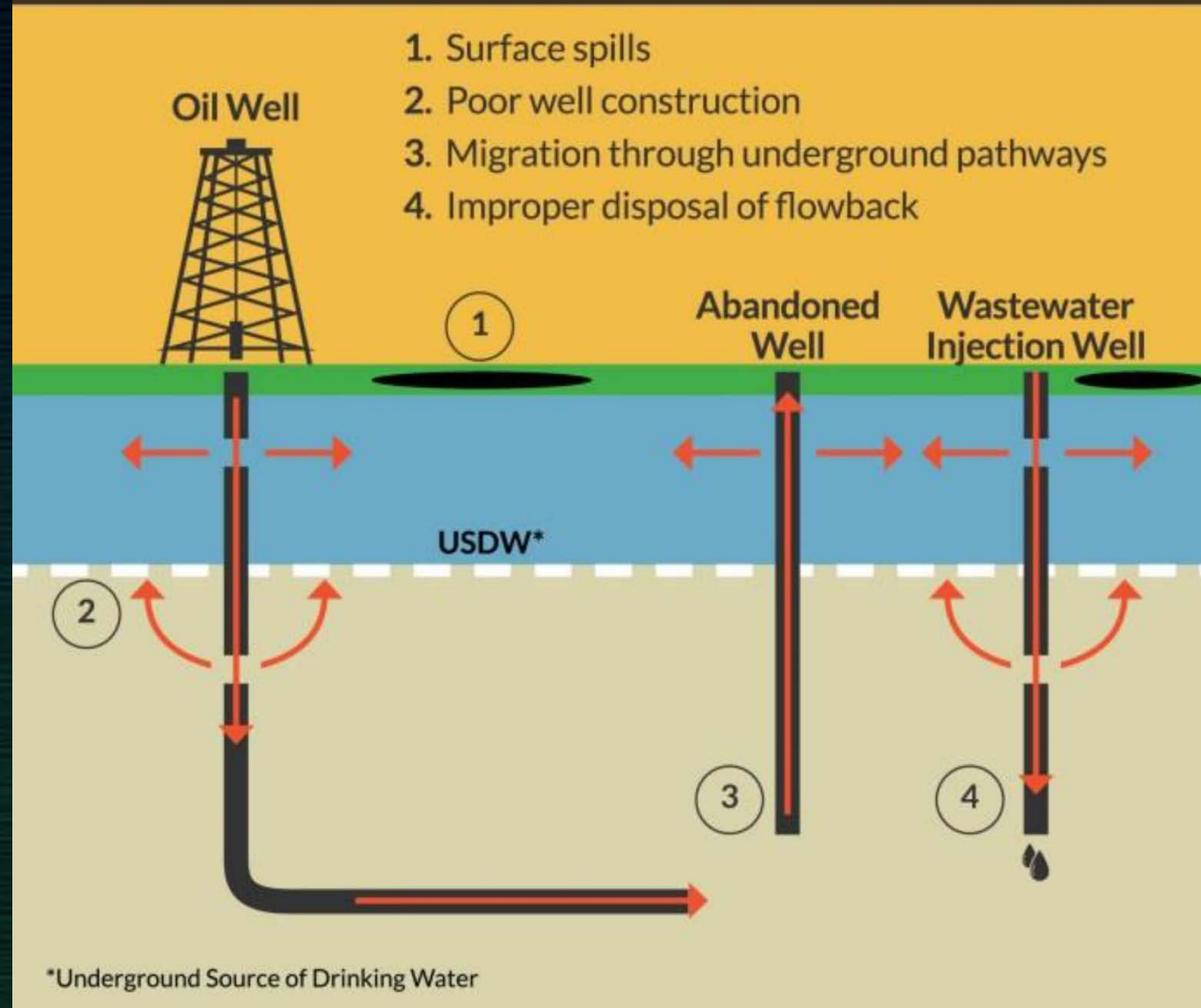


image credit: Conservancy of Southwest Florida

POTENTIAL PATHWAYS FOR CONTAMINATION



Collier-Hogan well profile

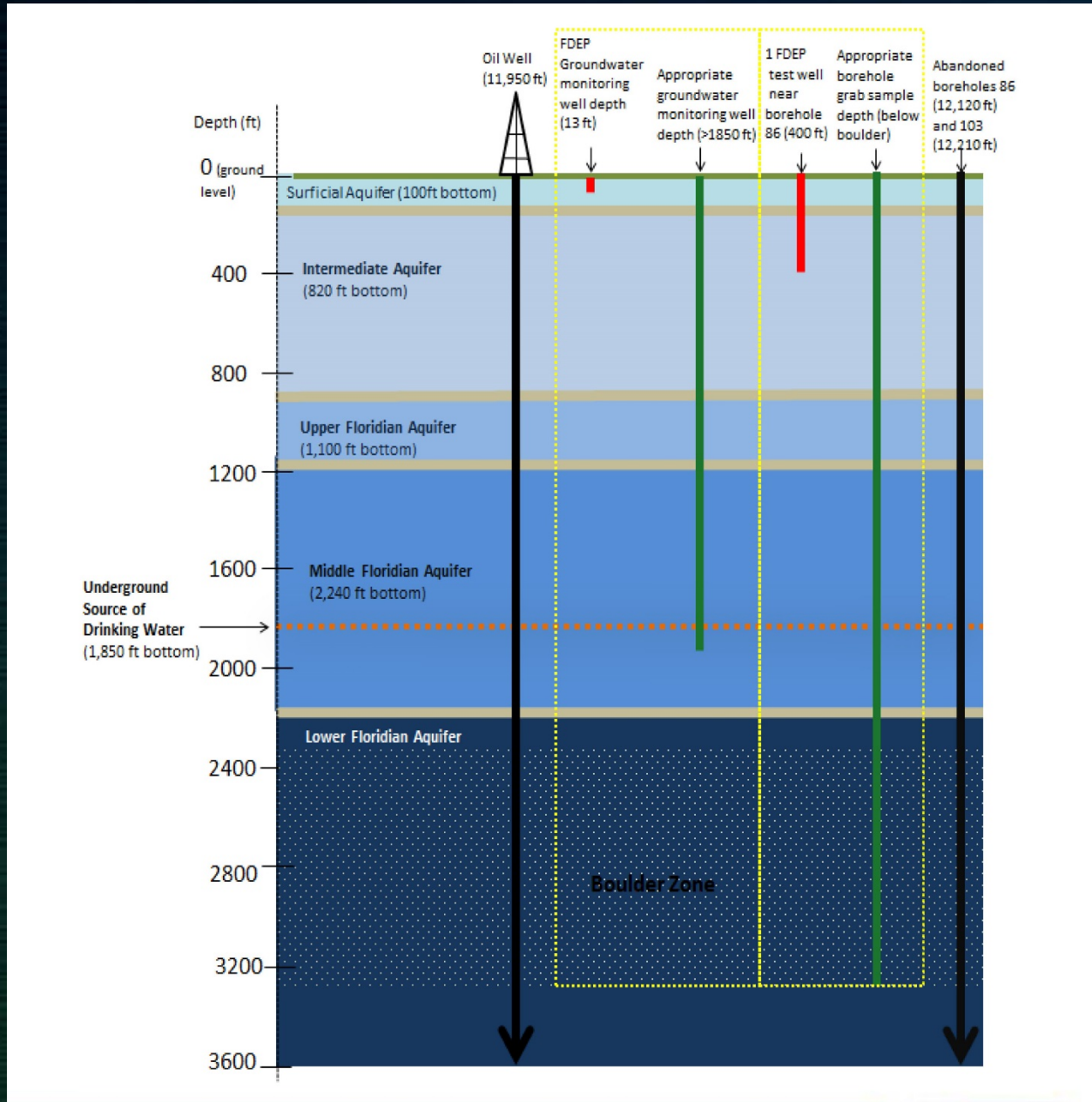
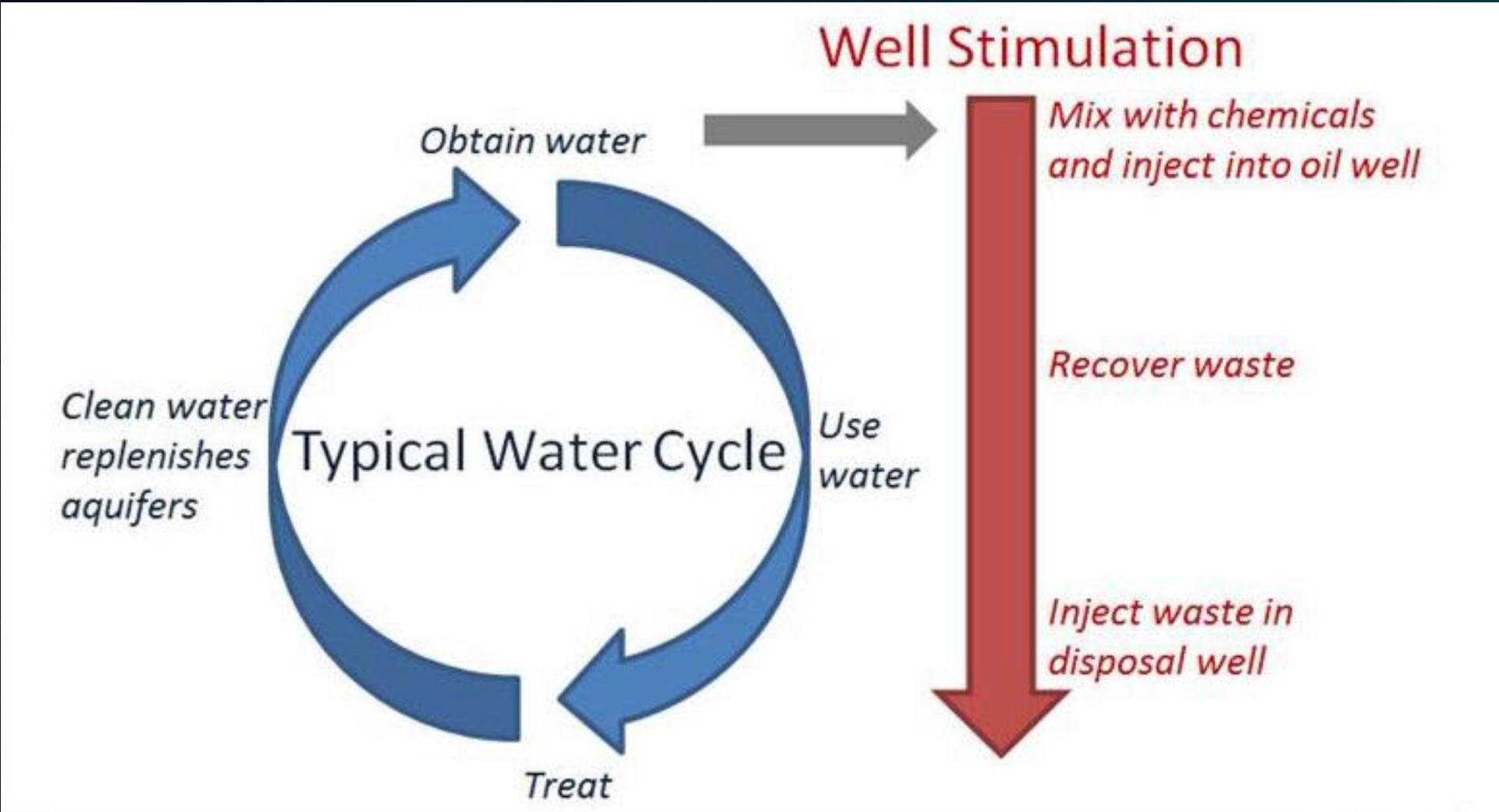


image credit: Conservancy of Southwest Florida



Well Stimulation Water Usage

- A fracking well can use up to 10 million gallons of water
- Equivalent to 1,000 average-size swimming pools
- Negates the water saved in a year by over 630 efficient toilets enabled by the County's Conservation Pay\$ program

Thank you.

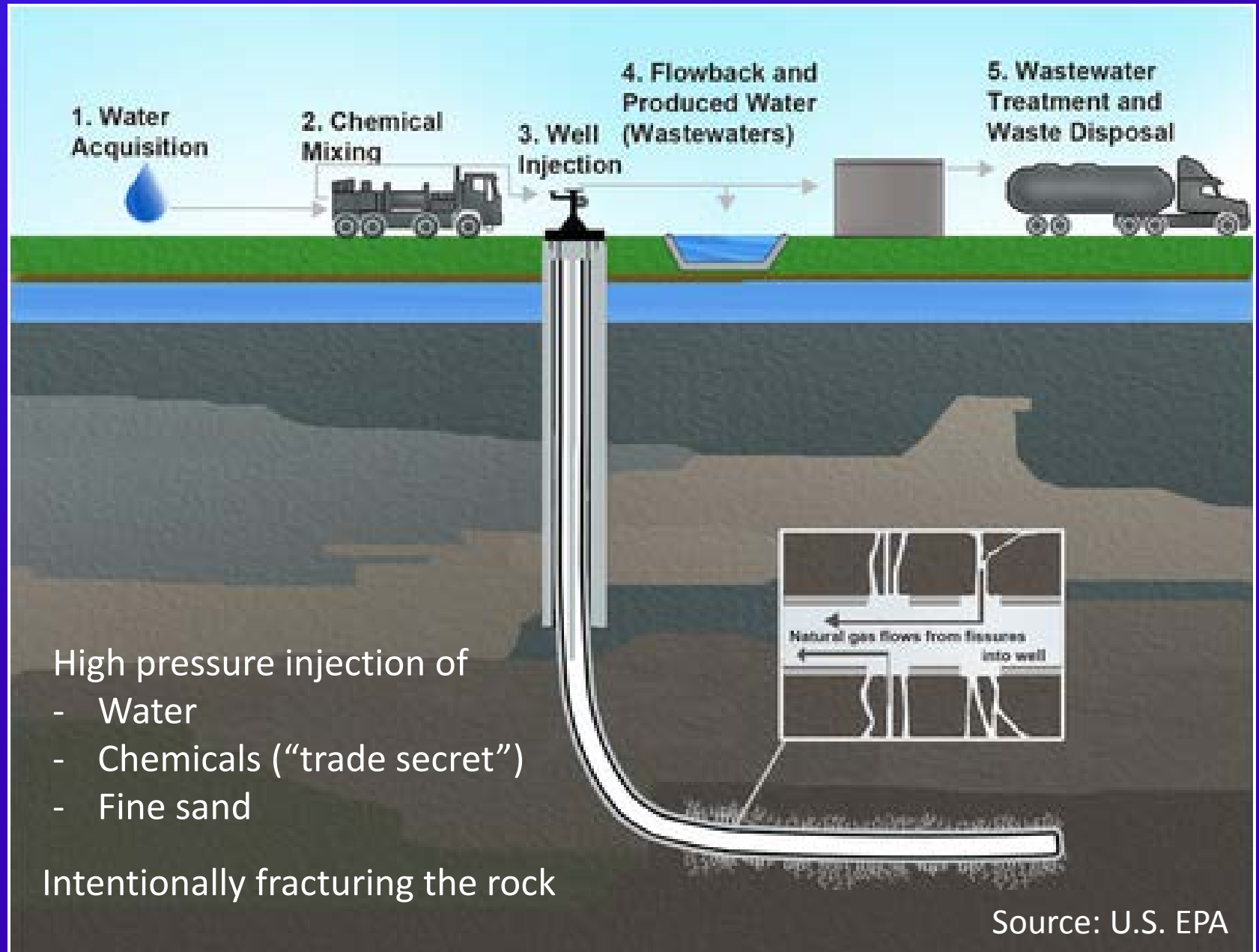
Jason Liechty
Environmental Planning and Community Resilience Division
954-519-0310
jliechty@broward.org

Background on Fracking (in the Everglades and in general)

Dr. Christopher McVoy

September 8, 2016

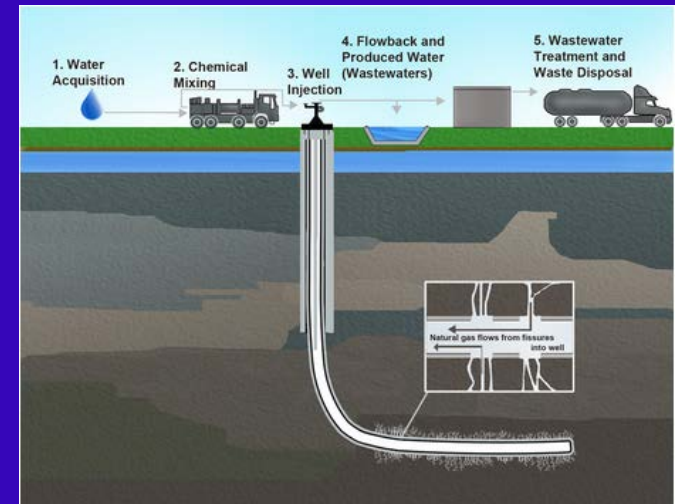
hydraulic fracturing - Also referred to as hydrofracking, hydrofracturing, and fracking



hydraulic fracturing - Also referred to as hydrofracking, hydrofracturing, and fracking

Potential environmental issues related to hydraulic fracturing:

- water use
- chemicals spills at the surface
- induced earthquakes from fracking
- groundwater contamination
- air pollution
- noise
- night sky light pollution
- impacts of sand mining
- forest fragmentation
- surface water quality degradation from waste fluids
- induced earthquakes from deep disposal injection of waste fluids



Potential societal issues related to hydraulic fracturing:

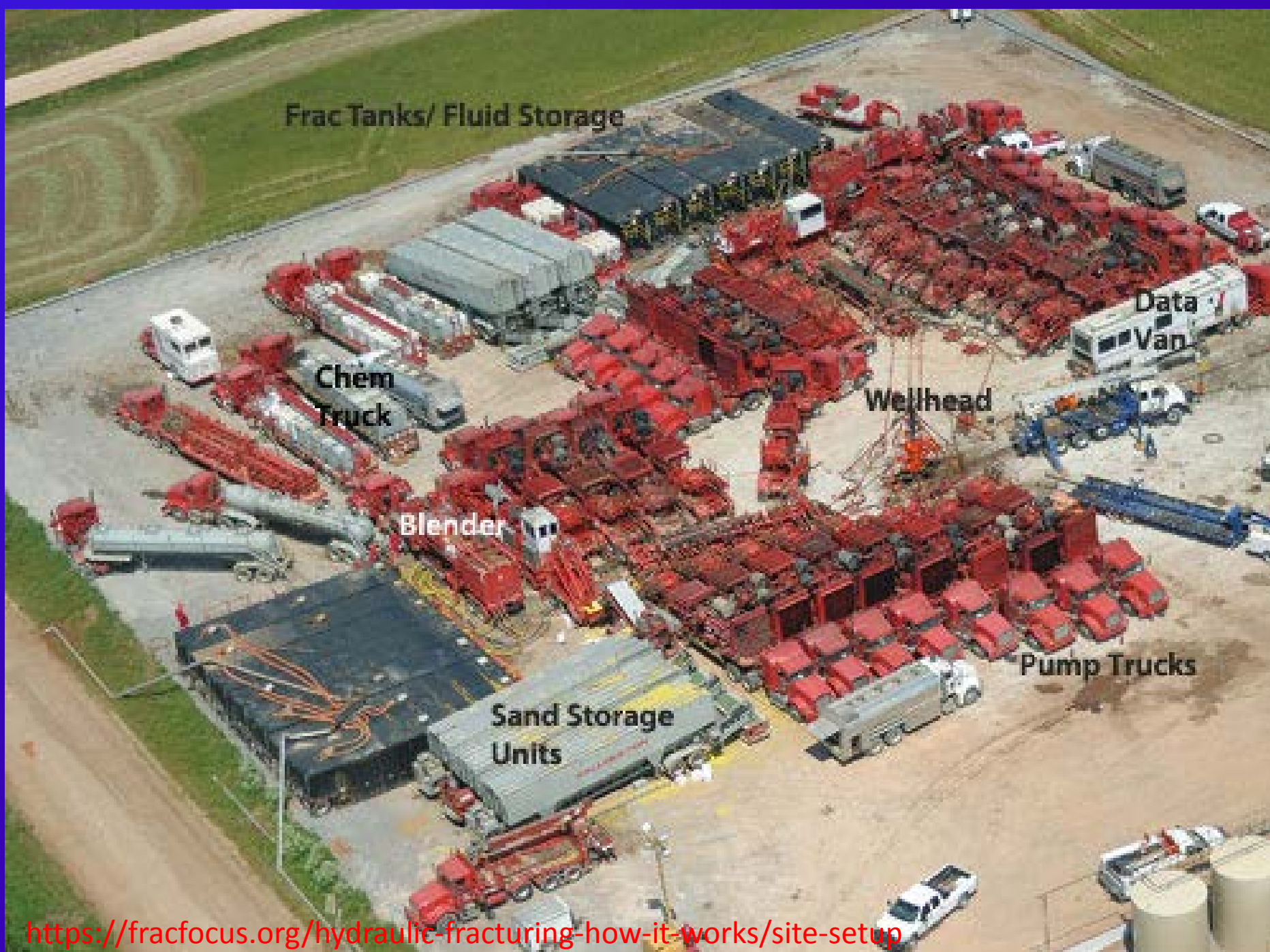
- Health
- Property values
- Insurance (induced earthquakes)
- Climate Change!!

- Marcellus Shale, Pennsylvania 4.5 million gallons
- Wattenburg Sandstone, Colorado 2.7 million gallons
- Barnett Shale, Texas 2.8 million gallons
- Eagle Ford Shale, Texas 4.3 million gallons
- Haynesville Shale, Texas 5.7 million gallons
- Bakken Formation, North Dakota 1.5 million gallons
- Horn River Shale, British Columbia 15.8 million gallons



Figure 7. Example of a gel used in hydrofracturing to carry proppant into a fracture.
Photograph by Daniel Soeder, USGS.

- Up to 3 M gals per fracking treatment
- Even @ 0.5% => 15,000 gals chemicals in wastewater
- Chemicals proprietary and unknown (“Halliburton Exemption”)
- 2005 exemption from Clean Water Act and Safe Drinking Water Act



Frac Tanks/ Fluid Storage

Chem Truck

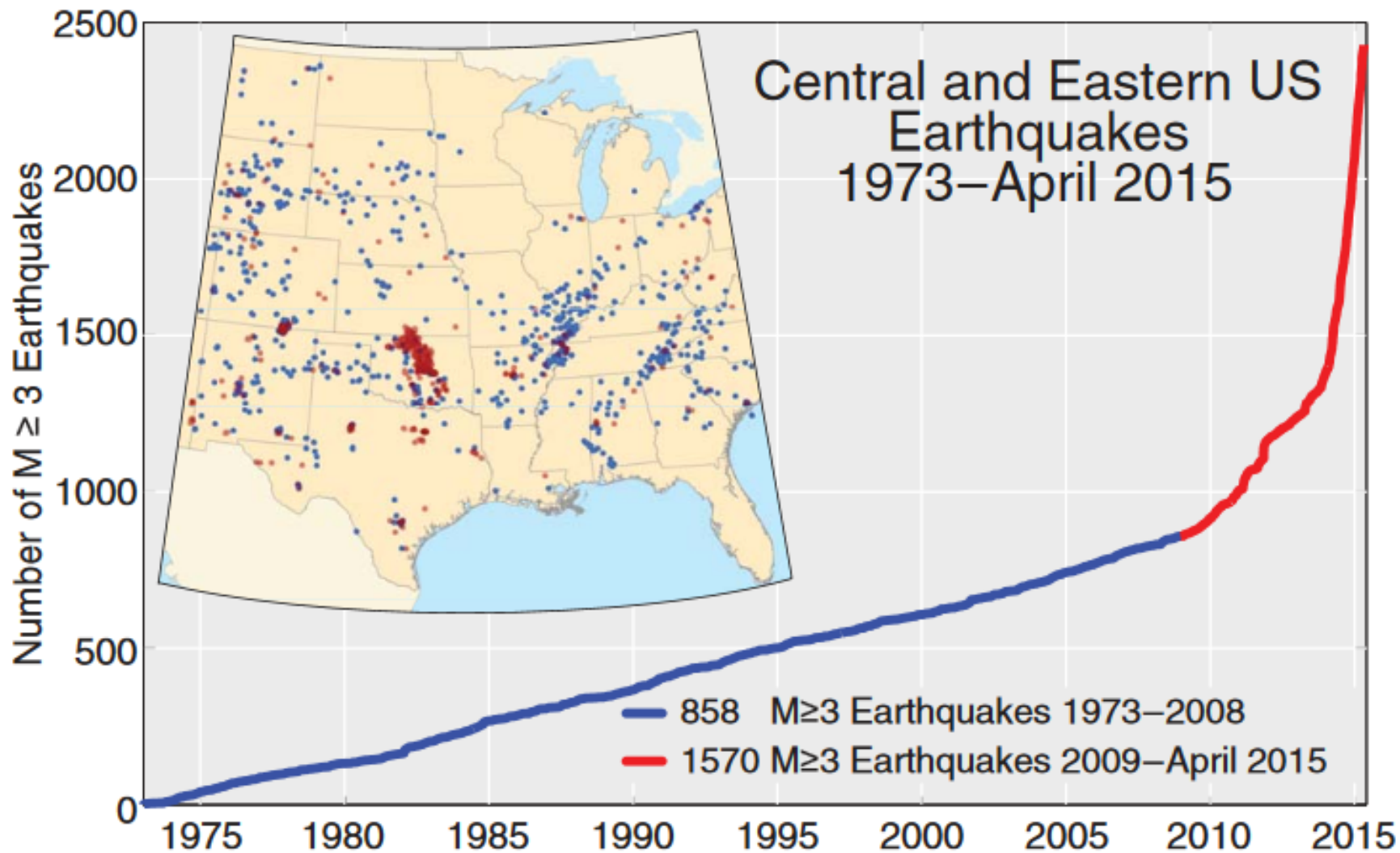
Blender

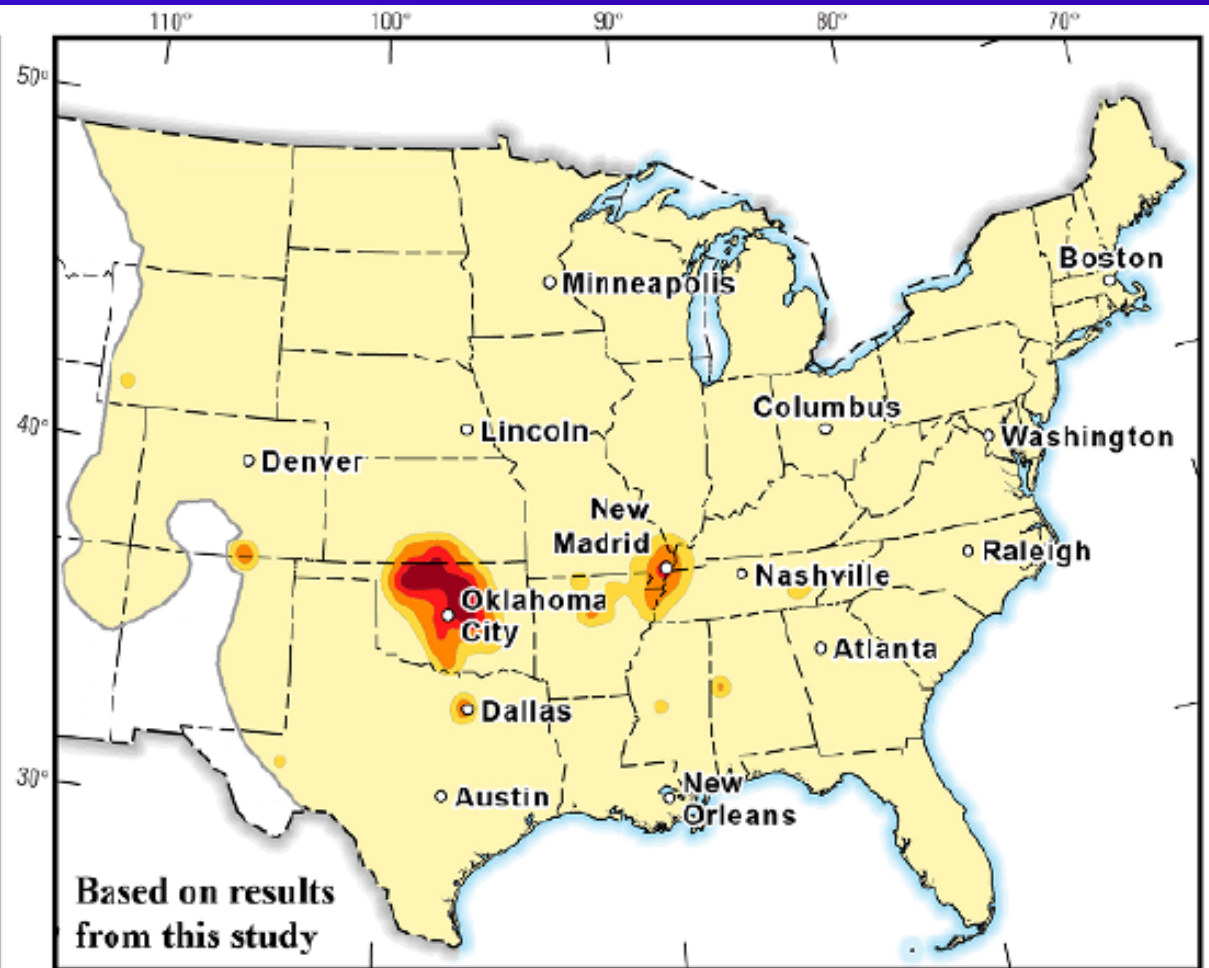
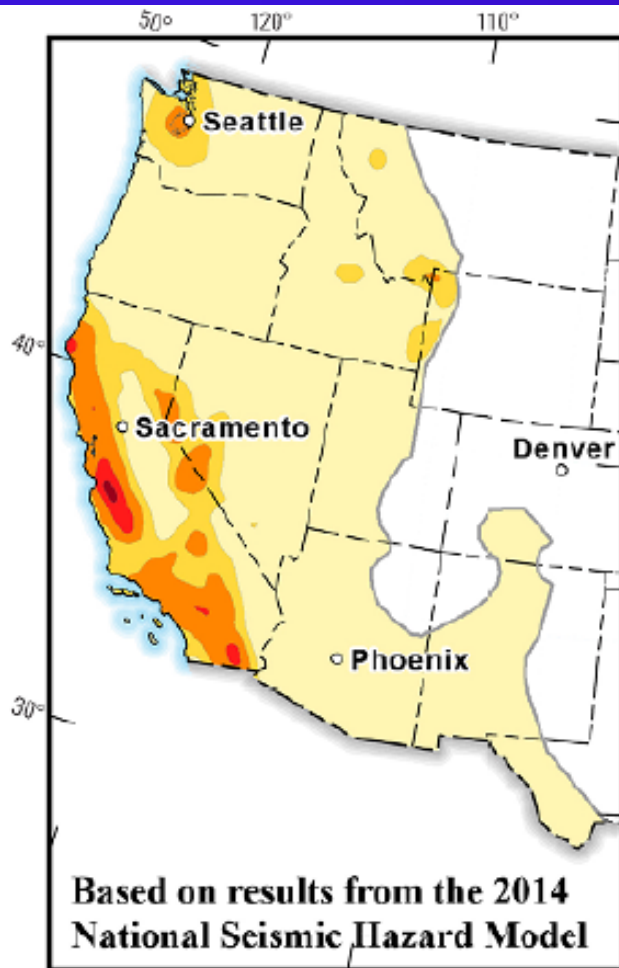
Sand Storage Units

Wellhead

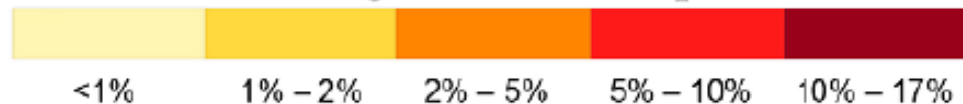
Data Van

Pump Trucks





Chance of damage from an earthquake in 2016



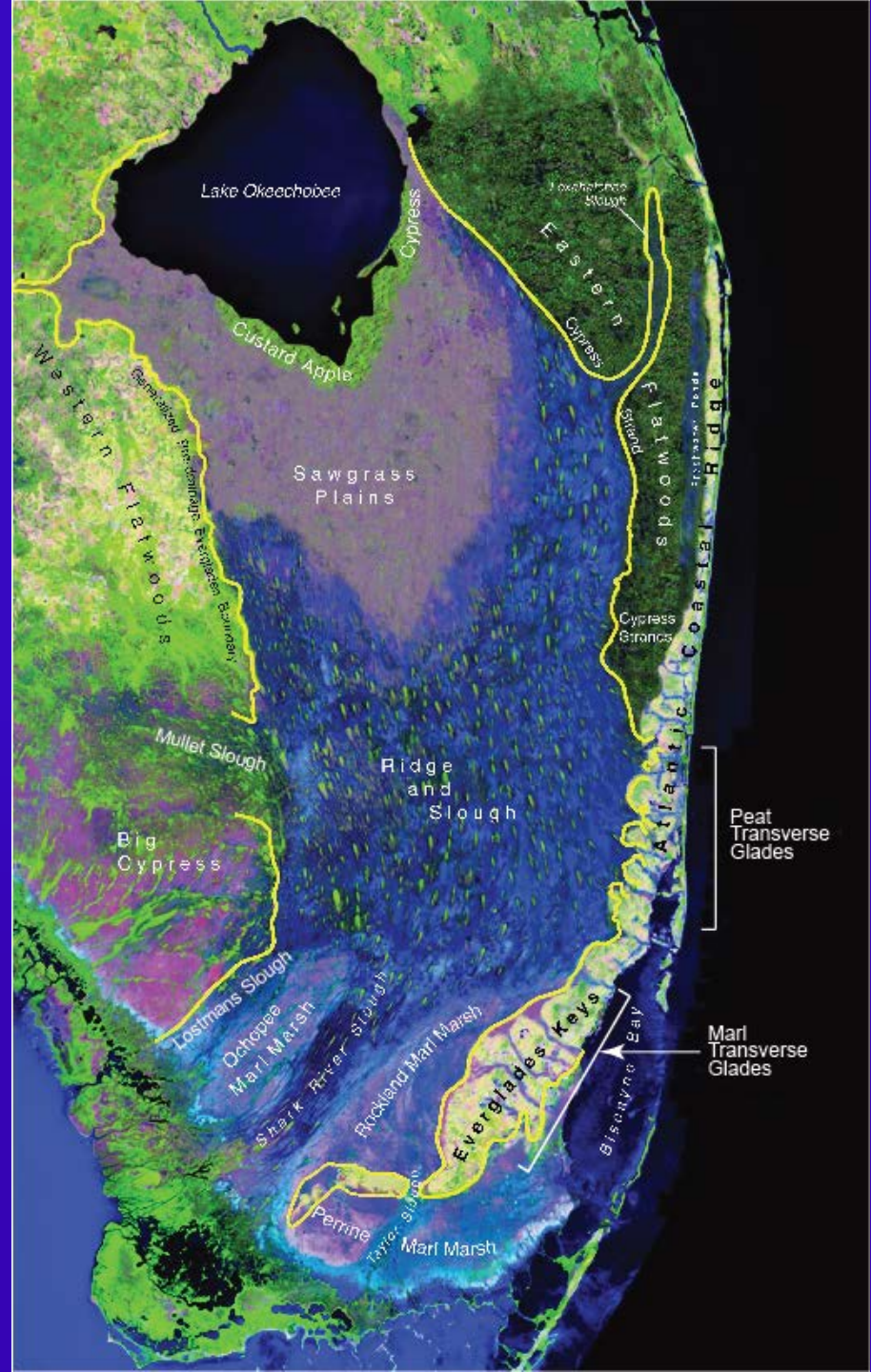
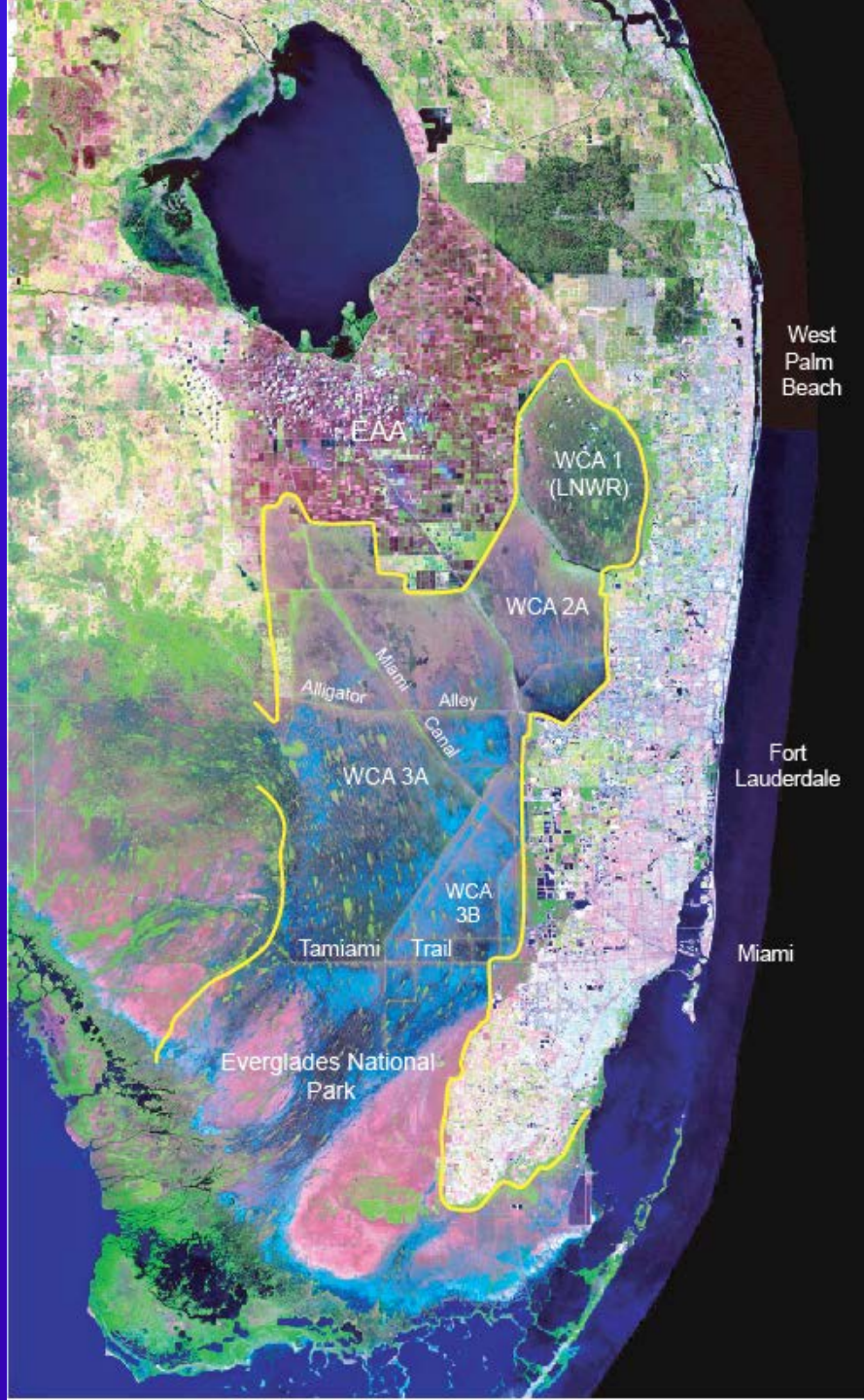
2016 One-Year Seismic Hazard Forecast for the Central and Eastern United States from Induced and Natural Earthquakes

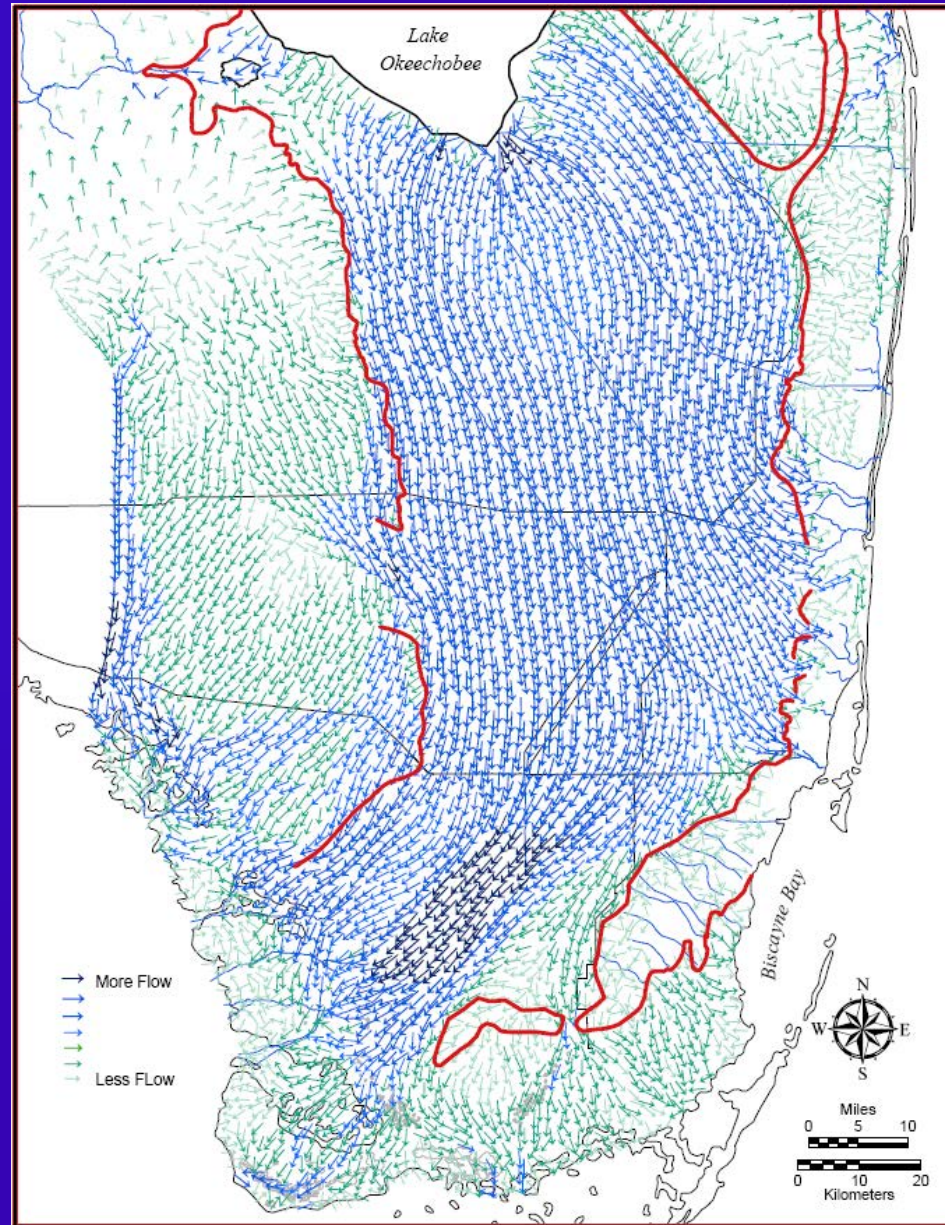
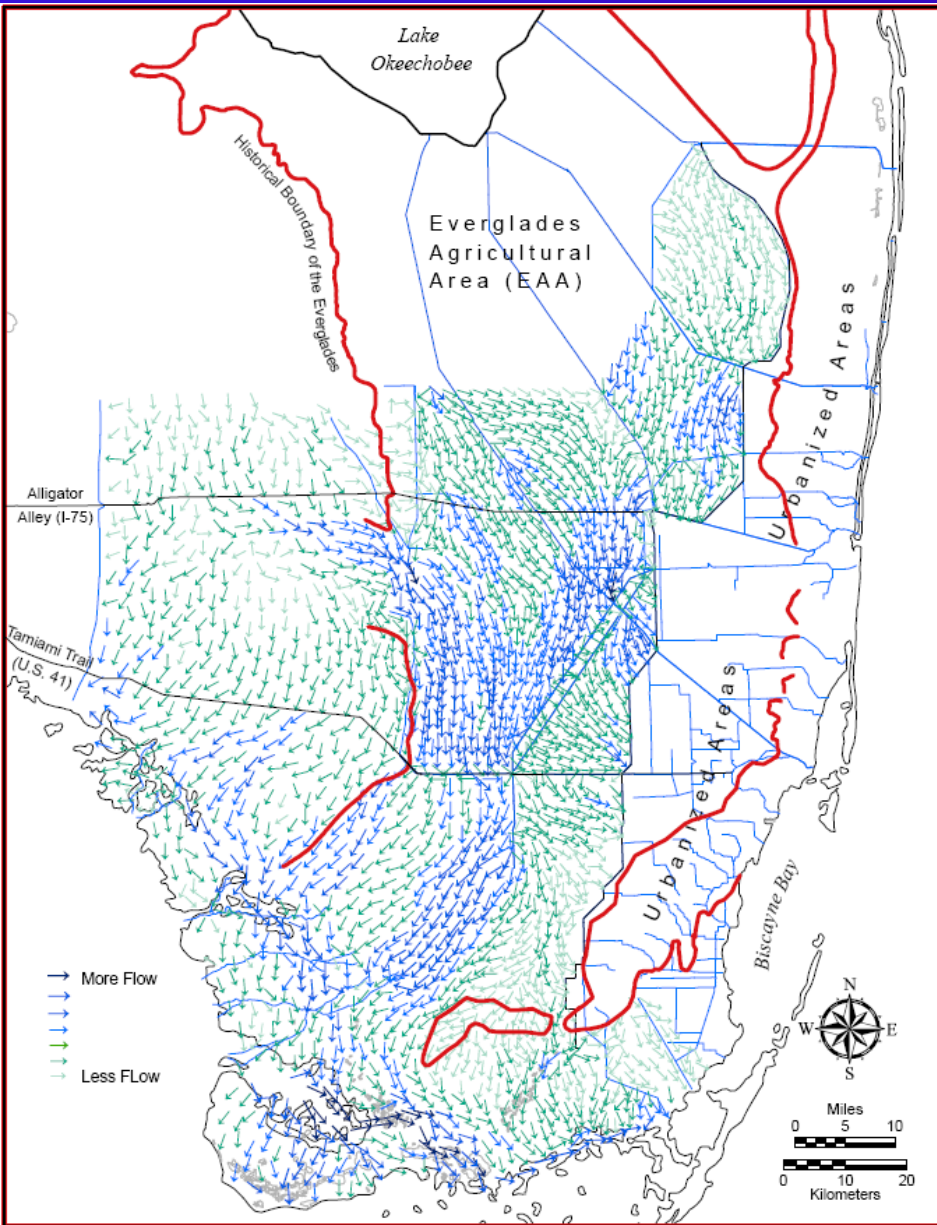
Open-File Report 2016-1035



Everglades:

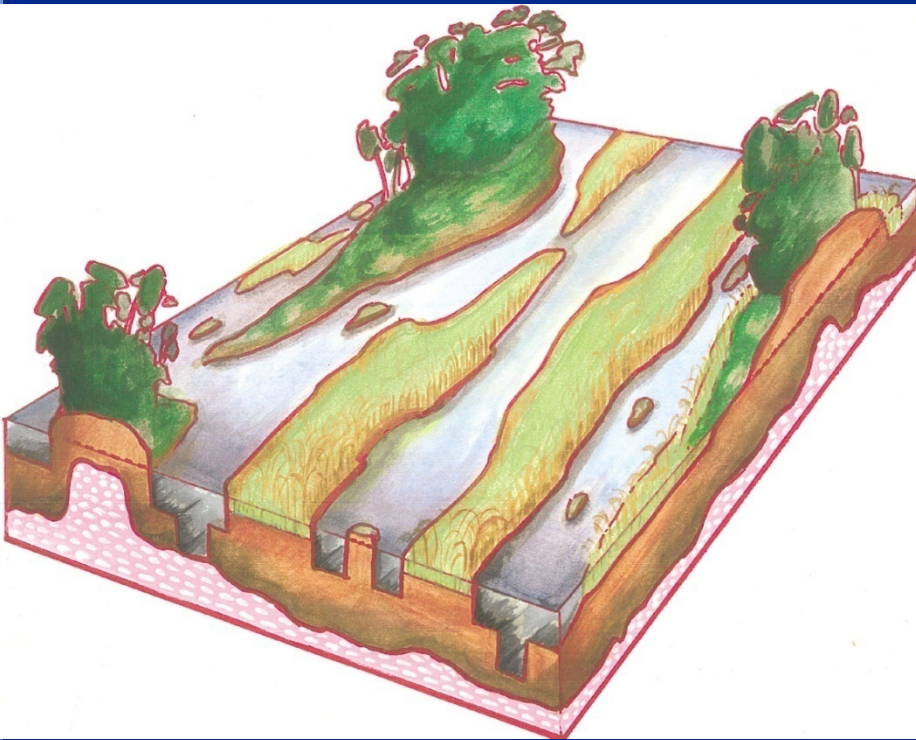
- Don't have the water
- Don't have place to put the produce water
- Can't support the industrial and trucking footprint
- How to get the gas/oil off the site?
- Patterned; extreme sensitive to even minor disturbances
- Sensitivity to WQ – 10 ppb for a nutrient!



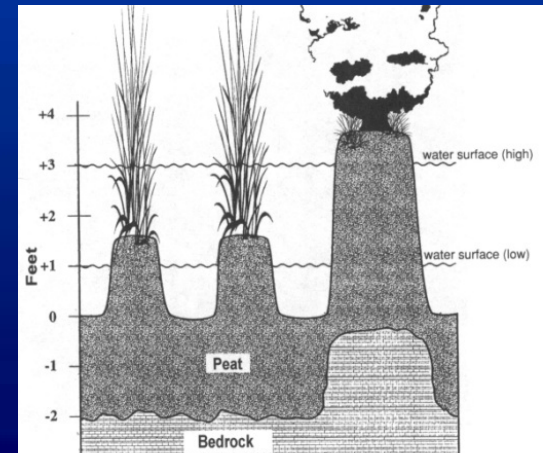


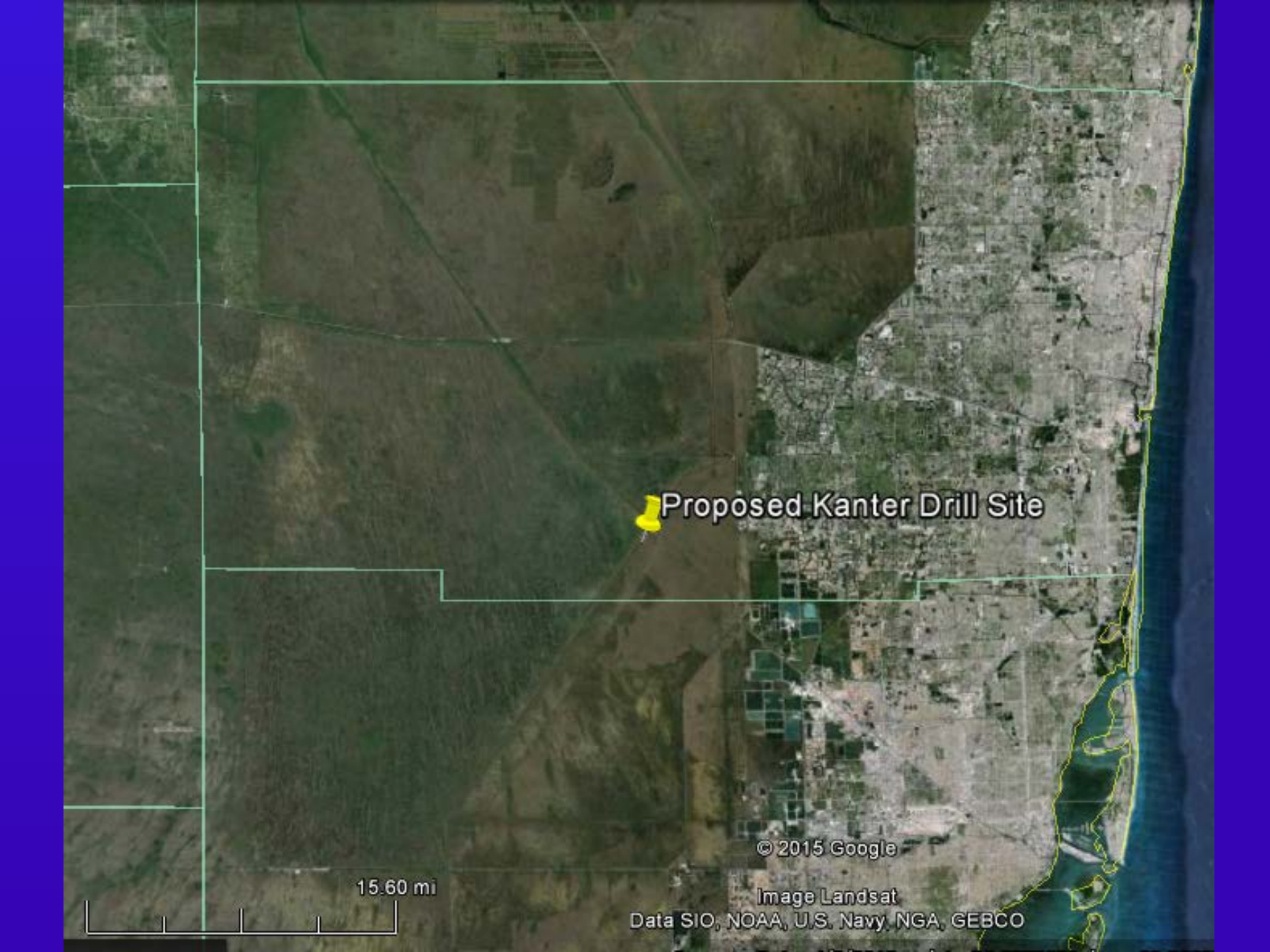
Ridge & Slough Landscape

Pattern
(plan view)



Microtopography
(x-section)




A satellite map showing a coastal region. A yellow pushpin is placed on a brownish, undeveloped area. The text 'Proposed Kanter Drill Site' is overlaid on the map near the pushpin. The map shows a mix of green fields, brownish land, and a coastal town with buildings and roads. The ocean is visible on the right side.

Proposed Kanter Drill Site

© 2015 Google

Image Landsat
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

15.60 mi

A scale bar with four segments, used to indicate distance in miles.

But wait, didn't we all
get the memo that we're
supposed to keep fossil
fuels *in the ground*, out
of the atmosphere?

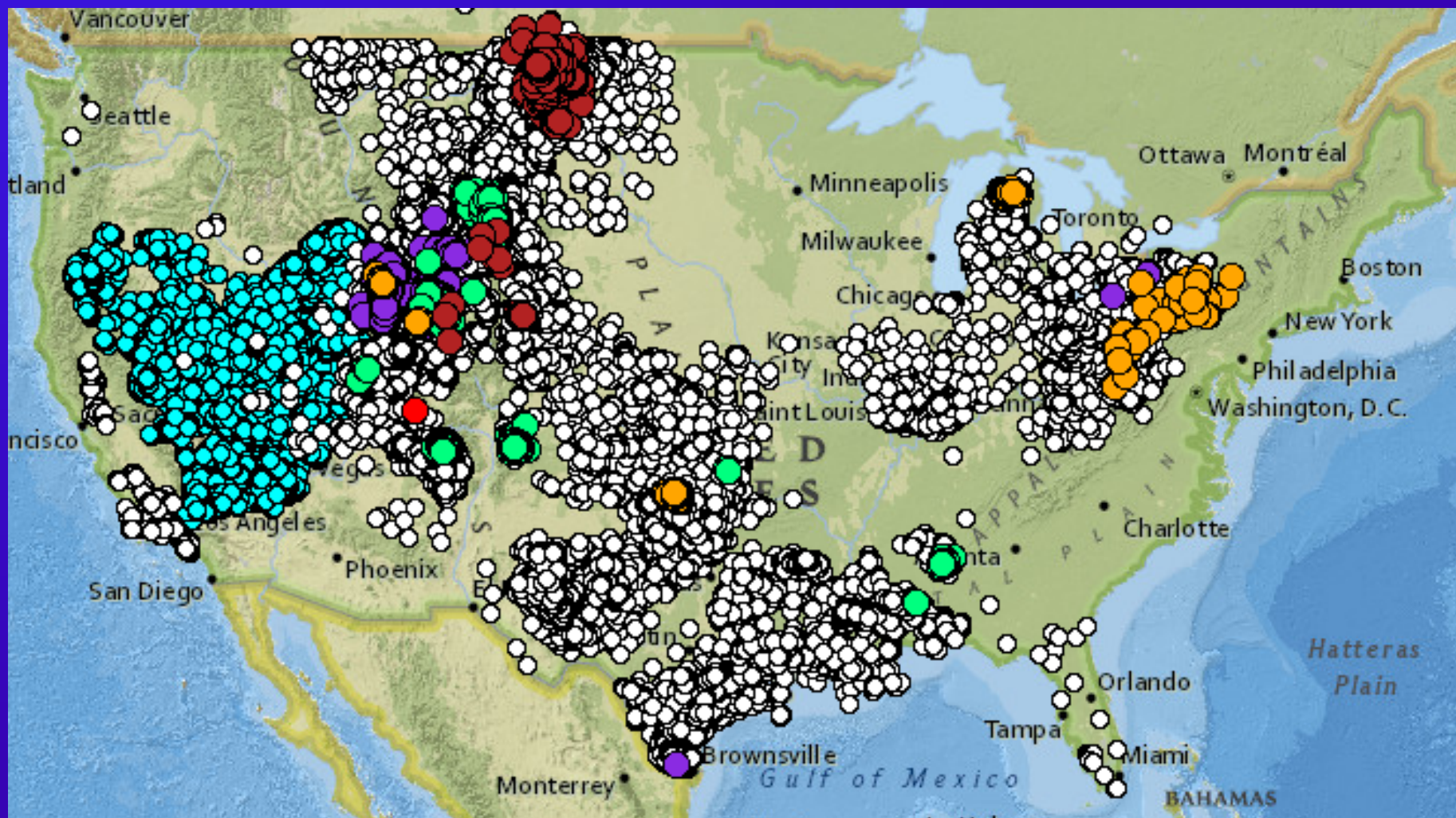
Desperately wringing out the toothpaste tube!

For more than half a century, millions of barrels of brine have been produced with oil from the East Poplar oil field and surrounding area. The brine, which contains 37,900 to 210,000 milligrams per liter (mg/L) dissolved solids, was placed in pits and ponds or injected into subsurface geologic units through disposal wells. Handling and disposal of the brine has resulted in contamination of not only the shallow aquifers in the East Poplar oil field, but also the Poplar River (Thamke and Craigg, 1997). The shallow aquifers primarily consist of unconsolidated sands and gravel that are as much as 45 feet (ft) thick and are overlain by unsaturated clay, silt, and sand that are as much as 100 ft thick. The shallow aquifers are underlain by 700 to 1,000 ft of impermeable Upper Cretaceous Bearpaw Shale (Bearpaw Shale).

The shallow aquifers are the only available source of potable groundwater in the area, and had provided water for

Abstract

The extent of brine contamination in the shallow aquifers in and near the East Poplar oil field is as much as 17.9 square miles and appears to be present throughout the entire saturated zone in contaminated areas. The brine contamination affects 15–37 billion gallons of groundwater. Brine contamination in the shallow aquifers east of the Poplar River generally moves to the southwest toward the river and then southward in the Poplar River valley. The likely source of brine contamination



**U.S. Geological Survey National Produced Waters Geochemical Database
v2.2 (PROVISIONAL)**

02/16/2016



Fracking: A View From Tallahassee

State Representative
Evan Jenne (D-99)
Minority Caucus Policy Chair

2013: Minimal Opposition in the House

- ❖ HB 743 - Fracturing Chemical Usage Disclosure Act
- ❖ HB 745 - Public Records/Fracturing Chemical Usage Disclosure Act

First Failure of the Original Plan

- ❖ HB 743
 - ❖ House Floor Vote - 92 members in favor, 19 opposed (83%)
 - ❖ Broward Delegation - 8 members in favor, 1 opposed (88%)
 - ❖ Senate Floor Vote - Did not occur (DNO)

The Death of the Companion Bill

- ❖ HB 745
 - ❖ House Floor Vote - DNO
 - ❖ Senate Floor Vote - DNO



Identifying the Culprit: Florida's Constitution

- ❖ Florida's Constitution, Article I, Section 24(c) specifically states that:
 - ❖ “The legislature, however, may provide by general law passed by a two-thirds vote of each house for the exemption of records from the requirements of subsection (a) and the exemption of meetings from the requirements of subsection (b), provided that such law shall state with specificity the public necessity justifying the exemption and shall be no broader than necessary to accomplish the stated purpose of the law.”

2014: Growing Opposition

- ❖ HB 71 - Fracturing Chemical Use Disclosure Act
- ❖ HB 157 - Public Records/Fracturing Chemical Use Disclosure Act

Second Failure of the Original Plan

- ❖ HB 71
 - ❖ House Floor Vote - DNO
 - ❖ Bill died without a vote in the Agriculture & Natural Resource Appropriations Subcommittee

Second Failure of the Original Plan

- ❖ HB 157
 - ❖ House Floor Vote - DNO
 - ❖ Bill died without a vote in the Government Operations Subcommittee

2015: The Push Back Begins

- ❖ HB 1205 - Regulation of Oil & Gas Resources
- ❖ HB 1209 - Public Records/High Pressure Well Stimulation
- ❖ HB 169 - Well Stimulation Treatments

Final Failure of the Original Plan

- ❖ HB 1205
 - ❖ House Floor Vote - 82 members in favor, 34 opposed (71%)
 - ❖ Broward Delegation - 2 members in favor, 7 opposed (22%)
 - ❖ Senate Floor Vote - DNO

The Final Death of the Companion Bill

- ❖ HB 1209
 - ❖ House Floor Vote - DNO
 - ❖ Senate Floor Vote - DNO



2016: A New Legislative Plan

- ❖ HB 191 - Regulation of Oil & Gas Resources
- ❖ HB 19 - Well Stimulation Treatments
- ❖ HJR 453 - Well Stimulation

Failure of the New Plan

- ❖ HB 191
 - ❖ House Floor Vote - 73 members in favor, 45 opposed (62%)
 - ❖ Broward Delegation - 1 member in favor, 9 opposed (10%)
 - ❖ Senate Floor Vote - DNO

Local Movements Impacting Legislation

- ❖ As of today, 29 of Florida's 67 counties have a fracking ban
 - ❖ Alachua, Bay, Brevard, Broward, Escambia, Flagler, Franklin, Gadsden, Gulf, Hamilton, Jefferson, Leon, Madison, Marion, Martin, Miami-Dade, Monroe, Nassau, Orange, Palm Beach, Pasco, St. Johns, St. Lucie, Suwannee, Taylor, Union, Volusia, Wakulla & Walton Counties
 - ❖ These counties represent 11,506,255 citizens (56.8%)
 - ❖ They also represent 31,870 square miles (48.5%)

Questions & End Notes

- ❖ For details on the legislative voting record please visit:
 - ❖ www.myfloridahouse.gov/Sections/Bills/bills.aspx
- ❖ For details on counties & municipalities with bans & resolutions against fracking please visit:
 - ❖ www.foodandwaterwatch.org/insight/local-resolutions-against-fracking