

An aerial photograph showing a power plant facility with several tall smokestacks emitting thick plumes of white smoke. The plant is situated in a valley surrounded by dense green forests. The sky is clear blue with a few wispy clouds. The perspective is from an elevated position, looking down on the landscape.

Marcellus Impacts

August 18, 2011

Philip Johnson, The Heinz Endowments

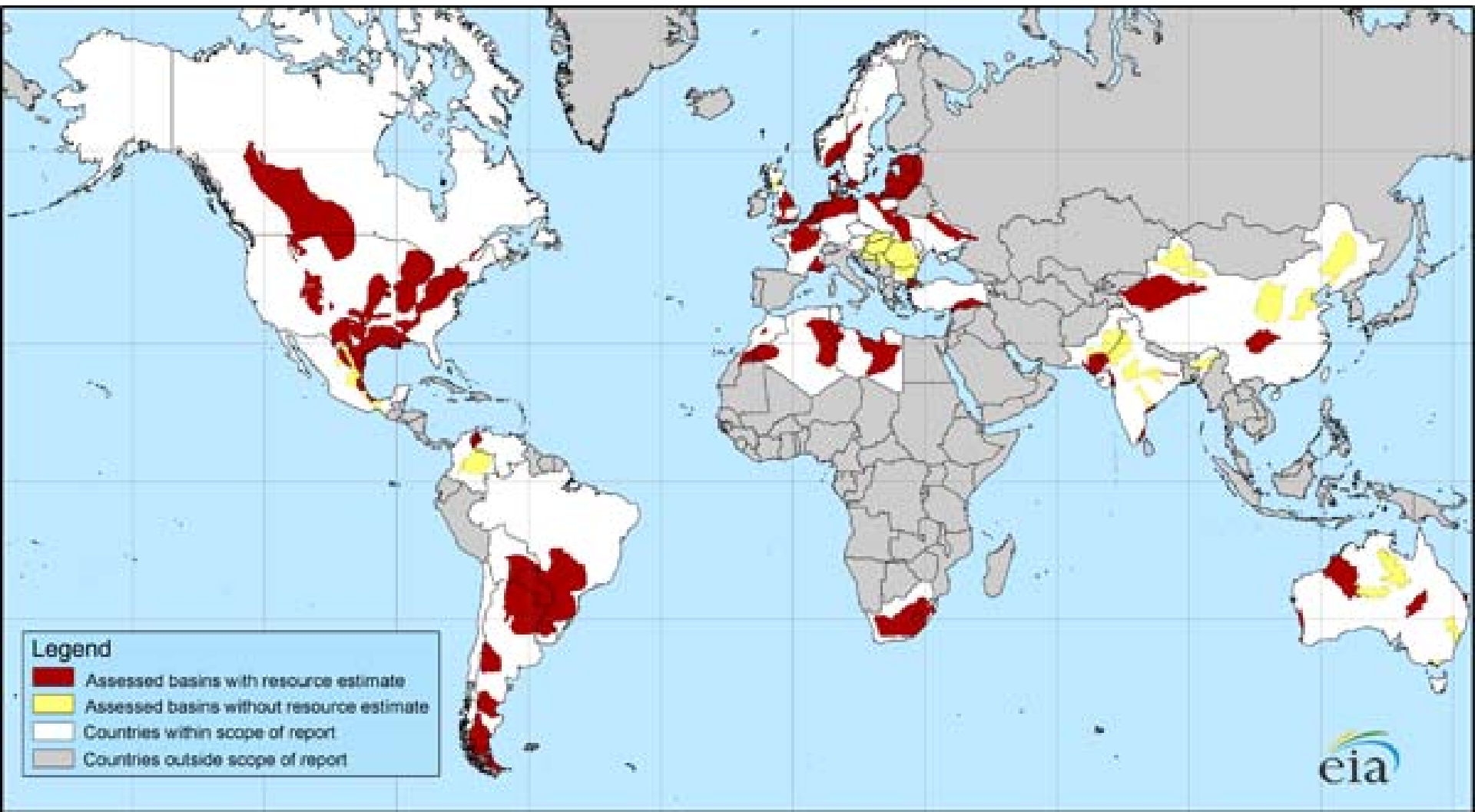
Domain

The Play

Threat evidence

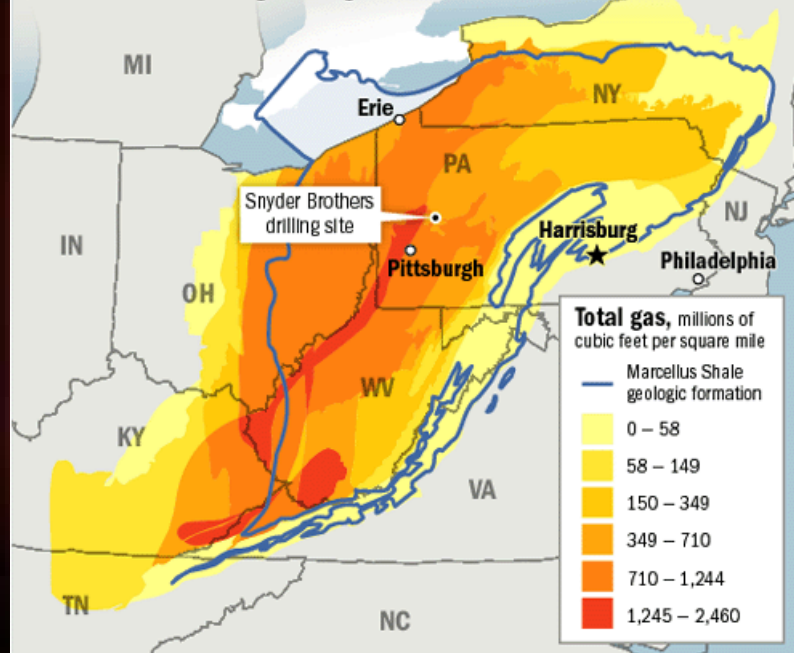
Governance

An uncontrolled experiment



Untapped riches

The Marcellus Shale formation, which stretches all through the Appalachians, holds as much as 516 trillion cubic feet of natural gas. Current, high energy prices have made drilling for the gas attractive.



Source: U.S. Bureau of Land Management, Geology.com, Catskillmountainkeeper.org

Ed Yozwick, Keith McCafferty/Post-Gazette

“The Play”

What can be done with wastewater?

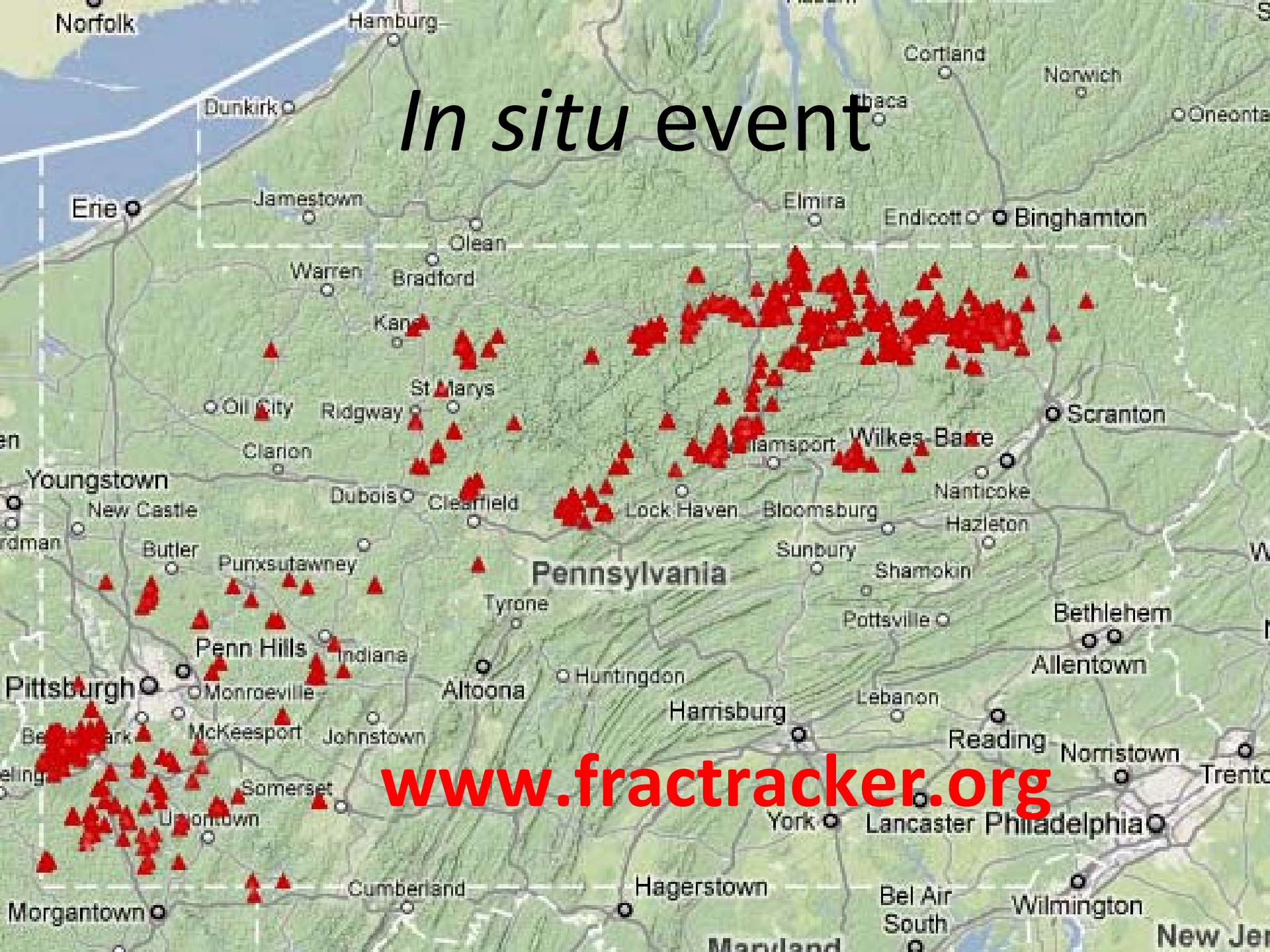
Rapid expansion of gas drilling has led to problems with disposal, contamination

Sunday, October 04, 2009

By Joaquin Sapien, ProPublica

Workers at a steel mill and a power plant were the first to notice something strange about the Monongahela River last summer. The water that U.S. Steel in Clairton and Allegheny Energy in Greene County used to power their plants contained so much salty sediment that it was corroding their machinery.

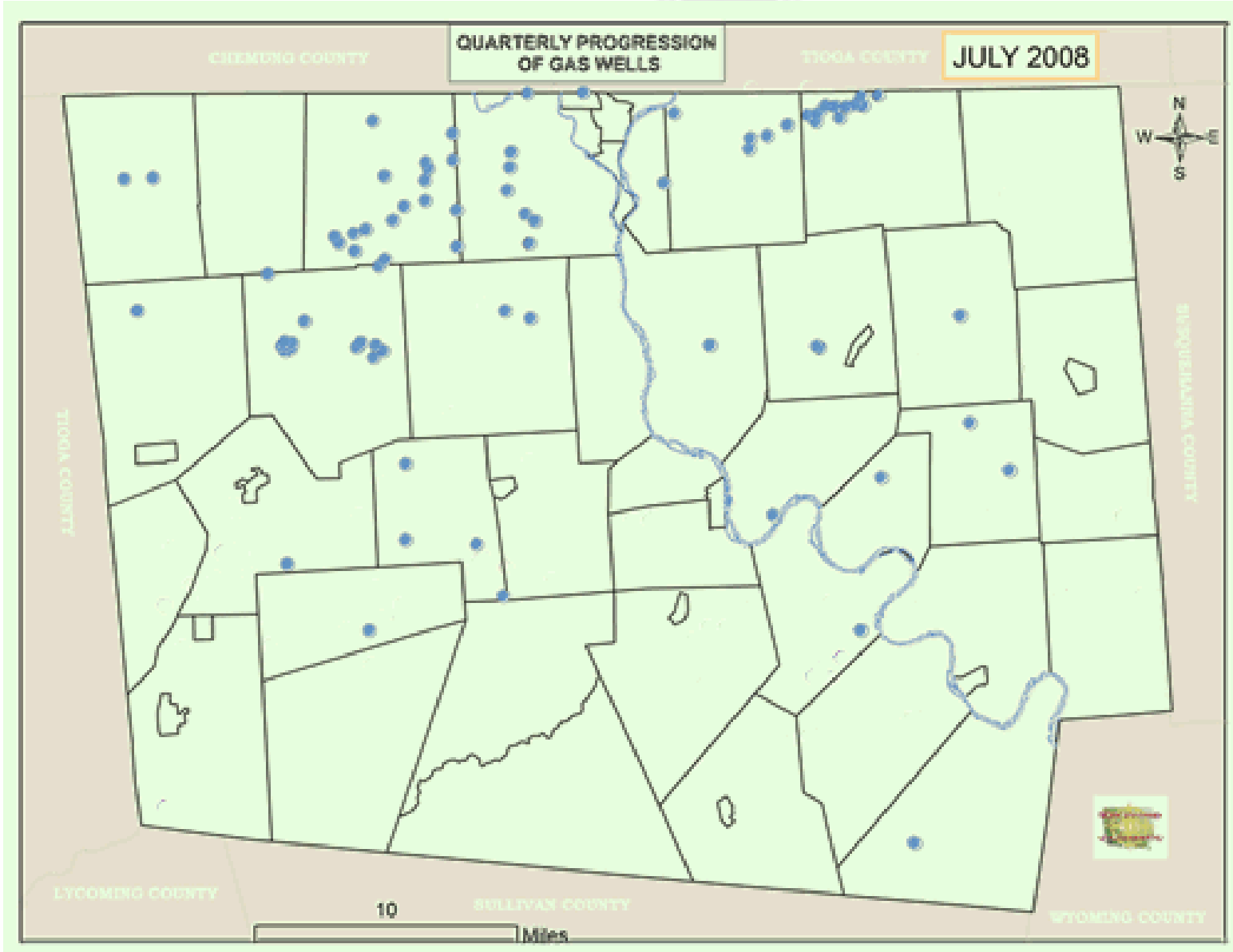
In situ event



www.fractracker.org

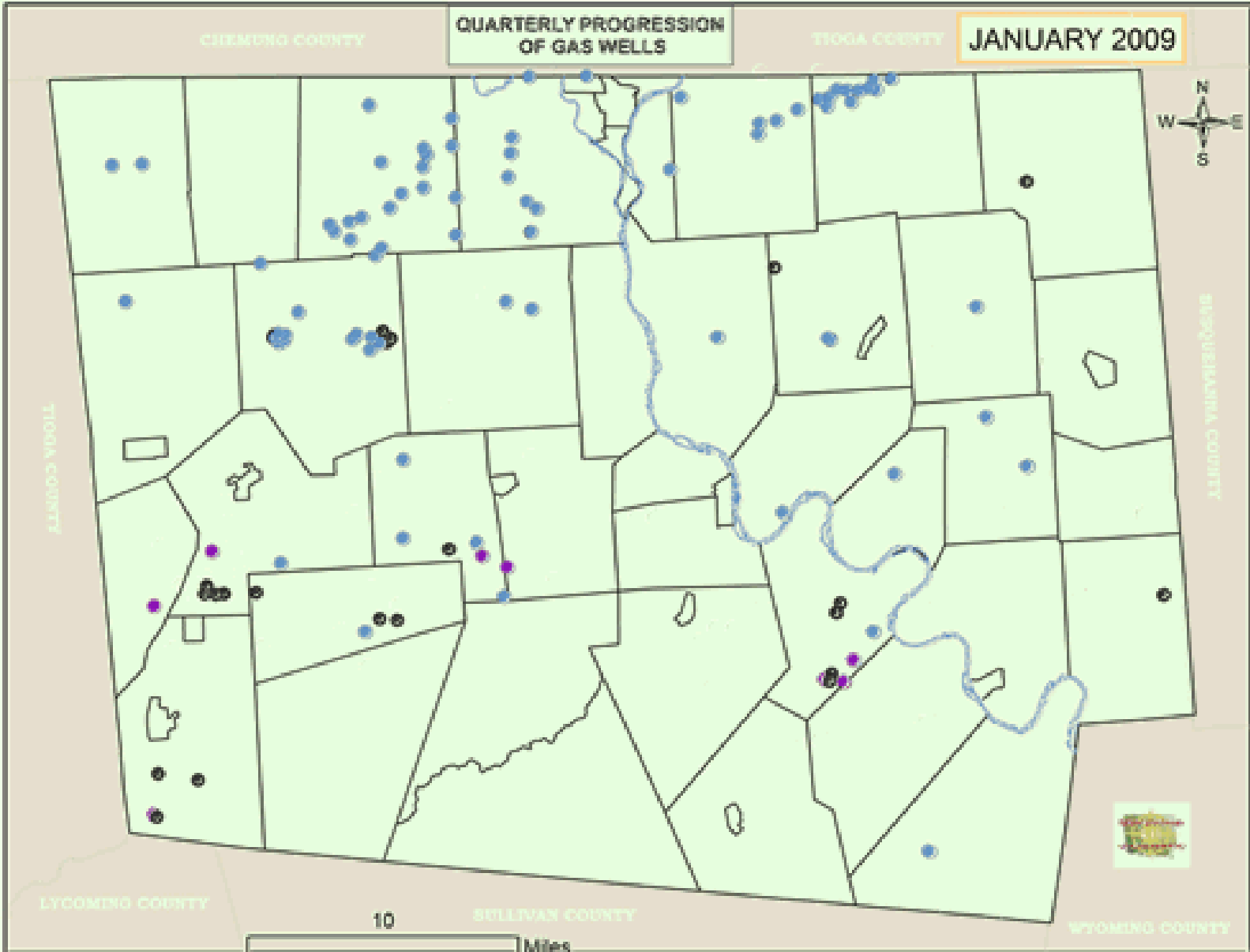
Maps of Natural Gas Development in Bradford County

Animated Quarterly Progression



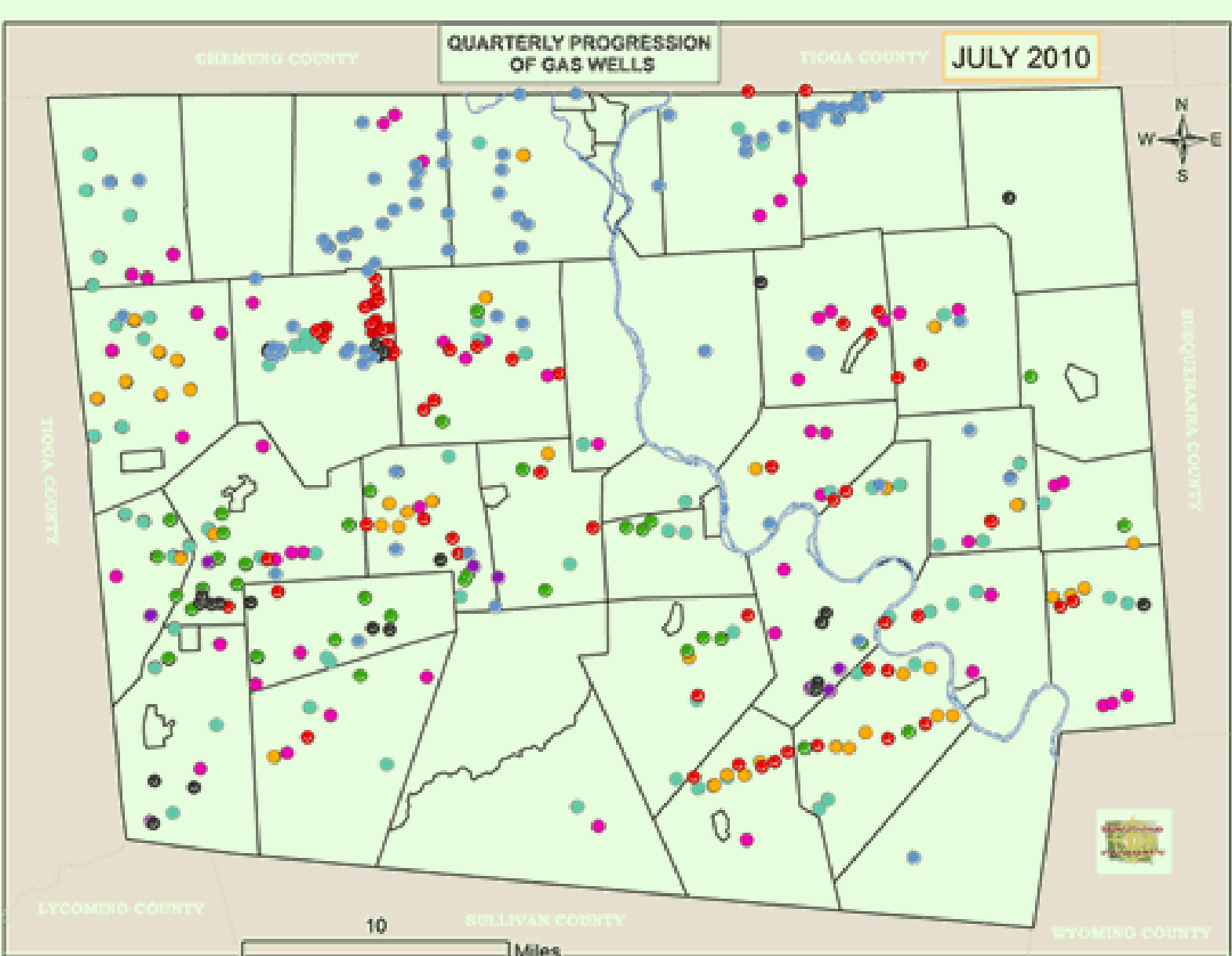
Maps of Natural Gas Development in Bradford County

Animated Quarterly Progression



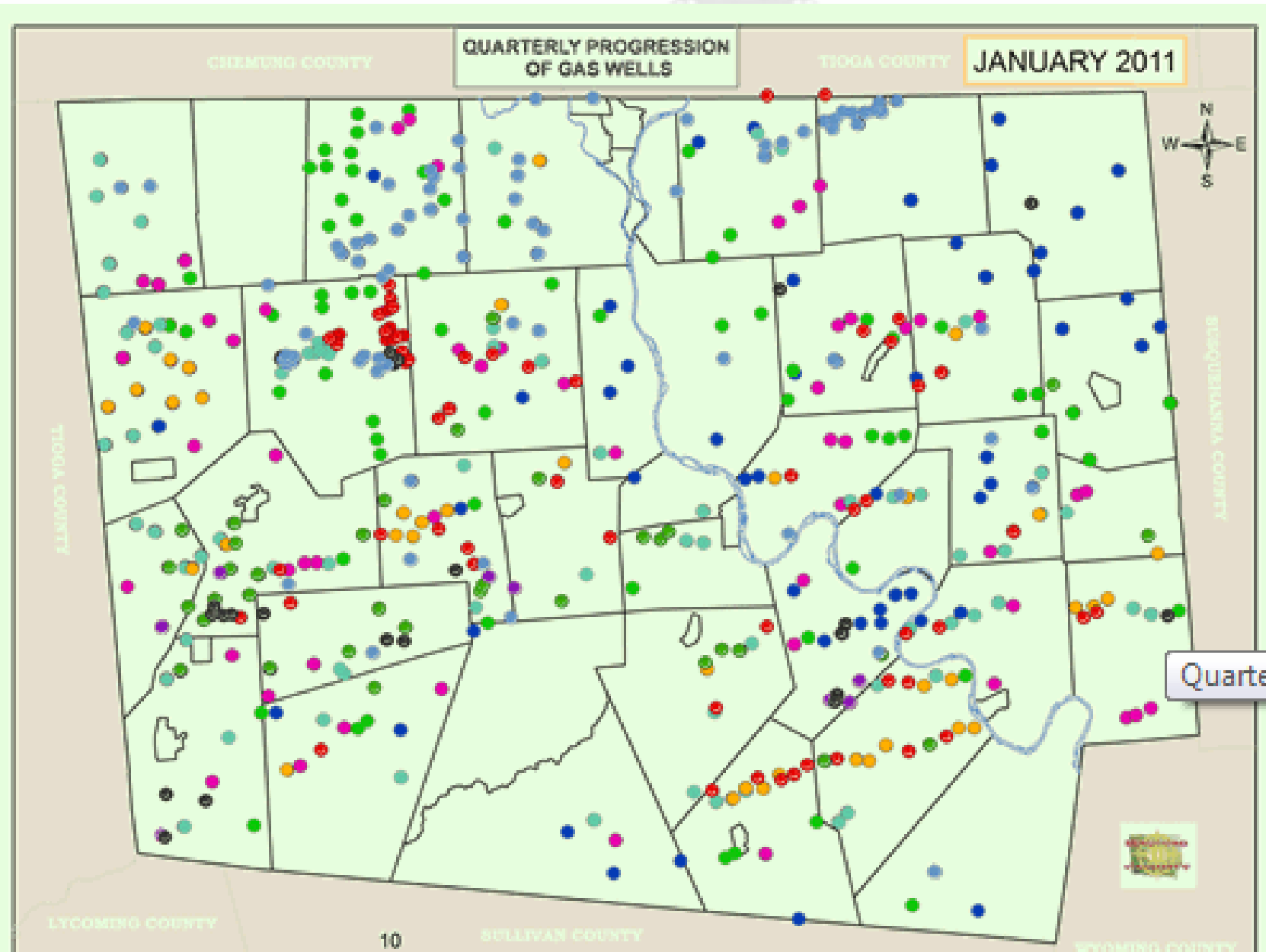
Maps of Natural Gas Development in Bradford County

Animated Quarterly Progression



Maps of Natural Gas Development in Bradford County

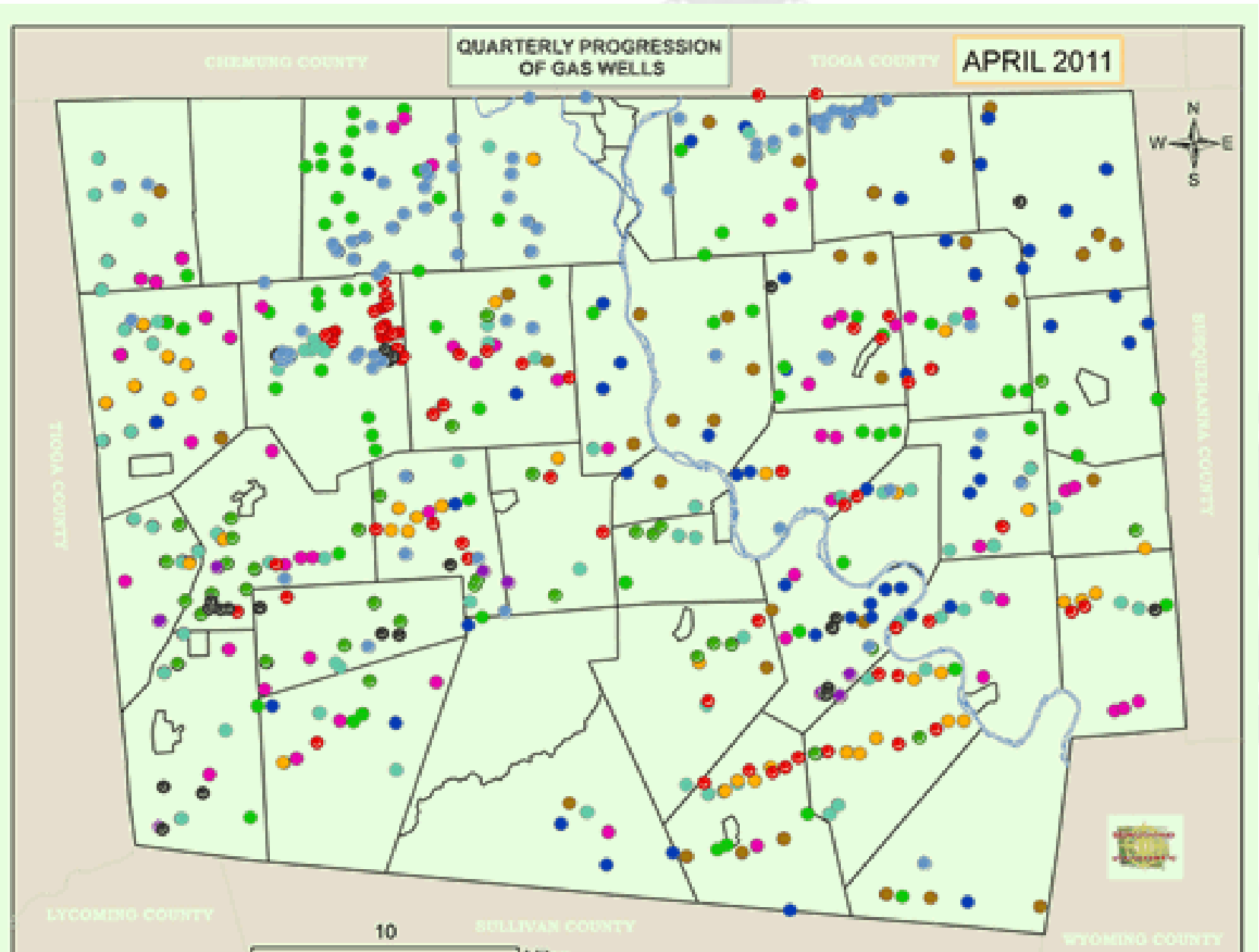
Animated Quarterly Progression



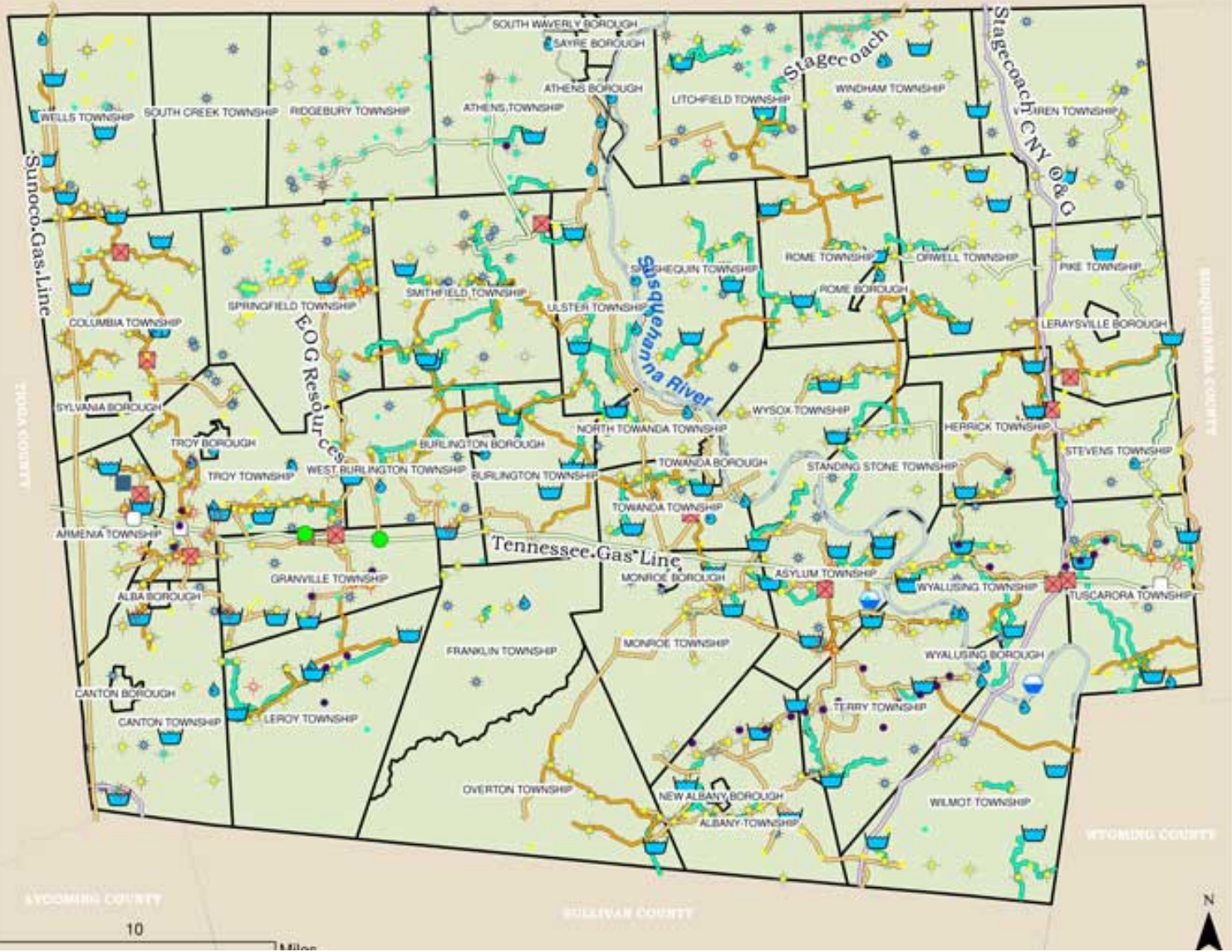
Quarterly Pro

Maps of Natural Gas Development in Bradford County

Animated Quarterly Progression



OVERALL GAS ACTIVITY



SRBC

Source

- SRBC or DEP Permit
- All Other Sources

County Database

Permitted Features

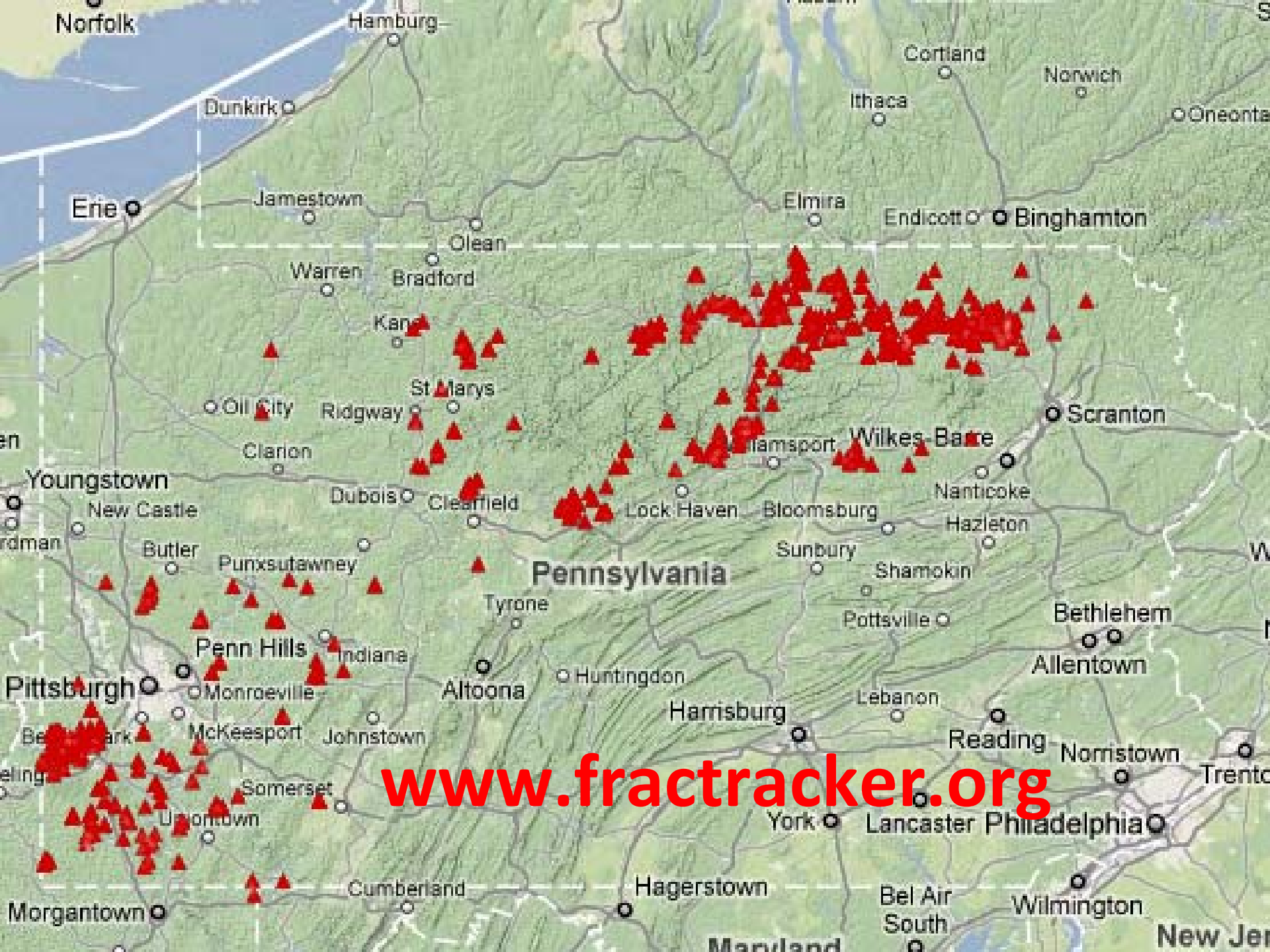
- HORIZONTAL GAS WELL
- VERTICAL GAS WELL
- WATER IMPOUNDMENT
- WATER TREATMENT FACILITY
- WATER WITHDRAWAL
- METER STATION
- SUBSTATION
- COMPRESSOR STATION
- TAP LOCATION
- DEP Wells July 2011

Gas Lines

Pipe Size

- 2" - 10"
- 12" - 18"
- 20" - 24"
- 30" - 36"
- Water Lines
- All Dry Hydrants

NEXT



www.fractracker.org

Hickory and Houston, September 20, 2005



1 mile

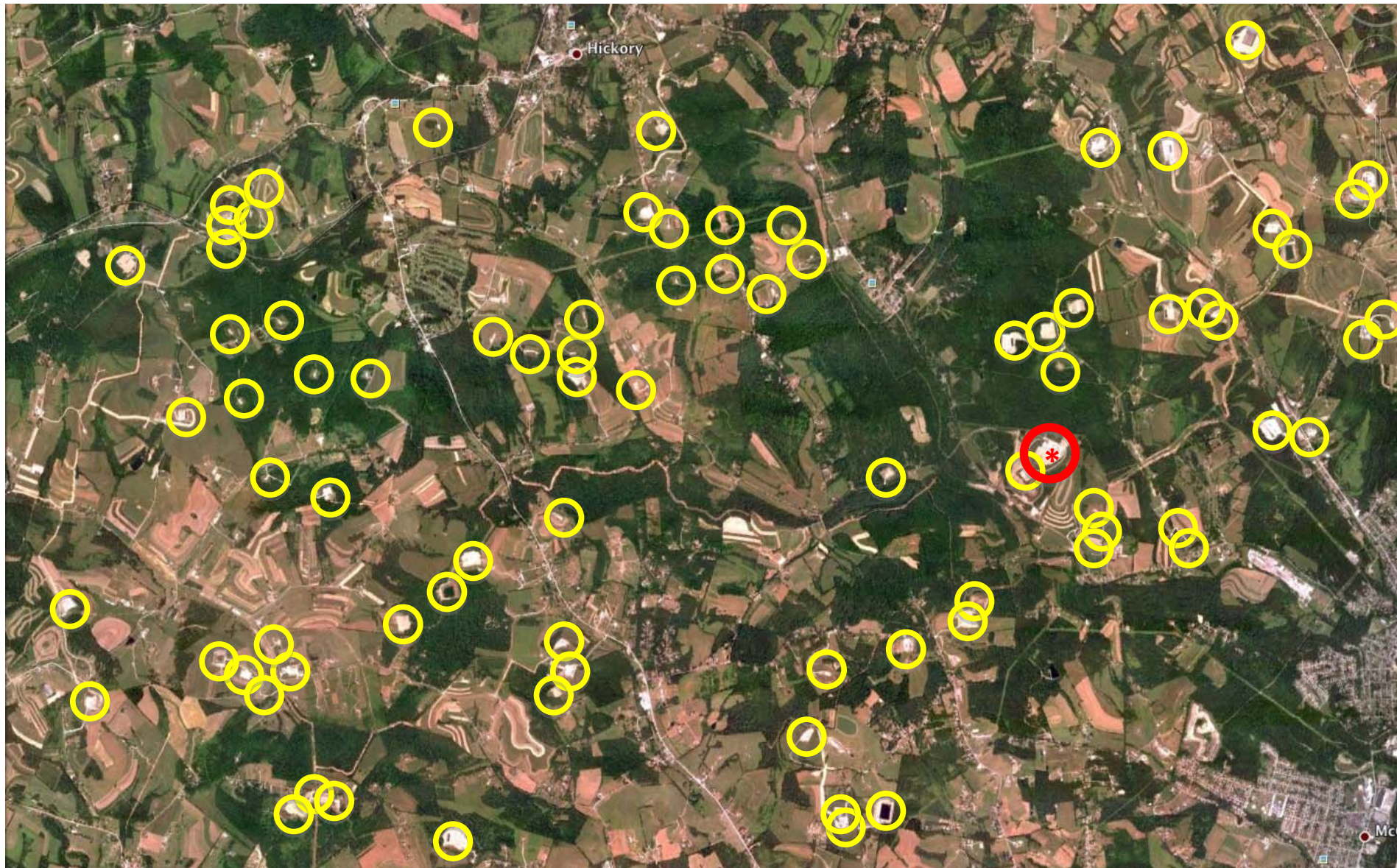
John Stolz, Duquesne

Hickory and Houston, July 2, 2010



1 mile

John Stolz, Duquesne



1 mile

○ Well pad or Compressor Station

* MarkWest Refinery

Threat evidence

Potential threats



Actual threats

Indirect supporting evidence



Direct evidence

Manifold ecosystem threats

- Riparian, aquatic, terrestrial
- Water quality contamination, surface, deep
- Water quantity disturbance
- Erosion
- Fragmentation of habitat
- Invasive species, water and land

Sudden death of ecosystem ravages long creek.
'Everything is being killed': 161 aquatic species
have died along Dunkard Creek

Sunday, September 20, 2009

By Don Hopey, Pittsburgh Post-Gazette

Toxins tied to fish kill may have hitchhiked
Investigators weigh whether mining equipment
is culprit

Sunday, October 04, 2009

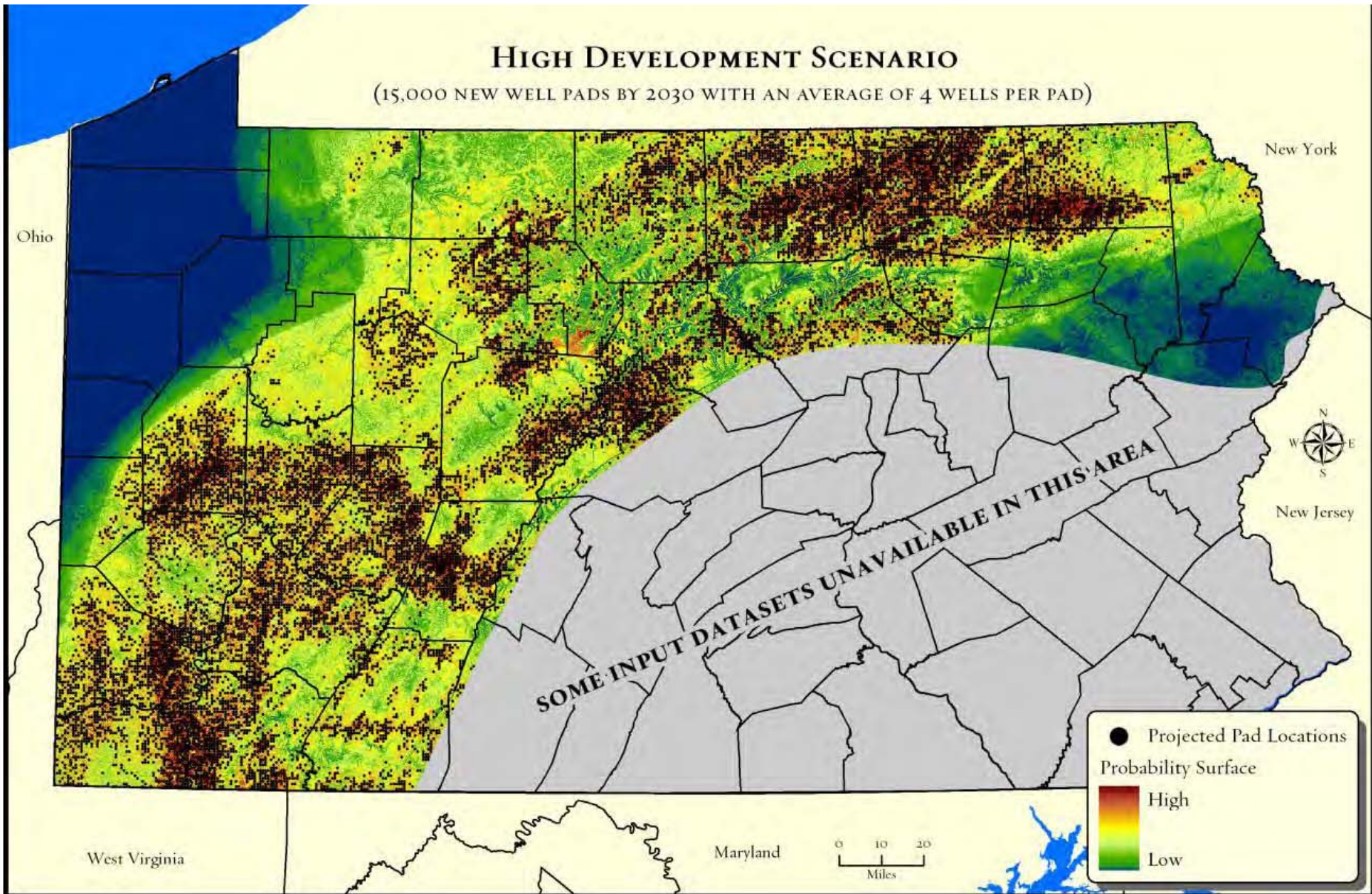
By Don Hopey, Pittsburgh Post-Gazette



PA DCNR July 2010
Loyalsock State Forest

HIGH DEVELOPMENT SCENARIO

(15,000 NEW WELL PADS BY 2030 WITH AN AVERAGE OF 4 WELLS PER PAD)



TNC 2010

VOC and NOx loading = ozone

- Reduced agricultural crop and commercial forest yields
- Reduced growth and survivability of tree seedings
- Increased susceptibility to diseases, pests and other stresses such as harsh weather
- Damages to tree foilage and other plants
- \$500 million reduced crop production/year in U.S.

EPA 2003

Manifold public health threats and social stressors

- Individual, family, community, regional
- Acute and possibly semi- and chronic
- Mutagenic, carcinogenic potential
- Respiratory, cardiac, neurological potential
- Downwinder's syndrome
- Occupational
- Agricultural
- Clinical incapacity
- Rural and urban EJ split
- Public health establishment slow to engage

Assessment	Direction of health effects	Geographical Extent of exposure	Vulnerable/ Benefited populations	Duration of exposure	Frequency of exposure	Likelihood of health effects as a result of Project	Magnitude of health effects	Priority
Air Quality	Negative	Local to Community-wide	Yes	Long	Frequent	Likely	Moderate to High	High
Water and Soil Quality	Negative	Community-wide	Yes	Long	Infrequent	Unlikely	Moderate to High	Medium
Traffic	Negative	Community-wide	Yes	Long	Frequent	Possible	Low to high	High
Noise, Vibration, Light	Negative	Local	Yes	Long	Frequent	Possible	Low-Medium	Medium
Community Wellness	Positive	Community wide	Yes	Long	Frequent	Possible	Low	Low
Community Wellness	Negative	Community wide	Yes	Long	Frequent	Possible	Low to High	Medium-High
Economy, employment and property value	Positive	Community wide	Yes	Long	Infrequent	Unlikely	Low	Low

Colorado School of Public Health
 Battlement Mesa HIA/EHMS
 Battlement Mesa Health Impact Assessment (2nd Draft)
 February 2011

Assessment	Direction of health effects	Geographical Extent of exposure	Vulnerable/ Benefited populations	Duration of exposure	Frequency of exposure	Likelihood of health effects as a result of Project	Magnitude of health effects	Priority
Economy, employment and property value	Negative	Community wide	Yes	Long	constant	Likely	Low to high	Low
Health Infrastructure	Positive	Community-wide	Yes	Long	Infrequent	Unlikely	Low	Low
Health Infrastructure	Negative	Community-wide	Yes	Long	Infrequent	Unlikely	Low	Low
Accidents and malfunctions	Negative	Local or Community wide	Yes	Short	Infrequent	Possible	Low to high	High

There is no substitute for
empirical field-based evidence.



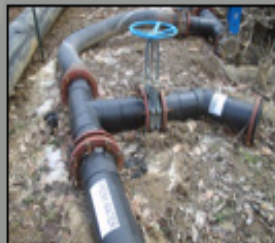
Ray Renaud
2/15/2009

<http://www.wcag-wv.org/>

Wetzel County Action Group

February 16, 2011 pictures of polluted water being released from pipeline on Blake Ridge.

Click on thumbnails for larger images.





Wetzel County Action Group

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Last Updated: March 5, 2011

Anthony Crane Blocks Road for Hours

December 23, 2010 accident on milepost 13.5 on Route 89.





Waterfall on Blake Run Removed to Make Road in Run



Wetzel County Action Group



Wetzel County Action Group

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Gas Release Rine Pad



This video was taken on August 4 and 5, 2010. It is of the Rine Pad from two different views.

Wetzel County Action Group

Explosion and Fire at McDowell B Well Site on Sunday, September 19, 2010

Fire lasted for 8 days.

1



2



3



4



5



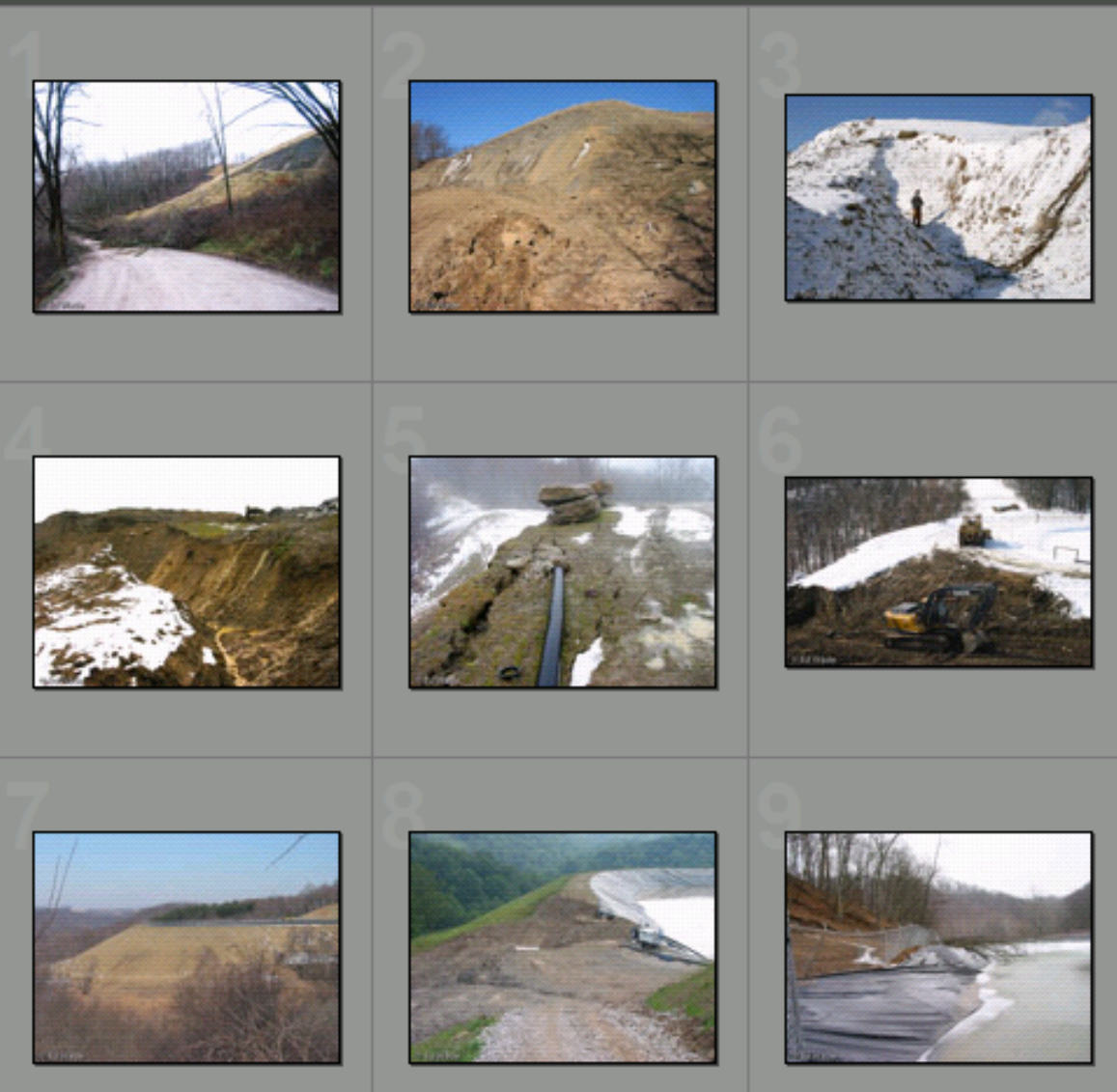
6



Wetzel County Action Group

Spring Frac Pond Failures

Most of the ponds built on top of the hills failed this spring. Springtime is when they tend to fail.



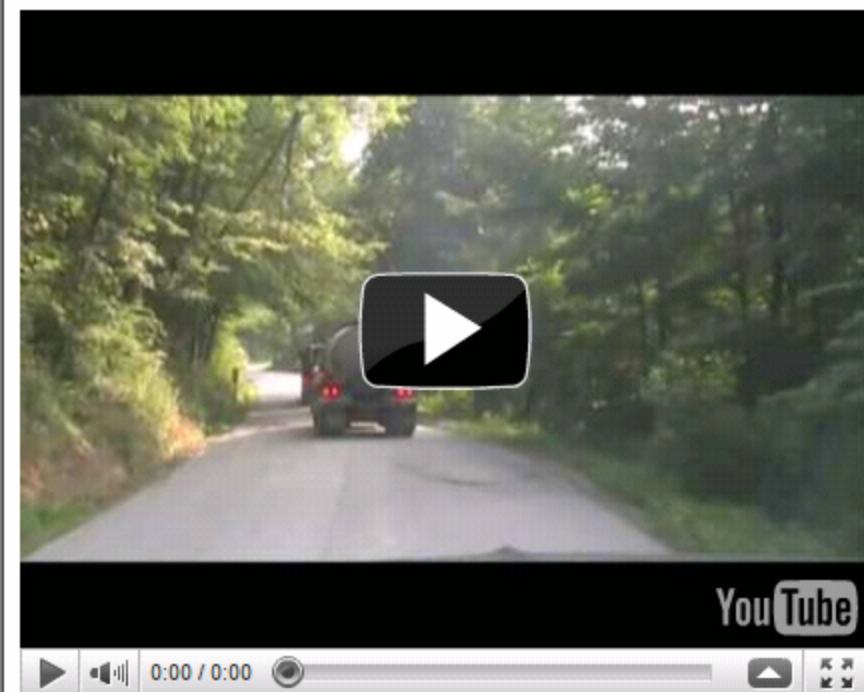


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Carpers Brine Hauler

Several individuals reported speeding and dangerous driving by a brine hauler called Carpers. Reported behavior to Chesapeake on June 30, 2010, July 3 and 6. This video was taken on July 9. Residents have had to keep their windows shut because of pollution similar to this. This convoy hit 45 MPH + on sections of Route 89 posted for 35 MPH.



Mission: *The Wetzel County Action Group will support economic development for the county and state; and work to insure that economic development does not negatively impact safety, economic interests, and quality of life of the Citizens of Wetzel County.*



Wetzel County Action Group

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Gas Release Chesapeake B Pad

Air Pollution - Production Discharge



YouTube

0:00 / 0:35



Wetzel County Action Group



Wetzel County Action Group

Marcellus Pit Tailing Being Buried



Wetzel County Action Group



Wetzel County Action Group

© Ray Renaud



Wetzel County Action Group

Wetzel County Action Group









Bonnie's Pet Boutique - Groomer And Dental Care

★★★★★ (5)

I had never felt good about leaving my dog at the groomer. But I am SO happy I found Bonnie's Pet Boutique! The people are all such dog lovers and were ...

google.com



SMARTKIDS

Child Care & Learning Center Inc.

← BLDG. 2 • (724) 743-3201 →

← BLDG. 1 LPN WACTC →



45



MAERSK











20 ft
10 m





©2011 Google - Imagery ©2011 GeoEye, U.S. Geological Survey, Map data ©2011 Google, Perry Rd, Terms of Use, Rep









Impoundment's removal pleases home

Water from gas well work a source of odor, frustration, says Hopewell

CHRISTIE CAMPBELL
Staff writer
iscam@observer-reporter.com

June Chappel is sleeping soundly these days.

After nocturnal rest returned once she learned a nearby impoundment behind her home on Wotring Road in Hopewell Township would be removed. The impoundment recycled water for natural gas drilling by Range Resources.

Last month, Chappel was having difficulty sleeping when several waste trucks would



WWW.MARSELLUS-SHALE.US

A view of June Chappel's Hopewell Township home and a nearby Range Resources water impoundment

back u
impou
loads
the sm
recycl
she sa
on he
But
tified
plann
poun
prop
dum
poun
and v
pond

P

Governance

“Yes, yes, yes, yes and yes.”

Analysis: Terrorism advisory group aided Marcellus industry

Thursday, September 16, 2010

By Tom Barnes and Tracie Mauriello, Post-
Gazette Harrisburg Bureau

Homeland Security chief Powers resigns Critics called for his firing over anti-terror contract

Saturday, October 02, 2010

By Tom Barnes, Post-Gazette Harrisburg Bureau

Ridge's firms to get \$900,000 for pushing Marcellus drilling

Monday, August 02, 2010

By Tom Barnes, Pittsburgh Post-Gazette

Former governor TOM RIDGE sets out the guidelines by which natural-gas companies will develop the Marcellus Shale

Sunday, October 03, 2010

DEP top brass must OK all Marcellus regulation,
memo says

Wednesday, March 30, 2011

By Don Hokey, Pittsburgh Post-Gazette

Shale cops: Now state enforcement will be in
political hands

Friday, April 01, 2011

Pittsburgh Post-Gazette

DEP roles back approval process for shale violations

Tuesday, May 03, 2011

By Don Hohey, Pittsburgh Post-Gazette

THE CASTLE FRANZ KAFKA



ISBN 0-14-001-710-1

A frustrating, irritating book that accurately describes
the impersonality of the bureaucracy

Utterly annoying. Very bizarre.

Machinery behind the workings of life aren't
amenable to reason

Drags us through things we really don't want to know

Absolutely incomprehensible. No conclusion.

No exit, no rest, no easy comfort is to be found

Dark, surreal.

Alienation, bureaucracy, endless frustrations of
attempts to stand against the system

A stage with red curtains and a dark background. The curtains are pulled back, revealing a dark stage floor. The text is centered on the stage.

“The Play”

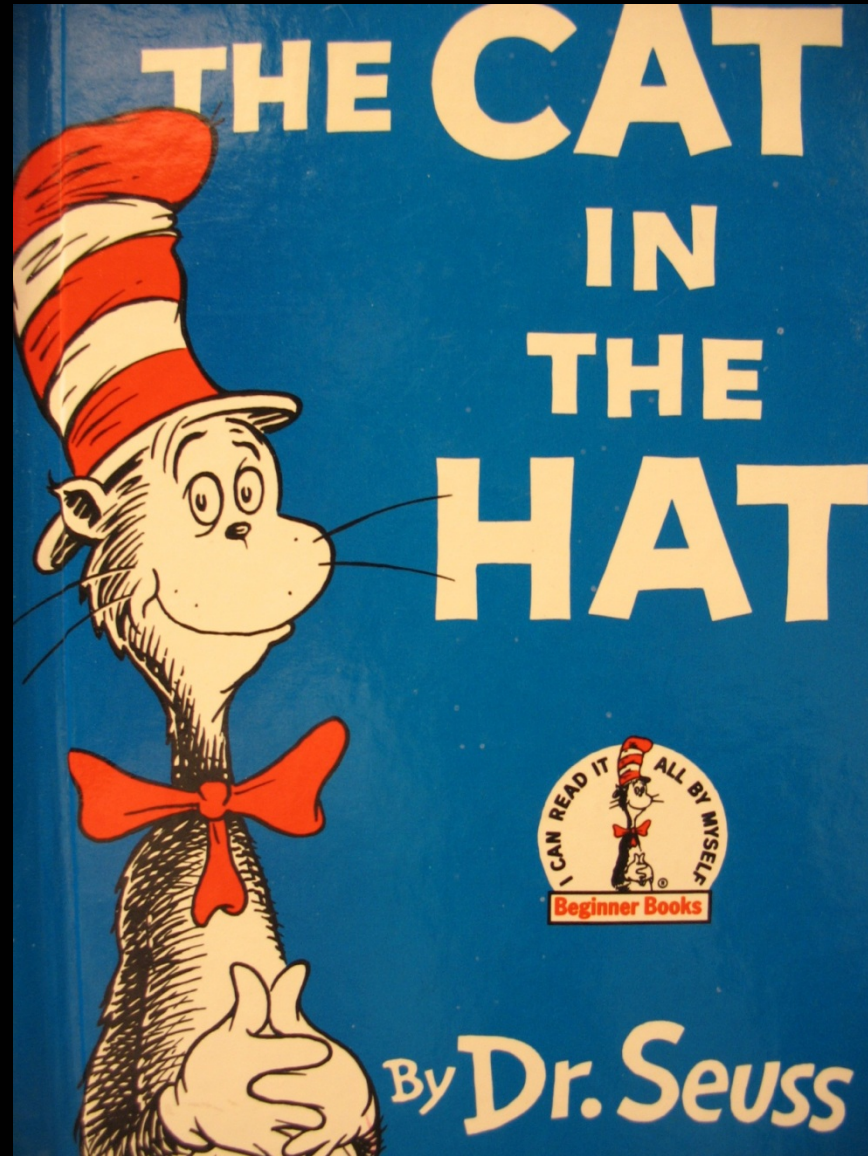
Act 1, Scene 1

Act 1, Scene 2

Act 2, Scene 1

Act 2, Scene 2

An uncontrolled experiment





The sun did not shine.

It was too wet to play.

So we sat in the house

"I know some good games we could play,"
Said the cat.

"I know some new tricks,"
Said the Cat in the Hat.

"A lot of good tricks.
I will show them to you.

Your mother
Will not mind at all if I do."

Then Sally and I
Did not know what to say





But our fish said, "No! No!
Make that cat go away!
Tell that Cat in the Hat
You do NOT want to play.
He should not be here.
He should not be about.
He should not be here
When your mother is out!"

“Have no fear!” said the cat.
“I will not let you fall.
I will hold you up high
As I stand on a ball.
With a book on one hand!
And a cup on my hat!
But that is not ALL I can do!”
Said the cat . . .







“But I like to be here.

Oh, I like it a lot!”

Said the Cat in the Hat

To the fish in the pot.

“I will NOT go away.

I do NOT wish to go!

And so,” said the Cat in the

“So

so

so . . .

I will show you

Another good game that I like



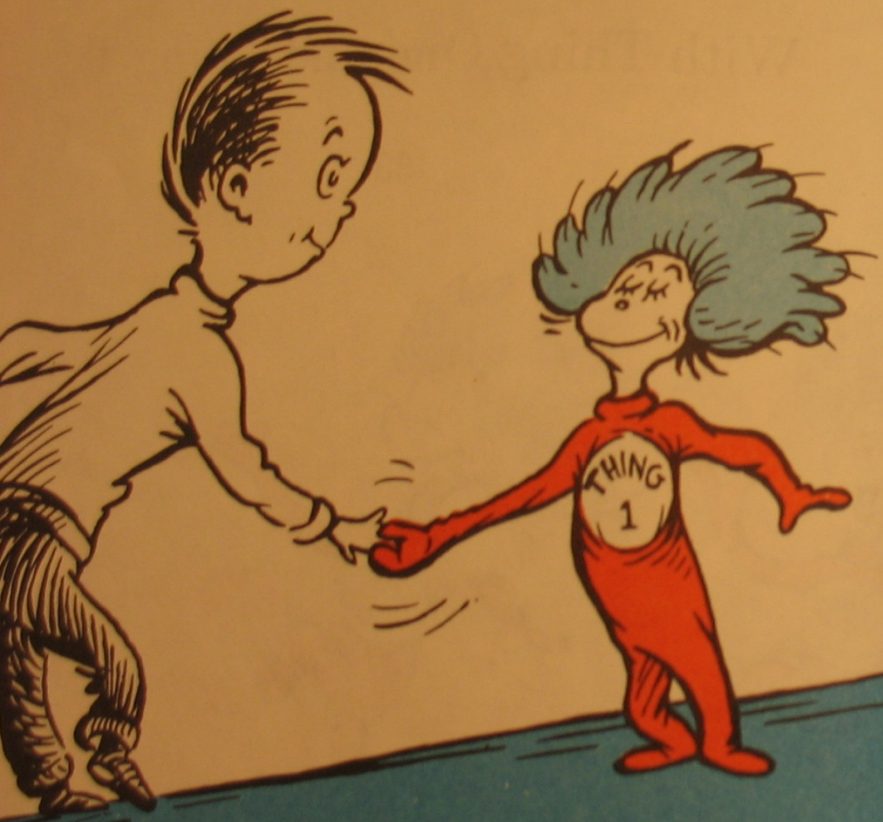
“I will pick up the hook.
You will see something new.
Two things. And I call them
Thing One and Thing Two.
These Things will not bite you.
They want to have fun.”
Then, out of the box
Came Thing Two and Thing One!
And they ran to us fast.
They said, “How do you do?
Would you like to shake hands
With Thing One and Thing Two?”

33



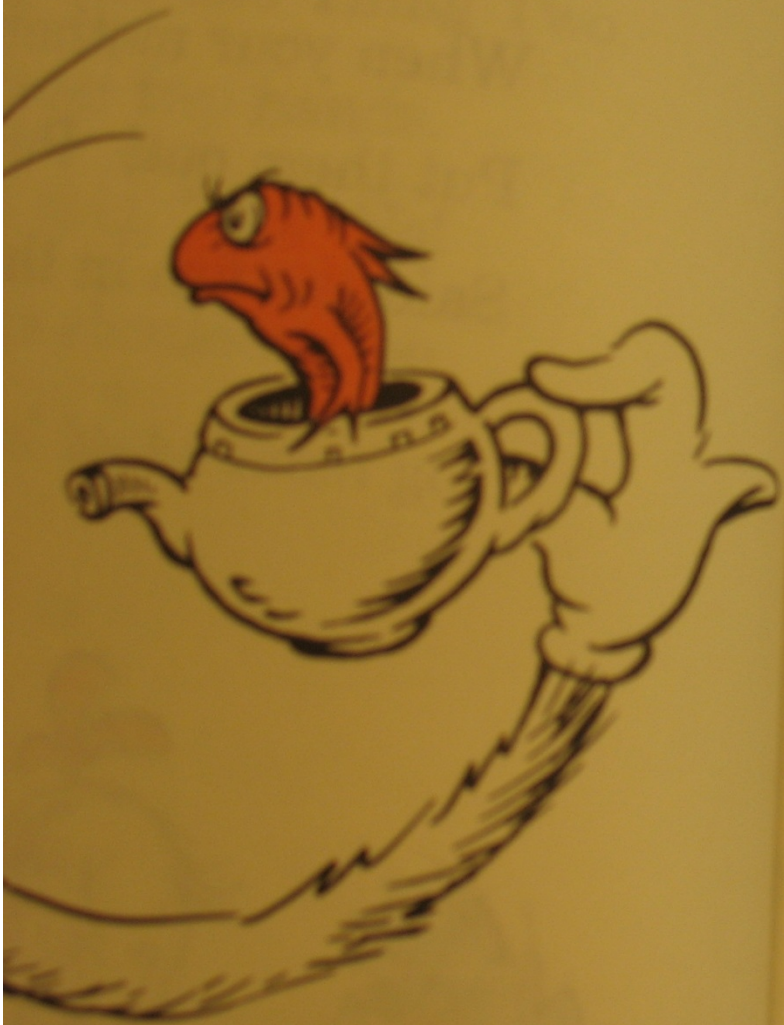
Those Things should not be
In this house! Make them go!

34



35





"Have no fear, little fish,"

Said the Cat in the Hat.

"These Things are good Things.

And he gave them a pat.

"They are tame. Oh, so tame!

They have come here to play.

They will give you some fun

On this wet, wet, wet day."





Then those Things ran about
With big bumps, jumps and kicks
And with hops and big thumps
And all kinds of bad tricks.
And I said,
“I do NOT like the way that they play

Intermission

Chance

**ADVANCE TO
ST. CHARLES PLAGE**



IF YOU PASS GO, COLLECT \$200

© 1936

Chance

**THIS CARD MAY BE KEPT
UNTIL NEEDED OR SOLD**

**GET OUT OF JAIL
FREE**



Chance

**THIS CARD MAY BE KEPT
UNTIL NEEDED OR SOLD**

**GET OUT OF JAIL
FREE**



© 1936

© 1936 PARKER BROTHERS, INC.

Chance

**ADVANCE
TO GO**



(COLLECT \$200)

Chance

**ADVANCE
TO GO**



(COLLECT \$200)

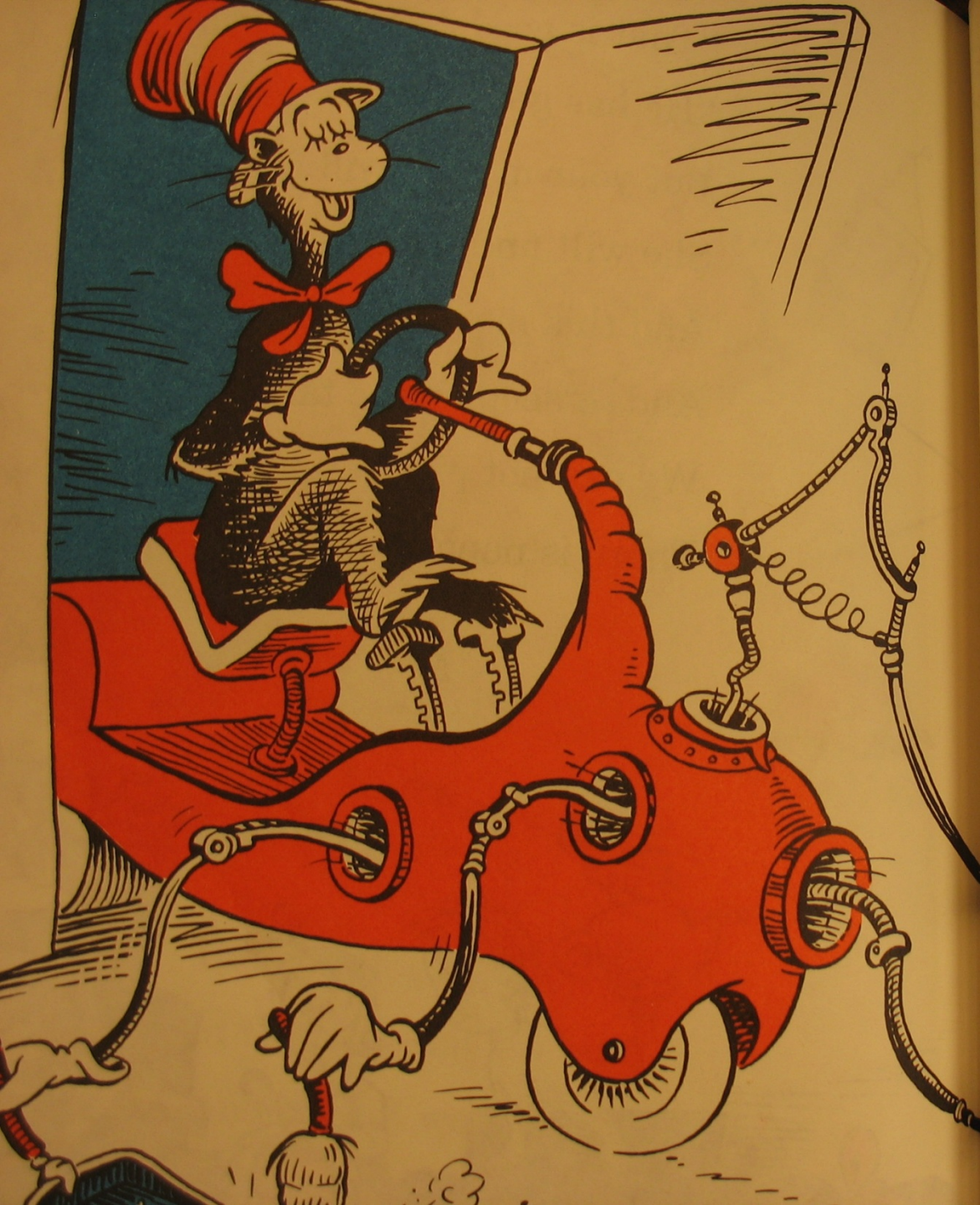
Community Chest

**BANK ERROR
IN YOUR FAVOR**

COLLECT \$200



© 1936 PARKER BROTHERS, INC.



And THEN!

Who was back in the house?

Why, the cat!

“Have no fear of this mess,”

Said the Cat in the Hat.

“I always pick up all my play

And so . . .

I will show you another

Good trick that I know!”

57



him pick up
s that were down.
o the cake,
e, and the gown,
k, and the strings,
s, and the dish.



Shell may locate cracking plant in region

Pittsburgh Business Times - by Anya Litvak

Monday, June 6, 2011, 10:56am EDT

Strategic response – *a priori*

- Democratic process requires information flows
- Quantification precedes communication
- Government cannot solve problems, at least in short-term, potentially long-term
- Complexity cannot be reduced into simplicity
- Science (natural, social, medical) and communication (all forms) must be interconnected to inform all scales of decision making

Strategic response – guides

Support organic and coordinated quantification of impacts to environment and public health

Engage individuals, communities, institutions

Develop data streams that aggregate across geographies

Facilitate transformation of data into information

Generate means of dissemination to foster deliberative dialogue

Strategic response – guides

Subject operative assumptions to unbiased assessment

Minimize and mitigate impacts occurring in sacrificial zones

Prioritize susceptible populations

Use interdisciplinary techniques

Engage funder colleagues – shared problem solving

Strategic response – implementation

Coordinated citizen surveillance network

Similar monitoring protocols

Multi-media and receptor, self-prioritization

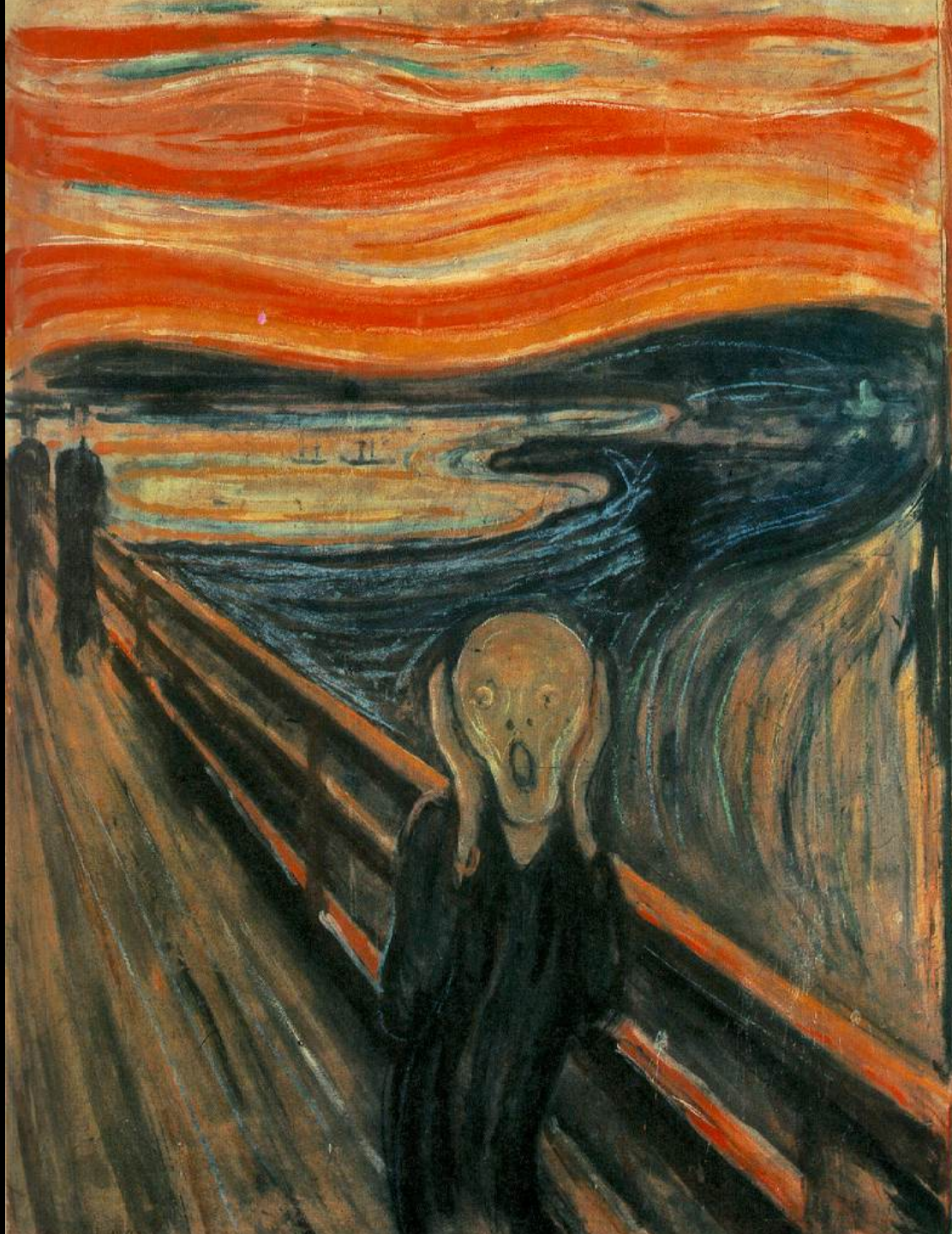
Coordinated academic/institutional investigation

Baseline and prospective monitoring

Multi-media, seed funding

Data and information hub to aggregate, disseminate
and empower with knowledge

www.fracktracker.org



Thank you!

pjohnson@heinz.org