

Michigan's Oil & Gas History & The Elenbaas' 110 Years in Coal, Gas & Oil

Presented By - *Douglas J. Elenbaas PE*
4th Generation *Elenbaas*

January 11, 2017



Elenbaas - 5 Generations in Energy

1907 - 2016
110 Years



Aaron Elenbaas 37 Years

1878 - 1953 Coal: 1917 - 1953

Frank Elenbaas 37 Years

1879 - 1953 Coal: 1917 - 1953

Harry Elenbaas 31 Years

1886 - 1975 Coal: 1912 - 1942

Martin R. Elenbaas 44 Years

1888 - 1975 Coal: 1913 - 1956

Arthur Elenbaas 50 Years

1892 - 1972 Coal: 1907 - 1956



Jack R. Elenbaas 64 Years

1923 - 2012 Oil & Gas: 1947 - 2010

Douglas J. Elenbaas 45 Years

1955 - Oil & Gas: 1973 - 2016

Matthew J. Elenbaas

1853 - 1940

Coal: 1907 - 1931

25 Years

January 11, 2017

El Energy Consulting LLC

DJE Employment History

- 1973-75 Mich-Wis Summer Field Tech – Goodwell
- 1976 Mich-Wis Cable Tool Drilling Rig – Roustabout
- 1977-84 ANG Coal Gasification – Process Engineer
- 1984-96 *Elenbaas Oil & Gas Consultants* – Consultant
- 1996-97 CMS NOMEKO – Petroleum Engineer
- 1997–2012 Coastal, ElPaso Corp & TransCanada (ANR Pipeline) – Project & Principal Engineer
- 2012-16 *El Energy Consulting LLC* – Consultant
 - & *Brock Engineering LLC* Sub – Consultant

Jack R. Elenbaas - Charter/Founding Member in Two SPE Sections Midwest Gas Storage & Michigan Section



FIRST Society of Petroleum Engineers unit in Michigan and first officers are (standing) Jack Elenbaas, Robert Feathers and Richard Stauffer; and (seated) Reese Bennett, chairman, and G.D. Jerry Simon, first vice-chairman.

January 13, 1977

Mr. Jack S. Elenbaas, Chairman
Michigan Sub-Section
Society of Petroleum Engineers of AIME
c/o Michigan Consolidated Gas Company
One Woodward Avenue
Detroit, Michigan 48226

Dear Jack:

Thanks for your January 12 letter concerning procedures to be followed by the Michigan Sub-Section in becoming a Full-Fledged Petroleum Section of AIME. I had hoped that your officers were thinking of this now, and I wholeheartedly approve.

As requested, I am enclosing a copy of the document, "Outline of Procedures for Forming a New AIME Petroleum Local Section". Specifically, your Section should put together the necessary petition; a proposed set of bylaws, spelling out the exact geographical boundaries of the proposed new Section; and secure a letter from the Midwest Gas Storage Section authorizing establishment of the new Section. You should then submit this material, along with a proposed slate of officers for the Section's first year of operation, to me for submittal first to the SPE Board and then to the AIME Board of Directors for approval. I would suggest that you attempt to get this material together in time for approval by the SPE and AIME Boards at their meetings in June. This would permit your Section to start off on a Full Section year basis.

Thanks again for your letter, Jack, and please let us know if there is any way I can assist you with your plans for forming the new Section.

Yours sincerely,

W. Earl
Chairman

cc: Dr. Harold L. Davis
SPE Director, Region IV
The University of Tulsa
600 South College Avenue
Tulsa, Oklahoma 74124

Jack R. Elenbaas Professional Career

- Officer in USA Navy 1944-1946
- M.S. Chemical Engineering University of Michigan - 1947
- Michigan Consolidated Gas Co. 1947-1979
- 65 Year **SPE** Member, Many **SPE** Task Groups & Awards
- 15 Year **AGA** Storage Research Committee Member
- Co-Author with Katz - “Handbook of Natural Gas Engineering”
- Significant Contributor to Penn State Rock Mechanics Lab
- D.L. Katz (1907-1989)
- A **IRE** Mentor & Friend
- “**Father of Underground Gas Storage**”



Jack & Doug Recipients of SPE Region Service Award



DOUGLAS J. ELENBAAS (BS CHEM E '77)

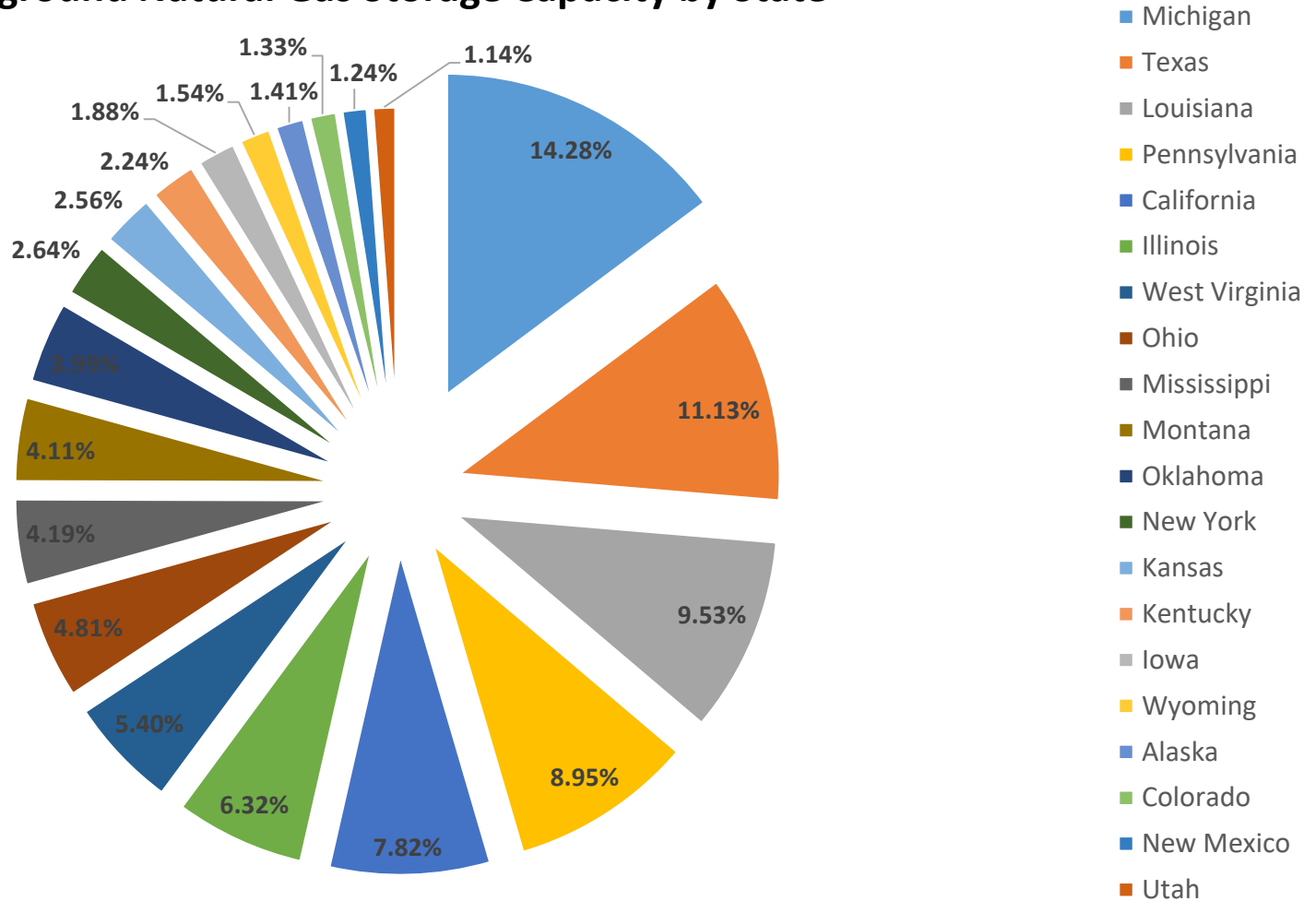
Douglas Elenbaas of Grand Rapids, Michigan, was presented the 1994 Mid-Continent Region Service Award by the Society of Petroleum Engineers (SPE), acknowledging his contributions to the Society through his time and effort to its programs. Doug and his father, **JACK ELENBAAS** (BS ChemE '44, MS Chem E '47) became the first father and son in the history of the Society to receive the service award.

In addition, Jack became a Distinguished Member of the SPE at its Annual Technical Conference in New Orleans in September. Jack, left, and Doug, center, are shown with Richard Sandtveit, SPE region director.

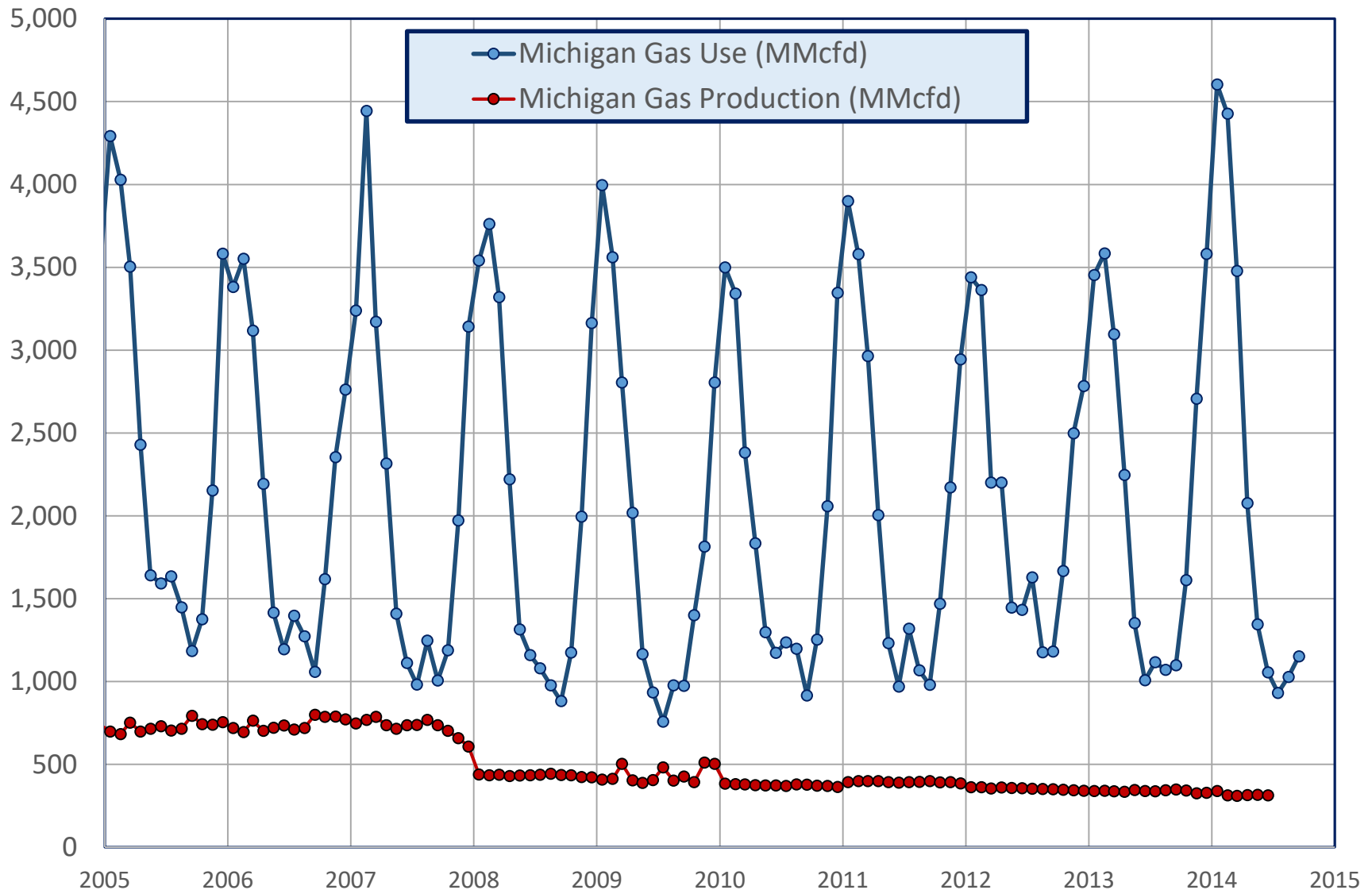
Jack R. Elenbaas

Legacy in Underground Natural Gas Storage

USA Underground Natural Gas Storage Capacity by State



Importance of Gas Storage



Jack R. Elenbaas & Michigan's Underground Gas Storage Fields



Michigan - Underground Natural Gas Storage

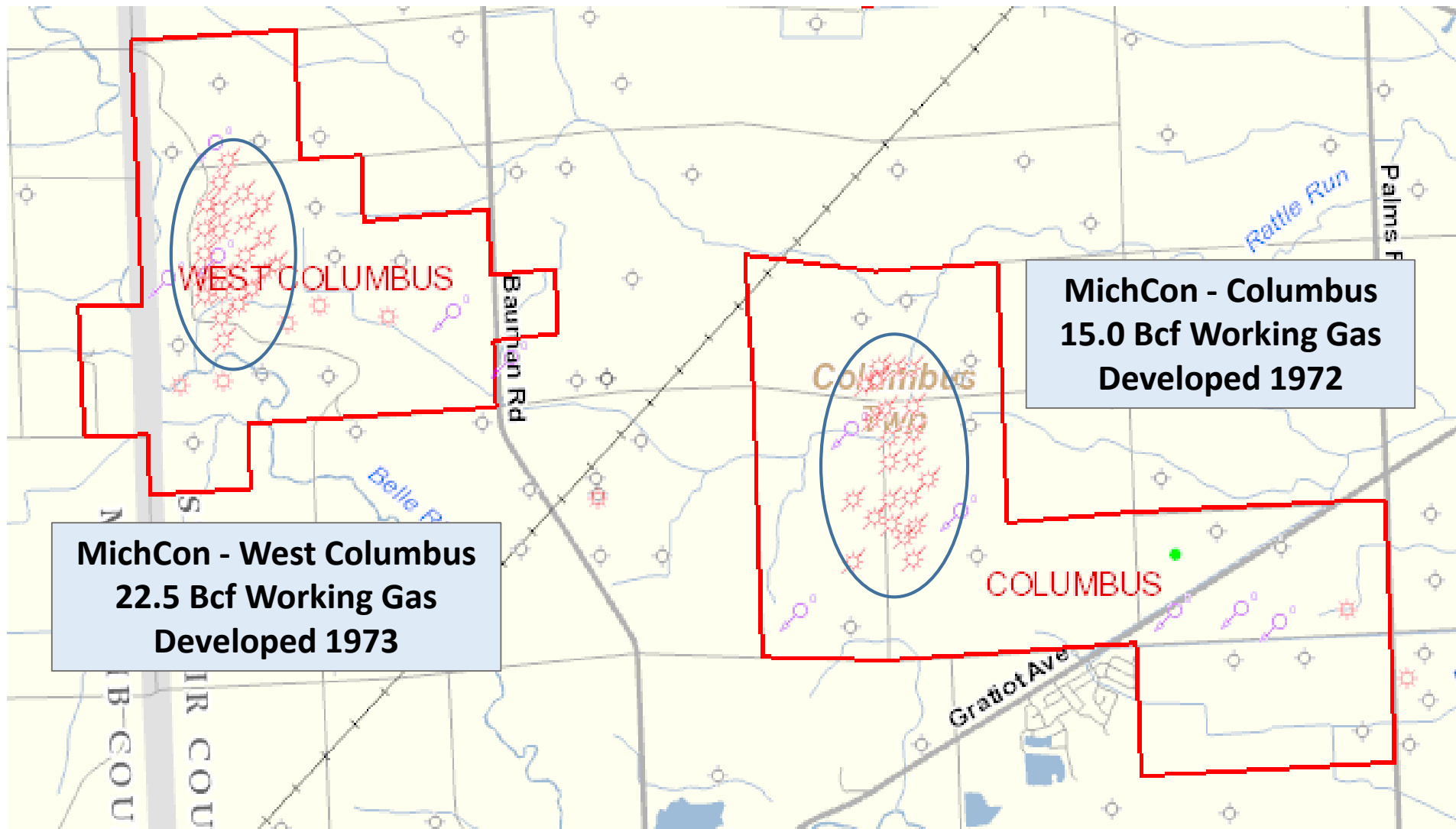
		Working Gas	Base Gas	Total Gas	
Storage Formations		Bcf	Bcf	Bcf	% W. G.
Niagaran Reefs	37	465	158	624	75%
Michigan Stray	9	158	173	331	48%
Other Zones	5	57	76	133	43%
Total Fields	51	681	407	1,088	63%

Jack R. Elenbaas - 27 Fields

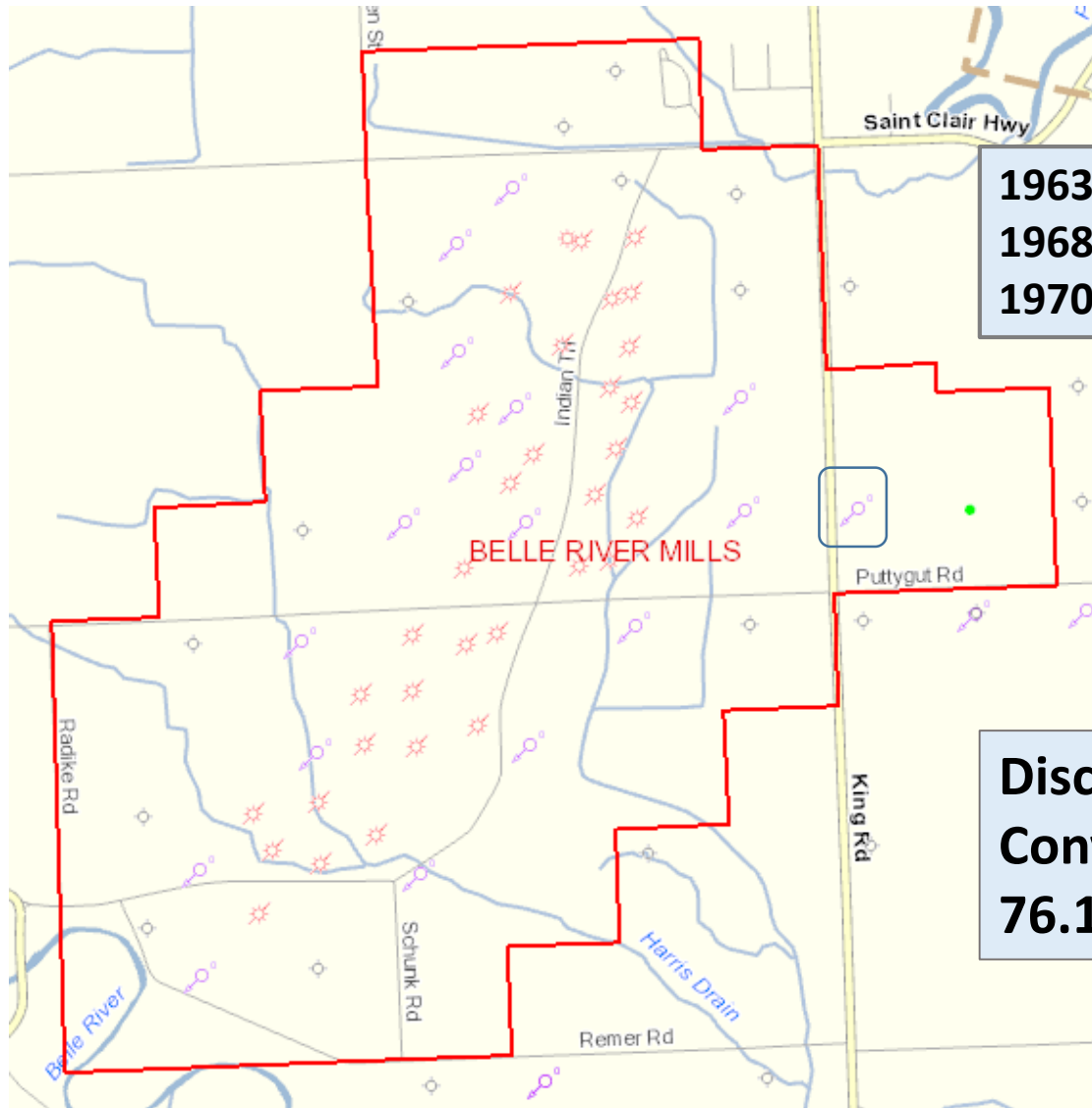
Jack R. Elenbaas regarding
Michigan Storage Fields

***"I defy Anyone to Find
Better Storage Fields!"***

Columbus Township - MichCon Storage Fields



Belle River Mills

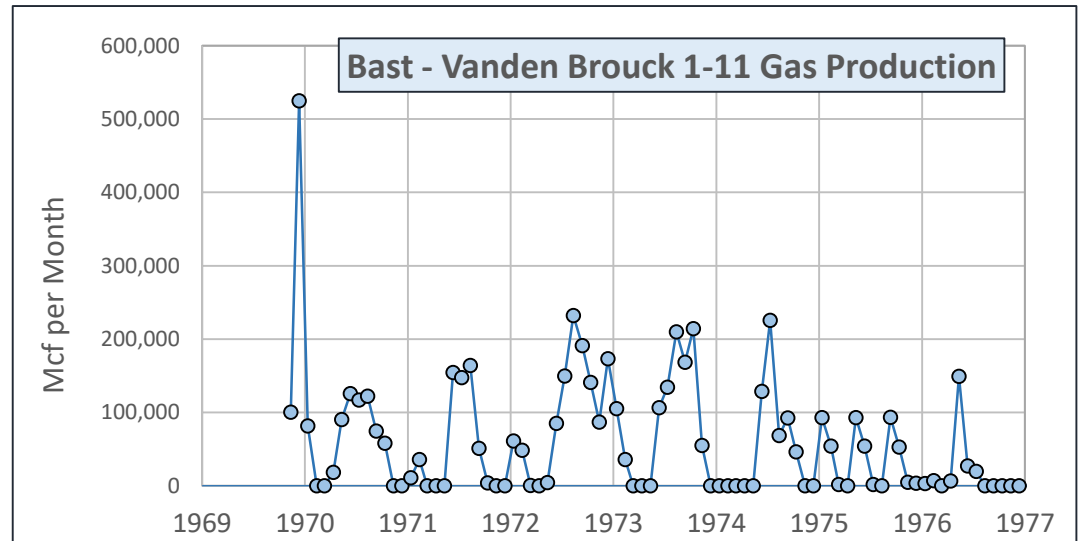
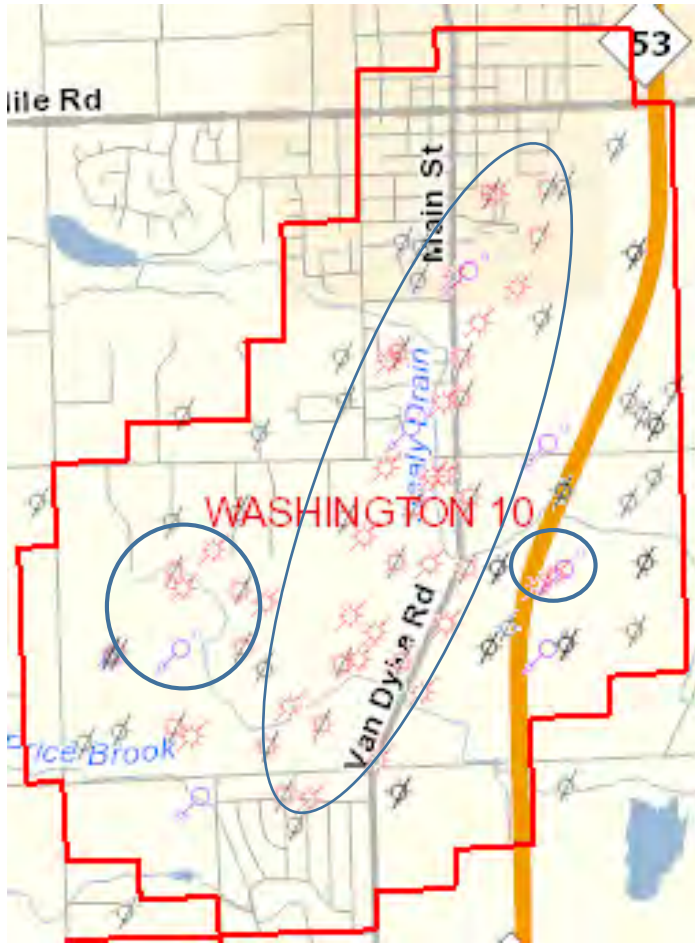


1963 Rood Estate Oil Well Drilled
1968 MCGC Acquires Rood Est. Well
1970 MCGC Converts to Facility Well

Discovered - 1961
Converted to Storage - 1965
76.1 Bcf Total Gas

Washington 10 Storage - Developed 1999

3 Reefs – Washington 10, 10A, 11

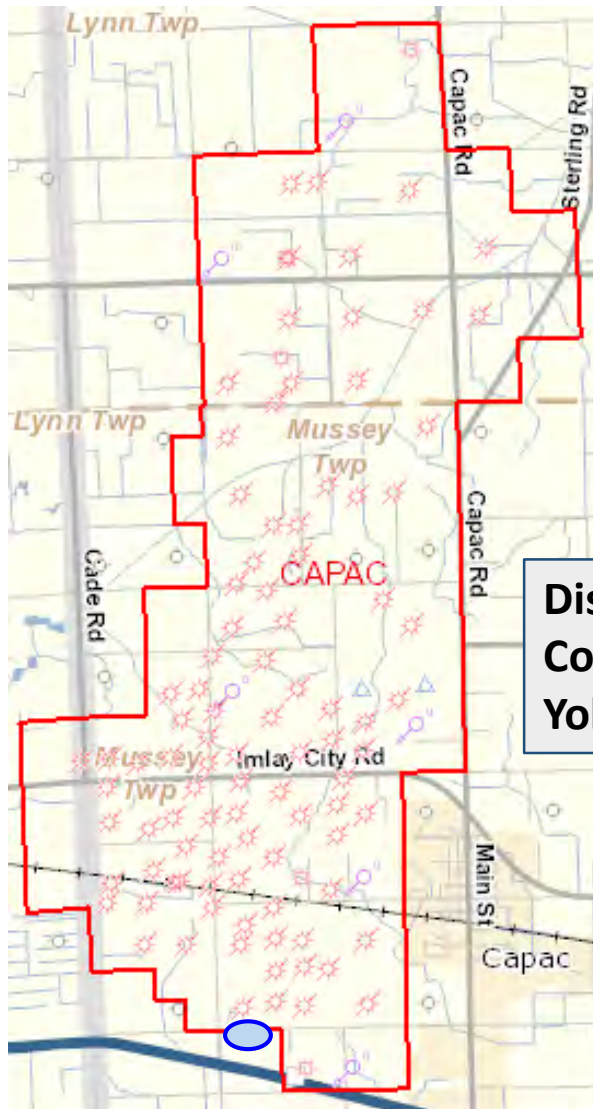


Washington 11, Disc. 1966

Washington 10, Disc. 1974

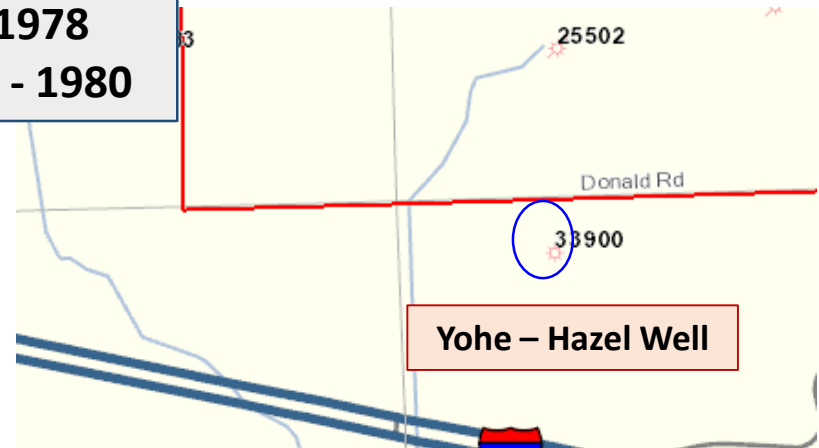
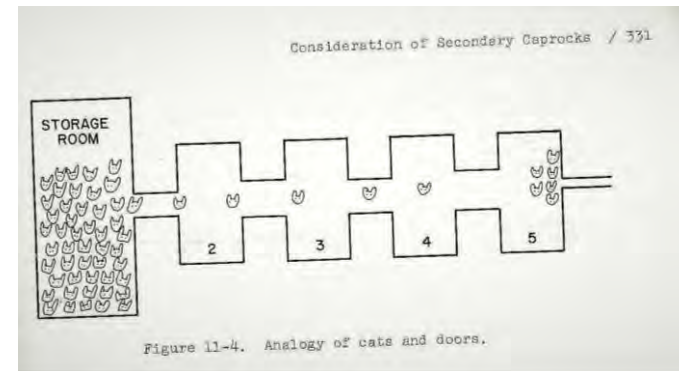
Jack R. Elenbaas "Merlin,
something has to be feeding
the Bast Vanden Brouck well,
the evidence is irrefutable!"

ANR Capac Storage Field - Developed 1978



Discovered - 1961
Converted to Storage - 1978
Yohe-Hazel Well Drilled - 1980

D.L. Katz Analogy of Gas Losses
‘the Cats and the Doors’



Elenbaas Family History Selling Coal

GR Press April 17, 1915

Announcement!

We would most respectfully announce to our friends and patrons the opening of our

New Coal Yard

We will be ready to serve you about June 1. If you appreciate honest weight, courteous treatment and quick delivery, place your fuel orders with us.

M. J. Elenbaas & Sons

Dealers In

Building Material, Flour Feed, Hay,
Straw and Grain, Coal, Coke
and Wood.

Office 2100 S. Division Ave. Branch Offices and Yard, Burton
St. and G. R. & I. R. R. Both Phones.

November 11, 1915

Shovel Day To-morrow

75¢ Shovels
for **39¢**
to Advertise

Genuine Gas Coke

This Genuine Gas Coke Shovel is just as good as it looks—light, strong and well made. The handle is turned from solid ash and the scoop is good solid steel. It's a well balanced shovel, too, and the woman who must use it to fill her furnace during her husband's absence will find it will make her work a great deal easier. REMEMBER, there are only 800 of these shovels to be sold at 39¢, and that they are regular 75¢ values.

Tomorrow, the Gas Company and Genuine Gas Coke dealers will sell 800 shovels—just like the one shown—for only 39¢ each. This is a ridiculously low price for such shovels—they would cost you 75¢ anywhere else and we are making this offer simply to advertise Genuine Gas Coke. Last year we disposed of 1,000 shovels in a very short time—so come in and get yours bright and early tomorrow.

Get One from the Gas Company or Any of These Genuine Gas Coke Dealers

Central—
Bennett Fuel and Ice Company, Fulton street and Ottawa avenue, S. W.
Breen & Halladay Fuel Company, Franklin street and G. R. & I. Railway, S. W.
Brummeler & Van Strien Company, Franklin street and Railway, S. W.
Century Fuel Company, Hilton avenue and Buckley street, S. W.
Crystal Springs Water and Fuel Company, 35 Division avenue, N.
Grand Rapids Ice and Coal Company, 29 Fountain street, N. W.
A. Himes Coal Company, 135 Ottawa avenue, N. W.
Home Fuel Company, Hilton avenue and Buckley street, S. W.
Hulst & Van Heulen, Grant street and G. R. & I. S. W.
A. B. Knowlson Company, Powers Theater Building, S. A. Morman & Company, 35 Pearl street.
Wykes-Schroeder Company, Prescott street and M. C. R. R.

East—
De Young Bros. Fuel and Building Material Company, 1145 Michigan street, E., corner-Fuller avenue.
East End Fuel and Feed Company, 1409 Robinson Road.
Steele Brothers, Sherman street and Eastern avenue, S. E.

North—
G. H. Hehnke, 14 Coldbrook street, N. W.
Christenson Ice and Coal Company, 1391 Plainfield avenue.
Creston Fuel and Building Material Company, Taylor avenue and G. T. Railway.
Jon. J. Kahnoski, 485 Grand Avenue.
Henry Pleune, Sinclair avenue and G. T. Railway.
I. C. Shipman Coal Company, Plainfield avenue and Leonard street.

West—
Ball Park Coal Company, 1314 Butterworth street.
Bustrian Coal Company, Elizabeth and Broadway.
City Coal and Coke Company, 519 Bridge street, N. W.
George Connor & Sons, 448 Bridge street and P. M. R. R.
Donker & Mol. Leonard street and P. M. R. R.
C. Goudswaard, 602 Leonard street, N. W.
Edward Groff, 567 Eleventh street, N. W.
J. A. Kieis, Seventh street and G. R. & I. Railway.
H. W. Lehnen, Earle street and P. M. R. R. S. W.
Jos. Tazelaar, Seventh street and P. M. R. R. N. W.
Valley City Ice and Coal Company, 584 Fulton street, W.

South—
Battjes Fuel and Building Material Company, 1575 Division
M. J. Elenbaas & Sons, 2100 Division Avenue, S.
Hyde & Son, 1148 Madison Avenue, S. E.
A. Hyde & Son, 1148 Madison Avenue, S. E.
John Jasperse, Grandville Avenue and G. R. & I. Railway, S. W.
J. Mollens, Eastern Avenue and P. M. R. R. S. E.
Oakdale Coal and Wood Company, 854 Alexander street, S. E.
Silver Creek Coal and Wood Company, Kalamazoo Avenue and P. M. R. R.
John S. Tyler, Madison Avenue and P. M. R. R.
Welmers & Dykman Fuel Company, 453 Grandville Avenue, S. W.
Wykes Fuel and Building Material Company, Burton Avenue and G. R. & I. Railway.

The Gas Company

M. J. Elenbaas & Sons - Store Locations



January 11, 2017

El Energy Consulting LLC

Elenbaas Brothers - Coal

PAGE TWO

Burton Heights Record

Known For—

QUALITY COALS

.... and

Dependable Service

Since 1907

BURTON HEIGHTS' OLDEST COAL DEALER

ELENBAAS BROTHERS, INC.

MAIN OFFICE AND YARDS

623 Burton St., S. W.

BRANCH OFFICE

2106 Division Ave., S.

Dial 32-585

Dial 31-232

COAL

COKE WOOD

BUILDING MATERIAL

Checkerboard Bag Chows for
Horses, Cows, Hogs and Poultry

INSURE HIGHEST QUALITY

ELENBAAS BROTHERS, INC.

Dial 32-585

Did You Ever Stop to Think of the Danger in Delay

MUD, snow, slush or other hindrances due
to bad weather may cause unpreventable
delays in the delivery of coal just when you
need it most.

Set your mind at ease by ordering your coal
now.

PHONE **32585** TODAY

**ELENBAAS
Brothers, Inc.**

Elenbaas Brothers - Premium Coal

Burton Heights Record

Thrift Mixture

SAVE \$ \$ \$

On Your Coal

1,000 lbs. Pocahontas Forkings

1,000 lbs. Zeigler Egg Coal

PER TON \$12.00

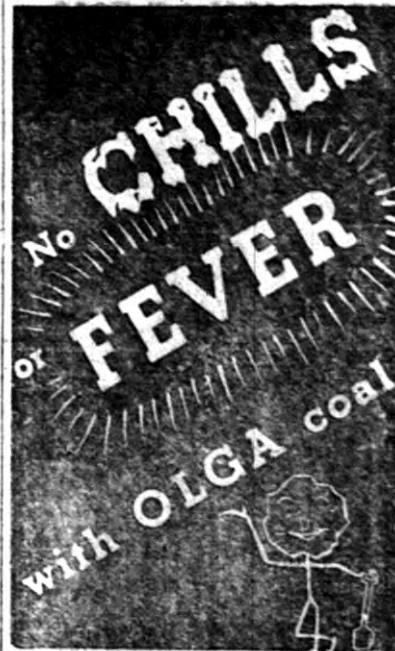
LOAD LOTS \$11.50 TON

Plus Tax

Elenbaas Bros. Inc.

623 Burton, S. W.

Phone 3-2585



OLGA COAL

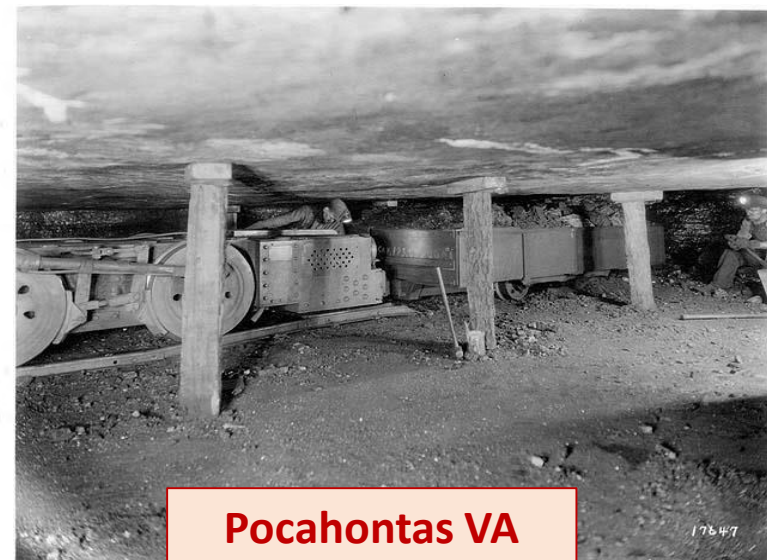
SMOKELESS DUSTLESS

POCAHONTAS

ELENBAAS

Bros., Inc.

623 Burton, S.W.



Pocahontas VA

M. J. Elenbaas & Sons Delivery Methods



History of Crude Oil Products

- **The Bible – Genesis 6:14 - “Make rooms inside the ark, and cover it inside and out with pitch”**
- **2,000 BC – Asphalt Used to Build the Walls of Babylon**
- **Cuneiform Tablet - Bitumen Usage (ca 2350-2150 BCE).**



- **615 BCE - Asphalt for Road Building in Babylon**
- **1264 – Marco Polo Diary - Seeps of Oil in Persia (Baku)**

Drilling Oil Wells

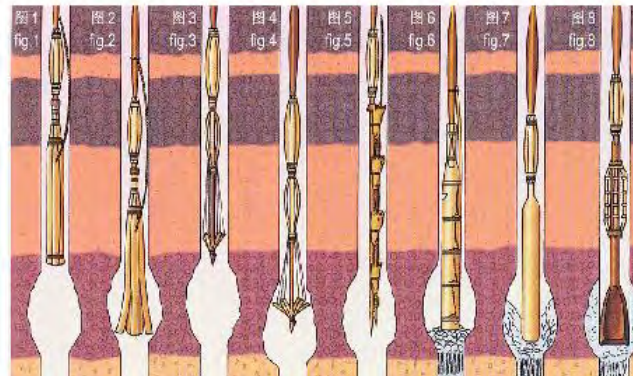
347 AD – China
Bamboo used
drilling Oil
Wells to 800’



1594 - First
Hand Dug Oil
Wells in Baku



1858 - First
Modern Oil
Well Drilled in
Baku



North America's Early Oil Wells

**1858 – America's First
Oil Well Drilled
Ontario, Canada 13'**

**1859 - Drake Well
Seneca Oil Co. 69'**

**1886 - Port Huron
Field 21 Wells
(Dundee) 575'**

**1901 - Spindletop
Ranch – Lucas 1 Well
Gusher, First Major
Oil Well**

**1925 – Deindorfer
Woods Michigan's 1st
Oil Well in Saginaw
County – (Berea @
1,873')**



Crude Oil Transport & Storage



Transport in
Whisky Barrels

Transport by
Oil Pipelines



Crude Oil Storage



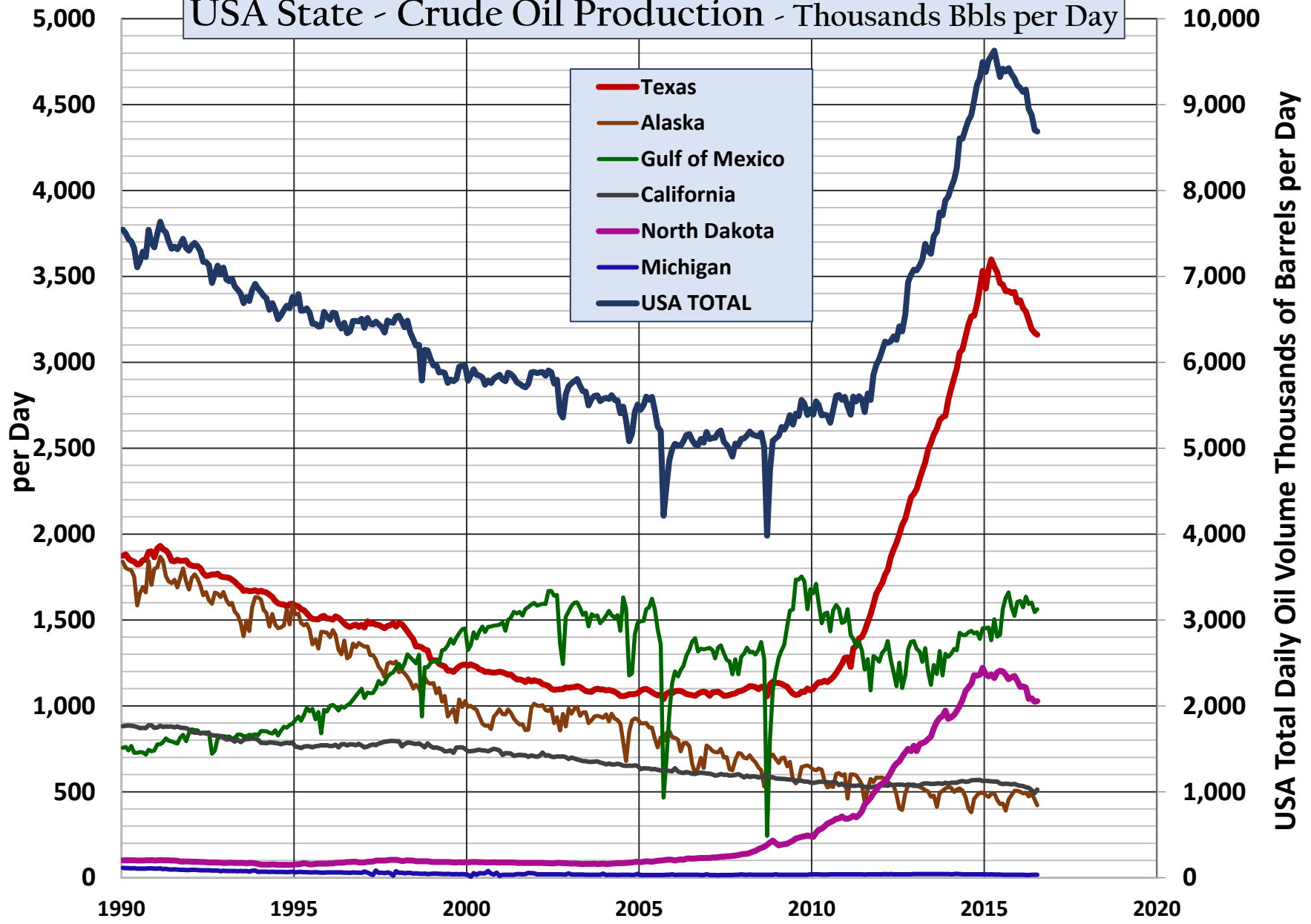
**Cushing Oklahoma
50 MM Bbl Storage**

**Lewiston MI – MarkWest
Oil Storage 15,000 Barrels**



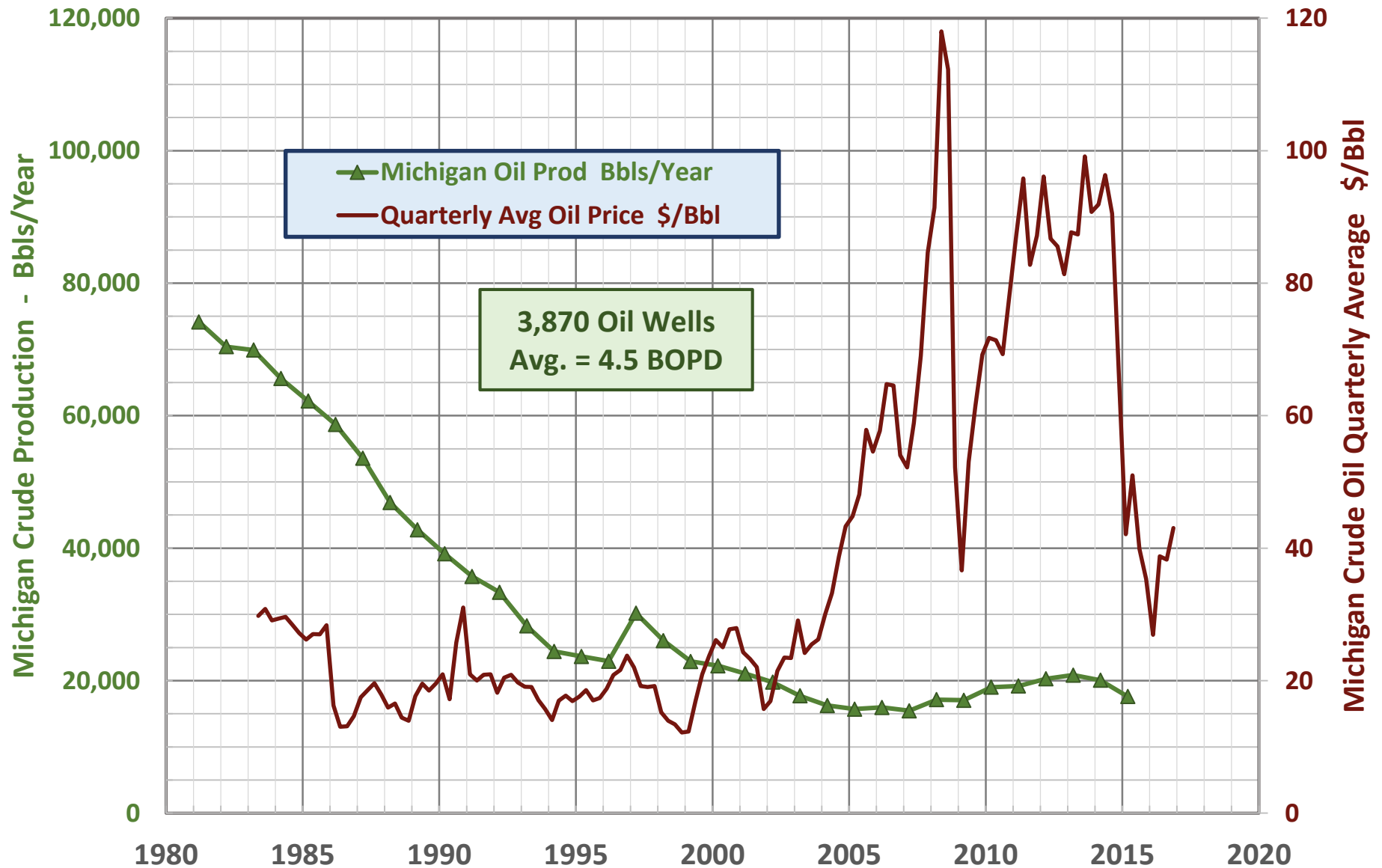
USA State - Crude Oil Production - Thousands Bbbls per Day

State Daily Oil Production Volume Thousands of Barrels per Day



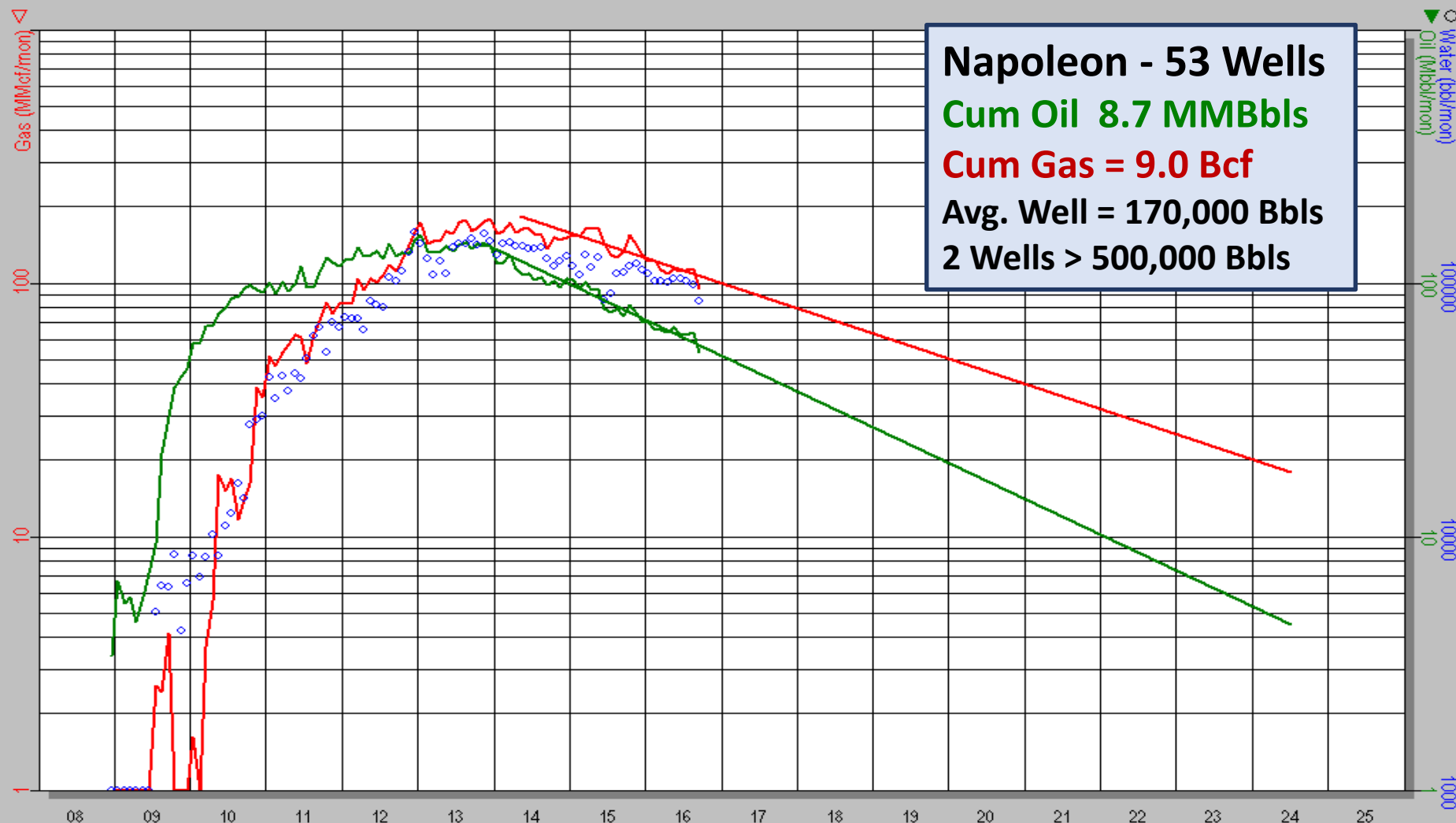
USA Total Daily Oil Volume Thousands of Barrels per Day

Michigan Yearly Oil Production & Crude Oil Prices



Case Name: Napoleon
Oper: West Bay
Major Phase: Oil

Field:
County,State: Jackson,MI
43,796.46 M\$



Proj Oil Cum: 8,721.64 Mbbbl
Oil Rem: 1,791.21 Mbbbl
Oil EUR: 10,512.86 Mbbbl

Proj Gas Cum: 9,094.31 MMcf
Gas Rem: 4,423.97 MMcf
Gas EUR: 13,518.29 MMcf

History of Natural Gas

- 1,400 BC – The Oracle of Delphi (Temple of Apollo) Built on a Burning Spring or Eternal Flame (Greece)
- 500 BC - Chinese Formed Pipelines Out of Bamboo Shoots Transporting the Gas for Boiling Sea Water
- 1785 – Britain Commercialized Gas Produced from Coal to Light Houses & Streetlights
- 1821 – Fredonia New York, Hart Well, First Natural Gas Well 27 Feet Deep – **William Hart** considered the “**father of natural gas**”.
- 1859 – 2 ½” Pipeline Built 5 Miles from Drake Well Area to Titusville
- 1938 – Gas First Regulated by U.S. Government

USA Natural Gas History

- **1821 Fredonia New York**
 - William Hart collected & distributed shallow gas used for Street gas lighting in Fredonia – Hart Well was 27 feet deep and excavated by shovels

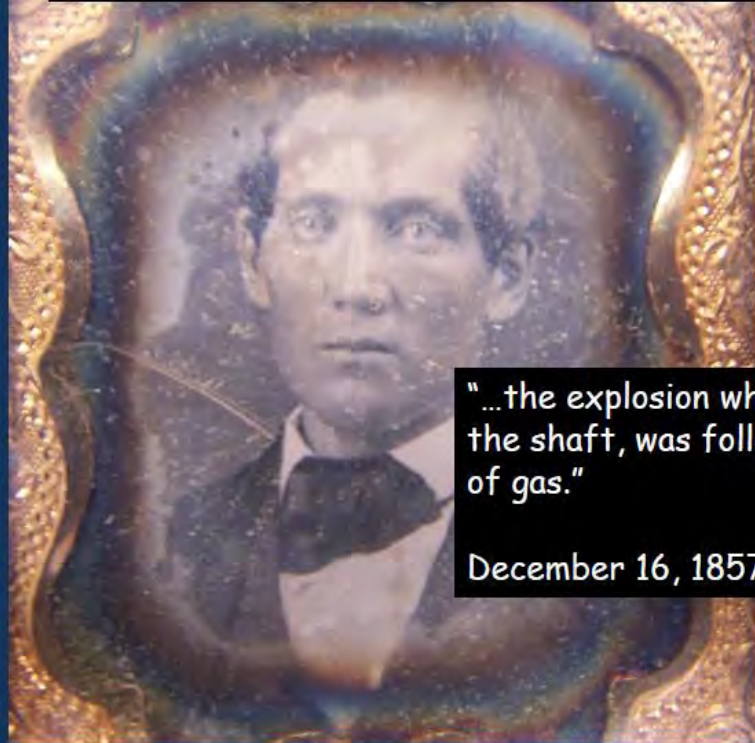


Kicking Down a Gas Well & “Fracking”- 1857



...in the fall of 1857 Barmore fraced the well with 8 pounds of gunpowder at a depth of 122 feet (the Dunkirk Shale).....

...the first recorded fracture stimulation of a gas well ... almost two years before the Drake well came in...



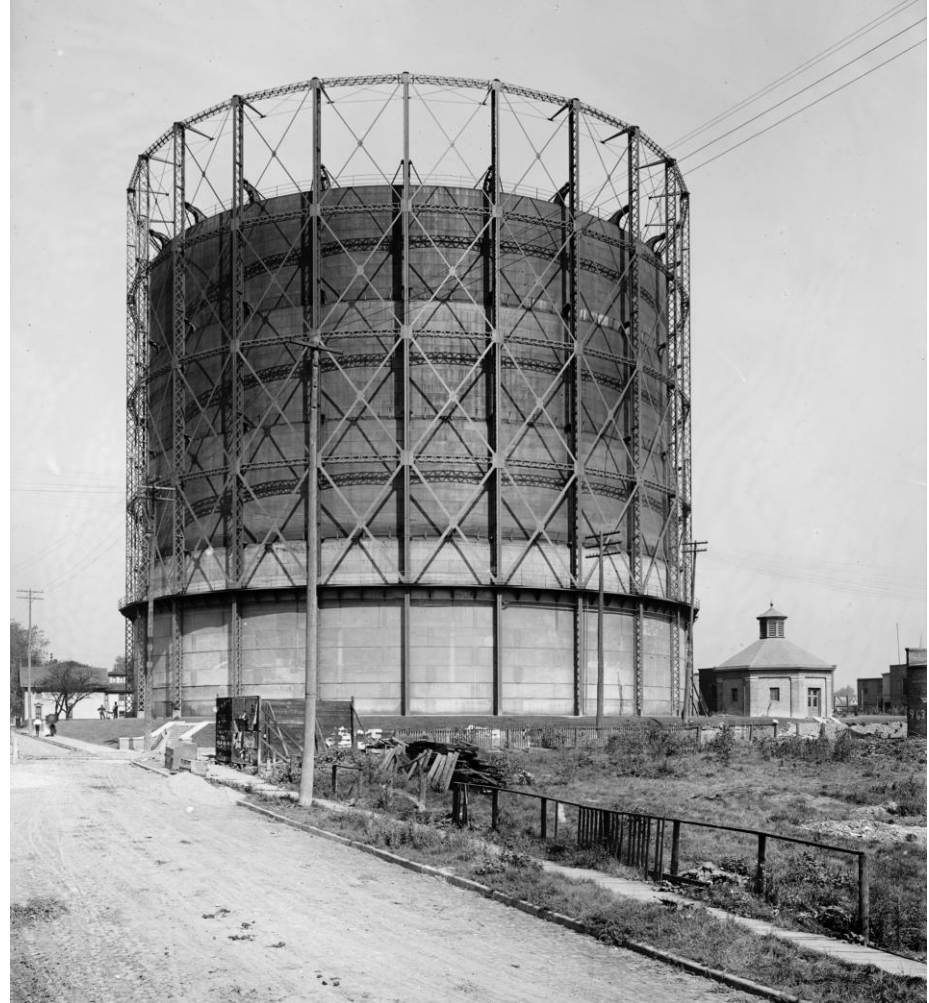
"...the explosion which expelled the water in the shaft, was followed by a plentiful supply of gas."

December 16, 1857, *Fredonia Censor*

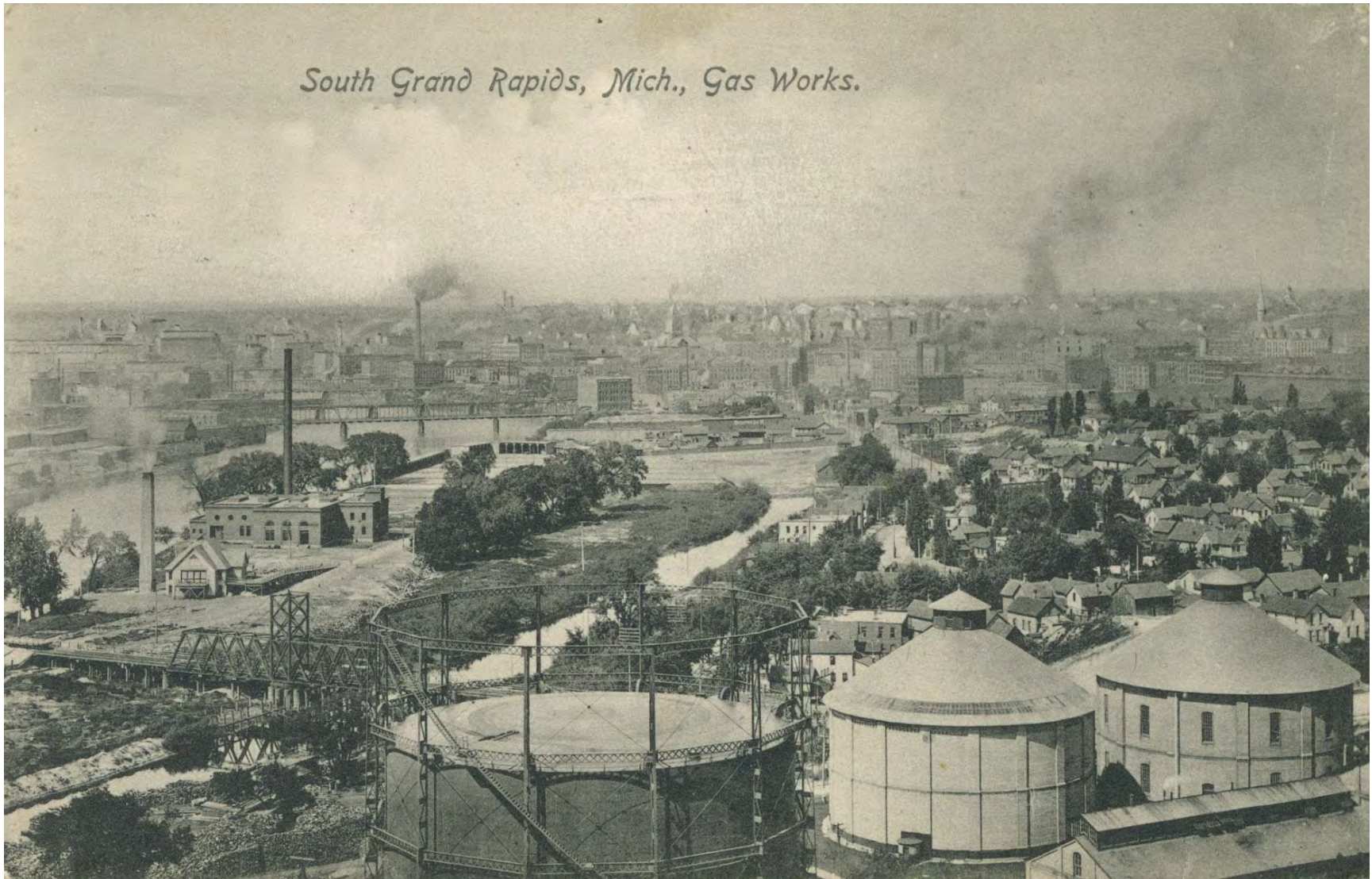
courtesy...Darwin Barker Museum, Fredonia , NY

1st Commercial Coal Gas - Detroit

- 1851 – City of Detroit Gas Co. (53 Street Lights)



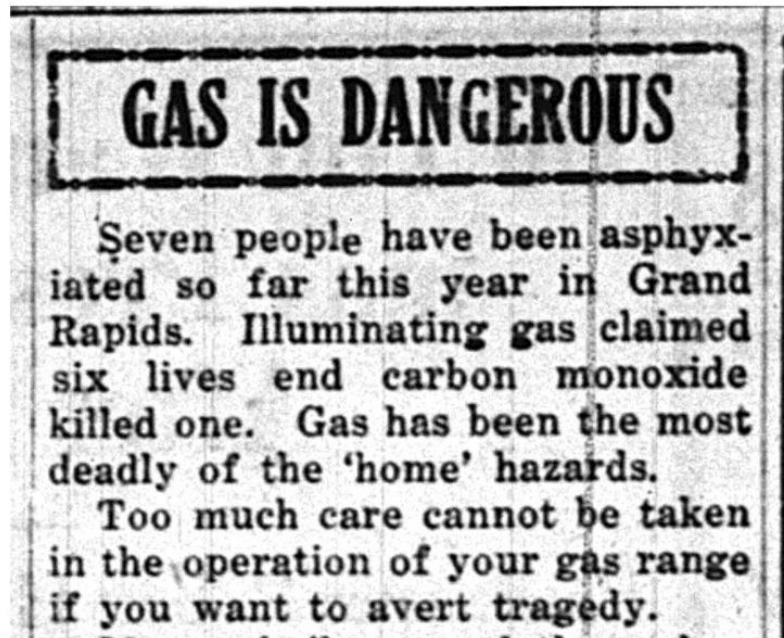
1857 - Michigan Consolidated Gas Opens in Grand Rapids Initial Street Lighting



Hazards of Coal Gas & Carbon Monoxide

- Gas Ranges
- Boiling Clothes
- Drafts from Open Windows
- Variations in Gas Pressure
- Flames Going Out
- Oven Pipe Flues
- Partial Combustion of Flames
- Insure Tight Fitting Valves
- Never Use Rubber Hoses
- Fumes from Soft Coal Heaters & Furnaces

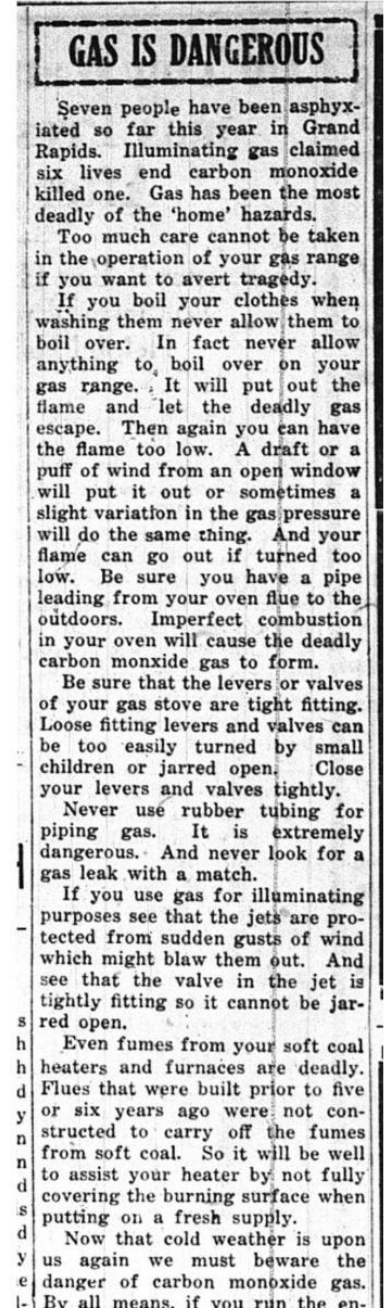
January 11, 2017



Grand Rapids Press, December, 1926



El Energy Consulting LLC



Early Natural Gas Pipelines

- **1889 - Natural Gas Pipeline from Findlay Ohio to Detroit**
 - **Gas production depleted by 1892-93**
- **1891 – USA's First Major Natural Gas Pipeline**
 - **120 Miles from Central Indiana (Trenton Oil & Gas Field) to Chicago**
- **1920's – USA Pipeline Infrastructure Built**
 - **Advances in welding, pipe rolling & metallurgy improved reliability**

Michigan's Early Gas Wells & Pipelines

- **April, 1928:** Lima Oil - **M. Figge #1**, **Permit #23**, 1873'-1877' Dundee Zone, Muskegon Twp., Muskegon Cty.
 - Gas gathered and sold in Muskegon
- **July, 1930:** Michigan Cities Natural Gas – **Keeler-Mitchell 2**, **Permit #979**, 1328'-1342' Napoleon Sand of Upper Marshal Form., Broomfield Twp., Isabella County, **MPSC #11**
 - Pipeline: Broomfield to Midland (1931)
- **April, 1933:** Taggert - **Barton #1**, **Permit #1440**, 1480'-1515' Napoleon Sand of Upper Marshall Form., Austin Twp., Mecosta County **MPSC #1**
 - Pipelines: Austin to Big Rapids & Muskegon (1934)

W.C. “Top” Taggart

- Taggart Brothers led by **W.C. "Top" Taggart**, used the Austin Gas Field find to earn the title as **"king of the gas people"**



Major Pipelines – Oklahoma to Michigan

1936 Big Switch – 500,000 Burners Adjusted

Panhandle Pipeline 1936



Michigan-Wisconsin Pipeline 1949



Hugoton Field Natural Gas Reserves for MW Pipeline

**“The Time We
Calibrated the
Geologists”**

J. R. Elenbaas



Sample Grading Method of Estimating Gas Reserves

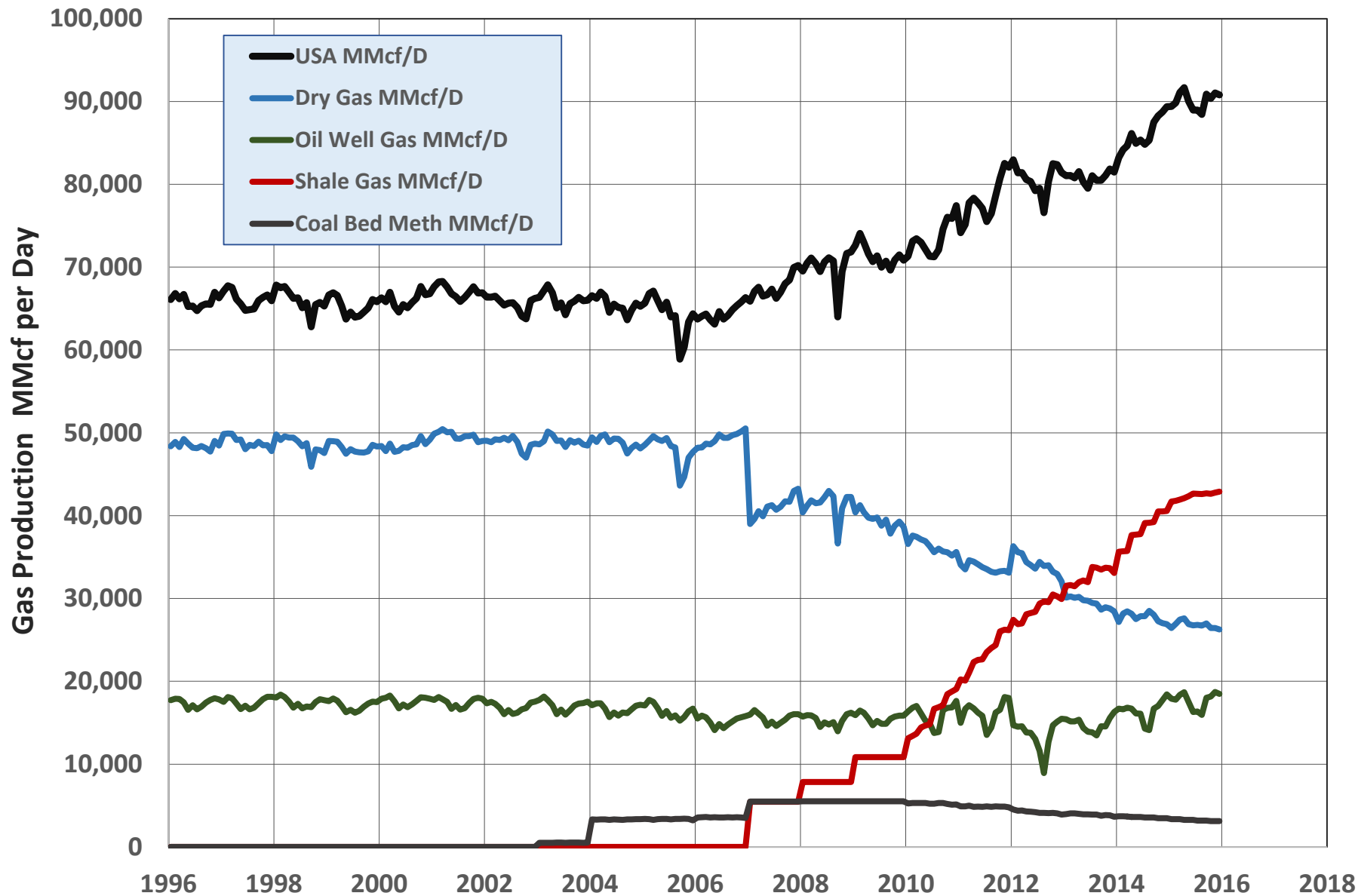
Authors	D.L. Katz (University of Michigan) C.E. Turner (Phillips Petroleum Co.) R.D. Grimm (Phillips Petroleum Co.) J.R. Elenbaas (Michigan Consolidated Gas Co.) J.A. Vary (Michigan Consolidated Gas Co.)
DOI	http://dx.doi.org/10.2118/952207-G
Document ID	SPE-952207-G
Publisher	Society of Petroleum Engineers
Source	Journal of Petroleum Technology
Volume	4
Issue	08
Publication Date	August 1952
Document Type	Journal Paper
Pages	207 – 212
Language	English
ISSN	0149-2136
Copyright	1952. Original copyright American Institute of Mining, Metallurgical, and Petroleum Engineers, Inc. Copyright has expired.

Elenbaas Brothers Closes – 1956

Last Coal Shipment

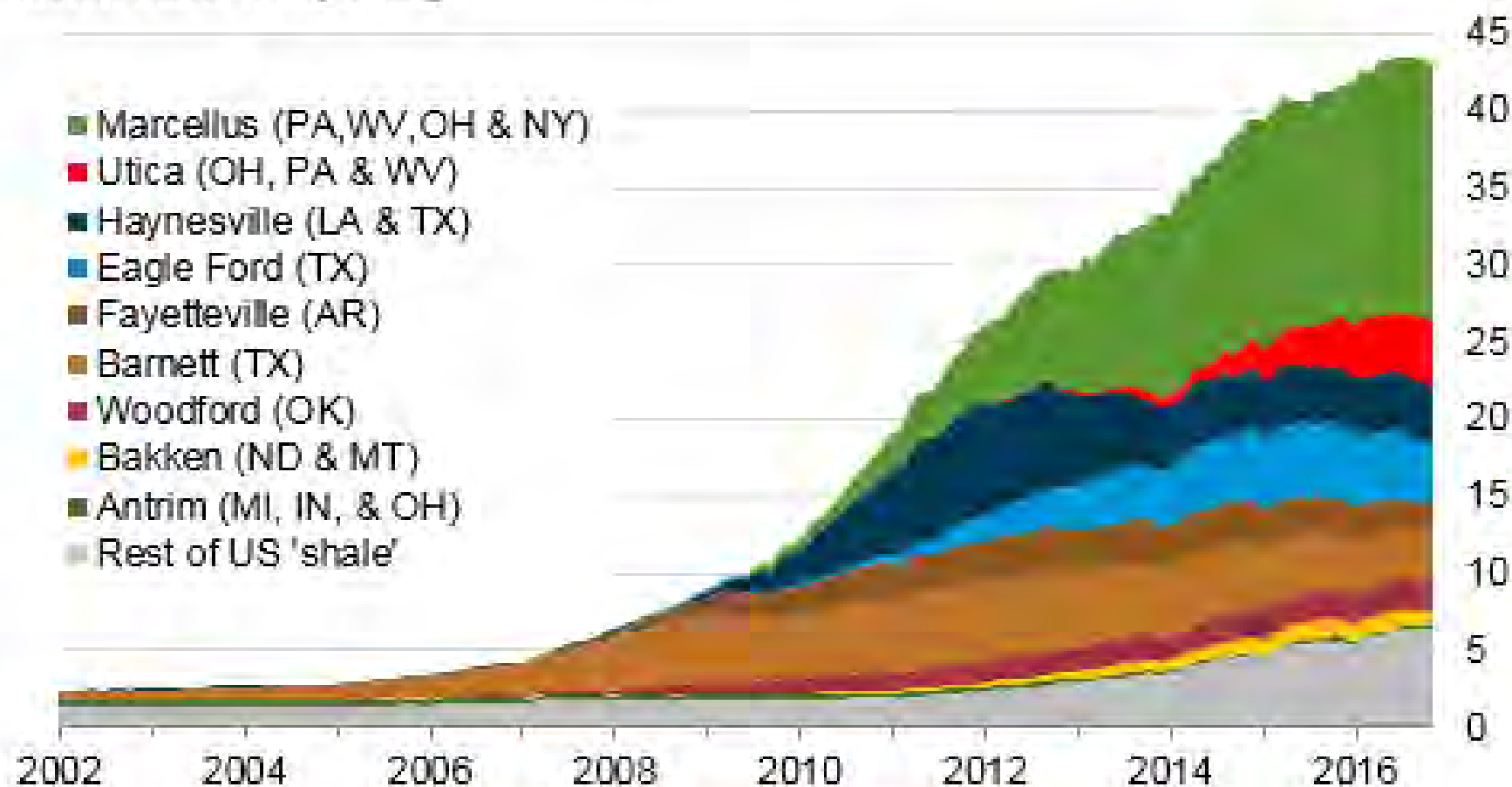


USA - Natural Gas Production by Source - MMcfd



Monthly dry shale gas production

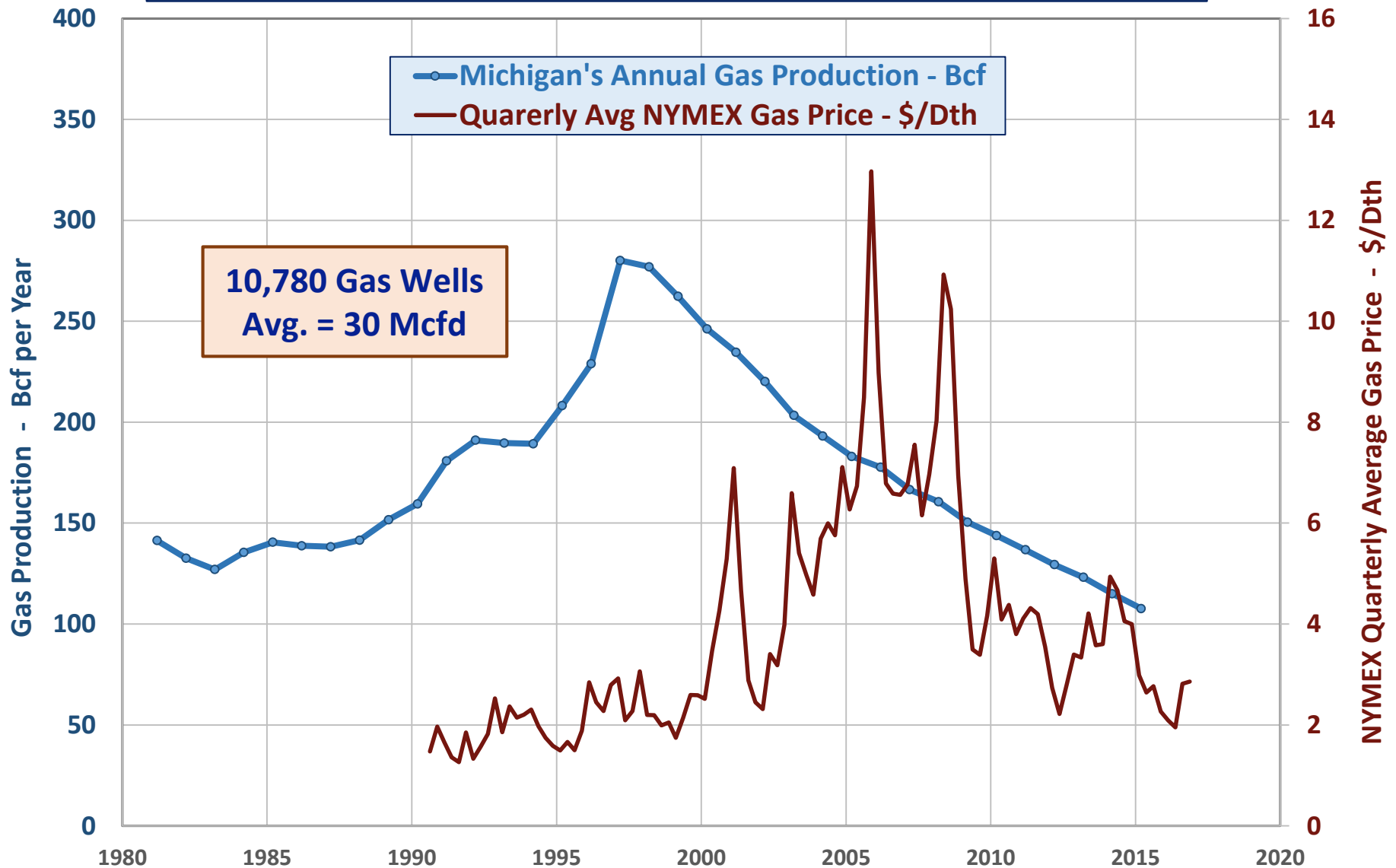
billion cubic feet per day



Sources: EIA derived from state administrative data collected by DrillingInfo Inc. Data are through November 2016 and represent EIA's official shale gas estimates, but are not survey data. State abbreviations indicate primary state(s).



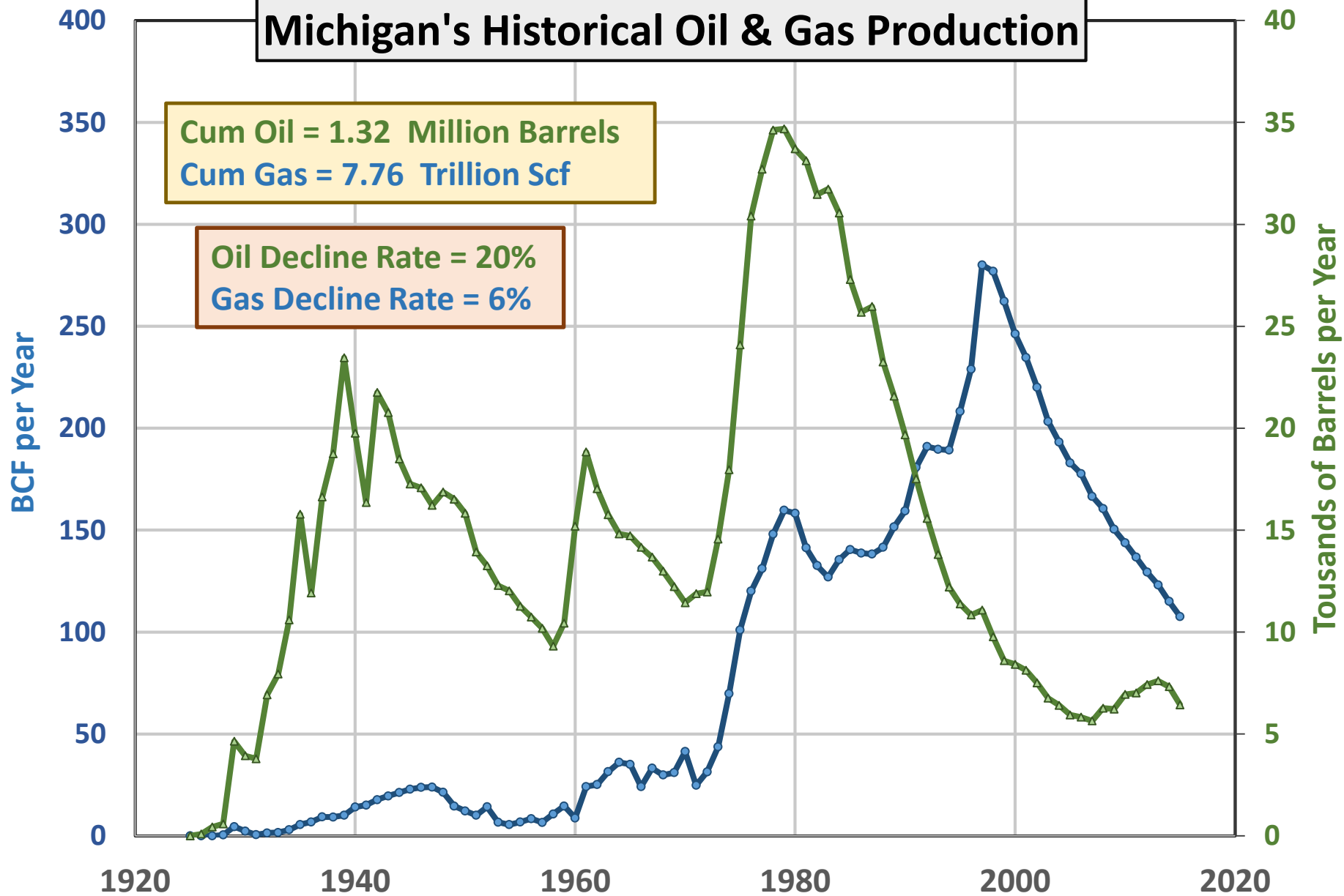
Michigan Annual Gas Production & NYMEX Natural Gas Price



Michigan's Historical Oil & Gas Production

Cum Oil = 1.32 Million Barrels
Cum Gas = 7.76 Trillion Scf

Oil Decline Rate = 20%
Gas Decline Rate = 6%



Collingwood – Michigan's Future?



Excelsior – 4 Wells

Cum Production = 4.45 Bcf, 325 MBbbls

Est. Total = 8.0 Bcf, 400 MBbbls

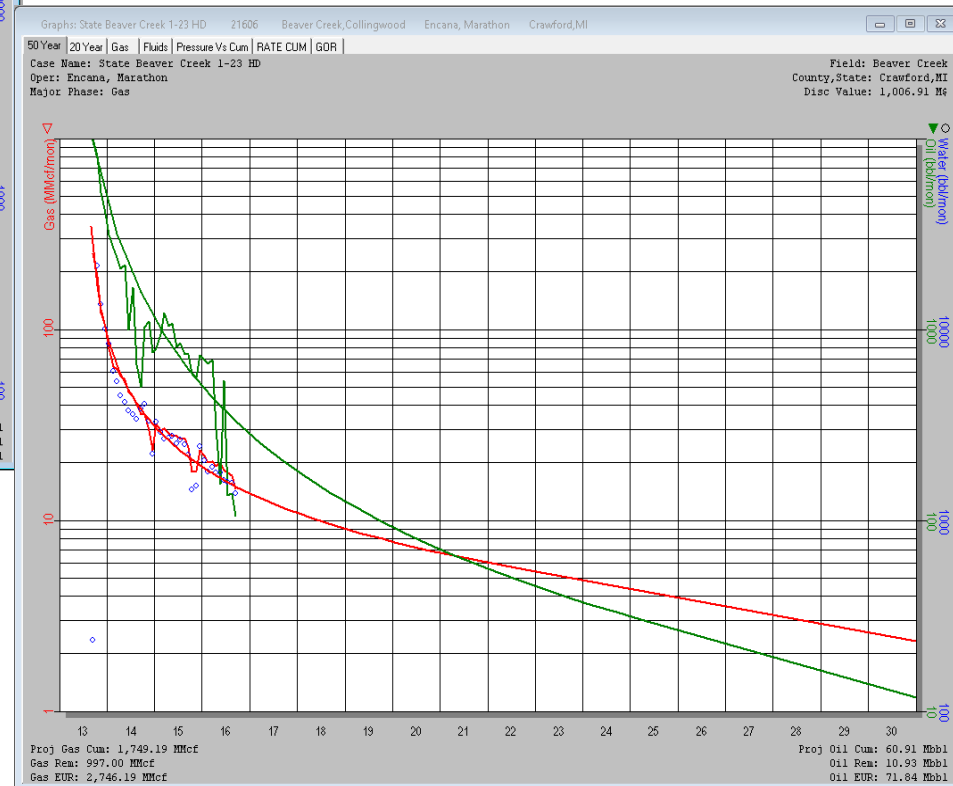
Est. Recov. Per Well = 2 Bcf, 100 MBbbls

Beaver Creek

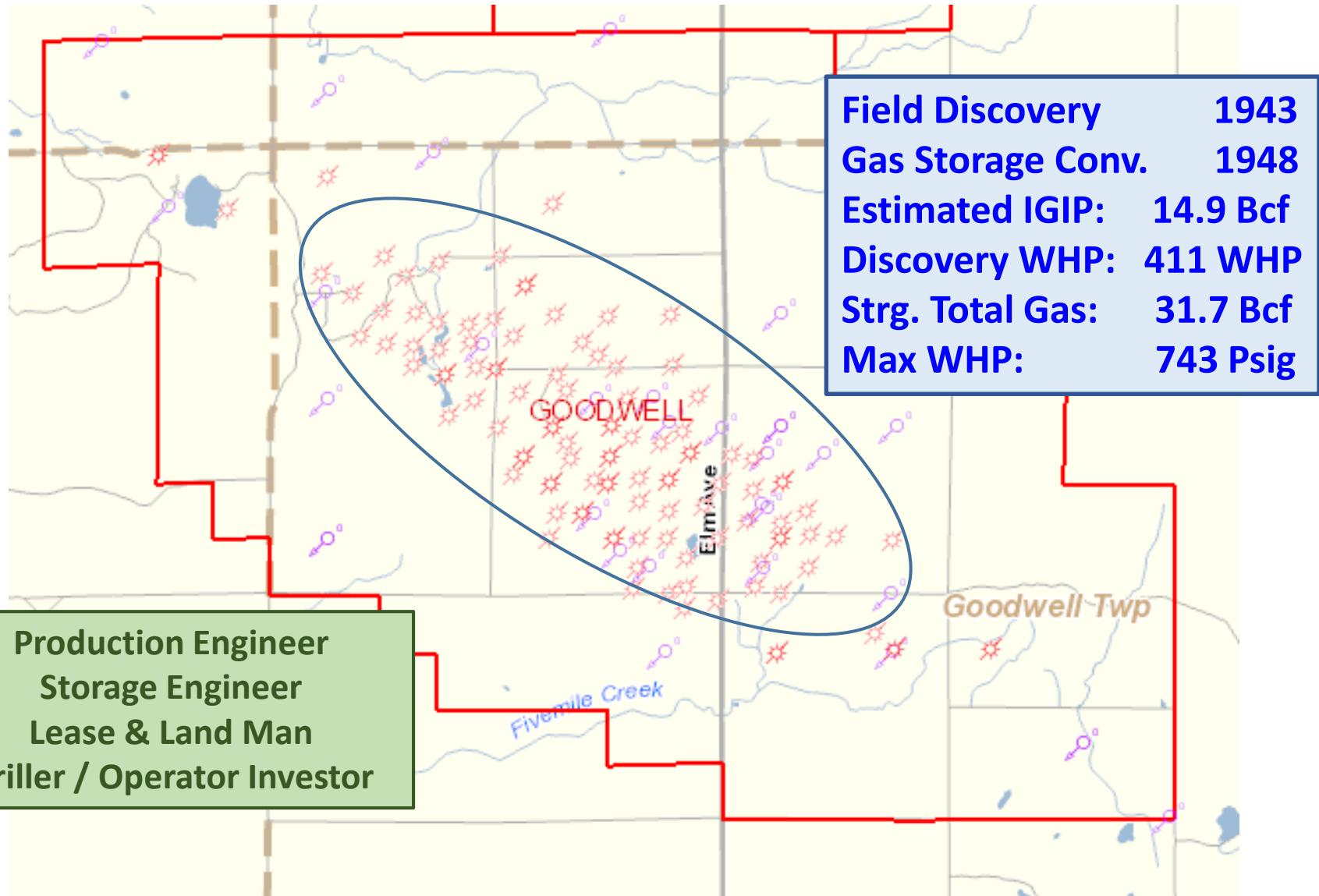
Cum Production = 1.75 Bcf, 60 MBbbls

Est. Total = 2.75 Bcf, 70 MBbbls

Est. Recov. Per Well = 3 Bcf, 100 MBbbls

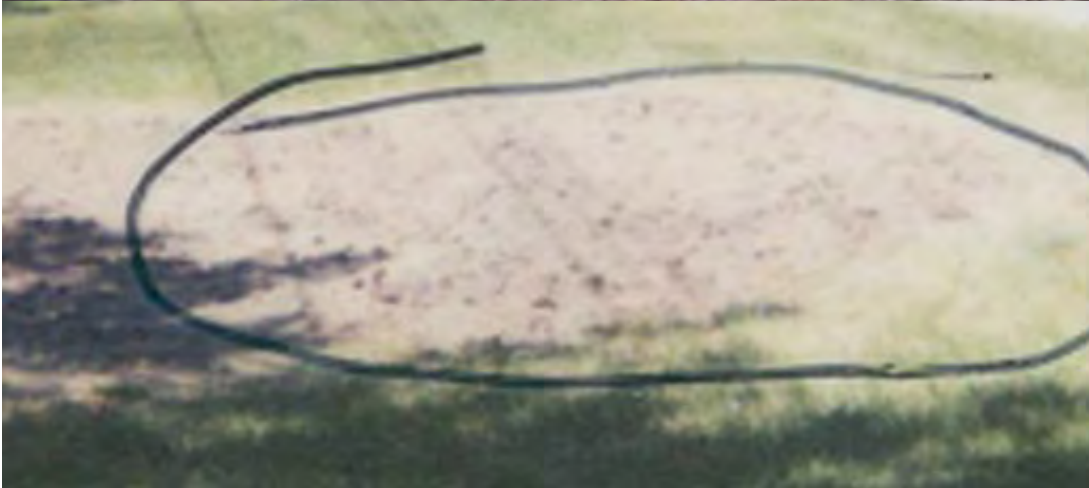


Goodwell Storage Field - *IRE* 60 Year Passion



~1970 Goodwell Collar Leak - Causing Dead Vegetation

Examples of
Dead Vegetation

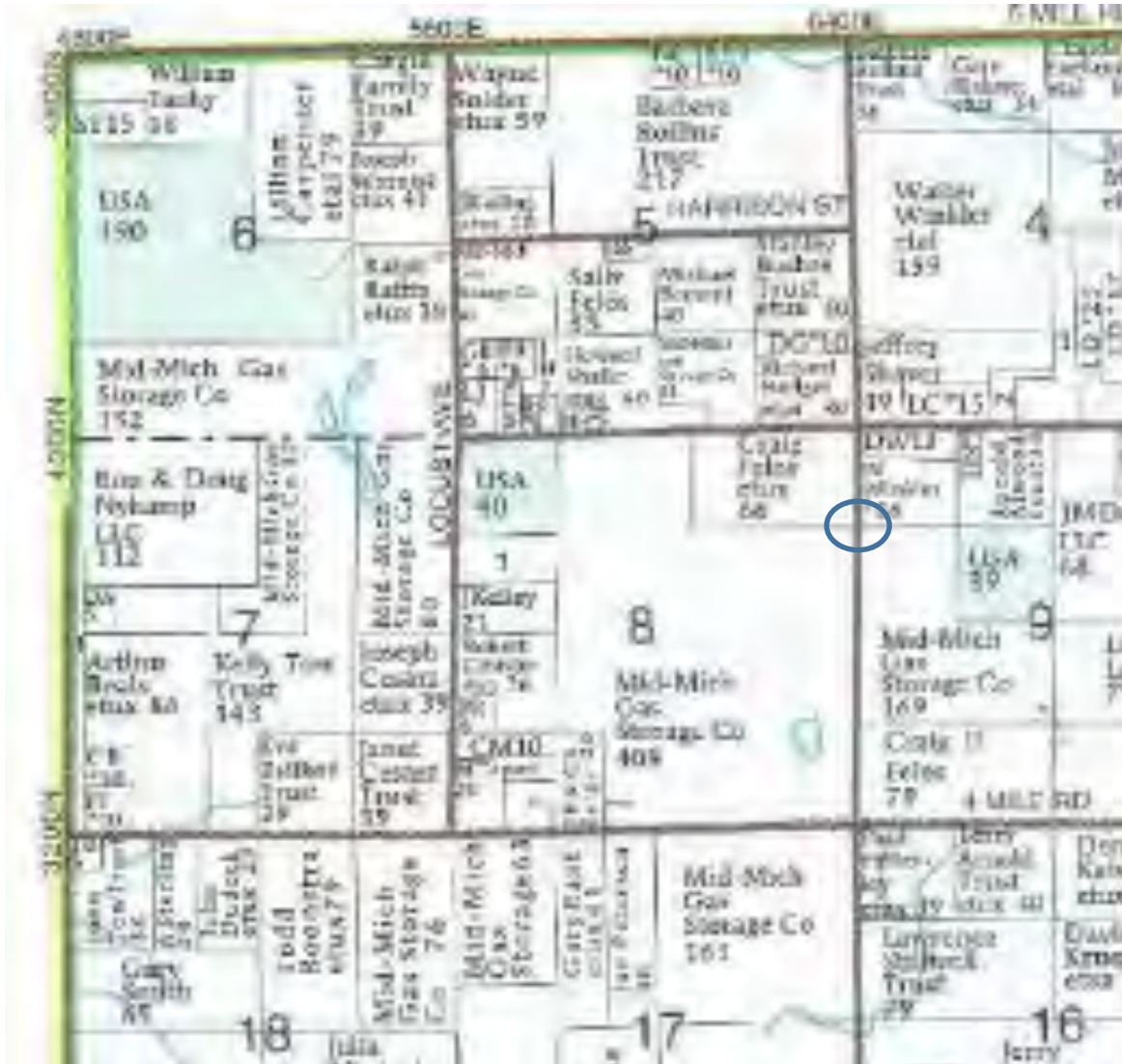




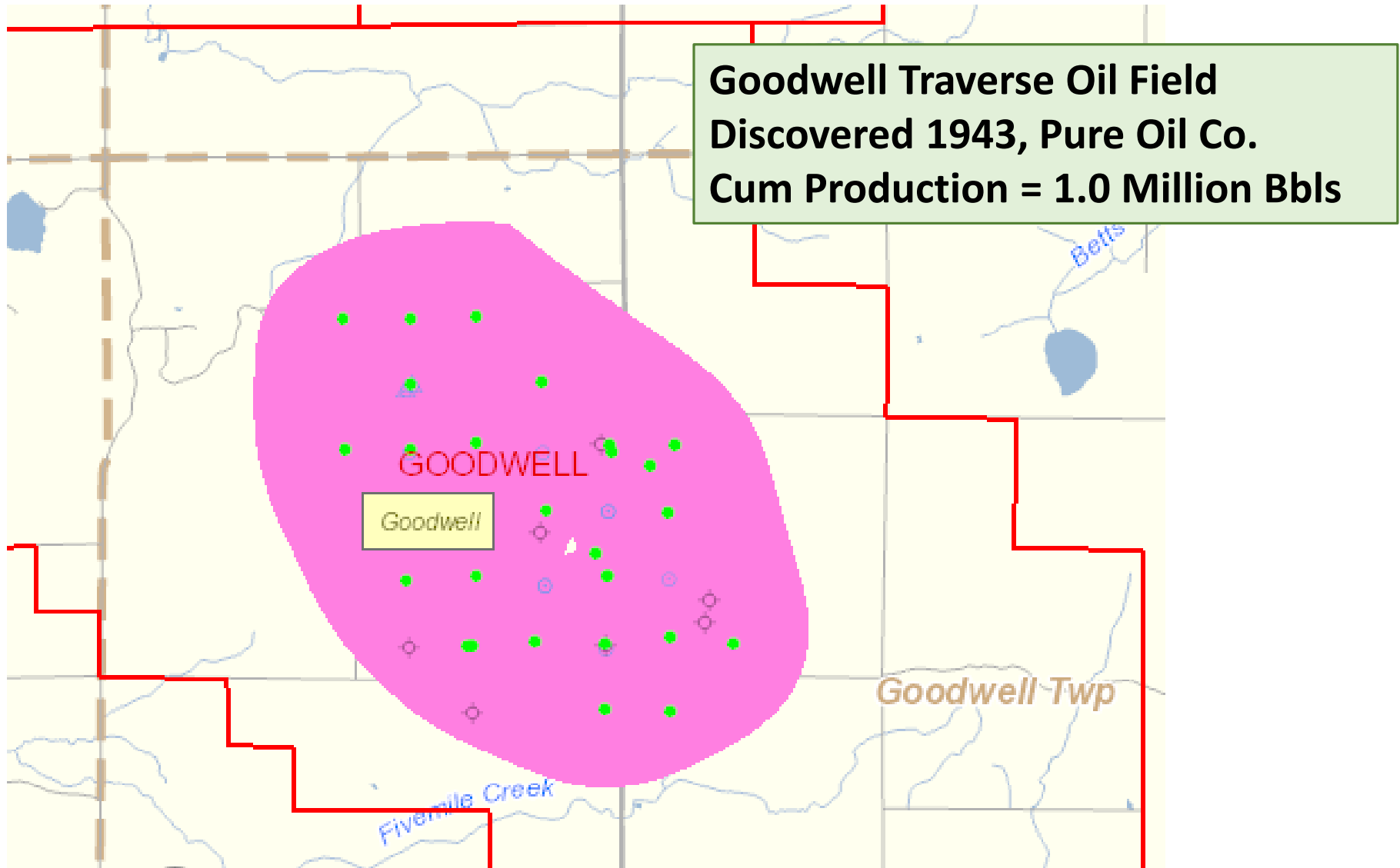
Summer 1973



Mich-Wis Buys Out Landowners

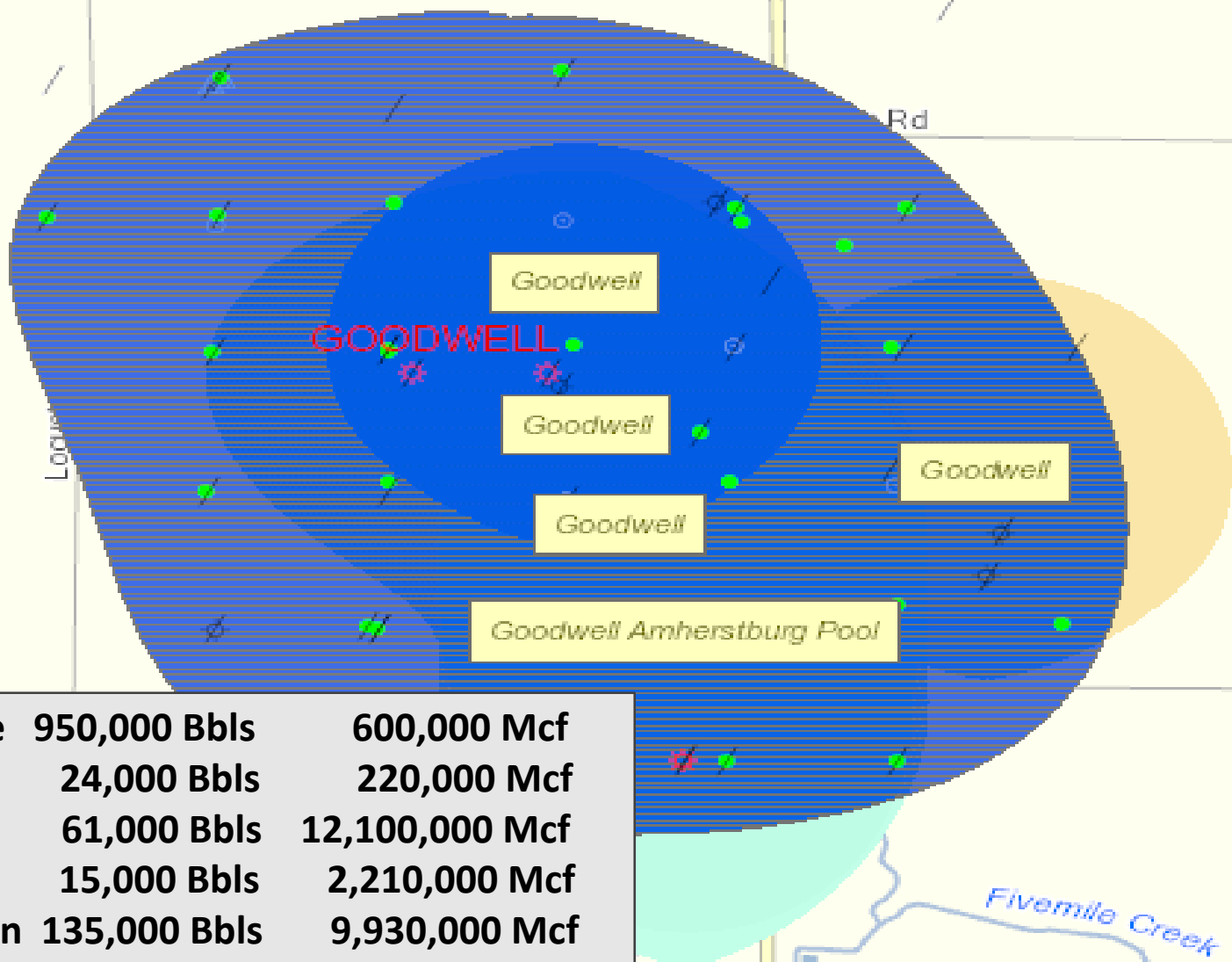


Goodwell Traverse



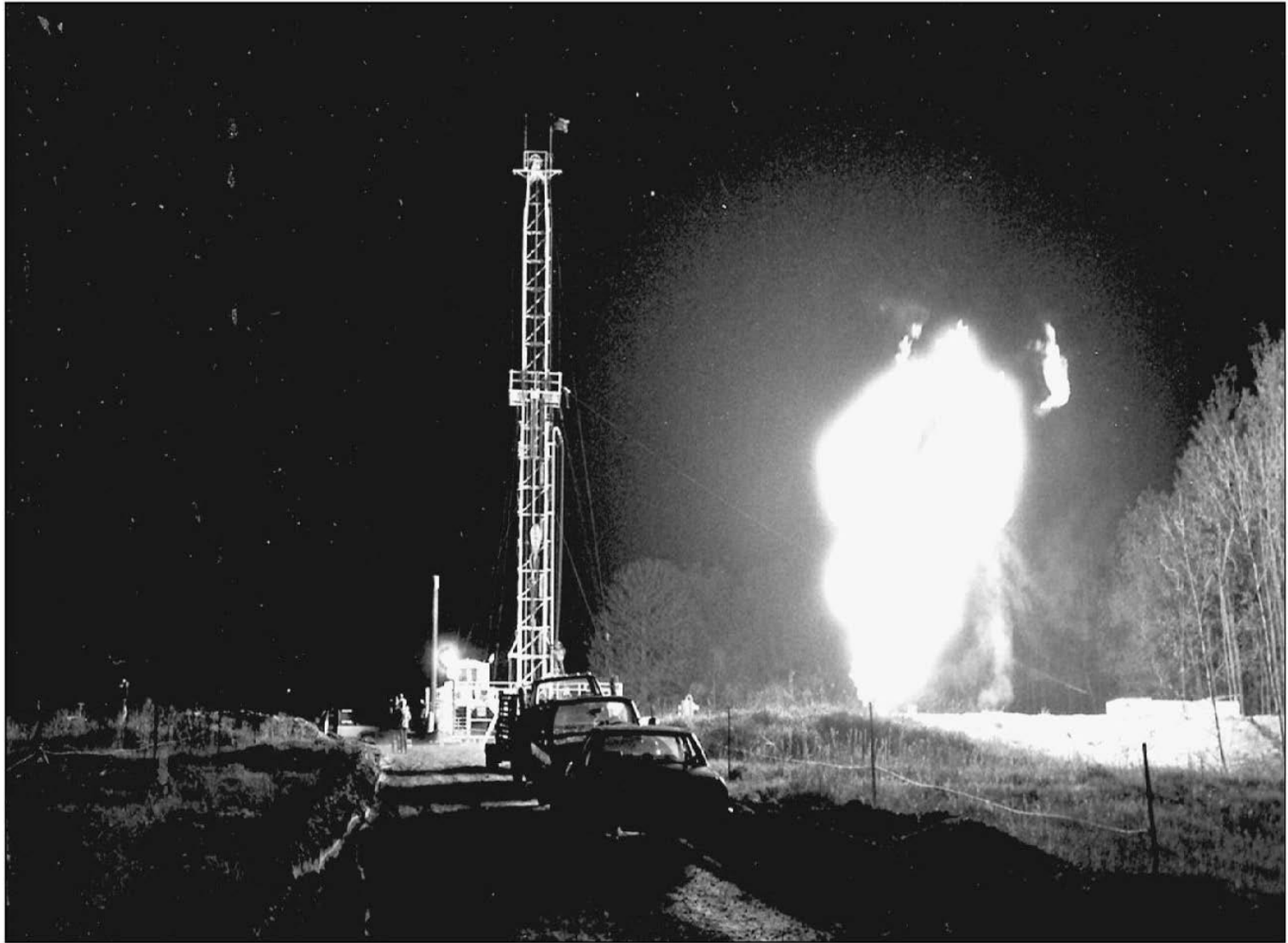
**Total Deep Production
25.1 Bcf, 1.2MMBbls**

**Goodwell Field
Deep Oil & Gas**



Reed City Zone	950,000 Bbls	600,000 Mcf
Amherstburg	24,000 Bbls	220,000 Mcf
Burnt Bluff	61,000 Bbls	12,100,000 Mcf
Glenwood	15,000 Bbls	2,210,000 Mcf
Prairie du Chien	135,000 Bbls	9,930,000 Mcf

Anderson #1-8A July 31, 1983



Results of Goodwill PDC Discovery

STATE OF MICHIGAN
IN THE COURT OF CLAIMS

JACK and ELEANOR ELENBAAS,

Plaintiff,

vs

REVENUE DIVISION OF THE
MICHIGAN DEPT. OF TREASURY,

Defendant.

Case No. 95-15776-CM

Hon. Thomas L. Brown

JUDGMENT AFTER APPEAL
AND SATISFACTION
OF JUDGMENT



I. **THE SEVERANCE TAX ACT PROVIDES AN EXEMPTION FROM ALL OTHER STATE AND LOCAL TAXES, INCLUDING THE MICHIGAN INCOME TAX, FOR OIL AND GAS PRODUCTION SUBJECT TO THE SEVERANCE TAX.**

The State of Michigan imposes a severance tax on producers of oil and gas. The severance tax is measured by the gross cash market value of the oil and gas produced. Section 15 of the Severance Tax Act says,

"The severance tax herein provided for shall be in lieu of *all other taxes*, state or local, upon the oil or gas, the property rights attached thereto or inherent therein, or the values created thereby . . ." MCL 205.315; MSA 7.365 (emphasis added).

1984 *BBE* Joins *JRE*
Consulting in Grand
Rapids, MI

Elenbaas Family

4 Generations & 110 Years in Energy



Matthaeus J Elenbaas



Martin R Elenbaas



Jack R Elenbaas



Douglas J Elenbaas

Dear Douglas, **Jack R. Elenbaas** was a member of SPE since 1948. In addition to being a Distinguished Member, a Senior Member, and a Legion of Honor Member. **Your father was truly a dedicated SPE member.** **Cynthia A. Thompson, Society of Petroleum Engineers**

Hi Doug! **We are thankful for your father's impact on this institution!** **Hannah Schierbeek**, Admin Manager, **Kuyper College**

PRESIDENT'S LUNCHEON

During his acceptance speech last year, 1994 SPE President E.A. "Al" Breitenbach focused on 1 members reg pursue better revisit these message at t Ballroom 1 c president, an the gavel of S operations di



In addition to Koerner, new directors taking office include W. Burt Nelson of Sonat Exploration Co. (Gulf Coast Region), I. Michael Gatens III of S.A. Holditch and Assocs. (North American Region), (Southwest Region), Farouk Kenawy of SPE (Middle East Region), and SPE Treasurer Rob

The luncheon elected SPE D Stegemeier, R Economides, Award recipient support and ap well as discuss the objectives that will be emphasized through 1995.

Tickets are \$28.00 each.

Distinguished Member Presentation Fall, 1994

SPE DISTINGUISHED MEMBERS



Bass



Elenbaas



Stegemeier



Dumbrell



O'Brien



Taber



Economides



Startzman



Wyman

Philosophy 101



ANY QUESTIONS ? OR COMMENTS !

References

- MDEQ Website
- MPSC Website
- CMS Website
- DTE Website
- EIA
- Indux Mundi
- Grand Rapids Press
- Burton Heights Record
- Michigan Oil & Gas News
- CMU Clarke Library
- New York Geological Society
- 2013 Newaygo County Plat Book
- “Gas in the Michigan Basin”
- Pocahontas Coal Museum Website
- “Sample Grading Method of Estimating Gas Reserves”
- “First Gas – Hart Well”
- “China’s First Oil & Gas Field”
- “History of the Oil Industry”
- “Petroleum History in Azerbaijan”
- “History of Manufactured Gas”
- “History of the Oil Industry”
- “Underground Gas Storage of Fluids”
- “Michigan Oil & Gas Story”