

# **ARMSTRONG COUNTY IRON AND STEEL SURVEY**

Final draft

Eliza Smith Brown  
with Carmen P. DiCiccio, Ph.D.

Prepared for  
Steel Industry Heritage Corporation

by  
Brown, Carlisle & Associates  
October 1997

## Contents

Introduction . . . . .	1
Methodology . . . . .	2
Historic Context . . . . .	4
Iron . . . . .	5
Steel . . . . .	8
Coal and Coke . . . . .	9
Clay and Refractories . . . . .	12
Glass . . . . .	14
Lumber . . . . .	15
Oil and Gas . . . . .	15
Limestone . . . . .	17
Water Transportation . . . . .	17
Rail Transportation . . . . .	20
Associated Properties	
Typology . . . . .	23
Criteria for Selection . . . . .	25
Site List . . . . .	26
National Register Eligibility . . . . .	51
Recommendations	
Endangered Site and Action List . . . . .	53
Designations . . . . .	53
Interpretation . . . . .	54
Bibliography . . . . .	55

## Introduction

This report is a component of the Rivers of Steel program, which is an outgrowth of the Steel Industry Heritage Concept Plan published in 1993. Rivers of Steel is a heritage tourism initiative that seeks to preserve and celebrate the story of Big Steel and its related industries in southwestern Pennsylvania. More specifically, it weaves together cultural, recreational, and historical resources in a unifying physical framework with an exciting programmatic theme that will bolster the regional economy through tourism and economic development. The Rivers of Steel region, originally encompassing the six counties of Allegheny, Beaver, Fayette, Greene, Washington, and Westmoreland, was named a Heritage Area by the Pennsylvania Heritage Parks Program in April 1996.

Late in 1996, Armstrong County was added to the Heritage Area, prompting the need for both historic and ethnographic surveys. Consequently, the Steel Industry Heritage Corporation (SIHC) commissioned this study, funded by the Pennsylvania Heritage Parks Program, with matching funds from five local financial institutions: Farmers National Bank, Mellon Bank, Merchants National Bank, Pennwood Savings Bank, and National City Bank. This study, focusing on sites associated with iron, steel, and related industries, was completed concurrently with two ethnographic studies of the county, one in the north and one in the south.

The goals for the study are numerous, including interpretation, education, and marketing of heritage tourism:

The research materials, survey forms, and final report will be incorporated into the Heritage Area Archives at the SIHC, and copies will be placed in local repositories as appropriate.

The survey will be showcased through a traveling slide presentation and display.

The Riverfront Park in Kittanning, currently under construction, will include a museum, which will feature historic and cultural resources in its exhibits.

The materials will be available for curriculum development in the regional schools.

- The survey report will be made available to the local cable channel, with suggestions for programming based on its findings.
- The Armstrong County Tourist Bureau maintains a web site, which will be expanded and updated based on the study findings.

It is hoped that both the process and the final product of the survey will focus on the county's assets to encourage economic development and community pride among its citizens.

## Methodology

The historic sites research was based upon existing local histories and building surveys. The goal of the survey was to generate an updated, accurate inventory of structures and properties significant to the county's cultural and industrial heritage, and to identify priorities for preservation and opportunities for interpretation. It was not intended to be exhaustive or definitive, but rather to establish a broad context and provide direction for further development of historic resources. In conducting the historic sites study, Brown Carlisle & Associates (BCA):

- Conducted research into existing historical studies and repositories to establish an overall context for the documented sites as well as historical/cultural significance for each property.
- Developed a preliminary site list based on the research conducted above, the subsequent field work, and the findings of the ethnographic studies.
- Reviewed existing sites surveys and evaluated their quality. BCA also consulted with the Bureau for Historic Preservation in Harrisburg to discuss the adequacy of the surveys, the additional information required, and their priorities for designation. It was determined, for the most part, that the survey forms were well prepared and did not need to be redone.
- Visited sites to verify their status and condition, augment descriptive information, and interview any on-site individuals who might offer useful information. During these site visits, photographs were taken as necessary to update existing survey information.
- Completed new Pennsylvania Historic Resource Survey forms for properties which had not been documented previously or for which additional information had been uncovered. These forms were generated on computer and submitted both in hard copy and on disk.
- Prepared this report including an overall historic context for the county's iron and steel-related industries, as well as an annotated list of the individual properties documented through the survey. A significant aspect of the final report are the formal recommendations for designation and other preservation-oriented action with respect to the districts or individual properties which warrant it. The report also addresses the potential for the development of heritage tourism in the county focusing on both the overall context and the specific sites.
- Coordinated throughout the project with the two ethnographic studies being conducted concurrently in the southern portion of the county by BCA, with Jean Snyder as principal investigator, and in the northern

portion of the county by Lydia Strohl.

## Criteria for Site Selection

This survey was focused in scope thematically and geographically, as well as by the constraints of schedule and budget. The criteria for selection were developed through discussions with the project Steering Committee and the Bureau for Historic Preservation in Harrisburg and through field testing. They may be outlined as follows:

1. The project was defined as a survey focusing on steel and steel-related industrial and cultural resources and communities in Armstrong County. In addition to steel production, relevant industries include iron, coal mining and processing, coke production, river and rail transportation, clay and refractory brick, and glass. Added to the list as the project progressed were the industries of lumber, oil and gas, and limestone and sandstone. In order to maintain the intended focus, agriculture and related industries, such as grist milling and distilling, were excluded.
2. In defining exactly what types of resources were included, it was decided that, in the outlying areas, the focus would be on industrial sites, company housing, company-sponsored institutions, and other sites with direct ties to the selected industries and the individuals associated with their founding. In larger population centers with critical concentrations of industry-related sites, however, the direction was to look more inclusively at all of the resources that figure in the industrial community. Under this approach, churches, schools, and other cultural institutions were included if part of an industrial community, even if not directly tied to an industrial concern.
3. In considering what level of significance to use as a selection criterion, it was determined that the scarcity of resources necessitated a broad standard, ranging from national to local significance.
4. The issue of integrity was considered in light of the scarcity of resources, and it was determined that a high level of significance would override a condition of poor integrity and justify inclusion on the list. If, however, a property possessed a low and level of significance **and** poor integrity, it would generally be excluded.

## Historic Context

This context is focusses on iron and steel and related industries in Armstrong County. Distinct chronological periods characterize the history of these industries. Beginning with the earliest rural iron furnace in 1818, the iron industry dominated, meeting the demand for consumer products. The industry shifted its emphasis to the needs of the railroads beginning in the 1840s. During this period coal and coke entered the industrial arena, as did oil and gas, refractories, and limestone. In the 1870s, the introduction of the Bessemer process enabled the steel industry to meet the demand for steel rails, shifting the focus away from consumer products. From the 1870s until the 1920s, the principal use of steel was confined to the railroads. With the decline of demand for rails once the country was well served by railroads (five transcontinental railroads crossed the U.S. by the 1890s), the industry found new markets in building construction and other applications.

Armstrong County was carved out of Allegheny, Lycoming, and Westmoreland Counties in 1800 and incorporated in 1805. It was reduced in size in 1839 when the area north of Redbank Creek was taken to make part of Clarion County. Subsequent divisions of the county into smaller and smaller municipal units continued until 1978. The county today includes 29 Townships, 16 Boroughs and one City. Of those, twelve are of relevance to this survey: Apollo, Bethel (town of Kelly Station), Brady's Bend, Cowanshannock (town of Sagamore), Dayton, Ford City, Freeport, Kittanning, Leechburg, Parker City, Pine (town of Templeton), West Franklin (Town of Worthington).

The principal industry in the county until well into the nineteenth century was farming. Major crops included buckwheat, hay, oats, rye, and corn. Beef and dairy cattle, sheep, swine, and poultry were the chief livestock animals. Collateral industries related to these products included gristmills, the woolen industry, and distilleries. The 1900 census listed over 4,000 farms occupying over two-thirds of the county, and a population of 52,557. By the late twentieth century, in 1970, 1,200 farms were still in operation.

But like many western Pennsylvania counties, Armstrong County had the natural resources -- both the raw materials and the fuel -- to support the development of iron and steel related industries beginning in the early nineteenth century. The county's mineral resources include coal, clay, including flint clay, limestone, sandstone, oil and gas, sand and gravel, glass sand, and molding sand. Coal, with an estimated 4,120 million tons in original deposits, is found throughout the county.<sup>1</sup> Clay and clay products follow coal in total value

---

<sup>1</sup> *Pennsylvania's Mineral Heritage*. Harrisburg: Commonwealth of Pennsylvania, Department of Internal Affairs, 1944, p. 129. This report details the configurations of the various coal beds and clay deposits.

and are also widespread and of good quality throughout the county. Limestone is also located throughout the county. Oil is concentrated in the northern portion of the county. Sand and gravel are abundant in the rivers.

## **Iron**

---

Iron was the earliest and historically one of the strongest industries in Armstrong County, though its duration was relatively short-lived. From the first iron furnace, built in 1818, until 1880, when all of the furnaces countywide had ceased operation, the iron industry fueled the other metallurgical industries, and the furnaces and settlements incident to them were a significant part of the county's landscape.

The furnaces were operated initially with local resources, fueled through a cold-blast process with charcoal made from the wood in nearby oak and chestnut forests and "buhstone" iron ore and limestone mined locally. Around 1858, coke replaced charcoal as the fuel, and after 1866 Lake Superior ore was brought in by river to augment the local ore.<sup>2</sup>

Fifteen Armstrong County furnaces were recorded in *A Guide to the Old Stone Blast Furnaces in Western Pennsylvania* in 1966. They were as follows:

Allegheny Furnace (1827)

two miles above Kittanning on the Allegheny River, west bank

American Furnace (1846-1860)

near Rimer, Madison Township

Bear Creek Furnace (1818-c.1850)

on Bear Creek south of Parker

Biddle Furnace (Rock Furnace) (1825-1855)

on Roaring Run near Apollo

Brady's Bend Furnaces (Great Western Iron Works) (1840-c.1873)

Brady's Bend

Buffalo Furnaces (1839-1864)

on Buffalo Creek near U.S. 422

Cowanshannock Furnace (Bonner Furnace) (1845-1851)

on Cowanshannock Creek three miles north of Kittanning

Mahoning Furnace (Colwell Furnace) (1845-1878)

in Village of Mahoning Furnace a mile below later Mahoning Dam

---

<sup>2</sup> Preliminary Research Report, p. 14.



McCrea Furnace (Olney Furnace) (1857)

Monticello Furnace (1859-1873)  
along the Allegheny River, east bank, above mouth of Cowanshannock Creek

“Old” Redbank Furnace (1841-1853)  
near Kellersburg

Ore Hill Furnace (1845-1857)  
eight miles north of Kittanning along Allegheny west bank

Phoenix Furnace (1846-1853)  
on Mahoning Creek

Pine Furnace (1845-1879)  
on Pine Creek north of Kittanning

Stewardson Furnace (1851-c.1880)  
along Mahoning Creek

The furnaces tended to be concentrated in the northcentral portion of the county, although Bear Creek was located just south of Parker, and Biddle was near Apollo.<sup>3</sup> This concentration of iron furnaces, which extended outside Armstrong County into Venango and Clarion, was one of the two main centers in Pennsylvania, the other located in Fayette, eastern Westmoreland, and nearby Indiana and Cambria. Over 75% of all western Pennsylvania furnaces were in those two regions.

The earliest of the Armstrong County furnaces, Bear Creek (1818) south of Parker, was also one of the most important and longest operating. Begun by William Stackpole and Ruggles Whitney, it was completed by Baldwin, Robinson, McNickle and Beltzhoover. After initial experiments with coke fuel proved unsuccessful, the furnace reportedly succeeded with the substitution of charcoal. Experiments were also conducted in the use of raw bituminous coal. In 1832, Bear Creek was the largest furnace in the United States, producing 40 tons of pig iron per week. A tramway with wooden rails took the iron from the furnace to the Allegheny River for shipment to Pittsburgh.<sup>4</sup>

But it was the Brady's Bend Iron Works, built originally as the Great Western Iron Works, that figures nationally for setting industry standards, for pioneering the use of coke instead of charcoal, for increasing furnace size, for rolling the first T-rails west of the Alleghenies in 1846, and for introducing the notion of

---

<sup>3</sup> Myron B. Sharp and William H. Thomas, *A Guide to the Old Stone Blast Furnaces in Western Pennsylvania*. Pittsburgh: The Historical Society of Western Pennsylvania, 1966, pp. 6-14. See also, Robert B. Van Atta, “Blast from the Past,” *Tribune-Review*, March 28, 1993, 8-9.

<sup>4</sup> Sharp and Thomas, p. 7. Also, Lois Mulkearn and Edwin V. Pugh, *A Traveler's Guide to Historic Western Pennsylvania*. Pittsburgh: University of Pittsburgh Press, 1954, p. 104.

integrated production, with a rolling mill right at the site of the iron furnace. With a capital investment of over \$1,000,000 and four operating furnaces by 1872 and a work force of 1,200 to 1,500 men at its peak, the Brady's Bend Iron Works had an enormous impact on the local economy as well. Its impact was suddenly curtailed, however, when the company closed shortly after the Panic of 1873. During its heyday, Brady's Bend competed with the top three iron producers in Pennsylvania: Cambria Iron Company at Johnstown, Bethlehem Iron Company at Bethlehem, and Jones and Laughlin Company at Pittsburgh. Great Western and Cambria together, in fact, turned out about one-seventh of the 150,000 tons of iron rails manufactured in the United States in the decade before the Civil War.<sup>5</sup>

The furnaces, usually built of limestone, were pyramidal and lined with hard sandstone or firebrick, with clay between for protection against the heat. The average furnace measured about 25 feet square at the bottom and 25 to 30 feet in height. They were typically built against a hillside to allow for easier access to the top, from which the furnace was charged, placing alternate layers of iron ore, limestone and charcoal. Lighting the charcoal put the furnace in "blast," and bellows, sometimes powered by water wheels, fanned it. As the mass heated, the limestone absorbed the ore's impurities, which rose to the top and were puddled off as slag. The iron dropped to the bottom, was tapped, and drawn into sand casting beds in front of the furnace to cool as pig iron, which was further refined into bars or blooms at forges. Each ton of metal used about 200 bushels of charcoal.<sup>6</sup>

The ultimate demise of the iron industry generally in Armstrong County is attributable to a number of factors, including exhaustion of the local timber supply, difficult transportation, economic depressions and competition from other producers in other markets. As technology and transportation changed, the age of iron became the age of steel and industrial activity shifted in the 1840s from rural areas, producing agricultural tools, grates, stoves, wagon wheels, to the county's urban centers, producing iron rails for the enormous demands of the burgeoning railroad industry.<sup>7</sup>

**Resources:** Remains of only two iron furnaces survive in Armstrong County. Both are in ruins. The Pine Furnace is located on Pine Creek, near Mosgrove, rather removed from other significant sites. The surviving furnace of the Brady's Bend Iron Works, however, is associated with a number of other resources that recall the company and its significance in the region: the Iron Works Date Stone;

---

<sup>5</sup> Carmen P. DiCiccio, Ph.D., *The Rise and Fall of King Coal: A History of the Bituminous Coal and Coke Industry of Pennsylvania from 1740-1945*. Unpublished Ph.D. dissertation for the University of Pittsburgh, 1996, p. 88.

<sup>6</sup> Van Atta, p. 9.

<sup>7</sup> For an excellent discussion of America's iron industry in the 1830s and 1840s, see Peter Temin, *Iron and Steel in Nineteenth Century America: An Economic Inquiry* Cambridge, MA: MIT Press, 1964, pp. 20-52.

the Old McKinney House, earliest company house of the company; The Old Stone Church (St. Stephen's Protestant Episcopal Church) and Parsonage and Trinity United Church of Christ; the Superintendent's House; and other vernacular buildings that should be investigated as possible company houses. While the resources do not collectively constitute an historic district, they do offer sufficient critical mass to enable effective interpretation to visitors.

## **Steel**

---

Following on the heels of the iron industry, the steel industry had an even larger impact on the county's economy and landscape. That impact was strongest in Kittanning, Apollo, and Leechburg.

The Kittanning Rolling Mill, opened in 1847, was the first in the county. With a work force of 150 men, the plant produced bars, rods, sheets, nails, and castings. While the plant closed during the Panic of 1873, it was reopened by new ownership in 1879 and converted shortly thereafter to natural gas fuel instead of coke. It grew by 1883 to 33 puddling furnaces converting pig iron to wrought iron, with thousands of acres under ownership and lease, and 400 employees at the plant. Another 300 were involved in company ore mining, which continued until 1903, after which the company purchased its ore and coke. By 1914, the plant had an annual production of 75,000 tons and a work force of 300.

At Apollo, the steel works actually grew out of the Kiskiminetas Iron Company's nail factory, which opened in 1857 and was converted to a sheet rolling mill in 1869. It had been powered by water until an 1866 flood washed out the equipment and steam power was introduced. During the latter part of the nineteenth century, the mill underwent several changes in ownership and name, culminating in the highly successful Apollo Iron and Steel Company, reknowned for its cold-rolled, blue steel sheets. Between 1898 and 1902, however, the company developed a new 500-acre plant and accompanying company town called Vandergrift across the river in Westmoreland County and moved its entire operation out of Apollo, with many workers commuting from Apollo by ferry.

Apollo then hosted the development of another new steel concern, the Apollo Steel Company, organized by a group of local citizens in 1912 and opening a modern rolling mill in 1913. The company helped to fuel the local economy until its closing in \_\_\_\_\_. No remains of the manufacturing operation survive in the town.

Leechburg survives as the county's major steel town, with Allegheny Ludlum still in operation in West Leechburg on the Kiskiminetas River, down the road at Bagdad, and in Vandergrift across the Allegheny River in Westmoreland County. Steel began its impact on the town in 1872, when the Siberian Iron Works built a rolling mill and furnaces. In 1874, the first tin works built in the United States was added and natural gas was first used to fuel the furnaces, brought by

pipeline from a well across the river. The plant attracted the first large migration of English and Welsh tin and iron workers to America, employing 150 men by 1874 and swelling the town's population. After the Panic of 1873, the plant closed and the labor force scattered to area farms and mines and to a new tin works in McKeesport. When Kirkpatrick, Beale and Company purchased the operation, improved, and reopened it a few years later, however, a whole new wave of immigration brought southern and eastern Europeans to town. The plant was sold to the Pennsylvania Steel Company in 1900 and ultimately incorporated as part of the conglomerate U.S. Steel Corporation in 1901. The American Sheet and Tin Plate Company operated 11 sheet steel mills at the site in 1914.<sup>8</sup>

**Resources:** The steel industry is not well represented with extant sites. What does exist is concentrated in Kittanning, Apollo, and Leechburg. Notable sites include the Chambers Hotel and Women's Christian Temperance Union (WCTU) in Apollo and the Rogers Mansion and three social clubs in Leechburg.

## **Coal and Coke**

---

Armstrong County's most important and widespread mineral resource, coal fueled the iron and steel industries and grew in concert with the railroads to develop much of the county's built environment. In association with the Buffalo, Rochester & Pittsburgh Railway, the Buffalo & Susquehanna Railroad, the Pennsylvania Railroad, the Allegheny Valley Railroad, and the Western Allegheny Railroad, coal companies mined and developed towns countywide.<sup>9</sup>

The earliest coal operations in the county were small in scale, frequently operated by farmers, and served a local consumer market. These small mines were variously called "country banks," "wagon mines," "dig holes," "gopher holes," or "father-and-son mines."<sup>10</sup> Cannel coal was first mined in the county and was used as illuminating oil; high in volatile matter, it burned easily, at high heat, and for extended periods. On the eve of the Civil War, several commercial companies were formed that sold bituminous coal outside of the county. Among the earliest company-operated concerns was the Bostonia Mine operated by the Fairmount Coal and Coke Company in Mahoning beginning in 1854.

The economic expansion of "Smokestack America" during the Second Industrial Revolution of the last quarter of the nineteenth century was predicated on increasing supplies, improved transportation systems, and an enlarged labor force. Coal solved America's burgeoning energy demand. The annual consumption of coal per capita rose nationally from one ton in 1870 to two tons

---

<sup>8</sup> Preliminary Research Report, p. 16.

<sup>9</sup> Coal Mines, 1910. Cleveland: B. H. Rose, 1910, pp. 115-117.

<sup>10</sup> Carmen P. DiCiccio, p. 57.

in 1896 and to 6.6 tons in 1918.<sup>11</sup>

Consequently, Armstrong County, like Somerset, Indiana, and Cambria, experienced a phenomenal expansion of the small scale coal industry. County coal production saw enormous growth in tonnage from 1880 into the 1950s, with peaks in 1915 and 1945, as follows:

1880	74,859
1885	139,327
1895	642,809
1905	2,497,314
1915	5,159,882
1925	3,180,037
1935	2,289,252
1945	6,442,928 <sup>12</sup>

Large scale commercial mining did not come to Armstrong County until 1899, when L. W. Robinson bought the first coal land in Cowanshannock Township and the Baltimore, Rochester and Pittsburgh Railroad constructed an eight mile railroad from the main line in Echo to the five mines of the Cowanshannock Coal and Coke Company near Yatesboro, where a modern tippie was constructed.<sup>13</sup> The Cowanshannock Coal and Coke Company erected the first company towns of Yatesboro and NuMine. The Yatesboro mine and company town, with rail connections, was quickly erected in less than a year. A railroad spur line extended to Echo, where it joined the mainline of the Buffalo, Rochester & Pittsburgh Railroad. Coal was shipped on this railroad to markets on the Great Lakes. This was the largest and most productive mine in the county by 1910.<sup>14</sup>

The new town of Sagamore grew after the Buffalo and Susquehanna Railroad extended from Punxsatawney in 1904. Within four years, the town grew to a populaton of over 3,000. William Hays built a 60 room hotel, Hyde-Murphy Company built ninety homes, the Keystone Company Store was constructed in 1905-06, an elementary school was built in 1909, and a theatre was constructed in 1916.. By 1913, 806 men were employed and the annual coal production was 600,000 tons.<sup>15</sup>

The coal industry continued to spawn the establishment of numerous towns in the early twentieth century. By 1910, 4,290 men in Armstrong County were producing more than 3,500,000 tons of coal. Dozens of coal settlements sprung up or grew to support the mining operations: Kelly Station, Logansport, Glen, Brownstown, Edmon, Kaylor, Cadogan, Pine Run, Lumstead, Johnetta, Aladdin,

---

<sup>11</sup> Ibid, p. 149.

<sup>12</sup> *History of Pennsylvania Bituminous Coal*. Harrisburg: Pennsylvania Department of Mines, 1955.

<sup>13</sup> Peoples National Bank of Rural Valley, Calendars, 1994, 1997.

<sup>14</sup> Carmen P. DiCiccio, p. 144.

<sup>15</sup> Peoples Nationa Bank of Rural Valley, 1997 Calendar.

Bostonia, Oak Ridge, Mosgrove, Furnace Run, Bagdad, Cowansville, Dayton, Widnoon, and others. The principal coal companies in the county were the Helvetia Coal Mining Company, the Allegheny River Mining Company, and the Buffalo & Susquehanna Coal Company.<sup>16</sup>

The mines not only stimulated economic prosperity, but also brought waves of immigrants from Scotland, Italy, Sweden (concentrated in Rural Valley), and Eastern Europe. The concentration of miners in the region also gave birth to social and cultural institutions that enriched the life there and should be studied further. United Mine Workers Local 600 in the Rural Valley area, for example, had a baseball team.<sup>17</sup> And the town of Kaylor had both a baseball team and a band during the early twentieth century.<sup>18</sup>

**Resources.** Since the coal industry was essentially phasing out by the 1950s and many of the company-constructed buildings were not designed for longevity, resources to represent the industry are scarce in Armstrong County. Essentially no remains of merit survive from the extractive facilities, even at sites such as Cadogan and NuMine, which were intact even as recently as the countywide survey in 1981-1983. Where remnants of the company towns survive, they are generally only housing, most of it altered beyond recognition. Exceptions occur in Kaylor and Sagamore, and possibly others, although a detailed examination of all county coal towns was beyond the scope of this project. Kaylor is a surviving mine settlement that includes a company store, two hotel/boarder houses, and a number of company-built duplexes, all clustered around a bony pile and a railroad line. Extensive photographic and other documentation for Kaylor is available. Sagamore is another example of a community founded expressly to mine coal at the beginning of the twentieth century. Housing reflecting great historic integrity, the Sagamore Hotel, and two large mine buildings are still extant, but in very poor condition. A significant site relating to the coal industry is at Kelly Station, where ten to twelve beehive coke ovens survive. Besides mining coal, the facility converted coal to coke for the steel industry. Fayette, Westmoreland, and Allegheny were the centers of coke, with Cambria, Somerset, Indiana, and Armstrong involved to a lesser degree, making the Kelly Station ovens a rare find. These ovens represent a typical beehive oven design from the 1860s, converting about five to seven tons of coal in each oven, although the

---

<sup>16</sup> Other companies included Dayton Coal Company, Summit Coal Company, Joseph G. Beale & Co., Clark Coal and Coke Co., Fairmont Coal Company, Glendale Coal Company, Kerr Coal Company, Logansport Coal Company, Maher Coal and Coke Company, Oak Ridge Mining Company, Pittsburgh Plate Glass Company, Provident Coal and Mining Company, West Penn Coal Mining Company, Widnoon Coal Mining Company, the the Great Lakes Coal Company. *Coal Mines, 1910*. Cleveland: B.H. Rose, 1910, pp. 115-117. Preliminary Research Report, p. 11.

<sup>17</sup> Peoples National Bank of Rural Valley, Calendar, 1995.

<sup>18</sup> *If These Hills Could Talk: A History of Bradys Bend Township, Perry Township, and East Brady, Pennsylvania*. East Brady, PA: Bradys Bend Historical Society, Inc., 1984. This compilation, although it does not cite sources for its information, contains a wealth of photographic and other documentation which should be consulted and verified as interpretive efforts proceed. It is particularly helpful in its coverage of Bradys Bend and Kaylor.

ovens were constructed in the early twentieth century.

### **Clay and Refractories**

---

Armstrong County's rich clay resources led to the development of successful brick and pottery operations. Good quality clays near Kittanning Borough have been extracted for over a century, accounting for the concentration of most of the County's refractory business in the Borough. Large deposits of flint clay in Mahoning and Gilpin Townships have been useful in making high-grade furnace linings. The construction of the Pittsburgh, Shawmut and Northern Railroad in 1913 opened up the clay resources in the northern part of the County.<sup>19</sup>

Kittanning was the site of the county's first notable brickworks, as well as other brickmaking enterprises during the nineteenth century. Established by Paul Morrow in 1806, the first works supplied 189,000 bricks for the construction of the first county courthouse. Among the other operations were the Daugherty and Sirwell brickworks, which in 1851 made the first pressed bricks in the county, and the Avenue Brick Works, owned by G. B. Daugherty, which by 1880 had an annual capacity of over 4,000,000 bricks and by 1914 produced 8,000,000 red building bricks each year. It was these bricks from which the first Ford City glassworks buildings were built.

Kittanning continued in importance, with the clay quarries in Wickboro, now part of Kittanning Borough, operated by Ross Reynolds beginning in 1866 and the Wick Chinaware Company organized there in 1879. The Kittanning Brick and Fire Clay Company, organized at the turn of the century, was also located in Wickboro. This company, operating for nearly a hundred years, employed 100 laborers producing 100,000 bricks daily in 20 kilns in 1913.

The Freeport Clay Products and Minerals Company was founded in 1900 to manufacture building brick. The plant went into operation in 1902, with eight periodic kilns. With the demand for fire brick in the steel industry generated by World War I, the operation shifted its focus and the manufacture of ladle brick was begun in 1916 under a new company name, "Freeport Brick Company." Expansion continued, and by the end of World War II, the company operated 22 periodic kilns. Tunnel kiln plants were added in 1958, 1965, and 1975. Acquisitions continued the company's growth, with the purchase of the Allegheny Brick Company in 1963, the Kittanning Brick Company in 1966, and the DURO line of Acid Brick Manufacturing Company in 1983. Since its founding, the company has multiplied production to 42 times its original volume.<sup>20</sup>

---

<sup>19</sup> Preliminary Research Report, p. 8.

<sup>20</sup> Corinne Azen Krause, *The Hidden Industry: A History of Refractories in the United States, 1860 to 1985*. American Ceramic Society, 1987, pp. 198-199.

A number of other brick works were located around the county. Among them were the following:

At Brady's Bend, the Upper Kittanning Brick Company operated from 1913 until 1945, producing 100,000 bricks daily in eight kilns.

The Graff Kittanning Clay Company opened two plants in West Franklin Township in 1925, producing drain and tile flue lining and sewer pipe. Logal Clay of Ohio bought the Craigsville plant in 1958 and abandoned the plant in 1970. The Worthington plant continued to operate.

The Johnetta plant of the U.S. Sewer Pipe Company operated from 1900 to 1920.

At Manorville, the Phoenix Firebricks Works were established by Isaac Reese in 1880. Reese learned the specific of high-grade silica brick manufacture in Europe. The plant was sold in 1902 to Harbison-Walker, who moved it to Templeton, closer to the clay mines in Brookville.

At Templeton, 22 kilns employed 100 men. In Mahoning Township, the Stewart Fire Brick Works, later renamed the Climax Brick Company, was established in 1872.

Clearly, additional research should be conducted to document the full extent of the industry and the relationships between these refractory operations and the customers they served.

**Resources:** The extractive clay and refractory industries are still active in the county. Prime examples are the Freeport Brick Company and Continental Clay Company in Kittanning. The industries are represented, however, by only limited historic resources. The ruins of the Reesedale Clay Mines and remains associated with the Templeton works of Harbison-Walker (the works themselves slated for imminent demolition) appear to be the sole survivors. The related Eljer Pottery Works in Ford City, next to the abandoned PPG complex, was also a major user of clay.



## **Glass**

---

Glass has figured prominently in Armstrong County's industrial profile for over 100 years. The first glassworks were built in Parker City in 1880 after the oil boom and purchased in 1882 by the Wightman Glass Company of Pittsburgh. The operation employed approximately 100 men hand-blowing high-grade bottles and druggist containers, and utilized first coal and later natural gas from the nearby obsolete oil wells as fuel. About 1913, a bottle machine was added and the company relocated to Punxsutawney to facilitate shipping. The plant continued to operate, however, as Parker City residents organized and bought it, rebuilding after a disastrous fire in 1929. The operation was still in existence in 1981 as the Glass Container Corporation.

It was in Ford City, however, that the glass industry made its mark in Armstrong County. Founded by Captain John B. Ford in 1888, Ford City was developed as a true company town of the Pittsburgh Plate Glass Company (PPG), taking advantage of the availability of a large, level tract of land, as well as abundant natural gas, coal, sand and limestone, plus the presence of the railroad. The town was developed from scratch, and incorporated not only the industrial operations, but also a full complement of commercial, residential, and cultural elements.

Works #4, constructed in 1891, was considered the largest plate glass factory in the world, a position it held until the 1950s. By 1914 over 13,000,000 square feet of plate glass was being manufactured annually, and at peak production almost 4,000 workers were employed by the glassworks. Works #4's largest improvement project was the Grinder and Polisher Modernization Program in 1929. The operation was largely self sufficient, grinding the glass with sand ground from rock at a plant on the west side of the Allegheny River starting in 1900. About 250 men were employed and company houses were built. The sand plant closed in 1927, but the glassworks sustained operations through the Great Depression.<sup>21</sup> PPG also produced its own glass manufacturing equipment, which it sold nationwide.

With the dramatic growth of the plant came massive immigration and the introduction of ethnic diversity. Ford City's population grew to almost 5,000 within twenty years, with Germans, Belgians, Czech-Slovaks, English and Ukrainians represented in significant numbers.

The decline of the glassworks industry in Ford City came beginning in 1950, when the new "float" process for plate glass came into favor and PPG chose not to convert the plant there to the new method. The plant was finally closed in 1993, and the future of the site is uncertain, although PPG has joined with the local community to forge a strategy for reuse of the 47 acres of riverfront

---

<sup>21</sup> Preliminary Research Report, p. 17.

property.

**Resources:** Ford City is an outstanding example of a company town exclusively associated with a single industry. All components of the town are represented in a proposed historic district, which has been defined to include the original of the core, documented portions of the town, with deletions based on poor integrity and additions based on significant subsequent development.

## **Lumber**

---

With abundant timber and access via the Allegheny River to major markets, lumber was a significant pioneer industry even before the advent of the iron industry in Armstrong County. The timber was used locally for rafts, boats, mills, barns, and log homes, and was shipped south in massive quantities as well. The Allegheny River carried 3,000,000 board feet of lumber in 1811 and over 50,000,000 board feet between 1835 and 1840.<sup>22</sup> The industry has continued in a limited capacity to the present day.

It was the use of timber/charcoal for the iron industry, however, that particularly relates to this study. During the early iron era, timber was used to fuel the rural blast furnaces, deforesting much of the region. Many blast furnaces were put out of blast as the nearby timber was depleted. With the replacement of charcoal by coke, the importance of the timber industry to the metallurgical industries was eliminated.

**Resources:** No resources were identified with associations to the timber industry in Armstrong County.

## **Oil and Gas**

---

On the heels of the first oil strike in Venango County in 1859, northwestern Pennsylvania developed its oil resources in a speculative boom. In Armstrong County, the focus was in the northern townships of Perry and Hovey, primarily farming areas. What is believed to have been the county's first oil well was sunk on a Hovey farm in 1865 and ultimately yielded over \$2,000,000. In 1869, the growth was dramatic, from 25 wells in July to 1,000 in November. As the boom spread into Perry Township, acres of farmland were sold or leased to the oil interests and the area's population boomed.

Parker City thrived under the stimulus of the oil boom.

Formerly an unimportant ferry station called Parker's Landing, its

---

<sup>22</sup> Ibid, p. 6.

population exploded starting in 1870 and soared to more than 20,000 at the height of the boom. For several years the Parker City Oil Exchange experienced the largest volume of trading in the entire oil region with six pipelines converging at the City. Prices for crude oil were erratic and million-dollar fortunes could be gained and lost in a day. Prosperous speculators built substantial residences on the hilltop, while the less fortunate were accommodated in thousands of wooden shanties and hotels hastily built along the Allegheny River. The sprawl of Parker City soon engulfed the former village of Lawrenceburg, which had earlier been established around an iron works.<sup>23</sup>

This prosperity, however, was short lived. By 1878, many of the wells began to run dry and the focus of the oil boom moved northward. The demise of the oil industry, coupled with a disastrous fire on the city's waterfront, led to a rapid drop in population from the 20,000 peak to less than 1,000, earning Parker City its status as the smallest city in the United States.

Oil and gas also figured in the development of the Bradys Bend Iron Company, as has already been mentioned. At about the same time as the Hovey Farm well was drilled, the Bradys Bend Iron Company drilled the first well in its section of the Allegheny Valley, about 1-1/2 miles north of the rolling mill along Seybertown Road. The experiment, which sought to replace coke with crude oil as a fuel for melting iron ore and rolling sheet iron, was successful. A few years after this experiment, the company converted to natural gas, marking the first time in the United States that natural gas was used in iron production.<sup>24</sup>

Natural gas also figured prominently in the eastern part of the county. The first gas in Cowanshannock Township was drilled in 1892, with 71 additional wells drilled in the township by the turn of the century.<sup>25</sup> In Rural Valley, H. C. Judson was an independent gas drilling contractor and producer.<sup>26</sup> Peoples Natural Gas Company had a Valley Station by 1904.<sup>27</sup> The method of drilling for natural gas into the 1930s was a Standard derrick and steam operated drilling equipment.

Related industries during the oil era included crude oil refining, oil machinery, and the railroad. Like the parent oil industry, however, these were brief in duration. Two crude oil refineries opened in 1861: the Standard Oil Company operated a crude oil refinery in Manorville for fourteen years, and the Penn Oil Works was located in Kiskiminetas Township. A manufacturing plant producing machinery for the oil industry operated in Queenstown, Perry

---

<sup>23</sup> Ibid, pp. 12-13.

<sup>24</sup> *If These Hills Could Talk*, p. 42.

<sup>25</sup> Peoples National Bank of Rural Valley Calendar, 1994.

<sup>26</sup> Peoples National Bank of Rural Valley Calendar, 1995.

<sup>27</sup> Peoples National Bank of Rural Valley Calendar, 1997.

Township from 1871 until 1881.<sup>28</sup>

Once the boom was past, oil continued as a minor player in county's industrial profile.

**Resources:** The surviving resources in Parker City, limited in number and only loosely linked interpretively, are the sole historic remnants associated with the oil industry in the county. Of particular interest is the Parker Hotel, which predates the oil boom but which was a center of activity during the town's industrial heyday.

## **Limestone**

---

Limestone has been important in Armstrong County, first for the production of cement used in construction of the Pennsylvania Canal and later for the iron furnaces which used it as a fluxing material. Several quarries were identified, the earliest at Wickboro, where lime was kilned from 1866 to 1899. At Manor Township, A. J. Dull operated a quarry from 1871 until 1913 or later. Limestone was also quarried near Apollo by the Apollo Lime and Ballast Company and near Logansport.

The largest and possibly most important limestone operation, however, was at Brady's Bend. Begun by the Frazer Brothers in 1912, the company was sold in 1914 to the Pittsburgh Limestone Mining Company, a subsidiary of U.S. Steel. The operation employed between 300 and 400 men. After U.S. Steel closed the plant in 1964, the site was dormant until 1964, when it reopened as the Brady's Bend Limestone Corporation, supplying Allegheny Ludlum plants with lime.

**Resources:** Remnants of the limestone industry in Armstrong County survive in Brady's Bend, where buildings of the Pittsburgh Limestone Mining Company stand among the remnants of the Brady's Bend Iron Works and contemporary limestone mining operations. Collectively, they offer an interpretive opportunity.

## **Water Transportation**

---

Armstrong County is clearly defined -- geographically, economically, and culturally -- by waterways. The primary river running through is the Allegheny River, which runs north-south, forming the eastern border of the northern section of the county and providing the focus for the majority of its industrial and recreational activities. At the southwest corner of the County, the Allegheny is joined by the Kiskiminetas River, which forms the county's southern boundary. The Kiskiminetas was also the route of the former Pennsylvania Canal, which provided the natural transportation system that was eventually to

---

<sup>28</sup> Preliminary Research Report, p. 13.

be replaced by the railroad. Four additional creeks feed into the Allegheny from the east: Redbank, which forms the northern boundary of the county, Mahoning, Cowanshannock, and Crooked.

Providing both transportation and water power, the rivers and creeks of Armstrong County have been the foci of industrial enterprise in the county, and have consequently received considerable public attention. The Kiskiminetas River was declared a public highway in 1771, as were the the Allegheny River and Redbank Creek in 1798. Early ferry stations often developed into settlements.<sup>29</sup>

The first commercial use of the Allegheny River was in 1806, when lumber was floated down to the Ohio River and ultimately to markets in Cincinnati. Subsequently, timber, salt, iron, and other bulk cargo, as well as passengers, were transported. During the early nineteenth century, the principal means of transportation on the river were canoes, keelboats, and rafts.<sup>30</sup> Steamboats were also beginning to be used on the river as far north as Franklin and Warren during high water stages. One steamboat successfully reached Olean, New York, a distance of approximately 250 miles from Pittsburgh, without obstruction or injury. River improvements during this early era were limited to dams and dikes, privately built to support various mill activities, which channelized the river and aided navigation.<sup>31</sup>

In 1828, the Pennsylvania Canal was constructed across the southern portion of Armstrong County, and continued in heavy use for the next two decades. Designed to link the Ohio Valley with the Eastern Seaboard, this massive project followed the Kiskiminetas River and led to the growth and prosperity of Leechburg, Apollo, and Freeport Boroughs as river ports. Dams and locks were built to provide water for the canal at Leechburg and the mouth of Roaring Run, and an aqueduct was built at Freeport, the junction of the Kiskiminetas River and Allegheny River. The canal was eventually sold to the Pennsylvania Railroad Company, and water traffic diminished as the railroads gained dominance in the 1860s.

At about the same time that the canal was being developed, during the 1820s and 1830s, the Commonwealth of Pennsylvania and the Federal Government authorized several surveys of the Allegheny River and recommended improvements to navigation on the river and creation of an inland waterway system connecting the Great Lakes to the Ohio and Mississippi Rivers. In 1846, the Legislature of Pennsylvania sent a Resolution to the United States Senate requesting the improvement of the Allegheny, Ohio, and Mississippi Rivers. No

---

<sup>29</sup> Ibid, p. 3.

<sup>30</sup> Ibid.

<sup>31</sup> Gannett Fleming Corrdry and Carpenter, Inc., A History of Navigation Improvements on the Allegheny River, unpublished report prepared for the U.S. Army Corps of Engineers, Pittsburgh District, 1981, p. 1.

action was taken until the 1870s, however, when the Federal Government initiated a program of improvements on the Allegheny to facilitate waterborne commerce. Two projects were implemented.

First, numerous authorizations and appropriations were targeted at improving the open channel of the river, including the construction of ten low dams and dikes which closed duplicate channels and concentrated the water into a single deeper channel, as well as the removal of rocks and other obstructions from the main route.

Secondly, a slack-water navigation system was comprised of nine locks and dams from the mouth of the Allegheny River at Pittsburgh to above East Brady. The original Locks and Dams Nos. 1, 2, and 3 were completed between 1893 and 1908. Finally, on May 12, 1917, the Secretary of War approved the recommendations of the Army Corps of Engineers for the additional locks through No. 8 at Mosgrove. A Congressional Act of 1919 appropriated the necessary funds.<sup>32</sup>

Over the ensuing year, plans and specifications were prepared and bids were solicited for Locks and Dams Nos. 4 at Natrona and 5 at Freeport. Work began in March 1920 and continued over the next several years, with little construction from 1923 through 1925 due to the unavailability of funds. Locks Nos. 4 and 5 were placed in operation in 1927 and substantially completed by 1929. Nos. 6 through 8 followed in rapid succession, so that by 1933, the five locks and dams currently in service in the county were already in place:

<b>Lock No.</b>	<b>Location</b>	<b>Plans and Specs</b>	<b>In Service</b>	<b>Complete</b>
5	Freeport	1920	1927	1929
6	Glen Irwin	1926	1928	1930
7	Kittanning	1928	1930	1932
8	Templeton	1929	1931	1933
9	Rimerton		1938	1939

These locks and dams extended slack-water navigation 72 miles above the mouth of the river to above East Brady, Pennsylvania.<sup>33</sup> During this same period, in the mid-1930s, Lock No. 1 was removed and Locks Nos. 2 and 3 replaced.

The five Armstrong County lock and dam complexes are of standardized design. The lock chambers measure 56 feet by 360 feet, with the lift at normal pool level varies from 11.8 feet at Freeport (No. 5) to 22 feet at Rimerton (No. 9). The buildings that service them are of identical design, utilitarian structures in concrete.

---

<sup>32</sup> The Gannett Fleming report details these surveys, proposed recommendations, and implemented projects.

<sup>33</sup> Gannett Leming Corddry and Carpenter, Inc.

The areas along the rivers near the dams have developed largely as recreational areas with cottages and camps.

**Resources:** Both the canal and river transportation are represented by extant resources. A district nomination for the Western Division, Pennsylvania Main Line Canal in Armstrong County, which incorporates four sites and 40 structures, is currently under review by the Pennsylvania Historical and Museum Commission. River transportation is manifested in the five locks and dams (Nos. 5 through 9) operated by the U.S. Army Corps of Engineers between Freeport and Watersonville on the Allegheny River.

### **Rail Transportation**

The story of the railroad in Armstrong County is largely the story of the coal industry. The companies involved in mining are discussed in the section of this narrative that deals with coal.

The Allegheny Valley Railroad was completed in 1856. Originally called the Pittsburgh, Kittanning and Warren Railroad, the company was granted a charter in 1837, but did not begin construction until about 1852. The line reached Kittanning by 1856 and Mahoning by 1863. Plans to extend the line to Brookville were changed when the oil boom seized northern Armstrong County and the region north of it. By 1868, a 78 mile line connected Mahoning and Venango City. With pipelines from Oil City, the railroad increased its control of oil traffic, and by 1881 had leased enough additional track to connect Pittsburgh with Brocton, New York.<sup>34</sup>

The Pennsylvania Railroad had purchased the Pennsylvania Canal right of way by 1865. In 1888, the railroad opened a branch line along the canal route from Leechburg to Schenley, connecting with the Allegheny Valley Railroad. The company had already begun to gain control of the Allegheny Valley through stock purchases in 1870, had complete possession by 1910, and completed new stations, bridges, and the Kennerdell tunnel at Brady's Bend over the next decade. This portion of the Pennsylvania Railroad was known as the Buffalo and Allegheny Division.<sup>35</sup>

The Pittsburgh, Shawmut and Northern Railroad, built between 1905 and 1913, passed along the west bank of the Allegheny River and Mahoning Creek and extended south to Pittsburgh and north to Wayland, New York.

On a more local level, the Kittanning and Ford City Street Railway Company organized in 1898 and began operations in Kittanning the following year. The line gradually extended over the next ten years, reaching Ford City in 1903,

---

<sup>34</sup> Preliminary Research Report, p. 4.

<sup>35</sup>Ibid.

Lenape Park in 1904, and Cowanshannock Creek in 1908. Trolley service between Leechburg and Apollo, utilizing part of the former Pennsylvania Canal towpath, was opened by the Leechburg and Apollo Electric Railway in 1902.<sup>36</sup>

***Resources.*** Four bridges were identified with possible significance: two at Freeport, one at Adrian, and one across the Allegheny River at the former Mosgrove Hotel. Three stations stand out in the context of the county: the Baltimore and Ohio Station at Dayton, the Pennsylvania Railroad Station, included as part of the proposed Kittanning Historic District, and the Pittsburgh and Shawmut passenger and freight station across the river from Kittanning in East Franklin,.

---

<sup>36</sup> Ibid.



## **Associated Property Types**

Based on the historical context and the extant sites that relate to it, this schematic typology of resources has been constructed to represent steel and steel-related industrial and community development in Armstrong County. The focus of this project has been to identify districts which embody the county's industrial heritage, and their accompanying community and cultural resources, which might be collectively documented, designated, preserved, interpreted, and marketed to promote heritage tourism. The typology also, however, includes individual sites which either existed in isolation or are the sole survivors of their respective contexts. Should a multiple resource or thematic nomination be pursued based on this study, the typology should be further developed.

### **Historic Districts**

#### Manufacturing Company Towns

- Glass Towns
- Refractory Towns

#### Extractive Company Towns

- Coal Towns

#### Transportation-Related Towns

- Canal Towns

### **Individual Sites**

#### Manufacturing Facilities

- Coke Ovens
- Blast Furnaces
- Steel Manufacturing Plants
- Refractories
- Glass Plants

#### Extractive Facilities

- Coal Mines and Processing Plants
- Clay Mines

#### Institutional Buildings

- Churches
- Social Clubs

#### Rail Transportation Buildings

- Train Stations

#### Commercial Buildings

Hotels  
Banks  
Stores

Housing

Homes of Prominent Individuals  
Houses for Industrial Management  
Houses for Industrial Labor  
Miners' Housing

Engineering Works

River Locks and Dams  
Railroad Bridges  
Canal Features

## **Recommendations**

Out of this study comes a clear direction for the future of preservation and interpretive activities in Armstrong County. It can be summarized as follows:

### **Endangered Site and Action List**

A limited number of resources which appear to be eligible for the National Register are threatened, and therefore worthy of inclusion on an endangered site list:

#### **B&O Railroad Station, Dayton**

The station is an abandoned structure in an isolated setting and threatened by neglect and vandalism.

#### **PPG Works, Ford City**

While the larger district does not appear to be threatened, the industrial complex occupies a large parcel of prime land and has no current reuse strategy.

#### **Parker House Hotel, Parker**

The structure is in poor condition, although the owner is working on maintenance. The adjacent structure was recently demolished, creating a deteriorated setting for the hotel.

## **Designations**

The sites listed as eligible for the National Register have been carefully selected in light of the county context and the current high standards for National Register listing; each meets at least two of the four criteria for eligibility, with the possible exception of the Chambers Hotel in Apollo. They should be further documented to establish their significance and individual contexts, in anticipation of nomination to the Register.

The top priority for this work should be the Ford City Historic District, which has the highest potential for approval and would constitute a major heritage tourism attraction. At the current time, PPG is in a highly cooperative mode, offering a promising climate for the district's development. A contract should be let as soon as possible for this work.

Secondarily, the collective resources of Bradys Bend and Kaylor might be considered as a Multiple Resource nomination. This site, too, offers great potential for interpretation and heritage tourism.

## **Interpretation**

The Rivers of Steel Heritage Area relies heavily on what it calls the “scenic armature” provided by the rivers which link the recreational, historical, and cultural resources of the seven counties. The Allegheny, Monongahela, Ohio, Youghiogheny, and Kiskiminetas Rivers link the region both physically and thematically. Extending from the core of the region to its far corners, they are the foci of the critical mass of industrial resources identified in Armstrong County, as in the other counties. They also represent subcultures of their own. The importance of this unifying physical framework cannot be underestimated. It should be documented, interpreted, and marketed to the fullest extent possible.

In addition, five major interpretive opportunities of a more specific nature should be pursued:

Parker City should be incorporated into the Oil Heritage Region to the north of Armstrong County, based on thematic links and geographic orientation.

Ford City should be promoted as a destination representing the full range of resources associated with a single industry.

Brady’s Bend/Kaylor offers opportunities as a destination due to the representation of three primary industries -- iron, coal, and limestone -- in close proximity at one location.

Kittanning is already being developed interpretively. This work should be continued and expanded.

The Sagamore Hotel and related company housing of the Buffalo and Susquehanna Coal and Coke Company should be reviewed for its potential to tell the story of a company owned, company developed coal community.

## Bibliography

"Armstrong Album: A Special Edition of the *Leader Times*," February 28, 1997.

*Armstrong County, Pennsylvania: Her People, Past and Present*. Chicago: J. H. Beers & Company, 1914.

Armstrong County Department of Economic and Community Development, "Preliminary Research Report for Armstrong County, Pennsylvania Historic Sites Survey, 1980-81." Unpublished report prepared for the Bureau for Historic Preservation, Pennsylvania Historical and Museum Commission, 1980.

Armstrong County Department of Economic and Community Development, Historic Sites Survey Forms, on file at Armstrong County Planning Department, Kittanning and Steel Industry Heritage Corporation, Homestead, 1980-1981.

Armstrong County Tourist Bureau "If It Wasn't for the River." Audio tape tour, 1996.

Beyer, George R., *Guide to the State Historical Markers of Pennsylvania*. Harrisburg: Pennsylvania Historical and Museum Commission, 1991.

*A Century of Historical Progress of Leechburg, Pennsylvania from Eighteen Hundred and Fifty to Nineteen Hundred and Fifty*. Centennial Celebration Held During the Week of June 18 to 25, 1950.

*Coal Field Directory 1928*. New York: McGraw-Hill Catalog and Directory Company, Inc., 1928.

*Coal Mines 1910*. Cleveland: B. H. Rose, 1910.

DiCiccio, Carmen P., "The Rise and Fall of King Coal: A History of the Bituminous Coal and Coke Industry of Pennsylvania from 1740-1945." Unpublished Ph.D. dissertation for the University of Pittsburgh, 1996.

Fritz, David and Clemensen, A. Berle, *Pennsylvania and Main Line Canal*. Washington, D.C.: National Park Service, America's Industrial Heritage Project, 1992.

Gannett Fleming Corddry and Carpenter, Inc., "A History of Navigation Improvements on the Allegheny River." Unpublished report prepared for the U.S. Army Corps of Engineers, Pittsburgh District, 1981.

*If These Hills Could Talk: A History of Bradys Bend Township, Perry Township, and East Brady, Pennsylvania*. East Brady, PA: Bradys Bend Historical Society, 1984.

Krause, Corinne Azen, *The Hidden Industry: A History of Refractories in the U. S., 1860-1985*. American Ceramic Society, 1987.

MacCloskey, James E., Jr., *History of Harbison-Walker Refractories Company*. Pittsburgh: Private Published, 1952.

Magra, Maryann, *Historic Freeport*. Freeport, Pennsylvania: Fountain Press, Transylvania Bible School, 1994.

Mulkearn, Lois and Pugh, Edwin V., *A Traveler's Guide to Historic Western Pennsylvania*. Pittsburgh: University of Pittsburgh Press, 1954.

*Pennsylvania's Mineral Heritage: The Commonwealth at the Economic Crossroads of Her Industrial Development*. Harrisburg: Commonwealth of Pennsylvania Department of Internal Affairs, 1944.

Peoples National Bank of Rural Valley, Calendars, 1994-1997.

*Rivers of Steel Management Action Plan*. Homestead, Pennsylvania: Steel Industry Heritage Corporation, c.1996.

Sanborn Map Company, *Fire Insurance Maps in the Library of Congress*. Washington, DC: Library of Congress, 1981. Includes listings for Apollo (1886, 1889, 1894, 1899, 1904, 1909, 1915, 1925-39), Ford City (1899, 1904, 1908, 1913, 1921, 1930-43), Freeport (1886, 1891, 1897, 1902, 1908, 1913, 1925-43), and Leechburg (1886, 1891, 1897, 1903, 1909, 1919, 1927-43).

Sharp, Myron B. and Thomas, William H., *A Guide to the Old Blast Furnaces in Western Pennsylvania*. Pittsburgh: Historical Society of Western Pennsylvania, 1966.

Silver, Jonathan D., "Ford City searches for a new identity," *Pittsburgh Post-Gazette*, July 6, 1997, pp. B-1, B-5.

Smith, Helene and Swetnam, George, *A Guidebook to Historic Western Pennsylvania*. Pittsburgh: University of Pittsburgh Press, 1991.

Smith, Robert Walter, Esq., *History of Armstrong County*. Chicago: Waterman, Warkins & Company, 1883.

Stewart, Rev. Reid W., *Thomas Hindman Marshall (1824-1908): The Man and His House*. Apollo, Pennsylvania: Closson Press, 1984.

Temin, Peter, *Iron and Steel in Nineteenth Century America: An Economic Inquiry*.

Cambridge, MA: MIT Press, 1964.

Van Atta, Robert B., "Blast From the Past," *Tribune Review*, March 28, 1993.

"Walking Tour of Apollo."

"Walking Tour of Dayton."

"Walking Tour of Freeport."

"Walking Tour of Kittanning."

"Walking Tour of Leechburg."

"Walking Tour of Parker City."

Undated pamphlets produced by Armstrong County Tourist Bureau.

Bonnie J. Wilkinson, National Register of Historic Places Nomination Form for Western Division, Pennsylvania Main Line Canal in Armstrong County, 1997.

### **Historical Societies for Armstrong County Research**

Apollo Area Historical Society

c/o Allan Morgan Secretary

P.O. Box 434

310 North Ninth Street

Apollo, PA 15613

Armstrong County Historical Society

300 North McKean Street, P.O. Box 735

Kittanning, PA 16201

Brady's Bend Historical Society

c/o Mrs. Dorothy Lewis

Box 451

East Brady, PA 16028

Dayton Area Local History Society

c/o Eleanor Stahl, Program Chairman

Box 15

Dayton, PA 16222

Freeport Area Historical Society

c/o Don Collar

171 Washington Street

Freeport, PA 16229

Historical Society of Western Pennsylvania  
1212 Smallman Street  
Pittsburgh, PA 15222-4200

Leechburg Area Museum and Historical Society  
P.O. Box 156  
Leechburg, PA 15656

Victorian Vandergrift Museum and Historical Society  
128-D Washington Avenue  
P.O. Box 183  
Vandergrift, PA 15690