

Magnolia Gas Pipeline Index 1

I. Context

Magnolia Pipeline “Index 1,” built in 1927, is an interstate natural gas transmission line that served Dallas and Tarrant Counties for decades providing gas from the Louisiana Monroe field. Magnolia Index 1 fueled power plants and industrial customers during a time of natural gas shortages and is one of the earliest examples of practical long distance gas transmission in North Texas. The Magnolia pipeline served Dallas County for 72 years before being decommissioned in the year 2000. This application is for a historical marker along the pipeline.

II. Overview

Prior to 1925, the United States had only six long distance gas pipelines. Texas had only one.⁽¹⁾

“[At] the end of 1909 Lone Star had begun the construction of what was then one of the world's longest pipelines, from Fort Worth-Dallas to Petrolia.” The Lone Star Gas pipeline to Petrolia was 199 miles in length. “The Petrolia field was not large enough to support the growing needs of Texas, however, so in 1916 Lone Star Gas expanded its business into southern Oklahoma.” “Between 1915 and 1924 the company confronted crises on three occasions when inability to deliver adequate gas supplies nearly forced it into receivership.”⁽²⁾ Dallas County and North Texas desperately needed additional supplies of natural gas.

In the early 20th century natural gas service was considered a luxury for the average homeowner. For the power plant operator natural gas was also a luxury. Dallas Power and Light's Griffin Street Generator Station did not begin to use natural gas as a fuel to generate electricity until 1924. “The Dallas Power Plant, which was the DP&L power station in downtown Dallas at the site of what is now Victory Park, began using natural gas as a boiler fuel in 1924, when a contract was executed with Dallas Gas Company. Fuel oil served as a standby alternate for use in emergencies. Prior to the use of natural gas, the plant used coal and fuel oil. Use of natural gas, with oil as a standby, soon became

standard practice for electric utilities across the Southwest.”⁽³⁾

Adoption of natural gas for use as a residential and industrial fuel was slowed by limitations in long-distance transmission and adequate reserves. Early gas lines, and in particular long-distance high-pressure gas lines, were impractical due to leaks and the difficulty of manufacturing sufficient quantities of “line pipe” suitable for use with high pressure. Pipeline technology of that era was simply not sufficient to meet growing demand and transmission to distant markets.⁽⁴⁾ The period from 1925-1930 provided a watershed of technological advances that permitted the long distance transmission of natural gas. These advances included line pipe fabrication techniques, compression of natural gas, improvements in welding pipeline joints in the field and the control of corrosion.⁽⁵⁾ In 1925 the first all-welded natural gas pipeline was built by the Magnolia Oil Company. It ran from Shreveport Louisiana to Beaumont Texas, a distance of approximately 214 miles. All-welded construction permitted higher line pressures and improved the reliability of the joined pipe sections. ⁽⁶⁾⁽⁷⁾⁽⁸⁾

In late 1925 Dallas-based Magnolia Oil Company received an infusion of cash from Standard Oil. Shortly thereafter, the Magnolia Pipeline Company was formed.⁽⁹⁾ One of Magnolia Pipeline company's first projects was an 18” transmission line to serve Dallas County's growing need for electricity and natural gas.

1924-1925 also saw the construction, by the “Magnolia Gas Association,” of a natural gas compressor station near Panola, Texas in an area later known as “LaTex.”⁽¹⁰⁾ Due to low and unpredictable gas well-head pressures, the LaTex compressor station was essential to distribute gas to distant markets.

The growing North Texas market for natural gas propelled the Magnolia Gas Pipeline Company, based in Dallas, to build a line from LaTex to Dallas/Fort Worth. Construction of this line, and what is believed to be an additional petroleum pipeline running in parallel alongside it, began in 1926.⁽¹¹⁾

“Magnolia Oil Company” is credited with building the first long-distance, all-welded, natural gas pipeline in 1925. In late 1925 Magnolia Oil Company spun off its pipeline operations into the subsidiary company called “Magnolia Pipeline Company.” The spin-off company's first project, to serve its home market of Dallas, appears to have been recorded as “Index 1” or “System Name 1.”

Magnolia Index 1 is a unique example for both the technological advances that it *didn't* use as well as the ones that it did. Index 1 is reported as having construction begin as early as 1926 and carrying natural gas by April, 1928.⁽¹⁴⁾ Aerial photographs from 1930 show a fully covered trench and recent scar.⁽¹²⁾

The exposed Magnolia pipeline crossing at Crow Creek in the Brettonwoods section of Oak Cliff appears to have used electric arc-welded line pipe predating mid-1920 advancements such as “Electric Resistance Welded” (1924) or “Flash Welded” technologies (1928). The pipeline at the Crow Creek crossing however appears to incorporate two relatively new technologies for 1926: (1) The sections of pipe appear to have been electrically arc-welded in the field and (2) the pipeline is coated with tar to reduce corrosion.

Photographic examination by experts have determined that this pipeline's longitudinal (lengthwise) seams were made by electric arc-welded, gas shielded, technology.⁽¹³⁾ The manufacture of line pipe using electric arc welded longitudinal seams was a slow process, often taking a half an hour to weld a single 30 foot section.⁽⁴⁾ Although Electric Resistance Welded technology was developed in 1924 to speed line pipe production, it was not used in the section of pipe exposed at the Crow Creek crossing. Flash-welded technology, also able to produce more miles of line pipe per day, was not developed until 1928. Index 1 appears to have used a slower, more conservative line pipe manufacturing process. In 1926 and 1927 one of the difficulties of constructing long pipelines was simply being able to obtain enough supplies of line pipe to complete construction. In mid 1927 the A.O. Smith Company of Milwaukee began the construction of line pipe for natural gas and petroleum transmission. In the fall of 1927, A.O. Smith filled a 160 mile order for the Magnolia Gas Company of Dallas, Texas.⁽⁴⁾

Joining pipe sections in the field using conventional acetylene gas welding techniques was difficult due to the need for the pipe to be welded right-side up. Welding using conventional gas techniques in the vertical or upside down position is very difficult. Gas welding pipe sections required the pipe to be rolled into position as it was welded.⁽⁵⁾ This was clearly impractical on a large scale. Improvements in welding pipe sections together were required. Assembly of the 1927 Magnolia pipeline sections in the field (observed at the Crow Creek crossing) appear to have used electric arc welding, a relatively new

technology. Electric arc welding provided the welder the ability to weld the circumferential (girth) seams in “all positions.” The acetylene gas-welded pipeline, pioneered by Magnolia Oil Company in the 1925 line running from Shreveport to Beaumont, (8) was a successful proof-of-concept that apparently resulted in the construction of the Magnolia Pipeline system into Dallas County the following year.

Magnolia Pipeline Index 1 was also one of the first to have protection to reduce the effects of soil on pipe corrosion. Index 1 was coated with coal tar which, in the 1920s, was a significant breakthrough. “Cathodic” protection of Magnolia Index 1, using an electrical current, was applied in a later decade and also extended its service lifetime. (The parallel “liquid” petroleum pipeline appears to have been abandoned decades earlier and experienced significant corrosion.)

An April 29, 1928 Dallas Morning News article reported that the “LaTex” Company, also known as Magnolia Gas Pipeline Company, was serving industrial customers in Dallas/Fort Worth.(14)

In 1930 the pipeline assets of the Magnolia Pipeline Company were acquired by what eventually became the United Gas Pipeline Company. From 1930 until Magnolia Index 1 was abandoned in the year 2000, it had many owners.

“Gulf South was created in the 1930’s when five major groups, representing more than 40 power, fuel and utility companies, merged to form a holding company named the United Gas Corporation.” “In 1937, the corporation was restructured and condensed into three basic divisions: production, transmission and distribution. The transmission division was christened United Gas Pipe Line Company.” “Over the years, United Gas Pipeline was acquired by a number of companies: Pennzoil (1965), MidCon Corporation (1986), LaSalle Energy Corporation (1987) and Koch Industries, Inc. (1992). In August 1993, United Gas was renamed Koch Gateway Pipeline, and in 2001, Koch contributed Koch Gateway Pipeline to a joint venture with Entergy Corporation, re-christening the pipeline as Gulf South Pipeline Company. On December 29, 2004, Loews Corporation purchased Gulf South Pipeline.”(15)

Magnolia Index 1 served natural gas customers in Dallas County for 72 years from 1928 to 2000, when it was “abandoned in place” due to reduced commodity flows.(16) The production of locally-produced

gas in North Texas, much of it from the Barnett Shale, obviated the need for the interstate transmission of gas from Louisiana. In their filings with the Federal Energy Regulatory Commission the owner of Magnolia Index 1 also wrote: “Koch seeks authority to abandon these facilities due to rising operating and maintenance costs, the number of encroachments, and increasing number of requests to relocate portions of the pipeline.”⁽¹⁷⁾

As part of the abandonment project almost all above-ground traces of Magnolia Index 1 have been removed.

III. Historical and Cultural Significance

Magnolia Index 1 provided Dallas County fuel for the generation of electricity and the production numerous industrial products to serve both local and global customers throughout its 72 year history. *Where* the Magnolia Index 1 pipeline went tells us a lot about its customers.

A current map of Magnolia Index 1 shows that the pipeline entered Dallas County from the east. ⁽¹⁸⁾⁽¹⁹⁾ A lateral line headed north to serve the Dallas Power and Light Parkdale generating station built in the 1950s. The main line headed west across the southern portion of Dallas County through the Brettonwoods section of Oak Cliff. West of Brettonwoods one branch heads north to pass by industrial concerns in west Oak Cliff before heading east to the Dallas Power and Light Griffin Street Generating Station now known as Victory Park. Magnolia Index 1 also provided fuel for Dallas Power and Light's Mountain Creek Generating Station which went online in 1938.

In Tarrant County Magnolia Index 1 also heads west to Lake Arlington to supply gas to the Hadley generating station built in the 1950s. That same line continues West to the former Fort Worth Power and Light Main Street Generating Station.⁽²⁰⁾

In Dallas County the Magnolia Index 1 right-of-way passed several large industrial concerns centered around the Texas and Pacific Railway line near the small town of Eagle Ford and West Oak Cliff. The east-west lateral of Index 1 follows the railway.

On November 22, 1925 the Dallas Daily Times Herald reported “Expect Big West Dallas Industrial Growth.” The combined manufactured output of that area was estimated to be \$25 million in 1925 dollars. The principle products of that area were refined petroleum products, cement, cement products and metal products. The Times Herald also reported that Dallas was expected to grow to a population of 500,000 due to manufacturing.⁽²¹⁾ When Magnolia Index 1 was completed the Dallas Morning News reported, on April 29, 1928, that the Magnolia line “has about six towns and serves mostly industrial concerns.”⁽¹⁴⁾

One of Magnolia Index 1's customers, the Dallas Power and Light Griffin Street Generating Station, was at the terminus of the lateral line running into downtown Dallas. The Griffin Street Station had begun to use natural gas as a boiler fuel in 1924, three years earlier, and needed additional supplies due to previous gas shortages.⁽¹⁾⁽³⁾ In the early 1930s Dallas Power and Light began construction of a second power plant to serve Dallas located at Mountain Creek. The Mountain Creek Generating Station did not come online until 1938. In Dallas County Magnolia Index 1 provided fuel for Mountain Creek and later at the Parkdale Generating Station.

The Magnolia Index 1 pipeline fueled Dallas' early growth and reduced industrial demand on strained Lone Star Gas supplies. Magnolia Index 1 provided electricity to a growing Dallas as well as cement and steel products used both locally and exported world-wide. Over its lifetime it helped power war-time production of aircraft at Hensley Field which later became the Dallas Naval Air Station.

The electricity generation that Magnolia Index 1 fueled lit, heated and cooled our homes. It powered our Christmas lights, ran our radios and TVs, cooked our food and washed our dishes and laundry. Our silent, underground, and forgotten neighbor served Dallas County honorably before it was retired at the age of 72.

IV. Documentation

(1) Arlon Tussing and Bob Tippee, *“The Natural Gas Industry: Evolution, Structure, and Economics,”* 2nd ed, PennWell Publishing, 1995, p. 86.

(2) Jeff Seidel, "ENSERCH CORPORATION," *Handbook of Texas Online*, (<http://www.tshaonline.org/handbook/online/articles/dqe01>), accessed October 11, 2012. Published by the Texas State Historical Association.

- (3) E-mail communication with Michael Patterson, Director of Communications, TXU Energy, September 18, 2012.
- (4) "A.O. Smith History," 1960 Internal historical mimeographed document obtained from Charles Wright, Director of Corporate Communications, A.O. Smith Company, Milwaukee, WI, October 2012.
- (5) John F. Kiefner and Cheryl J. Trench, "*Oil Pipeline Characteristics and Risk Factors: Illustrations from the Decade of Construction*," American Petroleum Institute, December 2001. (<http://www.api.org/oil-and-natural-gas-overview/transporting-oil-and-natural-gas/pipeline-performance-ppts/ppts-related-files/-/media/files/oil-and-natural-gas/ppts/other-files/decadefinal.ashx>), accessed October 11, 2012.
- (6) ExxonMobil Corporation, "*2010: The Outlook for Energy : A View to 2030*," (http://www.exxonmobil.com/corporate/files/news_pub_eo_2010.pdf), accessed October 11, 2012, pdf p. 44.
- (7) Tom Meisner, "*History of Gas and Oil Pipelines*," *Pipeline Knowledge and Development*, (http://www.pipelineknowledge.com/images/stories/presentations/history_of_gas_and_oil_pipelines.pdf), accessed October 11, 2012.
- (8) John J. McKetta, Jr. "*Encyclopedia of Chemical Processing and Design*," Vol 67, CRC Press, 1999, p.103.
- (9) J. L. Terrell and James A. Clark, "MAGNOLIA PETROLEUM COMPANY," *Handbook of Texas Online* (<http://www.tshaonline.org/handbook/online/articles/dom01>), accessed October 11, 2012. Published by the Texas State Historical Association.
- (10) Genealogy Trails History Group, "THE HISTORY OF COMMUNITIES IN PANOLA COUNTY," (<http://genealogytrails.com/tex/pineywoods/panola/historyof3.html>), accessed October 11, 2012.
- (11) Louis Stotz and Alexander Jamison, "*History of the Gas Industry*," Stettiner Bros., 1938, p. 387.
- (12) Dallas Historic Aerial Photograph, Foscue Map library, SMU, Dallas, TX, "Hampton Road, Grid 034" (<http://digitalcollections.smu.edu/cdm/singleitem/collection/dmp/id/124/rec/1>), accessed October 11, 2012.
- (13) E-mail communication with Charles Wright, Director of Corporate Communications, A.O. Smith Company, Milwaukee, WI, September 26, 2012.
- (14) Dallas Morning News, "*Texas Gas Lines Add 150 Towns to 8000 Mile System in 14 Months*," April 29, 1928.
- (15) Gulf South Pipeline Company History, (<http://www.gulfsouthpl.com/AboutUs.aspx?id=352>), accessed October 11, 2012.
- (16) Telephone conversation with Ms. Linda Haughton, Boardwalk Pipeline Partners, September, 2012.
- (17) Federal Register, Vol. 65, No. 22, Wednesday, February 2, 2000, (<http://www.gpo.gov/fdsys/pkg/FR-2000-02-02/pdf/00-2187.pdf>), accessed October 11, 2012.
- (18), (<http://gis2.rrc.state.tx.us/public/>)
- (19) (http://www.waynekirkwood.com/Images/Magnolia/Map_Dallas_County_Route_1.jpg)
- (20) (http://www.waynekirkwood.com/images/Magnolia/Map_Tarrant_County_Route.jpg)
- (21) Dallas County Texas Archives, (<http://freepages.history.rootsweb.ancestry.com/~jwheat/westdal.html>)

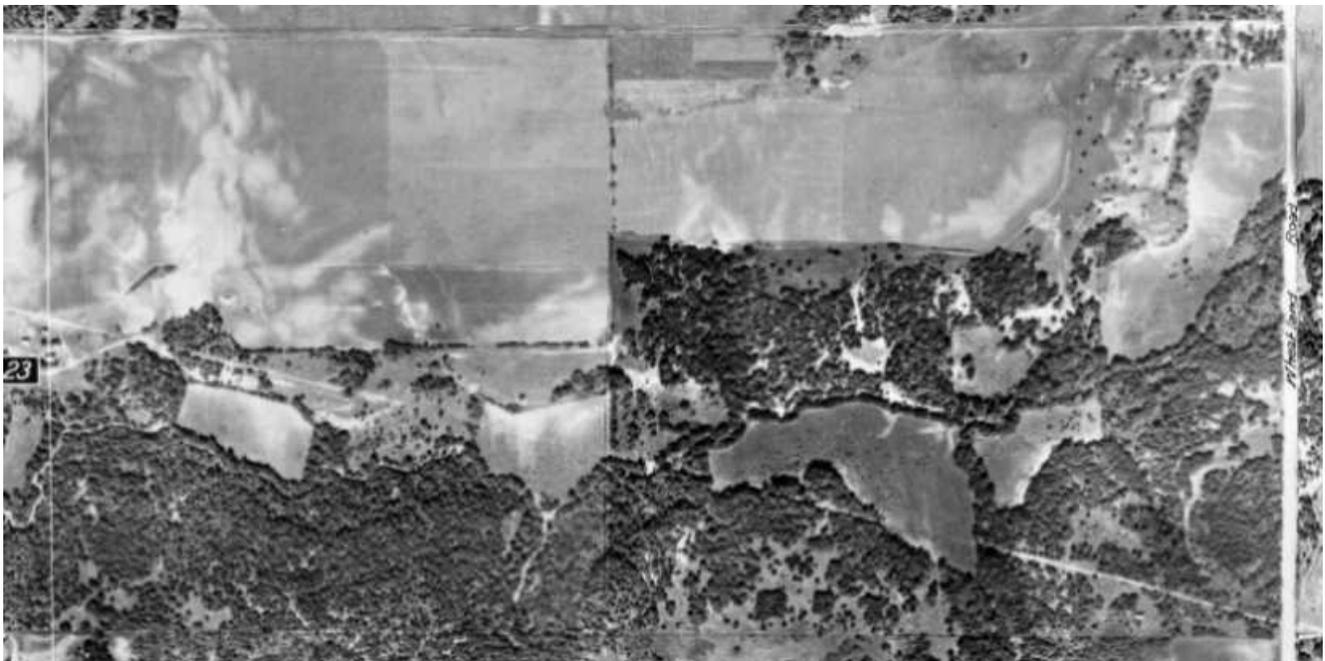
Additional resources including maps, photographs and excerpts from many of the above-referenced citations may be viewed at:

http://www.waynekirkwood.com/Images/Magnolia/Magnolia_Number_1.htm

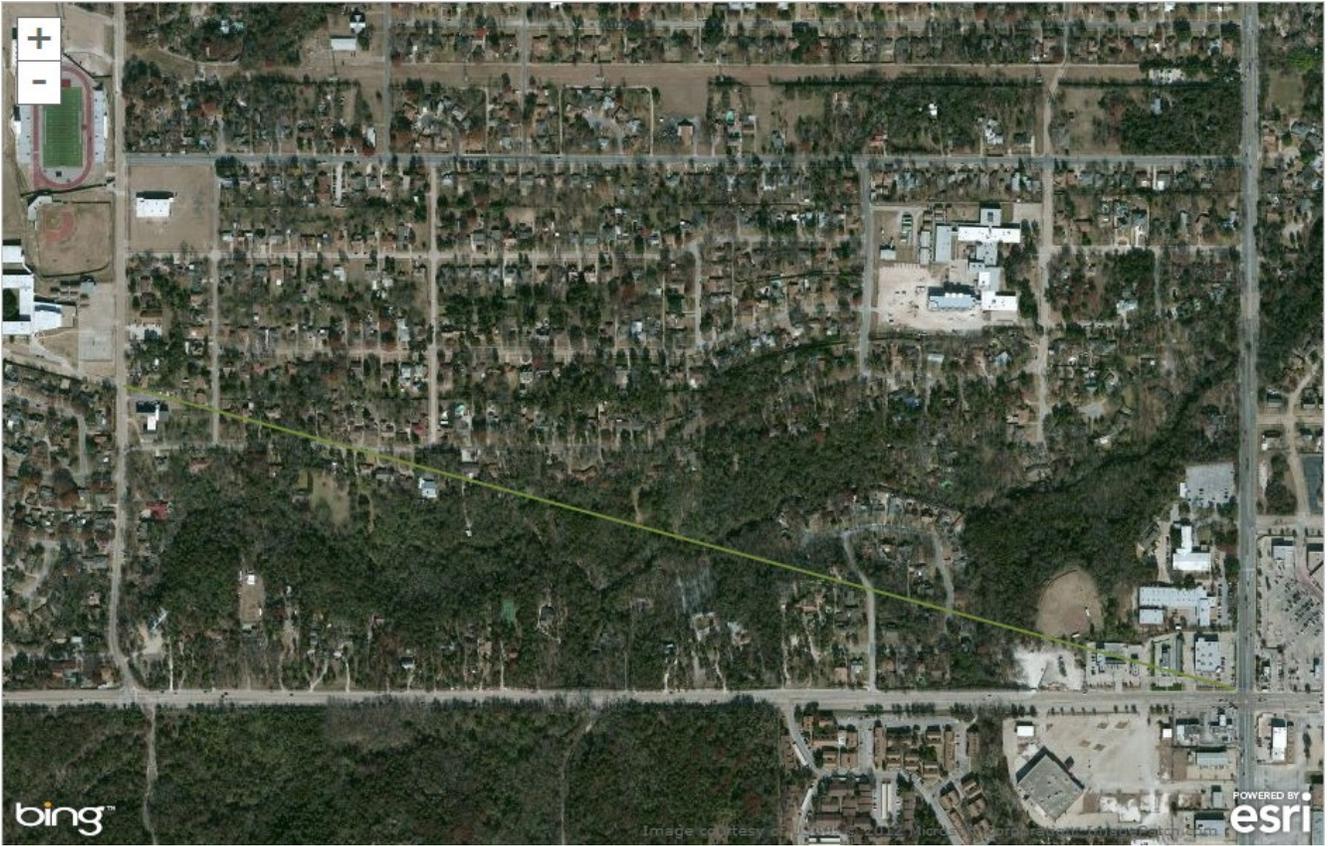


Map 3-1 Long-Distance Gas Transmission Before 1925

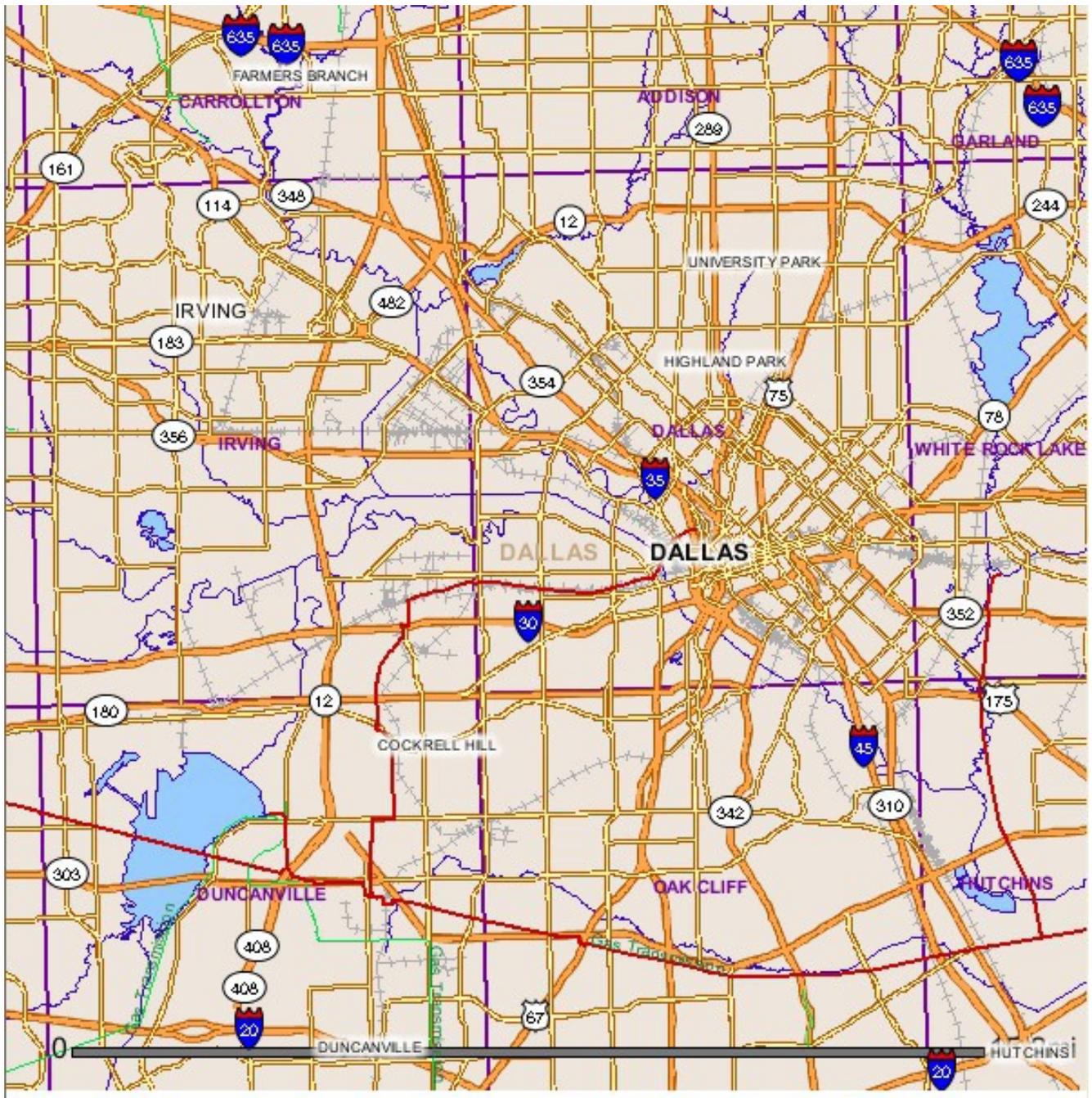
Arlon Tussing and Bob Tippee, *The Natural Gas Industry: Evolution, Structure, and Economics*, 2nd ed, PennWell Publishing, 1995, p. 86



Dallas Historic Aerial Photograph, Foscue Map library, SMU, Dallas, TX, "Hampton Road, Grid 034" (<http://digitalcollections.smu.edu/cdm/singleitem/collection/dmp/id/124/rec/1>), accessed October 11, 2012. (Image has been cropped to show the area of interest.)



Route of Magnolia Index 1 through Brettonwoods. Area is bounded by South Hampton Road, Boulder Drive, Gibbs Williams Road and West Ledbetter Drive.



Map, Magnolia Index 1 Dallas County Route. Screen capture from Texas Railroad Commission, Public GIS Viewer.
(http://www.waynekirkwood.com/Images/Magnolia/Map_Dallas_County_Route_1.jpg)