KETTLE CREEK
CULTURE

The rural and historically significant landscape defines the character and identity of Kettle Creek. The cultural history of the watershed portrays the evolution of the landscape and its resources. Social analysis, through demographics, economics and a discussion of the watershed association, illustrates specific trends in the population through time. The recreational and scenic value of the watershed landscape demonstrates contemporary values for natural resources and the overall environment, as defined by local residents and visitors alike.

The history of the Kettle Creek watershed is not unfamiliar. It incorporates the histories of Clinton, Potter and Tioga counties into a story about the people that have shared this landscape across time and relates local events, circumstances and conditions more directly to the landscape rather than editing it along socially constructed boundaries. It demonstrates the flexibility and resilience of the forest under human management, the distinct patterns of land settlement and speculation, and the shift from forest consumption to conservation that have occurred across the region and state. However, this history also includes visions of sustainable immigrant communities, natural gas extraction and storage, and the flooding of a small town that distinguish it from its surroundings. While life along Kettle Creek has seemed to pass without great change, the decisions made by residents and landowners have indeed transformed the landscape over time.

HISTORICAL
LANDSCAPE

The evergreen plantations we see today resemble what the "Black Forest" of Pennsylvania once looked like.

Kettle Creek as Influenced by Native Americans

The watershed prior to human habitation was a mature, forested landscape of hemlock, pine, and oak. Hemlocks grew 100 to 150 feet (30 to 45 m) tall, the lower 40 to 50 feet (12 to 15 m) bare of branches from lack of sunlight (Beebe 1934). European explorers would later name the region "the Black Forest" of Pennsylvania, as the midday sun barely reached the forest floor. The pine and oak were tall, thick and straight.

Wildlife was also abundant from the air to the water. Passenger pigeons traveled the skyways and fed on native nuts. Elk roamed the Appalachian Plateau browsing the tender, woody vegetation. Wolves wandered the ridges in search of native deer, singing their wild melodies at nightfall. Beaver managed the waterways, building small dams throughout the headwaters. This landscape developed, and continues to develop, changing subtly each year, each season, each day.

Native Americans were the first known human inhabitants of the watershed. They lived as hunters, gatherers, farmers and fishermen in the then densely forested landscape. They inhabited large areas and moved seasonally throughout the landscape, actively managing natural resources of vegetation and wildlife for their sustenance. They burned forest patches to flush wildlife, to rejuvenate the native vegetation, and to cultivate orchards, cornfields and gardens. From the hides of animals, they tanned leather and from timber scraps, they sculpted woodcarvings. Their use and management of natural resources was efficient, productive, and sustainable[1].

As they moved through the landscape of the Northern Tier on their seasonal journey, they established regular routes of travel. The Kettle Creek Path connected the Cowanesque River to the West Branch of the Susquehanna by way of Kettle Creek. Native Americans may
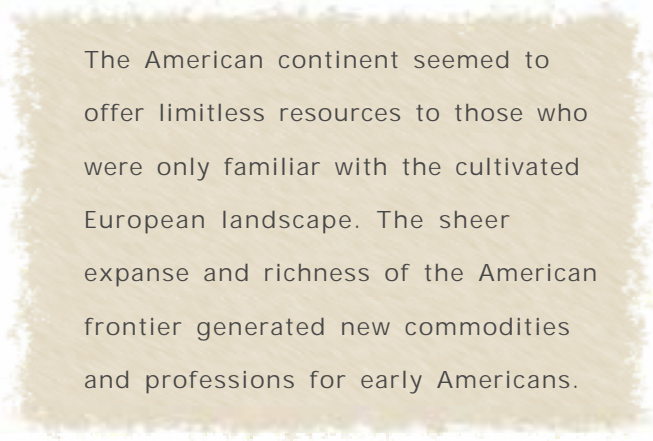
have camped along the creek while hunting and fishing in the region. Some believe that Kettle Creek was named for kettle cooking that occurred on a large boulder in the West Branch. Their theory describes how Native Americans would pour water into the depressions on the boulder's surface and then toss heated stones into the water to heat their kettles.

Several Native American tribes made their homes in the Mid-Atlantic region. Each tribe claimed large areas, though individual land ownership was unknown. The Iroquois and the Delaware tribes both claimed lands in what we now call Pennsylvania. The Iroquois lands were located in the north and west; the Delaware lands were in the south and east. The Iroquois were a community composed of several smaller tribes who claimed lands throughout present-day Pennsylvania and New York. Collectively, they were known as the Six Nations. The Seneca tribe used the region of the Northern Tier as hunting grounds for its people. The Delaware were also a composite community, including the Monsi (Munsi, Munsee, or Minisinks; meaning wolf) tribe and were incorporated with the Delaware Indians, and later with the Senecas, as their numbers declined.

European Exploration, Purchase, and Colonization of North America

Much of what is known about the early North American landscape and the people who lived here was first described in the travel diaries of European missionaries. David Zeisberger was a Moravian who traveled throughout the Mid-Atlantic region (Beebe 1934). Though his charge was to preach and baptize in the Christian doctrine, he spent much of his time learning Native American languages and culture. He wrote rich descriptions of Indian physique, folklore, and ways of life. He recorded their stories of creation and beliefs about the movement of the earth, sun, moon and stars. He described

sacred rituals and beliefs in witchcraft and evil spirits. Insightfully, he noted that the Indian at peace was never in a hurry, "for they are everywhere at home, and whithersoever they wander they find the sustenance of the forest" (Wallace 1981).

> The American continent seemed to offer limitless resources to those who were only familiar with the cultivated European landscape. The sheer expanse and richness of the American frontier generated new commodities and professions for early Americans.

Other European explorers traveled the continent for its forest resources and traded European goods for Native American game. They recognized that the Native Americans were far better hunters of the native species and that they were eager to barter for tools and trinkets, such as brass kettles for which the creek may also have been named.

Interactions between Native Americans and Europeans were not always peaceful. As the Europeans attempted to colonize the region, the Native Americans attacked the new settlements. Though the Indians did not own the land in the way that Europeans defined ownership, they maintained their claims to inhabit it[2]. Colonists responded with devastating attacks on Indian settlements, such as the one led by Captains Patterson, Crawford, Sharp, and Laughlin in 1763 that destroyed a camp at the mouth of Kettle Creek (Linn 1883).

European persistence eventually led to treaties with the Six Nations that purchased the land for

colonists. The boundaries of the agreements were generally natural features, such as streams and mountains. However, which stream the authors of the treaty meant was frequently unclear as Native American stream names were difficult for the European negotiators to understand. This led to frequent disputes over the land in question as both Native Americans and Europeans defended their claims. The Treaty of 1754, which opened a large part of western and northwestern Pennsylvania to settlement, was one whose agreed boundaries were adjusted after several years of ongoing disputes. An additional agreement in 1768 expanded the settlement area to include the previously disputed areas.

The 1784 Treaty at Fort Stanwick, in present-day New York, purchased much of Pennsylvania's Northern Tier, including the Kettle Creek watershed, from the Iroquois for $5,000 (Welfling 1949). Since Delaware and Wyandott Indians also claimed these lands, a second treaty and payment of $2000 was made. The following year, the Commonwealth opened the region to settlement, though Native Americans retained hunting rights for the next twenty years. For this reason, local governments in the Northern Tier were not organized until 1804.

The Division of Land for Private Sale

As a colony, Pennsylvania had been able to sell land without involvement from England. William Penn established the Pennsylvania Land Office to conduct initial land transactions. Once the colonies declared their independence, the Land Office was incorporated into the state government. To facilitate the division of land into parcels, and since surveying was highly inaccurate, the state adopted the use of rectilinear tracts to prevent boundary disputes.

The purchase of original land titles involved a 5-step process (Munger 1991). First, prospective landowners would file an application at the Pennsylvania Land Office, requesting a parcel of a specified size and location. The Land Office would then warrant the parcel, meaning it would order a survey to verify the boundaries and assess the resources within. Next, the survey was completed on the site and a diagram of the tract was made. A return of survey was then issued by the office, documenting that the survey process and monetary transactions were complete. Finally, a patent was issued, "passing ownership of the particular tract of land to its initial purchaser."

After the Revolutionary War, the new state government owed payments to military officers and to foreign investors, who had supported the colonies in their fight for independence. The Commonwealth offered land in lieu of cash payments to its military servicemen. Foreign investors were paid from revenue generated by land sales and resultant property taxes. William Bingham, a privateer from the West Indies, received large tracts of land throughout northern Pennsylvania and New York, for which he created the Bingham Land Company to parcel, survey, and sell (Currin 2001).

In order to generate revenue quickly and to establish American presence in the eyes of Native Americans, the remaining lands north and west of the Susquehanna River were parceled into lots as large as 1000 acres and offered for sale[3]. When high prices-$80.00 per 100 acres-failed to motivate buyers, the state reduced the price in 1788 (Beebe 1934) and again in 1792 to $13.33 per 100 acres (Welfling 1949). While this may seem inexpensive, few early Americans had the financial resources to purchase land and establish new homes on the frontier where the Commonwealth offered little service, support, or protection to rural residents. As prices fell, land was quickly bought up by speculators, most of whom were prominent businessmen in eastern cities. By 1817, most of the state's land, including the Kettle Creek watershed, had been sold but not occupied.
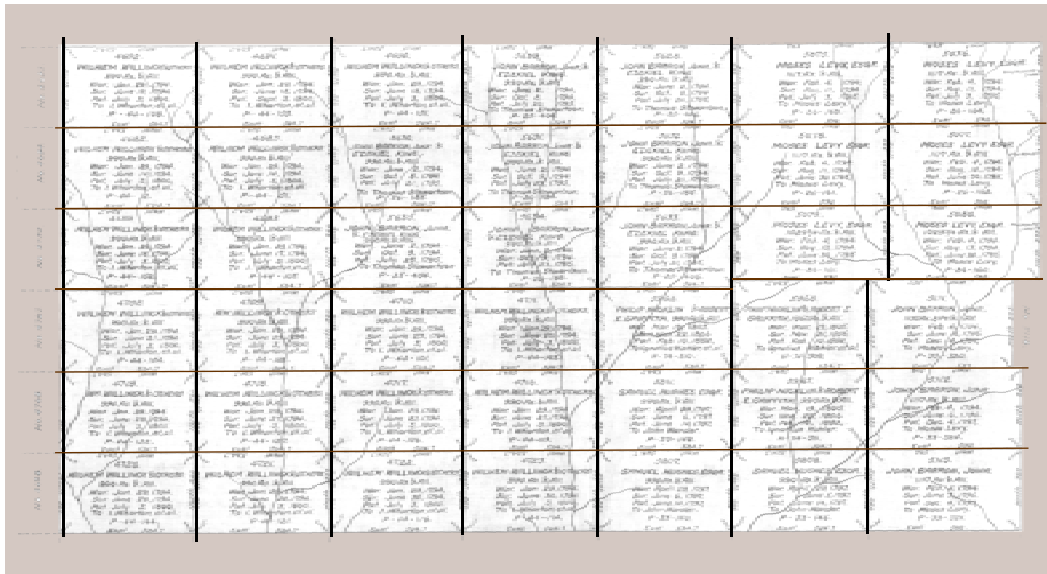
Figure 2.1 - Following the model of the Northwest Ordinance of 1787, much of the Northern Tier was divided and surveyed in a grid of rectangular, thousand acre tracts.

To further advertise the frontier land sales, surveyors and land companies were hired to explore the new region, to characterize the resources available and identify the best areas for farming and timber production, and to layout land tracts for purchase. As surveyors established tract boundaries, they divided much of the Northern Tier into a grid of 990 acre and 1100 acre tracts, making land purchases efficient. They witnessed these boundaries (or carved their initials) on trees, posts and stumps, including the American chestnut that was found throughout the forest during this time. Early surveyors included Henry Drinker for the German Land Company around 1792, Wilhem Willinck and the team of Nivklin and Griffith in 1805, whose names all appear on the original land warrant maps for Abbot and Stewardson Townships.

Ownership implied a responsibility to settle and improve the land, meaning clearing timber, planting crops and building a permanent home[4]. Speculators were able to avoid this requirement by way of a policy loophole. The prevention clause allowed owners to waive settlement responsibilities when relations with Native American proved threatening. When corporate owners wanted to avoid improvement costs, they reported grantees (real and fictitious individuals) that engaged the prevention clause and presented notarized certificates as proof of dangerous relations.

Land Speculation of Forest Values in Kettle Creek - Landowners by Purchase

During the 1790s as the land prices fell, several wealthy, urban businessmen bought multiple tracts in speculation of their resource value. Among them was Thomas Stewardson of Philadelphia, who purchased tracts throughout present-day southeastern Potter County and for whom Stewardson Township is named

Land speculation was popular, particularly with those in eastern business communities. As the Commonwealth reduced the price of land on the frontier in an effort to "civilize" the wilderness, these buyers purchased increasingly larger tracts of land.

(Heimel 1992). He probably intended to harvest the maturing white pine, commonly used for ship masts, and market it on the eastern seaboard or in Europe[5]. In 1851, George Stewardson and William Vaux sold portions of the property, to John F. Cowan, a Williamsport businessman (Heimel 1992). Within these tracts the Stewardson family reserved several parcels along the stream for their own use and development[6]. These reservations later became significant as Cowan sold the tracts to another, stipulating but not explaining the reservation held within its boundaries.

Other early speculators included surveyors from the land companies who bought up the most valuable tracts of land for themselves, as they knew firsthand of the resources found in the region. Wilhem Willinck, chief agent for the Holland Land Company, "bought over 1100 warrants in his own name and later purchased almost as many from other speculators" (Munger 1991).

Early American Settlers - Landowners by Claim

Richard Gilmore was the first European to stake a claim on the banks of Kettle Creek[7]. Though the territory was only opened for settlement six months after the Treaty of Fort Stanwix was signed, Gilmore had already chosen a site near the mouth of the creek on its northern bank (Linn 1883). A warrant dates his claim to July 21, 1794. But Gilmore must have abandoned his claim, since James Caldwell claimed the same site in 1807.

Simeon Pfoutz was the third European landowner in the watershed but the first known to develop his property, establishing his farm in 1813 (Lock Haven Express 1951). From Perry County, he traveled up the West Branch of the Susquehanna River and turned north into Kettle Creek. Finding a wide expanse of rich, alluvial soils at a bend in the stream, he cleared the land and built a log farmhouse. That same year, he returned home to prepare his wife, his daughter, and their possessions for the move north. The following year, together with a man named Paul Shade, the Pfoutz family traveled to Kettle Creek. Here, he and his wife, Susannah, raised nine children and built the first sawmill on Kettle Creek to process the timber on his farm. Pfoutz was a Pennsylvania Dutchman from Perry County and brought with him the Pennsylvania Dutch language and culture. His daughter, Martha, was the first-born and the first bride in the watershed. She married Isaac Summerson. Pfoutz died in 1856 and was buried in a small family cemetery located upstream from the Pfoutz home on north shore of Kettle Creek.

> Those who moved into the watershed brought with them their native landuage and social customs. The watershed's first family, the Pfoutz's, spoke Pennsylvania Dutch, but they were soon joined by English and Irish folk who spoke something close to our modern American English.

When Pfoutz and other early settlers first came to the region, there were no roads. They simply followed Indian paths and made narrow clearings where routes of travel were needed. One route that had already been established was Boone Road, used by Commodore Oliver Hazzard Perry and his fleet.

Roads that were first cleared for packhorse transport were later widened or "improved" for wagons. The Jersey Shore Road was one example. It opened in 1807, accommodating trade and early government travel from Jersey Shore

to Coudersport. The route was funded by land speculators such as John Keating, Thomas Stewardson, and George Vaux (Beebe 1934). Work began in 1811 to widen the road and make it passable by wagon (Welfling 1949). John Cartee was one of the contractors hired to build a five-mile section of the road (Heimel 1992). He established a camp for his construction crew along Little Kettle Creek (now erroneously called Carter Camp). Other contractors included Ezra Hitchcock, Jonathon Edgecomb and Alvin Renells (Beebe 1934). Though few materials were needed, road improvements were nonetheless expensive. Upon completion of the route, a toll was implemented to generate revenue for loan repayment and the road was named the Coudersport and Jersey Shore Turnpike. The 12-cent toll, charged for each five-mile section traveled by a team and its wagon, continued until 1860 (Beebe 1934).

Even with improved transportation routes, population increased slowly in the Northern Tier and it was 1814 before the state government established county commissioners jointly for Potter and Tioga Counties (Welfling 1949). Over the next two decades, Potter County would gradually become independent of adjacent county politics.

Road improvements included not only clearing of the forest but also bridge construction where travelers frequently forded the streams. In 1815, a petition was submitted to build a bridge at Little Kettle Creek for the Coudersport and Jersey Shore Turnpike (Beebe 1934). The petition was approved and in 1816 the bridge was completed as part of the artificial road construction of the turnpike, also known as the Lycoming and Potter County Turnpike.

Improved roads were few and far between, crossing the watershed only in the northern regions. The common routes of early settlers along the lower part of the main stem directed continued development from the south. In 1822,

A monument for Simeon Pfoutz and his wife Susannah, the first permanent settlers on Kettle Creek, is located at the reservoir.

John Calhoun purchased land further upstream and built himself a home. He and his wife, Polly Daugherty, raised five sons and two daughters, several of whom settled close to home, beginning a long-standing Calhoun presence in the lower watershed. The Calhoun cemetery along Kettle Creek just north of Spicewood Run denotes a strong family presence in the Kettle Creek watershed.

In 1823, David Summerson moved from Renovo to the banks of Kettle Creek in present-day Leidy Township (Lock Haven Express: Kettle Creek). This Englishman built a home on the northeastern side of Beaver Dam Run in an area now known as Big Bottom, where the lower campground of Kettle Creek is found[8]. Although he and his wife had ten children, only two survived into adolescence. Summerson's presence in the watershed influenced the local language, changing the predominant language from Pfoutz's Pennsylvania Dutch to modern American English.

Early American settlers were necessarily independent and interdependent. They sustained themselves by clearing forest and cultivating the fertile soils. Initially, they grew Indian corn and buckwheat for themselves and their live-

**Kettle Creek
From European Exploration to 1833**

1807: Jersey Shore Road opened for pack horse transport, later improved and renamed Coudersport Jersey Shore Turnpike

1779: Boone Road cleared to wage war on the Six Nations

1811 - 1812: Carter Camp, a temporary village for contractors and laborers constructing the Coudersport Jersey Shore Turnpike

1827: Settlements of Jacob Hammersley and Archie Stewart

1826: Samuel Kelly, one of Kelly brothers to settle on the ridge between the West Branch of Susquehanna and Kettle Creek, farmed on the western side of the swamp

1822: John Calhoun farmsted

1823: Daniel Summerson farmsted

1813: First permanent resident, Simeon Pfoutz erected a sawmill and a grist mill

1763: Indian Settlement at the mouth of Kettle Creek destroyed by the army

1794: Richard Gilmore stakes first Pennsylvania claim in the watershed

Legend:
- Towns
- Roads Constructed by 1833
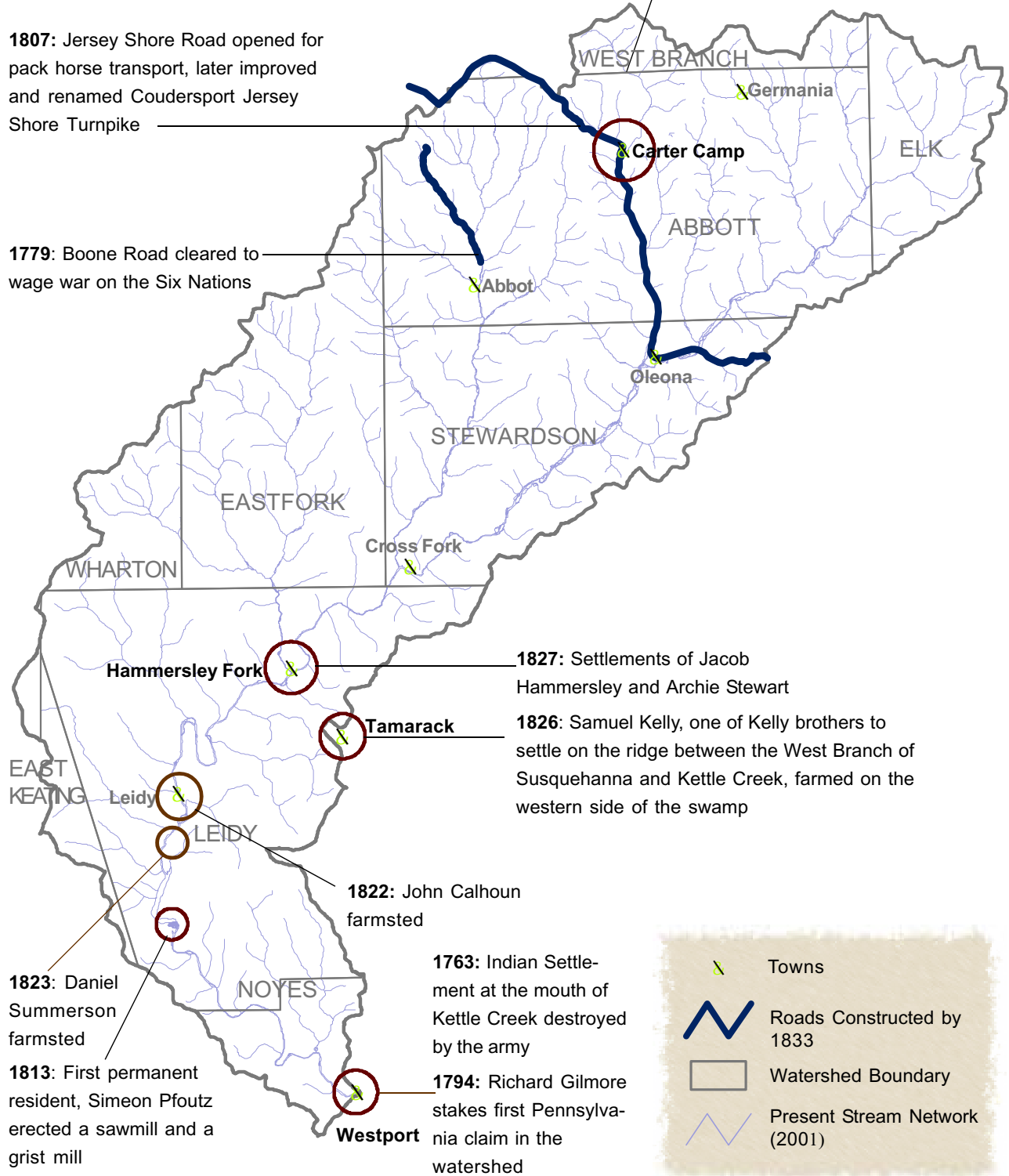- Watershed Boundary
- Present Stream Network (2001)

Figure 2.2 - Kettle Creek: From European exploration to 1833

stock. Few had any cash and instead traded their surplus of rye, corn and potato whiskey, venison, and maple syrup with others on the frontier. Since doctors were few and far between, whiskey was used as a medicinal treatment for many ailments. Cash was available from the state government for efforts to help tame the wilderness of the frontier. Bounties were offered for panthers and wolves and provided cash for purchasing household and agricultural equipment.

> As residents harvested the dense forest, clearing the land for fields, they began to change the ecology of the watershed in subtle ways. This only foreshadowed the more dramatic change that would come with the onset of the lumber industry.

Through their desire to own personal property and to make the land properly productive, Pfoutz, Summerson, and other early settlers, such as John Moore, Thomas Brooks, Samuel Kepler, David McCoy, and Joseph and Marmaduke Summerson established agriculture as the predominant livelihood of the watershed[8]. Beginning with farming in the lower region, agriculture slowly moved north, following the creek and its fertile floodplain soils.

Due to the dense forest, settlers first had to fell and clear trees before they could begin constructing a home or plowing a field. Without a home to clean or children to tend, women contributed in this effort to help establish the family homestead as quickly as possible.

Agriculture and timber harvest went hand in hand as early settlers developed the frontier. While forestry is now practiced on public lands, agriculture continues as a private enterprise.

A few years later in 1827, Jacob Hammersley and Archie Stewart pushed the frontier upstream (Lock Haven Express 1947a). They selected the stream we now know as Hammersley Fork as the site of their homes-Hammersley on the eastern bank and Stewart on the west[9]. For several years, they carried sacks of flour from the river to their homes, traveling the Old Boone Road sixteen miles over the mountains. Tiring of this long journey, the two men built a gristmill on the western bank of the stream. "Old Jake" Hammersley and his wife, Jane Paine, "Granny Hammersley," raised a family of nine. The oldest son, Jacob P. Hammersley, was known for his skillful hunting even as a young boy.

Around the same time, the Kelly brothers, Alexander, Montgomery, George and Samuel, moved into the watershed from Ireland (Lock Haven Express: Kettle Creek). Samuel was the most widely known for his leadership in the Methodist Church that was established in 1831. The Kelly brothers settled on the western side of Tamarack Swamp, the first to establish a home on the uplands of the watershed, specifically between the West Branch and Kettle Creek.

With several families living, farming and milling along the main stem, a formal road was built around Oxbow Bend in 1834. Once completed, this route crossed the stream twenty-one times. A few years later, a road was completed from the West Branch to Cross Fork, then only a small, family settlement, via Paddy's Run and Stewart Hill. State Road, as it came be known, was the primary route for residents to reach southern commercial centers at Renovo and Lock Haven. (Mountain top routes on the western side of the watershed developed more than a decade later. In 1850, Butler Road was constructed along the ridge of the western watershed boundary from Westport to the headwaters of Sugar Camp Run and downstream to Kettle Creek (Lock Haven Express 1947i).

Miles Thompson moved into the watershed sometime after 1827 as well. He was named sheriff of Potter County-only the second to hold this position and the first to carry out a public hanging in the county in 1839 (Beebe 1932, Heimel 1992). He established the first known sawmill in the midsection of the watershed at Cross Fork in 1845 (Leeson 1890).

Frances French pressed the frontier of American settlement even further upstream when he settled at the confluence of Kettle and Little Kettle Creeks, what we know now as Oleona, in 1843 (Beebe 1932). Henry Andresen later bought his property in the mid 1850s, including the first hotel opened in the watershed. The building was merely a log house and was located in present day Oleona (Welfling 1952). Travelers were primarily mail carriers who delivered to rural post offices on a weekly basis.

Early Mills
Early farmers constructed sawmills to process the wood cleared for agricultural fields[10]. Later mills were built as commercial operations, first owned by individuals and later owned by large corporations. The white pine was harvested

first, from the time of European exploration to the mid-1880s, and used for ship spars and large construction beams. Pitch and shortleaf pine were also common. The hemlock was removed around the same time and at first cut only for its bark, whose tannins were used in leather curing. Later, the hemlock was valued for its inner wood as well and used for wooden nails.

Miles Thompson's mill was the first of many constructed in the 1840s (Lock Haven Express 1947a). Three years earlier, in 1842, James Brook owned a small sawmill a short distance below Bearfield Run. Jacob Baugham and John L. Proctor also operated a sawmill, starting in 1848 or 1849. Their mill was profitable and after several years, they sold it along with several tracts of valuable timberland to Munson, Corbet & Company with some financial support from a man named Rumsey. This company built an-
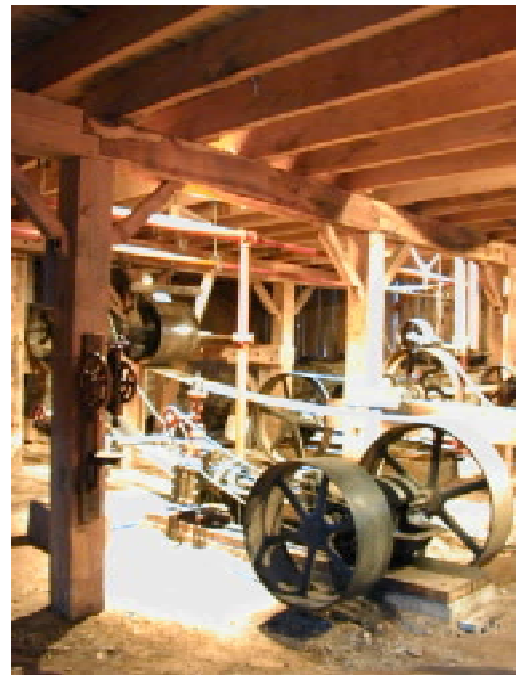
Lumber mills, like this one, reconstructed at the Pennsylvania Lumber Museum, were built and operated across the watershed from the 1840s to the 1910s.

other sawmill about one mile below the Potter County line, which was later enlarged and converted into a gang mill. It was highly productive for a number of years, but eventually burned down. Edgar Munson was later known for clearing rocks from the stream to improve log rafting on the stream (Lock Haven Express). Sometime between 1840 and 1850, Michael Stout, his son, Franklin Stout, and Franklin Summerson purchased several tracts of timber on Hevner's Run and built a log gristmill and a sawmill about 825 feet (251 m) above the mouth of the stream.

Through the efforts of residents, the lumber industry continued to gain steady ground during the 1850s. By 1852, several small sawmills were run by Kettle Creek's waterpower. Hiram Meriman operated a water mill at Cross Fork. English gate mills were introduced and used a vertical sawing motion to cut 1000 board feet of lumber each day, a significant improvement over earlier methods. One of the first of these types was located at the mouth of Bearfield Run. Gang mills were also popular; Nathan Tuttle operated one on Hammersley Fork and the Goodman's owned another at Elm Camp.

But residents were not the only ones at work pursuing the local timber. Land speculators cashed in as lumber companies bought up large forested tracts, passing land ownership from one non-resident to another. As company holdings throughout the East were cleared, the Goodyear, Lackawanna, and Emporium Lumber companies moved into the region.

Political Organization for Population and Tax Assessments

Descriptions of the landscape during the 1840s can be found in documents related to the political formation of townships during this time. The lower portion of the watershed was described as having a very uneven surface, streams branching east and west, with deep hollows

While the lower portion of the watershed was generally unsuitable for farming, the upper portion was developed for its gentle slopes and fertile soils.

and narrow ridges, and few tracts suitable for farming. Stewardson Township was the first municipality to be established in 1844. Leidy Township was organized in 1847 (Linn 1883), Abbot Township in 1851 (Leeson 1890). Township lines were drawn and redrawn as new municipalties were organized.

As the region was further organized into county and township governments, assessments and surveys were made to describe the value and patterns of settlement in each municipality. These descriptions were early forms of census and recorded family names and property. The Stewardson Township Assessment of 1845, prepared by John Wolfe, listed the names English, Hall, Hazen, Herrod, Jekins, Pfoutz, Roundville, Stewardson, Thomas and Yoh in its record.

Just a few years later, tax records for Stewardson Township in 1849 indicate significant property improvement by several landowners (Heimel 1992). Two lumber mills were in operation - one owned and operated by Miles Thompson in Cross Fork and one by William Vaux and George Stewardson located in the upper parts of Kettle Creek near the home of Frances French. The Dodge brothers who operated a farm owned 14 oxen. And Ezra Pritchard, who

lived near the mouth of Long Run, owned a patent leverwatch.

The first surveys of Abbot Township, not yet officially established, indicate that several families had settled in the northern region of the watershed. Thomas Abbot, Daniel Conway, George Wran, Peter Yochum, and Adam Yoh had all claimed or purchased land and built small homes. Official assessments of Abbot Township were completed in 1852, one year after its organization, and listed many more residents, including many Norwegian colonists.

Expansion of Infrastructure and Public Service for Rural Communities

Post offices were, and still are, few and far between. The first post office in the watershed was established at Westport in 1847. A. O. Caldwell was appointed postmaster and the office was named Kettle Creek. Residents from the mouth of Kettle Creek to at least the county line received mail at this office until another was instituted in Carter Camp in 1851 (Welfling 1952). Hubbard Starkweather served as postmaster here until the office closed in 1859. At some point, the Kettle Creek post office closed but a second was opened, again in Westport, in 1856. At that time, Sol Smith delivered mail twice a week from Lock Haven. As commercial centers developed at Cross Fork, Hammersley Village, and Bitumen, these towns also received regular mail delivery.

Settlements along the streams required connections with centers of commerce at Coudersport and Renovo. Through the development of roads, the headwaters of Kettle Creek were made more accessible to residents and regional travelers.

In 1852, the first bridge to span Kettle Creek was built at Westport. This bridge and other road improvements were integrated with the state's plan for expanding mail service. Postal delivery in rural Pennsylvania was quite limited up until this time. Mail pieces were held at the closest post office (still many miles away) for residents to pick-up while in town. Post offices and delivery schedules were established by the state based on the population of private residents and businesses. It was, in fact, an act of the Pennsylvania legislature in 1852 that enabled a future mail route from Westport to Cross Fork, since several road improvements and bridges were needed for the new route. The improved road was named Charter Road and opened later that year.

Other roads were cleared or constructed by private landowners. In 1856 Truman Goodman cleared a passage through Road Hollow on which he hauled logs to his sawmill. (In 1925, the road and its extension to the Potter County line became property of the state and were relocated to Five-mile camp, eliminating two particularly sharp turns. In 1936 after the March 18th flood (the largest on record), the road was again relocated, this time above the new high water mark of the stream.) The first railroad bridge to span the stream at Westport was built in 1859 just a few yards from the roadway crossing. Both bridges were swept away by the St. Patrick's Day flood of 1865.

Road, rail, and postal improvements during the 1850s were completed to support the rapidly expanding rural population. The mountains of central Pennsylvania attracted new residents for several reasons. The rural landscape provided an alternative to an ever more regimented society. It offered land ownership and independence to those who found it difficult to purchase property in the cities. The mountains compelled a sense of adventure in surviving and taming the wilderness. Others felt it provided a means to live peaceably with nature.

The Kettle Creek Landscape Offers Freedom and Resources for Immigrant Communities

The 1850s was a period planned for growth in the watershed - first by Norwegians and later by Germans. They envisioned the land as a place of freedom and opportunity, their vision enhanced by rich descriptions of the landscape and resources awaiting discovery. Ole Bull, a Norwegian musician envisioned an opportunity for his countrymen to escape the cultural oppression of Swedish rule; William Radde, an aspiring German developer, sought to create a cultural center, where German immigrants could be proud of their agricultural productivity rather than ashamed of their urban unemployment.

The Norwegian Colony

Ole Bull, a world-renown Norwegian violinist, traveled throughout the United States, playing in major cities and touring the American landscape. In the late 1840s and early 1850s, he traveled through Pennsylvania and was impressed by the upper reaches of the Susquehanna River Basin, as they reminded him of his homeland. Well aware of the political scene in Scandinavia, where Danish oppression had been defeated, only to be replaced by Swedish domination, Bull hoped to liberate his countrymen in the freedom offered by the United States. His interest in the upper reaches of the Susquehanna led him to John F. Cowan, a prominent businessman and social figure of Williamsport (McKnight 1905). A land transaction was arranged and Bull began to make plans to establish his new community. He purchased 11 warrants owned by Cowan for the price of $10,388.00 for the development of a Norwegian colony along Kettle Creek. The warrants lay in two blocks-the northern block along Little Kettle Creek and the southern block along the main stem (Welfling 1952). Within that purchase were three parcels, totaling 658 of the most tillable acres, reserved by the Stewardson
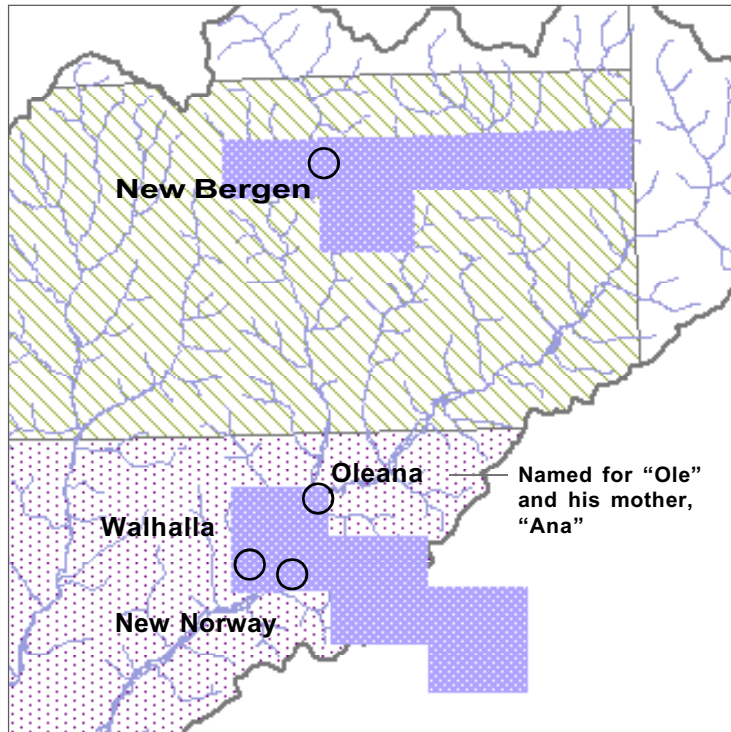

Figure 2.3 - Ole Bull planned four villages within the eleven warrants that he purchased in Abbot and Stewardson townships.

family adjacent to the stream and a small portion of the Coudersport and Jersey Shore Turnpike, the only improved road in the upper watershed (Myers 1983).

From descriptions of the landscape (Bull may not have seen the sites he would purchase), Bull envisioned an agricultural colony with village centers surrounded by fields and pastures. He planned four small villages: New Bergen,

Apparent similarities between Kettle Creek's headwaters and the Norwegian landscape led Ole Bull to imagine that his fellow countrymen could find a prosperous life in Pennsylvania.

**Kettle Creek 1834 - 1853
Early Political Organization**

1851: Abbot Township established

1852: Lumber men from Maine and Canada introduced splash dams, log slides and swivel gates to increase logging efficiency

WEST BRANCH

Germania

Carter Camp

ELK

ABBOTT

Abbot

Oleona

1852: Ole Bull deed purchase

STEWARDSON

1844: Stewardson Township established

EASTFORK

Cross Fork

1842: Road built up Paddy's Run, down Stewart Hill to Cross Fork

WHARTON

Hammersley Fork

1853:John Gartsee established a village at the confluence of Trout Run and Kettle Creek.

Tamarack

Leidy

EAST KEATING

LEIDY

1847: Leidy Township established

1834: The watershed got its third Road around the Oxbow Bend.

NOYES

Westport

1847: First Post Office

1852: First bridge spanned the creek at Westport

1850: Butler Road built from Westport over Savage Mountain and down Sugar Camp Run

Town

Ole Bull Purchase 1852 and sale in 1853

Mills existing in1852 (Owner operator)

Roads used between 1834-1850

Present stream network (2001)
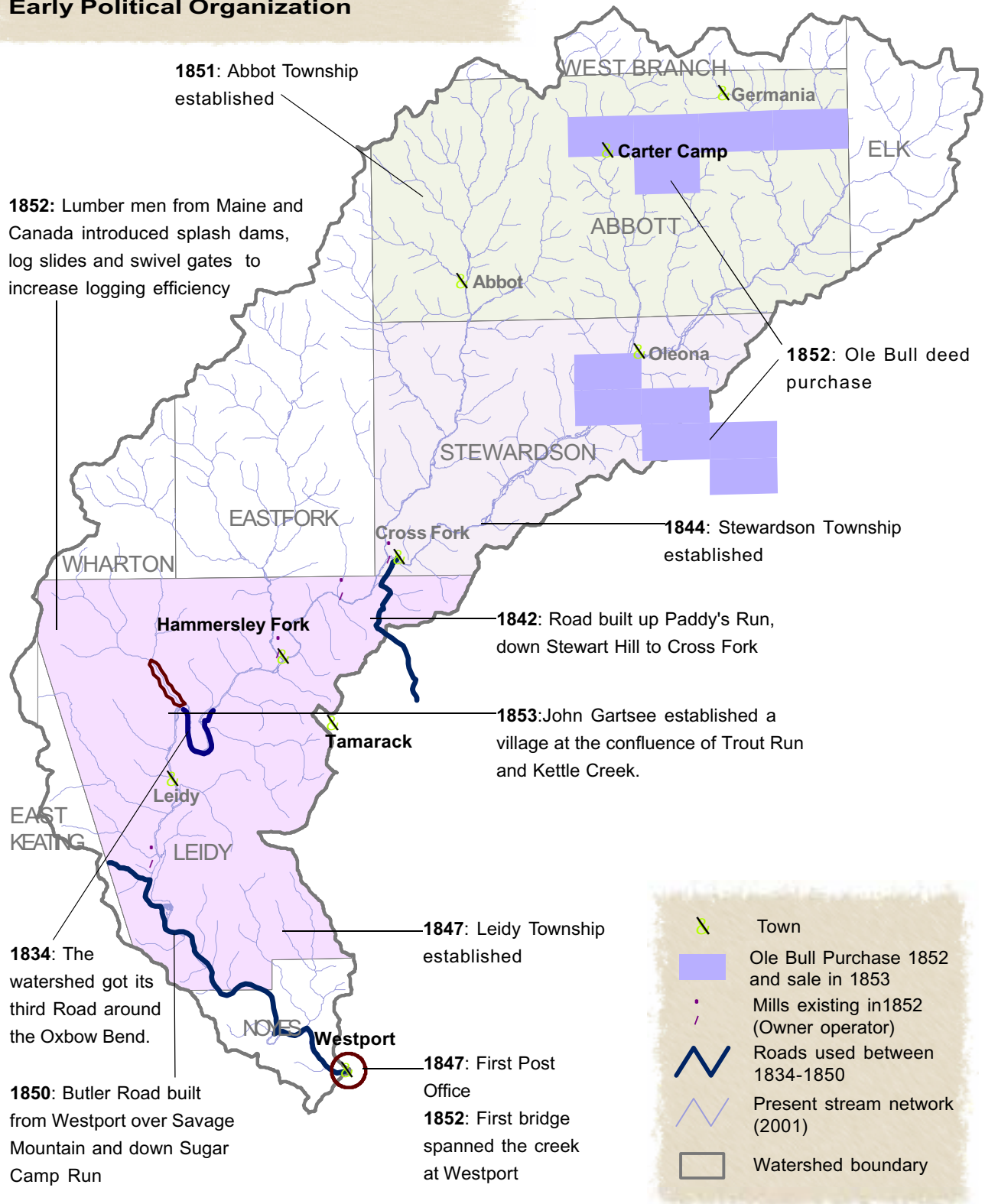
Watershed boundary

Figure 2.4 - Kettle Creek 1834 - 1853, Early Political Organization

Oleana, named for himself and his mother (and later known as Oleona), New Norway, and Walhalla (or Valhalla). With plans in mind, Bull purchased the properties and set about the promotion of his philanthropic venture.

In September of 1852, Bull traveled to the ports of New York City to gather a small group of men to begin construction of the new colony. He persuaded approximately 30 Norsemen, many of whom were skilled craftsmen, not to head for the Midwest but to help settle a new community in Pennsylvania (Heimel 1992). Bull paid for their travel, first by train to Wellsville, then by stage to Coudersport-the first of many subsidies for the colony's development. Their arrival in Coudersport drew the attention of local newspapers and was widely reported. Most of those who had already settled here did so quietly and individually. No one had taken such a corporate or development interest in the Northern region, so this was news.

From Coudersport, the group traveled on foot into the upper heart of watershed. They immediately began building homes for the future colonists and a school for the children. Merely 10 days later, Bull returned to New York to greet the first of those who had been lured across the ocean by stories of gold and mineral wealth, rich agricultural productivity, bountiful springs, and cheap, abundant land. Sailing upon the Incognito, over one hundred men, women, and children had dreamed of endless fields of oats, hay and corn, pastures of sheep and cattle, and profits to be made from sales in the big eastern markets (Heimel 1992).

Those first settlers were likely amazed by their first sights of the landscape. Their expectations of a farmable landscape with simply a few trees to clear were quickly replaced by the reality of steep, forested hillsides among narrow ridges and valleys. But their loyalty to Bull and his enthusiasm (and financial support) for newfound opportunities in America were not to be shaken

and they set out to establish a new home. Bull paid the settlers for their labor ($.50 per day) to clear the land and provided food and shelter until they were self-sufficient (Heimel 1992). Colonists ate a simple diet of cow cabbage, nettles, leeks, fish and game and made clothes by hand when materials were available. Bull was not an on-site community developer, rather he appointed a staff of managers to oversee the development of the colony while he traveled the States, giving concerts whose proceeds benefited the colonists in wages and supplies.

Over the next several months, the colony grew at a modest pace. Colonists worked to clear the land of the dense forest by "grubbing," digging out the trees and roots by hand. Progress was slow but thorough - on the dense hillsides, two men could clear an acre per year. By January of 1853, construction of a sawmill, two watermills, a schoolhouse and several roads had commenced (Heimel 1992). As long as Bull continued to pay their wages, colonists were willing to work, though efforts dwindled as time wore on. Morale was also challenged by the winter of 1852 to 1853, when long periods of below zero temperatures discouraged work outdoors (Heimel 1992). But spring did come to the region and morale improved as the colony continued to grow and attention was directed toward Independence Day celebration.

Reports of the grand celebration planned at the Norwegian colony made newspaper headlines in New York City. They claimed that huge orders for lamps and wine kegs had been placed and that President Franklin Pierce and his Cabinet had been invited. Interestingly, there were few records of the actual celebration in comparison to those of its planning. One account suggests that more than 800 were in attendance, while another claims less than 300 participated. To date, there is no confirmation of President Pierce's attendance or that of Cassius Clay, a southern slave reformer who was also invited to the event (Welfling 1952).

Ole Bull's American home was to overlook the valley from this mountain top. All that remains of Ole Bull's "castle" today is its foundation and a collapsing stone wall on the mountain face.

Among other buildings constructed for the colony, Bull planned to build a home for himself at Walhalla, the "Royal Hall" or mythical resting place of slain heroes' souls. The building was portrayed as a castle in reports traveling back to Norway, since it was sited atop a steep cliff overlooking Kettle Creek. Bull reinforced this notion with the construction of a stonewall just below the house, giving it a regal appearance. The building itself, at least in as far as it was completed, was modest: a two story frame cottage 20' x 36', with hardwood floors, and porches skirting the sides. The interior, according to eyewitnesses, was much more lavish, decorated with imported fabrics and native hardwood panels.

Although the deed transaction had listed three reservations, Bull had never paid attention to their location until he read the deed in full. On May 25, 1853, he wrote to Cowan from Philadelphia, asking for an explanation of these holdings (Welfling 1952). Cowan replied that these parcels were indeed not part of the transaction and were, in fact, still owned by the Stewardson family.

Disappointed that all of his efforts and those of his colonists had been in error, Bull deeded back the properties to Cowan in mid September of 1853 (Welfling 1952). The settlers soon learned that Bull had never owned the land they had worked so hard to make their new home and that the true owners had little interest in supporting the colony (Heimel 1992). Colonists were offered the option of purchasing their plots, but few had the money to do so. Instead, most packed their belongings and returned to Wellsville to follow routes west to Iowa, Minnesota, Michigan, and Wisconsin or east to the port that would return them to Norway[11]. Bull continued to tour the concert halls of the East, sending profits when he could, but ultimately returned to Norway in 1860.

> Norwegian settlers worked diligently to construct their new villages. But their timing and methods proved inadequate to establish a sustainable community before the challenges of topography and a particularly harsh winter took their toll on morale.

Henry Andresen was one of the few who were able to purchase land from Cowan. As Bull's personal secretary, he was well paid and able to afford the opportunity. He bought much of present-day Oleona and became a central figure-hotel proprietor, lumberman, merchant, grist miller, and postmaster-in the upper watershed (Heimel 1992).

Dr. Edward Joerg was another who purchased land from Cowan. Joerg, a physician, had been

lured from Missouri to the region by Bull as a physician to oversee the management of a sanitarium (Welfling 1952). Bull's description led him to believe that the sanitarium was ready for operations and merely needed professional staffing. What he found upon arrival was a small log house with the barest of supplies. After the colony disbanded, Joerg purchased the 990-acre warrant, containing New Norway and Walhalla, and constructed a two story stone house from the remains of Bull's castle.

The Olson family also stayed in Kettle Creek after the break up of the colony. Martin Olson operated a blacksmith shop in 1853. His sons, Bert and Henry, operated a whetstone factory at Indian Run off Little Kettle. The whetstones they produced were twelve inches long and well known in the region. The sons eventually sold the operation to a man named Jordan and moved to New Zealand.

By 1882, thirty years after Ole Bull's purchase, several of the original buildings were still part of the community. A few homes, a hotel and a store still comprised Oleona and the post office at Carter Camp had become a multipurpose community hall. Dr. Joerg's home was still intact, as was the foundation of Bull's home. The Oleona cemetery had been established and would come to include many of the remaining Norwegian settlers.

Several of the Norwegians who remained in the watershed after the colony disbanded are buried in the Oleona cemetery.

Germania

The dust had barely settled on the upper watershed when two Germans began planning for another European community. Dr. Charles Meine and William Radde sought to establish not just a village but a full-fledged city for German immigrants under the freedom of the American flag.

The original plans for Germania were modern for their time, including parks and fountains, industrial centers, and cultural amenities in the initial development proposal. However, they failed to consider how the ideas expressed on a sheet of paper would be constructed on the mountainous terrain.

Radde worked in New York as a publisher (Heimel 1992). News of the failed Norwegian colony passed through the city as colonists returned to Norway and Radde took advantage of the opportunity to acquire large tracts of land inexpensively. He bought out 15 of the remaining colonists to acquire east of the Norwegian colony and established the town of Germania. As part of the Pennsylvania Farm and Land Association, he planned to develop the town into a small urban center of factories, fountains, parks, and theatres, surrounded by agriculture. He envisioned each landowner having a downtown lot on which to build a home and a farmland plot for agriculture. He had a similar vision for a new city of Cross Fork, to be located at Oleona, though this plan never developed[12].

Radde sought industrious workers to help make his vision a reality. He sent descriptions of the new community home to Germany and to German neighborhoods of eastern American cities.

Kettle Creek 1854-1885 Rural Community Development

1850s: William Radde and Charles Maine led Germania's rapid development from the mid-1850s to the 1870s.
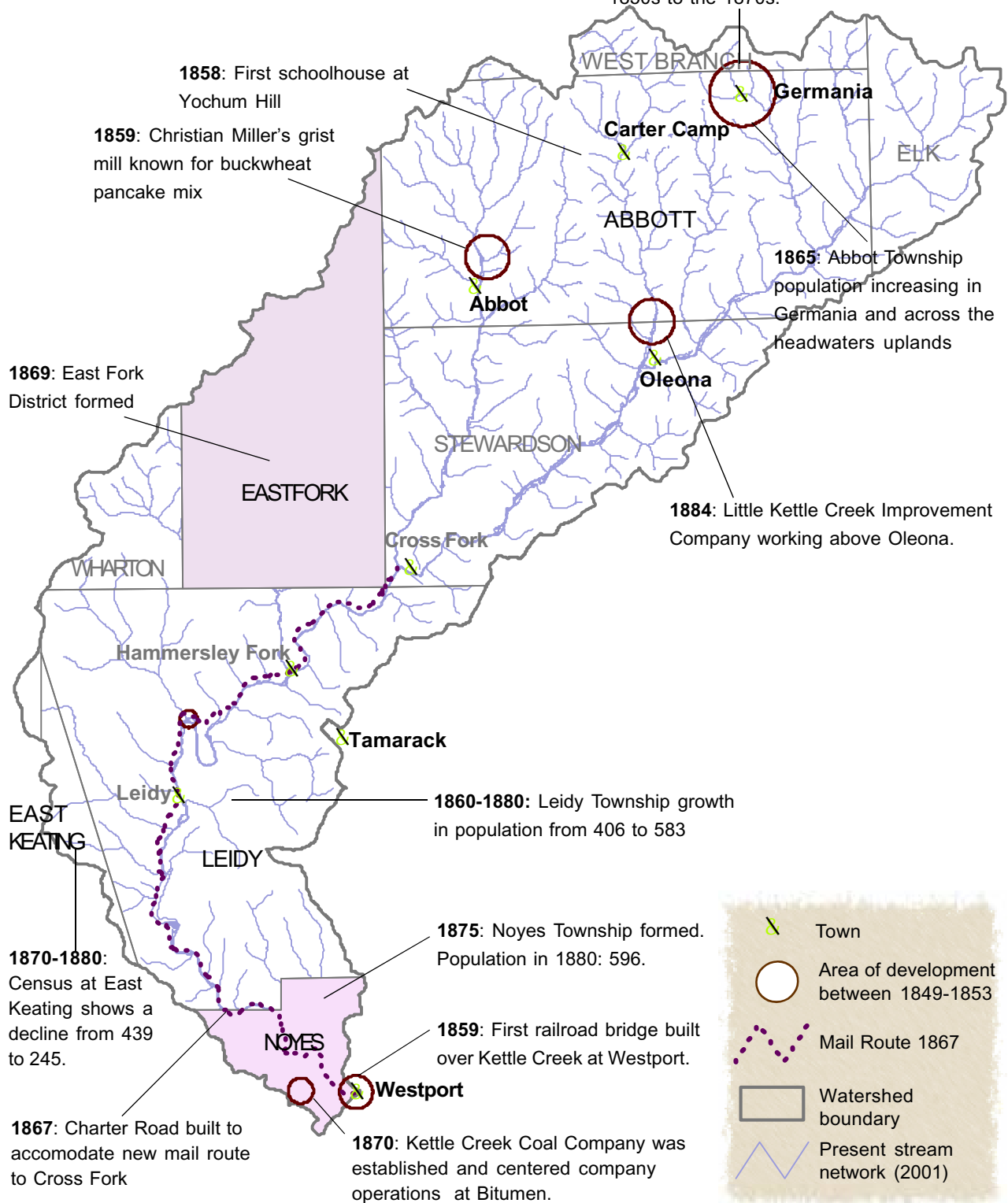
1858: First schoolhouse at Yochum Hill

1859: Christian Miller's grist mill known for buckwheat pancake mix

WEST BRANCH

Germania

Carter Camp

ELK

ABBOTT

1865: Abbot Township population increasing in Germania and across the headwaters uplands

Abbot

Oleona

1869: East Fork District formed

EASTFORK

STEWARDSON

1884: Little Kettle Creek Improvement Company working above Oleona.

WHARTON

Cross Fork

Hammersley Fork

Tamarack

Leidy

1860-1880: Leidy Township growth in population from 406 to 583

EAST KEATING

LEIDY

1875: Noyes Township formed. Population in 1880: 596.

1870-1880: Census at East Keating shows a decline from 439 to 245.

NOYES

1859: First railroad bridge built over Kettle Creek at Westport.

Westport

1867: Charter Road built to accomodate new mail route to Cross Fork

1870: Kettle Creek Coal Company was established and centered company operations at Bitumen.

Town

Area of development between 1849-1853

Mail Route 1867

Watershed boundary

Present stream network (2001)

Figure 2.5 - Kettle Creek 1854-1885 Rural Community Development

He claimed that it was better to be a poor, rural farmer than to be an unemployed urban worker.

In October 1855, Dr. Charles Meine moved to Germania. He represented the Pennsylvania Farm and land Association and oversaw the development of Germania for the state (Leeson 1890). He quickly built a log home in which to spend the winter and the next spring set about clearing land and building a sawmill, store, and several dwellings for future residents.

When the German settlers arrived, they were disappointed to find that the vivid descriptions of thriving agriculture that brought them to Germania were exaggerations. The plans for Germania had been beautiful on paper, however they were impossible to carry out on the steep topography of the Kettle Creek uplands. The plans were therefore scaled back to the bare necessities of a few streets and stores and adapted to the site.

The first stores opened as soon as buildings were constructed and stock was available. Fred T. Sahr and Christian Peterson opened the first store in Germania in the mid 1850s (Leeson 1890). The German community of course desired a steady supply of beer so Joseph Schwarzenbach opened a small brewery in 1858 (Leeson 1890). His business grew steadily over more than forty years and at the turn of the century, and he left Germania for Galeton where the railway could help distribute his product.

In 1859, Christian Miller opened a waterwheel-operated gristmill nearby to process grain for local farmers. Germania Roller Mills, owned by Frank Cizek and located between Germania and Carter Camp, was regionally renown for its pancake mix. The gristmill business was so profitable that when Cizek's mill was destroyed by fire, he replaced it with a larger mill in Germania to meet the local demand. Flour manufacture continued under Frank Cizek, Jr. until the beginning of the WWII when the Swiss silk used in

the sifting process was unavailable and deer populations were severely damaging buckwheat crops. The mill continued to operate as a feed mill and farm supply store until 1976.

As wild fires were problematic in the region, Radde purchased a water pumper to protect his colony and residents. The thick forest yielded plenty of flammable, organic material that ignited easily when lightning touched the ground. Fires spread quickly through the forest and fields and often consumed entire villages as the wooden structures passed flames to adjacent buildings. Germania was the first community in Potter County to have fire protection.

The German settlers brought their Lutheran heritage with them. In 1859, as part of the July 4th celebration, the community placed the corner stone in the recently completed foundation of their new church.

By 1860, most of the households (51 of 75) in Abbot Township were German. Others remained from the Norwegian colony or had moved from other parts of the country. Only a few were native born Pennsylvanians. Many lived in and around Germania, but there were other settlements at Carter Camp and Yochum Hill as well as scattered homes along the headwaters streams. Most were farmers, raising cattle and buckwheat to sustain their existence, though the merchant market was steadily growing. By 1868, Germania was home to five locally-ownedbusinesses.

Children of the frontier were usually educated at home between chores on the family farm. In 1858 the first school was organized at Yochum Hill and met at the home of the teacher, Daniel Conway. By 1863, there were enough students to support a two-room schoolhouse in
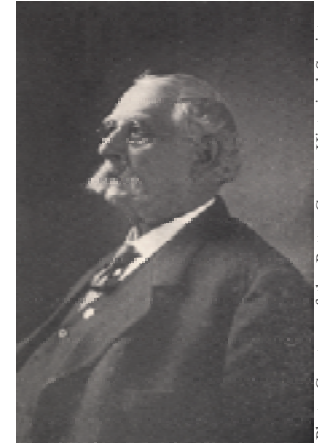
Dr. Charles Meine oversaw the development of Germania beginning in 1855

A FEW CRAFTSMEN OF GERMANIA

Jacob von Allmen - harness and horse supplies

Joseph Breunig - blacksmith

Mr. Hensel - tinsmith

John H Hug - undertaker and funeral director

C.F. Martin - crafter of musical instruments

Lauir F Meissner - merchant general and
                   agricultural tools

Frank Milde - merchant of general supplies
              and furniture

Paul Milde - cabinetmaker and spinning wheel
             crafter

Casper Neubauer and later John Bodler - shoe
             salesmen

William Schaar and George Shoemaker -
             blacksmith, wagonmaker

Germania. Over the course of time, the school became widely known for its excellent liberal curriculum. By 1880, there were five schools in Abbot Township educating 160 students at a cost of 90 cents per month per student. (At the peak of the lumbering industry, Abbot would host seven schools and as many teachers.)

For these families new to the frontier, social gatherings were particularly important part of community life. Around 1870, a social hall was added to the Sandbach Hotel and named the Schwarzenbach Hall. Local residents would gather here to dance and to take in the shows of traveling performers. As the community grew, additional facilities were needed and within a few years, Schwab Hall was constructed. By 1876, the local economy was comprised of two hotels, five retail stores, two meat markets, two shoe shops, a barber, a harness shop, two breweries and two blacksmiths.

While the Germans were a predominantly Protestant community, lumbering introduced other religions to the region. By the early 1870s, there were several Catholic families living in the watershed, mostly around Germania. At first, residents shared church facilities with other denominations and hosted ministers who traveled throughout the region. But in the early 1870s, a

Several structures in Germania have historic significance. The Germania Hotel hosted P. T. Barnum and Ole Bull and the Germania Store across the street has been in business since the early 1900s.

site was selected and construction began on a Catholic church (Lloyd 1921).

A third brewer moved to Germania in 1886. John Schmid found a welcome audience for his lager in this hardworking German settlement (Leeson 1890). When the county government proposed a prohibition amendment in 1889, Abbot Township overwhelmingly rejected the notion. Prohibition did limit the sale of alcohol in the upper watershed, but the Germans continued to enjoy their beer. Regulation prohibited the sale of beer in larger than gallon quantities but allowed beer service at restaurants, bars, and social clubs.

In addition to agriculture, many small businesses employed local residents and produced items for local and distant markets. As a center of agricultural commerce, several "smiths" and "makers" were located at Germania. Clothing, cabinets, food and farm supplies could all be found within a short walk downtown.

Businesses were also located in the more rural parts of the watershed. Hubbard Starkweather, postmaster as Carter Camp, found a sandstone ridge between Carter Camp and Kettle Creek that he thought would supply good material for whetstones. After purchasing the land, clearing a plot and building a house, he cutting and refining whetstones. In an effort to spark his new business, Starkweather produced several samples and distributed them to local residents. But the sandstones proved to be too soft for the metal implements the farmers needed to sharpen and Starkweather abandoned his operation. The clearing once provided a great campsite, as noted in several hiking guides.

In 1894, Dr. Meine helped organize the Schuetzen Verien, a fraternal club. Unsurprisingly, membership rose from 4 to 125 in its first four years. The organization constructed a clubhouse including a bowling alley, a shooting range, a ballroom, and a dining room and hosted regular local entertainment.

Germania grew steadily as a result of high grain and dairy production in the headwaters. In 1889, the Germania Land Company constructed a gristmill just east of town, possibly the largest gristmill in the watershed. Dairy farming was so productive that farmers found it increasingly difficult to sell their milk and sought ways to profit from the surplus. Around the turn of the century, two cheese factories were opened, one by Christian Schumaker in Germania, and the other, the Carter Camp Cheese Company, located near the Carter Camp Grange. The cheese business proved profitable, particularly during the lumbering era. But by 1916, most of the lumberjacks and their families had left the region and the factories were forced to close.

Just after the turn of the 20th century, John Cizek opened a heading factory in Germania. He realized that the abundant hardwoods that others were cutting for lumber could also be made into barrels heads. His factory employed 20 to 30 men involved in the cutting of timber for construction of his mill, the cutting and hauling of maple and beech logs, and the manufacturing various-sized barrel heads. His brother, Frank, operated a steam-powered traction engine to load logs onto the railroad cars. Once loaded, they were hauled to Germania where they were transferred to boxcars for shipment to eastern manufacturers.

As automobiles and gas-powered machinery became common throughout the Northern Tier, the town of Germania became a small hub of distribution, particularly for local farmers. During the 1920s and 1930s, there were as many as five pumps in town: David Gutgsell's woodworking shop, Herman Braun's store, the Germania Hotel, the Germania store, and Harold Beacker's garage.

Community Growth in the Lower Valley

While growth in the agricultural headwaters revolved around Germania, social and commercial life in the lower portion of the watershed centered on the town of Leidy. Theodore Leonard opened the first store in Leidy Township in 1856. After conducting the store for two years, he discontinued the business and left the region. Around 1860 Hamilton Fish engaged in a mercantile business. In 1862 Edgar Munson and Truxon Goodman became proprietors of the store, from which they managed a profit for eight or nine years.

The first schoolhouse erected in Leidy Township was built on the eastern bank of the creek. A man named Grimes was the first teacher employed. The next school was located on the western bank opposite where Boone road reached the stream.

The first mills were located along the main stem, where farms were located, but within a few years, mills were also constructed along the tributaries. By 1856, five saw mills were operating at Tamarack. Four other mills were also operating in the lower portion of the watershed. The mill at Bearfield Run was still running strong. A gang mill had been built below Trout Run. And two sawmills, one approximately 5 miles up Trout Run and another near Oxbow Bend, had been constructed. Meanwhile upstream, Thomas Bailey had constructed a sawmill near the mouth of Short Run, beginning its 30-year operation.

Agriculture made significant advances after the Civil War. Farmers of the lower watershed bought the first machines to improve the crop production. Hamilton Fish bought a reaper and a corn planter, and Dan Calhoun and David Summerson purchased threshing machines (Lock Haven Express 1947c). Productivity increased and easily supplied local residents and lumber camps with fresh crops. Apple harvests produced great surpluses that were shipped to New York markets. Apple season kept children busy peeling and drying the fruits for storage and sale. Livestock was a significant part of historic agriculture as well. During the 1860s 1400 cattle and 3500 sheep were pastured on the bottomlands and lower hillsides of the valley.

Railroads were slow to reach the watershed. There were few people to reach, few who could afford the fare, and the topography made railroad construction expensive. Only the profit to be made by getting lumber and hemlock bark to regional cities would truly make railroads worth the investment. In 1859, a railroad bridge was built across Kettle Creek at Westport. The railroad now continued along the northern bank of the West Branch toward lines delivering lumber from the mill at Austin.

Another village community was growing in Trout Run during the 1870s and 1880s. A church and cemetery had been established by 1876. Elizabeth Fish, wife of Hamilton, was the first buried here (Lock Haven Express: Kettle Creek). In 1883, John Gartsee established a hotel and a post office at the mouth of Trout Run (Lock Haven Express: Kettle Creek). Other residents saw opportunities to profit from the lumber companies working throughout the western reaches of the watershed and opened two general stores here as well, including one owned and operated by Clement Mills and Company. One mile above Trout Run, on the eastern side of the creek was a sawmill with its gangs of saw blades. Over the next forty years, the village at Trout Run would grow to include a general store, a wagon and blacksmith shop, a church, a shoe shop and a number of private dwellings.

Kettle Creek 1885 -1915 Commercial Logging Era

1886: A third brewer opened in Germania.
1894: The Schuetzen Verien was organized.

1900: The Goodyear Lumber Company had acquired almost all the uncut hemlock in Potter County.

1902-1910: Goodyears lumbered through all but one tract of the Hammersley region. Their dense railroad network connected the Bell and Nelson Branches with Hammersley Fork and Kettle Creek.

1902: Hammersley village, initiated by John Gartsee, was a supply hub for dispersed logging camps.

1902: Excess milk supply drove cheese factories in Carter Camp and Germania until lumbering left the region.

1893-1911: Business and social life boomed in Cross Fork as a result of the Lackawanna Lumber Company. Raillines delivered freshly cut timber by day and hemlock bark by night.

1907: Two gas wells drilled 10 miles from Hammersley Fork Creek. The gas was used for light, heat and fuel

1891: Road built from Tamarack to Cross Fork

1893: Daily mail delivery from Westport to Cross Fork

1908-1915: Sam Heisey shipped bark and lumber from Westport.

Carter Camp

Germania

ABBOT

Abbot

ABBOT

Oleona

STEWARDSON

EAST FORK

Cross Fork

WHARTON

Hammersley Fork

LEIDY

EAST KEATING

Leidy

NOYES

Westport

Legend

🜨	Town
••••	Road
#	Gas Producing Wells
∧∧	Railroad
▢	Area of development
▫	Hammersley Fork Timber cut
•••	Mail Route
⁝	Saw mills
▨	Sproul State Forest
▨	Tioga State Forest
▢	Watershed boundary
	Present Stream Network (2001)

Figure 2.6 - Kettle Creek 1885 -1915, Commercial Logging Era

Tales and Legends in Kettle Creek

While agriculture and lumbering along Kettle Creek met most of life's necessities, people supplemented their diet and income with products from the natural environment (Lock Haven Express 1947c). The wildlife populations were abundant as a result of forest management by the Native Americans. The hooves of slaughtered animals were sold to glue factories. Wild pigeons were shot, barreled and shipped to eastern markets. Wild ginseng was gathered from the mountains and sold in local stores for 25 cents per pound.

Though hunting was a serious activity, tales of "the one that got away" or "the accidental trophy" were often shared in a lighter tone[13]. One such story is that of Ole Snyder, the firstborn child of the Ole Bull colony. While hunting with friends, Snyder strayed away from the group to pursue his own prize. Stumbling into another hunter's territory, he accidentally shot a stool pigeon. After a long apology, Snyder paid the owner for the damages and bought a few pigeons, for a generous payment, to imply his good aim. Before returning to his hunting troupe, he shot a few bullets into the birds to make his catch convincing.

Another story relates the density of deer in the late 1800s. At that time, deer seemed particularly abundant, because logging operations created forest openings where they could feed generously on tender new growth. Other areas, such as Impson Hollow, were known as deer runways, since they led to fresh water supplies. The story tells of Martin Joerg, who took aim at a deer, fired, and was disappointed to see it run from view. He was happily surprised, however, to see another deer a bit farther in the distance collapse from his shot. It seems hunting was quite easy in those days.

Another tale is that of the Klukey Family Deer Hunt. Confined to crutches by a broken leg, Charley Klukey managed to harvest deer near his property. With the help of his daughter to carry his rifle to his post, his wife to release the dog, and the dog to herd the deer within range, the family was able to have fresh meat throughout the summer.

One final story stars the deer that stole Ezra Pritchard's prize Winchester. Pritchard was quite proud of his rifle, taking great pains to clean and polish its parts. While hunting one day, Pritchard shot and the deer fell. But as Pritchard approached the body, the deer got up, snagging the rifle in its antler. Pritchard chased the deer for several yards before it fell to the ground again. He ran past the deer to retrieve his gun, as it rolled free from the antlers with only a minor scratch.

Lumbering Gains Momentum Across the Watershed

As lumber companies established thriving operations in Kettle Creek and surrounding watersheds, population records began to reflect the influx of lumbermen. Records for Leidy Township in 1860 show a ratio of almost 3 men to 2 women, indicating that lumbermen, mostly single or married but traveling alone, were moving to the area to take advantage of logging opportunities (Linn 1883). Those who preceded the logging operations were surveyors who looked for the best routes among the dense forest and rugged terrain. Those who traveled with the companies were the harvesters and haulers of the cut timber.

Because cutting sites moved so frequently, many lumbermen sought temporary housing in the watershed. Some rented rooms at hotels and boarding houses in the rural villages, while others built primitive shelters, designed to last for only a few months, for themselves and their families near their work sites. These homes were built of rough-hewn logs, chinked or sealed with mud and moss. Windows were covered

with oiled paper and roofs were made of logs covered with moss-covered shingles. Homes only needed the most basic eating and sleeping facilities, since the workday of a logger was from dawn to dusk. A typical home had two bedrooms, a pantry, and a storeroom. Women spent their time cooking in the pantry or washing clothes in the creek. Furnishings were sparse, as well, since families moved frequently with the lumber camp to new timber tract locations.

Cutting camps were generally constructed at the center of the timber tract near a spring or stream, which provided fresh running water to the men and the teams. The tract was first cleared in the center to create openings for homes and camps buildings. Loggers continued to clear the trees toward the boundary until walking distance to the work site used precious company time, usually 2-3 miles, and the camp was moved.

> For loggers and their families, life in the lumber camp was almost nomadic, moving every few months to cut a new tract. A saw miller's life was far more stationary, as his mill required the steady flows of the stream to drive his operation.

The process of logging a timber tract involved several steps. First the trees were felled and sawed into manageable lengths. Next the bark was peeled from the logs in 3' sections and the logs were skidded, or pulled by a team, to a stockpile at the crest of a slope. Logs were moved down the steep hillsides in slides or chutes and piled along the streambank. In the

This log hut was located close to south of Hammersley Village and had many wooden bunks and a wood stove.

Single lumbermen lived in the Hammersley Boarding House and ate in this dining room.

winter, ice and packed snow made the slides more slick and logs flew down the hills at great speeds. From the banks, logs were either rafted downstream or left waiting for spring flows to fill the splash dam reservoirs and carry them to the Susquehanna.

Early pine loggers were known for rafting their logs downstream-some as far as the Chesapeake Bay. They constructed small rafts from several logs and linked them together. On one of the rafts they would construct a shelter in which the crew would sleep on the journey. It took two or three days to reach Lock Haven, four or five to reach Williamsport, and several more to reach the Bay. Along the way, the rafters would stop for supplies, tying the raft to the riverbank and walking ashore to a local tavern. Whiskey was the popular drink, thought to cure any rafter's ailments. When the raft reached its destination, the crew disassembled the raft, piled the loose logs at the mill, and began the return trip to the camp on foot.

> One after another, densely forested tracts of land were harvested for the valuable pine, hemlock, and hardwood species, leaving bare soils and empty habitats in their place.

Rafters wore spiked boots and carried can hooks to maneuver themselves and the logs on the busy river highways. Streams and rivers often became so dense with "log traffic" that the waterways became jammed and impassable. In order to restore the flow of valuable goods downstream, one of the rafters would walk across the tangled pile and attempt to loosen the clog. It was a very dangerous job for as soon as the clog was removed, the backup would come rushing forth. Many lives were lost as rafters were swept away in the current and crushed beneath the logs.

Other companies employed Mother Nature to drive the logs downstream. Amos Roberts, a lumberjack from Maine, built the first splash dam on Trout Run to float the logs downstream once spring rains had accumulated behind the dam. The dams were designed to hold back the logs until the dam was released, driving the logs to downstream mills. (Roberts also built the first log slide with a swivel gate to help move logs during the winter.) The splash dam quickly gained popularity, the second appearing on Nelson Fork in 1853. Since all of the cut timber floated downstream at once, each company or logger developed a mark or stamp that would identify the logs at the mill.

When spring rains were erratic, water levels could fall during a raft trip or log float. Without railroads or wagon trails to continue the journey, raft crews had to abandon their load and return to the camp. A later flood or high flow would carry the logs downstream, but these logs were at least temporarily lost profits for the lumber company.

Up until the 1870s, commercial mills were all located downstream. With the opening of a large commercial sawmill on the Woefel farm along Germania Branch, a transition to local lumber processing was begun. This mill processed some of the finest black cherry in the region. With lumber cut and dried, it could not be rafted or floated in the waterways, rather it needed to remain dry and stacked en route to eastern cities. The Goodyears were the first to invest in rail lines to connect their mills with existing rail networks to the north of the watershed.

At least one company continued to use the streams of Kettle Creek. During the 1880s, the Little Kettle Creek Improvement Company petitioned the state legislature to clear, widen, straighten and deepen Little Kettle Creek from its source to its mouth (Leeson 1890).

New and improved transportation routes were spreading across the watershed during the 1890s in order for farmers to reach each other and their local markets. In 1890 John Daugherty constructed a road from Indian Camp to Daugherty Run (Lock Haven Express 1947i). This was the first road in the watershed that did not ford a stream between the West Branch and the headwaters in Potter County. In 1891, a road was cleared from Tamarack to Cross Fork (Lock Haven Express 1947i).

Commercial interests in the lumber industry continued to develop throughout the 19th century. In 1890, several Williamsport businessmen joined together to profit from improved transportation of cut timber to downstream mills and markets (Linn 1883). They formed the Kettle Creek Railroad and began to develop a railroad network connecting lumbering activities on the West Branch with sawmills in Lock Haven and Williamsport. Lumber companies were also beginning to clear and maintain roads. In 1894, Frank H. Goodyear cleared a road from Galeton to Cross Fork in preparation for the Goodyear's lumbering activities in the watershed (Welfling 1949). Lumber companies made strategic purchases and developments over several years in order to access and transport their timber.
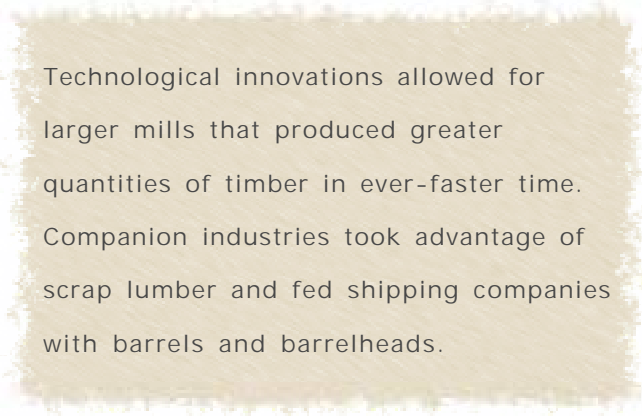
Kettle Creek Flourishes with Resource Extraction and Manufacturing Towns

When early prospectors realized the value of timber resources on their lands, they sold tract after tract to lumber companies working throughout the Northeast. One company would often buy numerous tracts in a region to consolidate harvest, milling, and transportation costs. Early companies were only interested in the pine that they knew how to work and they selectively cut it from the other species.

In 1893, the forests surrounding Cross Fork were thick with hemlock and hardwoods, rich habitat for wildlife. The pine had already been removed but the hemlock included some of the finest in the state. The area was home to just five or six families living in the valley, including the Thompsons, the Pollards, and the Knickerbockers. Their connection to the transportation and postal networks was limited. The booming lumber industry would soon demand improved mail delivery. As rail lines were installed, mail service was increased to three times per week. By 1893, mail delivery was upgraded to daily service to and from Westport.

The rich forest drew the interest not only of lumber companies but also of early developers. Emil Peltz purchased several acres north of the Cross Fork confluence in anticipation of lumbering activities and built a series of houses, calling his settlement Peltzonia (Currin 2001). By 1894, several buildings were complete only to be wiped out by a devastating flood. Peltz was undeterred, however, and he rebuilt with confidence.

> Technological innovations allowed for larger mills that produced greater quantities of timber in ever-faster time. Companion industries took advantage of scrap lumber and fed shipping companies with barrels and barrelheads.

It was during 1893 that the Lackawanna Lumber Company began logging at the confluence of Cross Fork and Kettle Creek. With hundreds of acres under Lackawanna ownership, the company decided to invest in local milling operations, rather than floating logs downstream to operations in Williamsport. During that same year, the Lackawanna Lumber Company constructed its first sawmill in Cross Fork, one of the largest and most modern mills of the time,
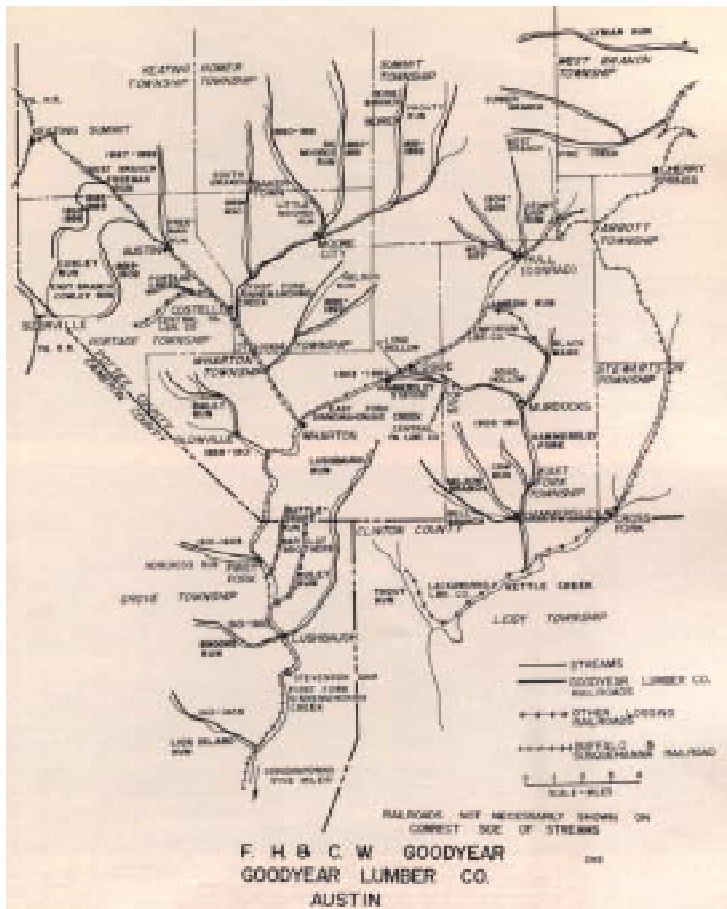
Photo Courtesy of the Railroad Museum of Pennsylvania, Pennsylvania Historical and Museum Commission

cutting as much as 75,000,000 board feet annually (Welfling 1949). The lumber supply seemed endless and soon several mills were open, making a variety of wood products. Since bulk materials, such as nails and bolts were shipped in wooden barrels, much of the smaller timber was used construct barrel parts. The Pennsylvania Stave Company, owned by Brooklyn Cooperage Company, operated a stave mill on the south side of the city, cutting the narrow strips that form the body of the barrel. Heading companies, those that made the disc-shaped barrel ends, also built two factories among the rising development at Cross Fork. In order to ship the processed lumber to markets throughout the East, Lackawanna purchased Buffalo & Susquehanna Railroad lines laid by the Goodyear Lumber Company that branched southward into the watershed from an east-west main near Cherry Springs. The interchange was known as Cross Fork Junction[14].

In 1895, the Lackawanna Lumber Company purchased the Joerg property along Kettle Creek for $28,000 (Heimel 1992). Over the course of the next fifteen years, Lackawanna would complete a small network of railroads to access its timber along Trout Run, Hevner's Run, and Turtle Point Run.

The Goodyear Lumber Company was primarily interested in hemlock and by 1902 it acquired almost all of the uncut hemlock in Potter County, including nearly all of the Hammersley Region (Taber 1971). The company chose a site at the mouth of Bell Branch along Hammersley Fork for Hammersley Village. The village was short-lived by present standards but did have a post office for several years, overseen by Mr. Hi Cranmer. The village was the terminus for the dense railroad network that was constructed alongside the stream network throughout the Hammersley Region and that joined the Buffalo and Susquehanna Line just south of Logue. This junction at the end of the

line was known as Hammersley Station and was the scene of a whiskey robbery.

The Goodyears were the last of the lumber companies to set up true villages while they timbered the landscape. Their villages consisted of 75 to 200 men who stayed for several years while logging throughout the region. Later companies would set up temporary camps for their men and which moved frequently to avoid long distances between home and the work site.

The Goodyears continued lumbering into the early months of 1910, essentially clearing the landscape of mature hemlock. However, one stand, located along a Goodyear-Lackawanna border, was left untouched, as poor survey technology could not accurately determine its ownership. Neither company was willing to pay the penalty for cutting another's tract–three times the value of the timber. Rather than risking a dispute, both companies left the tract undisturbed. Today the tract is known as the Forest H. Dutlinger Natural Area.

Hemlock bark was peeled during spring and early summer when the ready flow of sap made peeling easier. The bark was hauled from the lumber camp by rail after dark to a central location in Cross Fork. From here, it was shipped north to tanneries in Galeton, Elkland, and beyond. The return trip was used to deliver food and supplies to Hammersley Village and to the lumber camps.

Once the hemlock was removed, the Goodyears headed west. The Emporium Lumber Company purchased the land and the railroad network and began to harvest the remaining hardwoods. The company expanded the network to reach B & S lines to the west that would deliver the raw timber to Austin and to markets along the Allegheny. The route through Long Hollow was steep, especially for an engine pulling fully loaded railcars. A small freight yard called Murdocks was constructed at the mouth of


Hammersley Fork: Steam engines pulled railroad carts of cut timber from the Hammersley Region. Small railway stations were located along the way to load logs and unload supplies.

Road Hollow so that the load could be delivered in two runs.

Emporium operated several engines in this region and each had its own speed for ascending the mountain. Due to these variable speeds and without phone lines, the train schedule was communicated through smoke signals.

In 1896, the Lackawanna sawmill burned, but there was so much timber available that the company quickly decided to rebuild. Its second
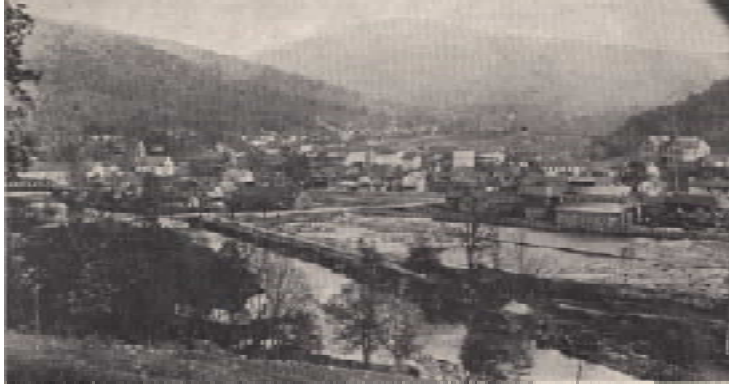
Cross Fork in 1904　　Photo Courtesy of the Potter County Historical Society

The town of Cross Fork boomed under the leadership of the Lackawanna Lumber Company. Lumber, stave and heading operations brought rail and telephone service, more frequent and direct postal service, and electric lights to the interior of the watershed. Unfortunately, it relied so heavily on these industries that their absence brought rapid demise that was felt even in the headwaters.

Cross Fork lumber mill in 1908

Photo Courtesy of the Railroad Museum of Pennsylvania, Pennsylvania Historical and Museum Commission

mill, completed in 1897, was significantly larger and therefore could process more lumber in a single day. Shortly thereafter, several companion industries opened shop in Cross Fork: a stave mill, a kindling mill, a shingle mill, a hub-factory, and a few machine shops to repair equipment. Things went smoothly for the next six years, until another fire in 1903 burned the mill again. Still, there was timber to be cut on Lackawanna lands, so a third mill was built that same year.

Lackawanna achieved its peak cut in January 1906. Stave and heading mills also reached peak production at this time. With hundred of thousands of board feet running through the mill, Lackawanna also supported a planing mill and a lath mill.

While Lackawanna was the prime operator in the Cross Fork region, other companies were had smaller holdings throughout the region. Without the financial resources to purchase rail lines, these companies had to float their logs downstream. In total, the lumber industry in the northcentral Pennsylvania region supported approximately 5000 lumberjacks annually.

Cross Fork - A Lumbering Hub

In the midst of a booming economy, Cross Fork became the commercial and social center for lumberjacks in the watershed. The Lackawanna Store was listed as the greatest trader in Potter County during the town's heyday, but not to the exclusion of other businesses. The dense rural population also supported five groceries, a farmer's market, a dry-goods shop, a millinery shop, two clothiers, a shoemaker, two medicine shops, a hardware store, a sporting goods store, and a few other retailers (Dana 1917). The Cross Fork post office even sold international money orders. Seven hotels were needed not only for business travelers, but also for men working in town, who opted to rent a room rather than buy or rent a house. In fact, many

who came to Cross Fork for the abundant work opportunities left for lack of housing. In addition to the bars located in each hotel, residents and travelers could choose from three restaurants in town. Three doctors and a dentist provided medical services, while two undertakers offered burial services.

By the sheer presence of the lumber industry, residents received public services far in advance of neighboring areas. Two electric light systems, two water systems, and a sewerage system were all put into place by the lumber company and benefited local residents.

The resident population supported four churches, a chapter of the Women's Christian Temperance Union, a YMCA, lodges of Masons, Macabees and Odd-Fellows, a literary society, numerous card clubs, and an opera house. Other social organizations included the town band and baseball team, the Cross Fork Tigers, whose team members included professionals of the Lackawanna Lumber Company.

With many families living in and around Cross Fork, there were 250 children in need of formal education. A combined primary-secondary school with state-of-the-art laboratory equipment was built and staffed for this purpose.

Apparently the threat of fire was far worse than that of crime as Cross Fork's Hose Company was established during this time, but no police were employed.

For more than eight years, the town's own newspaper, The Cross Fork News, pursued its mission "to cheerfully report town happenings and to improve social and political conditions in the town and county"(Dana 1917). Among the articles published on March 30, 1906 was a report that a neighboring town was facing setbacks and would be closing its operations. Many read the article but no one thought the same might happen here.

By 1907, all of the timber in present-day Leidy Township had been cut with the exception of Beaver Dam Run (Lock Haven Express 1947b). (Here, Sam Heisey operated a small, portable mill, cutting and peeling hemlock and transporting it through Trout Run and downstream to Westport. His mill also processed lumber from a number of lumbering camps throughout the watershed until 1915.) But the end of the timber supply in this township failed to capture the attention of lumbermen and their families.

However, in April 1909, Lackawanna shut down its sawmill at Cross Fork. The company's lands had all been cut and what little remained was scrap wood by comparison. The logging industry had grown to a watershed scale by 1910. Nearly all of the virgin timber had been cut and exported. A network of railroads connected timber tracts to the mainline along Kettle Creek and to major routes to the north and south. But the logging industry as it was practiced in the late 19th century was not sustainable and timber was growing scarce. Companies began closing their operations along Kettle Creek and moving to western regions. Lackawanna moved its operations to West Virginia and parts of New Mexico, leaving the town devastated in its absence.

Fires took several buildings that summer, including two hotels. Remaining residents were more concerned with collecting valuables than in protecting vacant buildings. By fall, the railroad station had burned down and the "exodus (was) in full swing." The following year, fire destroyed an entire block. While fires were very common at the time, arson is suspected to have been the cause in an attempt to collect from the insurance companies.

Businesses and services closed without the underlying support from the lumber company. By 1913, the population of Cross Fork had dropped to less than 200 (Welfling 1949). With

declining timber traffic and passenger travel, the railroad was forced to close.

> The end of the lumbering industry came suddenly and surprisingly to rural communities that had come to rely on the seemingly endless abundance of a single resource.

The population in 1914 was recorded as 61 and by 1923, only 40 people would call Cross Fork home (Zorichak 1923). Real estate values had dropped from $896.862 in 1904 to $18.815 in 1914 and tax rates to 2 1/2 cents per acre. Aware of the devastation that these people were facing, the state offered financial assistance to prevent bankruptcy.

In 1917, all that remained was one hotel, three stores, and a high school. The school, in fact, was for sale with all of its equipment including two organs.

Today, the schoolhouse remains as a reminder of the booming lumbering hub at Cross Fork.

As Lackawanna finished cutting operations on its individual tracts, it had sold these to the state as early as 1909 (Heimel 1992). The lands were then allocated to management under the Department of Forest and Waters[15]. Once milling operations were closed at Cross Fork, the company sold all lands back to the state, at a rate of $3 to $4 dollars per acre. Public land ownership was at first not welcomed by the few remaining residents, but efforts to reclaim the landscape and support this rural community, and the employment these activities offered, were appreciated. The Department worked to restore the landscape by tearing down remaining vacant buildings, filling in excavation, and draining the millponds, often employing remaining residents. In addition, the state also provided water system repairs and maintenance for the hose company.

When the lumber industry moved into the watershed with full force, many farmers attempted to earn a living in both forest and field. As a result, many farms were neglected. Buildings and fences were not maintained and livestock were left to roam and graze the landscape. When the lumber companies moved west, these men returned to their properties to face the expense of repair but with little money to do so. Farmers had never truly left their land but had been overshadowed and distracted by the scale and impact of the logging industry. The land had always been fertile along the main stem with plentiful wildlife to supplement crop and livestock production (Zorichak 1923). Some species were, in fact, so numerous that they were problematic for farmers. News articles from the Lock Haven Express suggest that farming certain crops was difficult due to the high deer populations in the local forests.

Since the 1920s, Cross Fork has remained a small rural town. Many returned to agriculture as a way of life after Lackawanna's departure. Recreational interest throughout the watershed

grew as a result of abundant fish and wildlife populations and the leasing of state forest lands for private cabins. As automobile ownership increased, fishermen traveled to Kettle Creek for the chance of a good catch. By 1963, the combination of small stores, local motels, and rental cabins showed that residents supported recreational tourism in their economy.

Today, few families live in the town of Cross Fork, but many rural landowners claim it as their home. Hotels and restaurants cater to a wide range of visitors–hikers, hunters, fishermen, and snowmobilers–who pass through town. Cross Fork has also become the home of an annual Snake Hunt, drawing people from across the state and the nation to this rural community.

Coal Mining

As coal began to compete with timber in fuel markets, investors and speculators hired prospectors to explore the Northern Tier, in search of coal seams known to underlay the region. Joseph Russell and David Bly were mineral prospectors who discovered coal resources atop the mountains aside Kettle Creek (Parucha 1986). By the mid 1870s, coal mining was underway in the watershed.

Without machines to remove the surface layers, miners dug vertical shafts to access the coal deposits. Underground tunnels left the surface essentially undisturbed. Miners used pick axes to chip pieces of the coal from the tunnel walls and loaded them into carts that were trucked back to the mineshaft. A total of 16 mines were operated throughout the lower watershed, extracting bituminous or soft coal from the Lower Kittanning coal seam (Klimkos 2000). The Kettle Creek Coal Mining Company operated 6 of those mines between the years of 1874 and 1929 and supported the village community of Bitumen (Klimkos 2000).

The Kettle Creek Coal Mining Company was formed by a group of investors but managed by civil engineer, George Miller. Miller was the superintendent, hiring mine employees, opening mines, building new houses and founding a company store that included US postal service (Parucha 1986). He would also serve as mayor and judge of the Bitumen community. Eisenhower, Miller's strong-armed constable, fiercely protected the interests of the company by keeping close track of those entering or leaving Bitumen.

Wages prior to unionization were paid by the ton, for which a miner received thirty cents per ton for mining and loading (Parucha 1986). Many discrepancies arose from the weight measured and paid by the weighmaster and that determined by the miner. Each miner had to furnish his own tools, powder and dynamite, as well as oil for lantern and carbide for the lamp on his cap. A monthly fee was deducted from each worker's earning for the sharpening of his tools by the company blacksmith. Coal for cooking and heat was free, but workers had to mine and load on their on time and were charged one dollar for their hauling labor.

As the market boomed and mines produced mass quantities, coal was taken off the mountain by cable cars. The cars were guided along a track on an incline plane to a tipple at Cooks Run, where the coal was weighed and loaded into Pennsylvania Railroad Cars for shipment to Williamsport and Eastern markets.

Mining was no less dangerous than logging. A mine explosion killed eighteen miners and injured several more in the fall of 1888. The following year, flooding washed out the tipple at Cooks Run and several company houses. Those who survived the tragedies were quick to leave, abandoning their jobs and homes for safer vocations. Despite setbacks in the labor force, mining resumed in full force when Slovaks were hired in 1890 (Parucha, 1986).

Kettle Creek: 1915 to present
Conservation, Recreation, and Rural Living

1915-1940: Establishment and increase in popularity of Susquehanna State Forest

1933: Establishment of Cherry Springs CCC Camp, one of the ten camps in the Susquehannock State Forest.
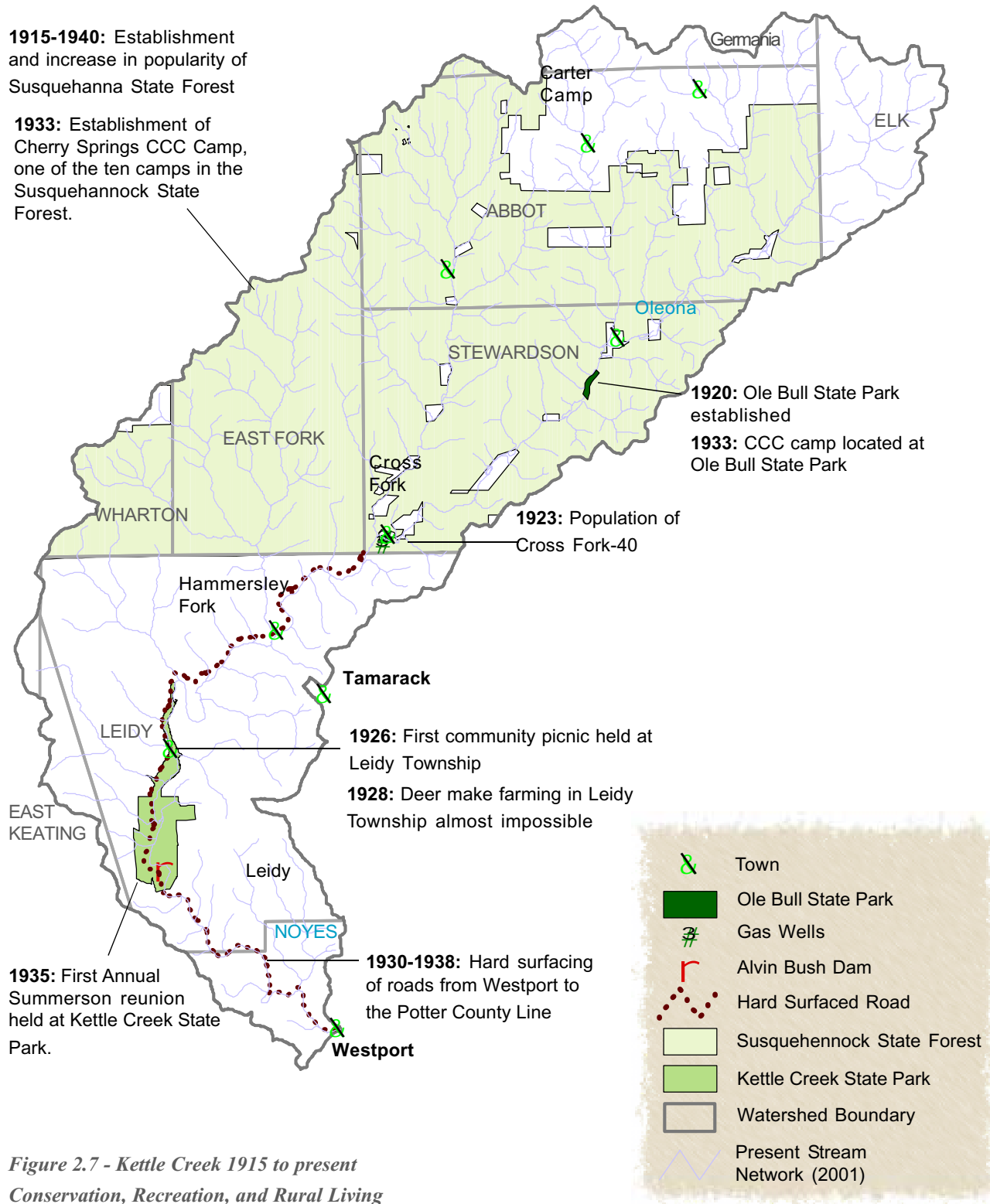
1920: Ole Bull State Park established

1933: CCC camp located at Ole Bull State Park

1923: Population of Cross Fork-40

1926: First community picnic held at Leidy Township

1928: Deer make farming in Leidy Township almost impossible

1930-1938: Hard surfacing of roads from Westport to the Potter County Line

1935: First Annual Summerson reunion held at Kettle Creek State Park.

Germania

Carter Camp

ELK

ABBOT

Oleona

STEWARDSON

EAST FORK

Cross Fork

WHARTON

Hammersley Fork

Tamarack

LEIDY

EAST KEATING

Leidy

NOYES

Westport

Legend

&	Town
◼	Ole Bull State Park
#	Gas Wells
⌐	Alvin Bush Dam
•••	Hard Surfaced Road
	Susquehennock State Forest
	Kettle Creek State Park
	Watershed Boundary
	Present Stream Network (2001)

Figure 2.7 - Kettle Creek 1915 to present
Conservation, Recreation, and Rural Living

Bitumen - A Mining Town

While Germania was a hub of agricultural activity and Cross Fork was the locus of the lumbering community, Bitumen was the center of coal mining in the Kettle Creek watershed. As a self-contained, company-supported community, it had an influential impact on the industrial and cultural heritage of north central Pennsylvania. The Kettle Creek Coal Company offered both employment and public services to its employees, thriving as a predominantly immigrant community between 1890 and 1930. Initially, the mine workers were American, but soon these men sought safer, higher-paying jobs in other parts of the region. Though the work was dangerous and hard, the jobs were abundant and steady for willing workers.

In need of a hard working labor force, the mine operators turned to the industrial cities of the east where they found several stout Slovaks and offered them company housing and medical care in exchange for their labor. The men and their families wrote of their newfound prosperity in Bitumen to friends and family in Eastern Europe, inviting them to immigrate and take advantage of American opportunities. From the 1890s to the early 1920s, Czechs, Poles, Russians, Ukraines, and Yugoslavs immigrated to America, willing to work for the offered wages in exchange for a new life of opportunities. Along with their work ethic, the Slovaks brought with them their social culture. They brought their Catholic and Greek Orthodox religions, their ethnic foods, their thirst for whiskey and wine, their festive dances and songs.

Residents lived in company owned houses and shopped in the company store. Miners' houses were plain, two-story, four room plank structures. Since there was no indoor plumbing, water was piped from a mountain reservoir to taps along the streets from which residents filled their buckets and carried them home. Coal for cooking and heating was free, but the miners

had to mine it themselves on their own time and load it on the wagon themselves.

While the company store met all the basic needs of the residents, the arrangement also kept miners in debt. The company prohibited purchases from other towns and catalogs, so families were forced to pay the prices set by the store operator.

The company also provided medical services to miners and their families. The doctor was a salaried employee of Kettle Creek Coal Company, but he accepted and perhaps even encouraged additional payments of produce, livestock, and poultry.

> During the era of deep coal mines, Bitumen's economy and social culture thrived, independent of its neighboring communities. The Kettle Creek Coal Mining Company met the miner's every need from home to health.

Since working conditions were difficult, miners were quite interested in union organizers who passed through the region. The company, of course, discouraged, even prohibited, meetings with union representatives on company property, but miners skirted this issue by meeting elsewhere. Despite further company obstacles, the miners were able to organize to influence wages and safety through the union.

In 1897 the first Catholic Slovak Union (Jednota), Immaculate Conception Slovak Roman Church, was built to serve the immigrant's spiritual needs. Religion ran deep in the Slovak community, as even the baseball team consulted the priest before games. The Church

was moved several times due to the constant expansion of the Kettle Creek Coal Company to where it finally stands today. The Church also started a school for its children. Studies in grammar, mathematics and history were combined with religious instructions. Slovak language was also taught to the children, as it was one of the main languages spoken here. Subsequently a local school was added and this was beneficial to the residents who could not afford the small tuition charged for the Catholic School.

As was customary in Slovak communities, holy days were reserved for spending time with family and friends. A marching band accompanied parades in the street. Dancing was an important social function and the town eventually constructed two dance halls to host special events. Baseball games were popular, as were picnics and long walks after the Sunday meal. Recreation in Bitumen was fun and free.

Over time, the Church would become a community landmark, a special place in the memories of past and present residents. By 1969 members of the Church and new residents of Bitumen had organized to preserve the church, as a historical part of Bitumen. Thus the Bitumen Shrine Corporation was founded to protect and maintain the church and its cemetery. Through donations, the church was renovated. Today the church is totally dependent upon continued financial support from external sources for its upkeep and maintenance. An annual reunion, held during the 4th of July weekend, reaffirms the commitment to and relationships surrounding the Immaculate Conception Shrine at Bitumen.

The children of Bitumen enjoyed the outdoors. After completing schoolwork and household chores, the young boys would leave their homes for games of baseball, rounder (and its many variations), and sling shot. They learned to whittle. In the summer months, they visited the swimming hole at the shoots in Cooks Run, skinny dipping in the cool waters and fishing along the banks. When they wanted to catch larger fish, they walked to Kettle Creek.

The girls' lives were more focused on household responsibility. They too had chores and spent time learning reading, writing and math skills. When these tasks were complete, they were allowed to skip rope, play hopscotch and jacks, and sing with their neighbors and friends. Occasionally a few would follow the boys to the swimming hole to catch a glimpse of bare skin.

Technological innovations changed mining procedures. By 1909, the mines were electrified, providing power and eliminating the need for mules to pull carts through the mine tunnels. But such improvements were not able to remove the risks of mine operations. On December 16, 1910, the brake shoe on a cable shattered, releasing the cart down the incline plane. Two miners were killed and two others were injured in this unfortunate accident.

The population of Bitumen peaked at 1200 that year. Over five hundred male residents were employed in the mines and the balance represented their families. The total number of people supported by mining activity was actually much higher, since some workers lived outside of Bitumen.

The town continued to expand during World War I. As demand for coal fell after the war, the company began to cut workers' wages. Union members went on strike to protest the decrease and in 1929, as contracts expired, mines across the state were closed. Workers who lived in company housing were given 30 days to vacate their homes or face eviction. Many miners enlisted in military service to provide a small but steady income for their families. Service also offered the immigrants access to American citizenship. Others decided to leave Bitumen for Trenton, New Jersey, where the abundance of goods and textile companies promised immi-

grants many benefits over the economic monopoly in Bitumen. The remaining miners refused to accept the wage rate offered by the coal companies, despite union efforts to reach an agreement. It was two years before an agreement was finally reached in 1921 and mines reopened but on a much smaller scale.

By 1929, nearly all of the deep mines had been abandoned. With each passing month more and more families left Bitumen. Company houses stood empty for several years though some were torn down by 1930. Mining companies closed their operations and left their lands to the Commonwealth by defaulting on property taxes. The Commonwealth then allocated the properties to the Department of Forests and Waters who became responsible for reclamation efforts. The Work Projects Administration, one of the programs of Roosevelt's New Deal, provided funds to seal many of the deep mine openings in an attempt to protect streams from sulphuric acid[16].

> In contrast to the logging era that lasted as long as the timber supply, coal mining ended when local companies were unable to compete in the national economy.

While underground mining resulted in minimal surface disturbance, it did cause other environmental hazards. Mine shafts allowed air and water to interact, physically and chemically, with deep geologic layers. This interaction resulted in the release of toxic gases into the air and chemical pollutants into the water that eventually discharged at the surface. Gases were an immediate work hazard at the time of mining ac-

tivity, but water pollution developed over many years and was exacerbated by the surface mining that followed. Liming machines were employed along Whiskey Springs to mediate the acidic drainage from mining sites.

During the 1960s, the Commonwealth leased lands in Sproul State Forest to D.G Wertz Coal Company and the Kettle Creek Corporation for surface mining, or strip-mining, of the Lower and Middle Kittanning seams. (Surface mining removes large areas of the vegetation, soil and bedrock layers above the coal seam to access the coal from above, rather than from within[17]. This technique ravaged large areas in the lower portion of the watershed that caused increased amounts of sediment pollution in Cooks Run and Kettle Creek.) In addition to surface access, mining required a site permit issued by the Department of Mine and Mine Inspection, the first of which was issued in 1960. Permits authorized the mining activities according to state regulations. Records from DEP, the follow-up agency to DM&MI, indicate that a total of 10 permits were issued between 1960 and 1969. D.G Wertz operated 4 sites in the early 1960s: the Westport mine (under 3 separate permits), the Crowley mine, the Wertz mine and the Cattaragus Road East mine. The Kettle Creek Corporation operated its 4 mines in the later 1960s, one each at Short Bend Run, Crowley Run, Bitumen, and Batschelett.

The mines closed as demand for bituminous coal fell or the coal was completely extracted. Most mines were abandoned, leaving the pit and the spoil to nature (or the state) for restoration. In 1977, the Surface Mining Control and Reclamation Act required mining companies to restore or reclaim their sites to a more natural condition. The Kettle Creek Corporation followed through and reclaimed some of their mines before closing their lease.

Natural Gas

Natural gas was first discovered while drilling water wells at Indian Camp in 1902 (Zorichak 1923). The gas was considered a nuisance because it hampered drilling with frequent, lasting fires, since it ignited easily and burned slowly. It was only five years before its physical and chemical properties were well understood, and at that point, energy suppliers would begin to take an interest in the region for the clean, inexpensive energy that the gas could provide. In 1907, two gas wells were drilled ten miles from Hammersley Fork (Zorichak 1923), providing light, heat, and fuel for local residents.

Though its properties were understood, its location in the bedrock was not. Around 1920, two more wells were drilled south of Cross Fork. One was 3500 feet (1067 m) deep, the other just over 2500 feet (762 m) deep, and both were dry. But within three years, a number of successful wells were installed and the Kettle Creek gas field was established. The wells were concentrated in the north-central part of Leidy Township but extended three quarters of a mile north of the mouth of Hammersley Fork. The Clinton Natural Gas Company, headquartered in Williamsport, extracted the gas and distributed it as far east as Philadelphia and New York.

The natural gas pipelines impact both the environmental integrity and the scenic quality of the watershed by cutting through the forested hillsides.

The area was heavily drilled from 1954 to 1958, a period locally known as the Gas Bowl. The demand for gas was high due to rapidly expanding suburban development and its relative low cost. By 1958, many of the gas wells were empty and those who had come to rely on the Kettle Creek supply were forced to buy gas from other regions or find alternative fuels. Daily supply exceeded daily demand in southern drilling regions and companies soon looked for storage facilities. Empty wells in Kettle Creek offered inexpensive storage and in 1960, the wells were refilled.

> While natural gas was extracted faster than timber or coal, its subsurface voids have been effieciently reused as natural storage facilities for these same regional markets.

Natural gas offered inexpensive energy for light and heat but came with environmental costs. More than once local residents had to evacuate their homes because gas pressure in storage wells threatened to blow out gas lines leading into the building. In 1966, a sludge pond above Bunnel Bridge broke under the pressure of stormwater, spilling tailings from the drilling operation and industrial and maintenance wastes into the main stem of Kettle Creek. The spill contaminated the stream with minerals and soils extracted by the rig during the drilling operation, diesel fuel, garbage, oil, grease, and caustic soda and aqua gel from the drill bit, killing most of the aquatic species for more than a mile. Yearly hatching cycles of aquatic insects, which were rather predictable before the spill, are just now returning to form.

Environmental Impacts Inspire State Efforts Toward Conservation: Forests, Parks, and Flood Control

The environmental impacts of logging across northern Pennsylvania were expressed from the small streams to the Susquehanna River. Increased flows and flood damage, sediment-laden waters and eroded streambank property, increased water temperatures, and nutrient loading angered property owners and forced the state to engage in forest and water resource conservation to protect the health and well-being of it citizens.

Under the leadership of conservationists such as James Trimble Rothrock, Mira Dock and Gifford Pinchot, the Commonwealth purchased denuded properties for $3 to $4 dollars per acre and established a Division of Forestry to manage them for conservation and recreation. The fact that lumber companies bought forested land in large tracts enabled the agency to expand the state forest in sizeable and often contiguous parcels.

By 1909, Lackawanna had cut all of the timber from the Joerg property. The Commonwealth purchased the tract and managed it as part of the Cross Fork State Forest Reserve within the State Forest system. The Joerg house, constructed in the 1850s, was retained and became as the residence of the forest ranger under the State system.

Representing the Department of Forests and Waters (and the first woman appointed to a state commission), Mira Dock visited the watershed in October 1911. Accompanied by District Forester Walter Mumma, Forester Emerick, and Ranger Bennett, she toured Trout Run and the Hammersley Region en route to Germania, Galeton and Coudersport, assessing the value of lands available for state purchase. While Dock's surveying was usually done on horseback, Mumma had a car arranged for this trip from Renovo to Coudersport and Galeton[18].

Though pipeline management requires open corridors, these areas hold great habitat potential.

In addition to conservation and recreation, the State Forest also provided a means of employment for residents during the early 20th century. A district forester and ranger were generally hired from a forestry school, but they in turn hired men to make road repairs, construct new roads, and plant seedlings of Norway spruce, white pine and Carolina poplar. They fought fires on both state and private lands. Their wages were far short of regional pay, and the district forester made multiple requests to raise their pay.

Fires threatened not only local residences but also the regeneration of a diverse, native forest. Several fires were particularly devastating: in the Hammersley Region in 1907, from Tamarack to Spicewood in 1909, and in the western portion of the Hammersley Region in 1913. Some areas were particularly fire-prone, such as Turtle Point, where thickets of huckleberry seemed to ignite with the suggestion of a spark. An extensive network of fire trails and access roads was developed and maintained to protect the State Forest (Zorichak 1923).

The district forester was in a sense a surveyor for the state system. With thoughts of potential

timber harvest in the recovering forest, Mumma reported that lack of transportation made the resource commercially unavailable.

In 1912, the State Forest sold seven miles of pipeline right-of-way to the Clinton Natural Gas Company. initially, foresters did not require restoration of pipeline corridors, but instead called for revegetation that would enhance habitat for wildlife.

Conserving the Wilderness for Recreation

Recreation on public lands was growing more popular every year with increased ownership of automobiles and social movement to escape the polluted, industrial city. As a result, the Commonwealth established a state park system at the turn of the 20th century. Two parks were later created along the Kettle Creek. Kettle Creek State Park was located at the mouth of Summerson Run and Ole Bull State Park was sited just below Oleona in 1920. The parks were open to the public for picnicking, camping, fishing, and hiking. Increased recreational facilities may have been one factor in the anecdotal references to the early 1900s as the creek's prime fishing era.

Through the Pennsylvania Administrative Code of 1929, state forests were permitted to lease small parcels, generally 1/4 acre lots, to Pennsylvania citizens for healthful outdoor recreational use. In addition to promoting recreation, leases generated revenue for the state forest. The lessee agreed to pay for any improvements, e.g. buildings, built these to meet state forest regulations. Leases were renewed every 10 years, at which point new regulations were enforced. Leases could be sold, transferred, or assigned if the lessee no longer wanted to maintain the site. (The state forest now desires to reacquire these parcels.) In 1970, the state forest stopped issuing new leases. The Kettle Creek watershed hosts approximately 100

Anglers from across the state visit Kettle Creek and its tributaries for their exceptional angling opportunities.

camps in each of the Sproul and Susquehannock state forests.

Road construction throughout the watershed continued as the public demanded greater access to the State Forest lands and as forest fires persisted in the North Central Region. With little money to make road improvements for increased volume and new modes of transportation, i.e. the automobile, townships asked the Commonwealth for financial aid. From 1925 to 1938, the Commonwealth helped fund several road projects, including road surfacing of Route 144 along Drury's Run to Tamarack (Lock Haven Express). Other projects improved drainage of road surfaces and replaced small bridges that were insufficient for modern transportation. Charter Road from Westport to the Potter County line received its first hard surface in the 1930s. The Forestry Department

also continued to develop new access routes from Trout Run to Wharton and along Sugar Camp Run.

In 1951, it was discovered that William Penn still owned approximately 73 acres of land among the gas fields of Kettle Creek (Lock Haven Express 1951). The land had never been warranted and therefore still belonged to the original proprietor, William Penn. Nearly surrounded by state lands, the Commonwealth assumed ownership and placed the tract under management of the state forest.

Civilian Conservation Corps Camps along Kettle Creek

While the Great Depression of the 1930s significantly impaired economic investments, it had a positive effect on recreational development and landscape conservation across the nation. The need for job training for abundant male youth population, reforestation of harvested lands, and improved recreational facilities for an increasingly mobile society led Franklin D. Roosevelt to establish the Civilian Conservation Corps in 1933. Young men, particularly

from urban areas, were employed by the government to build state park facilities, clear state forest roads, and plant tree seedlings. In addition to their work, the men took academic and vocational courses. Each young man was paid a weekly wage, a small portion of which was given directly to him while the rest was delivered to his home address. The small amount received was used to maintain a clean uniform and to pay for snacks and weekend ventures. Meals and lodging were provided at each camp.

There were four CCC camps located in the Kettle Creek watershed during the 1930s and early 1940s, one each at Hammersley Fork, Ole Bull, Windfall Run, and Two Mile Run. (Camps were also located at the Dyer Farm, Cherry Springs, and Lyman Run and may have completed projects within the watershed.) The Camp at Hammersley Fork, S-133, opened in 1933 and was closed by 1938. Captain G. Millholland commanded and Loring H. Grant of Galeton was Camp Superintendent (PCCCC 1983). Camp S-87 at Ole Bull operated from 1933 to 1941. The Ole Bull Camp was established under the leadership of Captain C.C. Griffin,

Camp Ole Bull was one of four Civilian Conservation Corps camps located in the Kettle Creek watershed in the 1930s. Its servicemen constructed picnic shelters, dammed the creek for swimming, and assisted local foresters in fire control and reforestation of state lands.

Captain Gomer L. Coble, and Lieutenant R. Ware (PCCCC 1983). Captain Joseph S. Hoffman and Lieutenant Herman W. Schweizer arrived in the fall of 1933 to lead the camp for the following several years (PCHS 2000). Camp S-137 at Windfall Run operated from 1933 to early 1936 under the leadership of Captain C.M. Lyons and James D. Glover (PCCCC 1983). The camp at Windfall Run reportedly reopened to assist in recovery and rebuilding in the Renovo community after the late spring flood of 1936.

The first tour of men to serve at Camp S-87 at Ole Bull had intended to go to Windfall Run but inclement weather hindered their travel they requested to stop at Ole Bull State Park. Amid downpours and puddles, they immediately erected tents for temp lodging. Within the first days, they built officers quarters at the foot of the eastern mountain and by fall had constructed permanent barracks below. A kitchen, mess hall, and recreation room were constructed in a U-shape to create a small courtyard or drill field for quasi-military exercises The buildings were heated by wood stove and lit by oil lamps.

Over the eight years that Camp S-87 was open, the servicemen built a dam to form a swimming area for the park, planted evergreens in the valley, and blazed and maintained fire trails throughout the recovering forest. In addition to conservations projects, they also helped local residents. After severe rain or snowstorms, the CCC men would clear the roads so that doctors and farmers could reach their destinations. In their spare time, servicemen tended the camp gardens, played games in the recreation hall, watched movies in the recreation room, and spent weekends in Coudersport or Galeton, maybe Renovo. Through weekend encounters (mostly positive), several men came to know the local residents, including the young women, and chose to marry and settle where they had invested their time and efforts.

Taming the Waters

In 1936, spring rains caused particularly heavy flows in Kettle Creek and throughout the headwaters of the Susquehanna. As waters from Kettle Creek and adjacent watersheds converged in the West Branch, flood volumes and resulting damage dramatically increased. News of the damage in Renovo was reported throughout the region. Many residents from Kettle Creek were involved in recovery efforts, including servicemen from several CCC camps.

Concern for the safety of residents and property generated widespread interest in developing flood control mechanisms. The State responded with a plan to construct four dams to control floodwaters of the West Branch. Some suspected the government had ulterior motives, such as water purification, in mind for the dam operation. In 1957, the Army Corps of Engineers constructed the Alvin R Bush Dam to detain the floodwaters of Kettle Creek. This 165-foot earthen dam would create a pool 1300 feet (390 km) long, 4.5 miles (7.2 km) of shore-

line, providing extensive recreational opportunities in addition to flood control.

The construction of the dam and reservoir permanently flooded the town of Leidy. Residents were forced to relocate, and due to family history in the valley, many chose to remain in the local area. Kettle Creek Valley Road that passed through the center of town was relocated along the western hill slope of the valley.

While flooding was controlled in downstream communities by the Bush Dam, it continued to impact the main stem of Kettle Creek. The heavy flows caused by Hurricane Agnes in 1972 and storms in 1975 caused significant changes in the shape of the channel. Sandy soils were easily eroded, destabilizing the bank vegetation, widening the channel, and decreasing average channel depth once flows subsided. Shallow channels resulted in warmer waters and changes in fish habitat and population. In Potter County, many camps were flooded out and Hammersley Fork was heavily impacted.

Recent Watershed History

While Victor Beebe, Michael Leeson, William McKnight and John Linn have gathered and analyzed historical data available at the turn of the 20th century, recent historical events and personalities have not been assessed in any comprehensive manner. News articles have reported local events as they happened, but no summary or analysis of these happenings has occurred to date. Points of interest for future analysis include: the development of state forests and parks, CCC activities throughout the watershed, the flooding of Leidy, seasonal camps at Ole Bull State Park, such as summer programs by Keystone Boys Club and music festivals organized by Inez Bull, the Cross Fork Snake Hunt, the fall Leek Festival held in Germania, and the reintroduction of elk in the region. Local personalities include Harry Kinney, the "Mountain Boy," and Preston

The Alvin R. Bush Dam was designed to control floodwaters in the West Branch and created this reservoir in Kettle Creek State Park.

"Slim" Croyle, who was known for calling deer from the mountains by name to hand-feed them. In addition, the birth and achievements of the Kettle Creek Watershed Association deserve documentation.

The logging industry of north-central Pennsylvania has not been forgotten. The Woodsmen's Show was organized in 1952 at Cherry Springs State Park to celebrate the history and culture of Pennsylvania's lumbermen. In 1975, the first Bark Peeler's Convention took place to revive the annual meeting of "woodhicks and bark peelers" each 4th of July weekend. The event was held at the Pennsylvania Lumber Museum, where a sawmill, log holding pond, and village smith shops provided the background for contests, such as log rolling and tobacco-spitting. While these annual events commemorate the regional logging history, they do not express the unique contributions of the local landscape.

In addition to cultural developments, the landscape had continued to change since the early 1900s. Local residents tell of swimming holes filling in with sediment, inhibited trout migration, warmer waters that are changing fish

populations, stocked fish out-competing the young wild ones, and the extinction of native species and introduction of non-natives. Streams getting wider and shallower and changes in species composition from pine and hemlock to oak dominated forests are indeed environmental changes, resulting from short-term and long-term impacts of land management across the entire watershed.
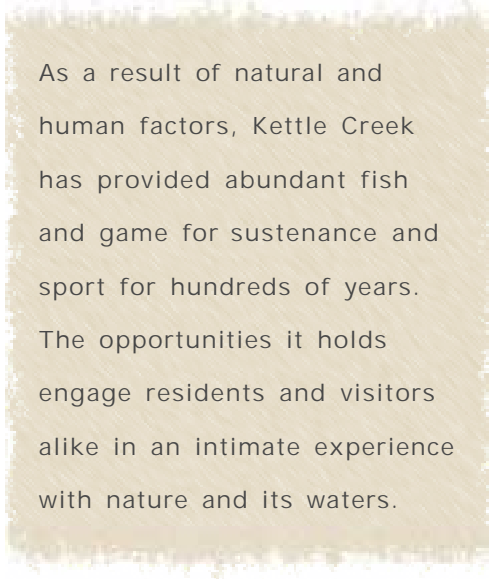
Conclusions

Over the course of history, residents and visitors have come to the watershed, particularly its valley and uplands for the productive soils that it offers for crop and dairy, and forest production. They have come for the immediate access to a high quality, natural and recreational environment. (President U.S. Grant was perhaps the most notable political figure to visit the watershed, as a guest of Colonel A.C. Noyes of Westport.) They have also come for the freedom and privacy that rural living offers and the self-reliance that it demands. Whether for short-term visits or long-term residency, people expect to find low-density development and high-density "nature."

Euro-American settlement and speculation led to two distinct forms of land ownership in the Kettle Creek watershed. Frontier settlers selected their sites based on stream and landform patterns that would support agriculture for many years and therefore explored the landscape to find suitable sites. Speculators chose their tracts geometrically, according to land surveys, and based on the mature condition of the timber that would turn a quick profit as soon as harvesting began.

Since the introduction of European-style land ownership, a large percentage of the watershed has always been managed by nonresidents. Speculators purchased large areas and would have proportionally large impacts on the environmental quality of the watershed. Once har-

vested, the land was sold or defaulted to another non-resident land manager, the state, who now attempts to conserve the land and water resources at the same scale as its degradation.

The abundant natural resources and the small-scale development define the Kettle Creek watershed as a frontier landscape. As with many rural watersheds, natural resources such as a maturing forest, tillable soils, and coal and gas deposits have been the engine of local economy. During their individual heydays, the lumber and coal mining industries fueled growth and sustained communities of up to 2000, many of whom were immigrants following the prosperity of company investors. But as resources were extracted faster than they were

> As a result of natural and human factors, Kettle Creek has provided abundant fish and game for sustenance and sport for hundreds of years. The opportunities it holds engage residents and visitors alike in an intimate experience with nature and its waters.

naturally replenished, these industries faced local decline, and those who relied on them were forced to leave or find other vocations to support themselves and their families.

With the passing of land ownership from lumber companies to the state, a shift from forest consumption to forest conservation occurred. Like the lumber companies, the state profits from its land management but not in private ways. Rather, the benefits are found in the in-

creased health and well-being of all Pennsylvania citizens.

The Kettle Creek watershed shares in the regional lumbering history of the northcentral Pennsylvania region, but it also has a distinct history that separates it from the surrounding region. The Ole Bull colony, the planned community of Germania, and the combination of timber, coal, and gas resources all contribute to this distinction and the unique identity of the watershed.

In addition to the story of the Kettle Creek watershed, there are a number of historic sites and structures that can be seen throughout the landscape. As a result of settlement patterns, many of these are located in the valley along the main stem of the creek. These landmarks in the community could be used to share the history with watershed visitors.

Changes in the landscape and the water were most noticeable during and after the logging and mining eras, but change also occurred as each farmer cleared the forest for field and pasture, as roads were cleared, constructed, and improved, and as plantations were established throughout the valley. With each personal, corporate, and government decision about the use and management of land, both land and water resources were impacted.

GOAL: HISTORY

WI 1.2 Goal: Explore and celebrate the rich cultural history of the watershed as a community and for visitors.

Notes

1. Although we commonly think of the American frontier as a pristine landscape, Native Americans had actively, sensitively, and sustainably managed its resources for centuries.

2. Native Americans and immigrant Europeans had very different ideas about land ownership. Living in tribal societies, Native Americans treated the land and its resources as community property. Immigrants, on the other hand, were rebelling against European authorities and social systems and sought personal property as an expression of their independence.

3. The Northwest Ordinance of 1787 used this same process of divide, survey, and sell to organize and establish ownership of United States territories across the country.

4. Settling on the land implied converting the acres of forest into fields of cultivated crops, making nature more "productive," yet unaware of the impacts such conversion would have on the environment.

5. Timber values changed over time. Pine was familiar and easy to work-"the Lord's wood." Hemlock, in comparison, was "full of hell, fire, and knots," but over time, its strengths were understood. After the evergreens were gone and primary needs of shelter were met, Americans found the hardwoods to be valuable for interiors and furniture.

6. Within the right to own land, Americans assumed the right to profit from it. As land was bought and sold, the most valuable tracts were often reserved or exempted from the transaction, leaving the spoils in the hands of the original landowner.

7. Since streams provided fresh water for people and livestock, early farms were located along the banks.

8. The Summerson family, descendants of David, Joseph, and Marmaduke, maintained a close connection with the watershed landscape and in 1935 held the First Annual Summerson Reunion at Kettle Creek State Park (Lock Haven Express: Kettle Creek). Their connection ran so deep, in fact, that they petitioned the Department of Forests and Waters to change the name of the park to Summerson Run Park.

9. Streams, and the hollows from which they came, were commonly named for the family living at or near the mouth.

10. Mill owners also took advantage of these sites, finding inexpensive transportation for lumber and shingles during much of the year.

11. Discouraged by the slow development of their settlement, its accidental location on another's property, and the steep topography, many Norwegians faced the choice of pursuing freedom in the Midwest or returning to their native land. Since Bull personally funded the colony from its infancy with profits from his concert tours, only a few were able to afford the cost of purchasing the land they had cultivated from the Stewardsons. But those who did became significant members of the Kettle Creek community.

12. Once it became clear that the elaborate plans for German settlements were not appropriate for the steep terrain, plans for a new city of Cross Fork were abandoned and development efforts focused on a revised site design for Germania. The German population grew steadily supporting a wide variety of businesses and several social organizations.

13. These tales were documented by W. W. Thompson in Historical Sketches of Potter County: Hunting and Fishing Stories, Legends.

14. The lumber industry influenced rural life in several positive ways-it brought more frequent and more direct postal service, introduced telephone and passenger rail service, and produced electricity for rural towns.

15. Out of concern for flooding and water quality at turn of the 20th century, the Department of Forests and Waters began replanting the lower hillsides with evergreen species. The trees were not meant to replace the native forest but it was thought that they would prevent erosion and downstream sedimentation.

16. Deep mining has had lasting impacts on the watershed. While many mines were sealed through reclamation efforts of the late 1930s and early 1940s, seepage through fractures still impairs water quality in lower reaches and the main stem.

17. Surface mines not only disturbed the vegetation and surface soils that buffer the impacts of rain events, but they also exacerbated acid mine drainage from deep mine seeps by exposing more fractures at the surface.

18. Automobiles first became a regular site in the watershed as the United States Postal Service expanded and improved delivery to rural areas. By 1921, automobiles were in use to deliver mail from Renovo. A decade later, mail service was still based in Renovo but traveled first to Westport, north to Cross Fork and returned via Tamarack.

Introduction

Demographic trends - or changes in population characteristics over time - provide valuable insight into the social character of a community. Demography analyzes the experiences of people such as birth, marriage, death, employment and aging and can be used to pinpoint the causes and consequences of population changes over time. Demography can reveal trends in social change and the impact of this change on the natural environment. While biological analysis - for instance water quality analysis - provides insight into the health and state of natural resources, demographic analysis reveals information about the people who use and enjoy these natural resources.

The overlap between natural watershed boundaries and political municipal boundaries results in multiple municipal districts that lie within and overlap multiple watersheds. This presents a challenge for demographic analysis in watershed planning as data collected generally follows municipal township, county and state rather than watershed boundaries.

Gathering information for Kettle Creek watershed was no exception to this challenge. Demographic data were collected for the watershed at the county and township level as it allowed for the greatest historical depth of inquiry while still maintaining boundaries close to those of the watershed. The degree of relative homogeneity in the Kettle Creek landscape - a largely rural forested landscape - relative to its context within Clinton, Potter, Cameron and Tioga Counties led to some assumptions in the gathering of data; it was assumed that data collected at the township level would represent trends and patterns in the community both within and across the watershed boundary. Because the vast majority of land - specifically populated land - lies within Clinton and Potter County, data were collected for these counties. The numbers discussed be-
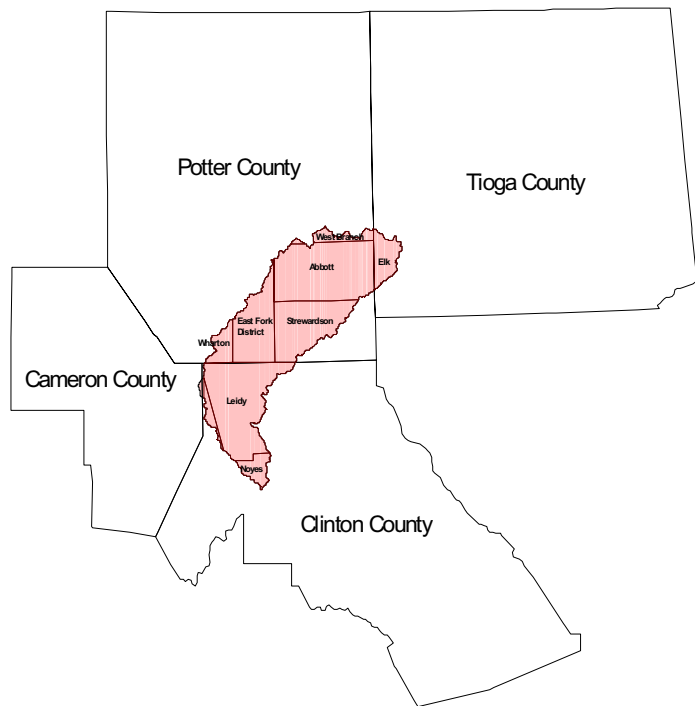

Figure 2.8 - Watershed boundaries often overlap into multiple municipalities. As shown above, 4 counties and 10 townships fall within the boundaries of Kettle Creek.

DEMOGRAPHIC
TRENDS

low reflect an accumulation of townships in Clinton and Potter County that overlap into the watershed.

Political
Boundaries In the Watershed

The political boundaries within Kettle Creek include portions of 7 census blocks, 10 townships and 4 counties (See Figure 2.8: county and municipal divisions in Kettle Creek). Population trends within these municipalities reveal a potential for development of private lands in the watershed due to a rising population and increasing market value of private lands.

Population by MCD 1850 - 2000

Legend:
- Elk
- Abbot
- West Branch
- Wharton
- Stewardson
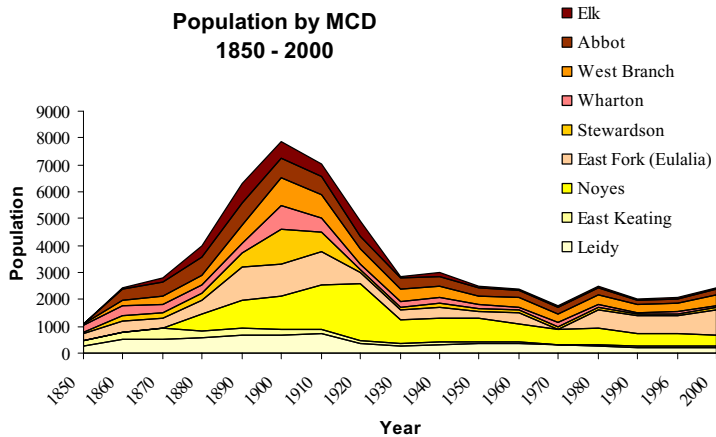- East Fork (Eulalia)
- Noyes
- East Keating
- Leidy

Figure 2.9 - Population values skyrocketed between 1880 and 1920 due to a peak in timber and other extractive industry; this trend was typical across much of the state. Following this period of population increase, distinct population fluctuations followed changes in the economy as people moved to and from the city, in search of jobs (Miller et al 1995).
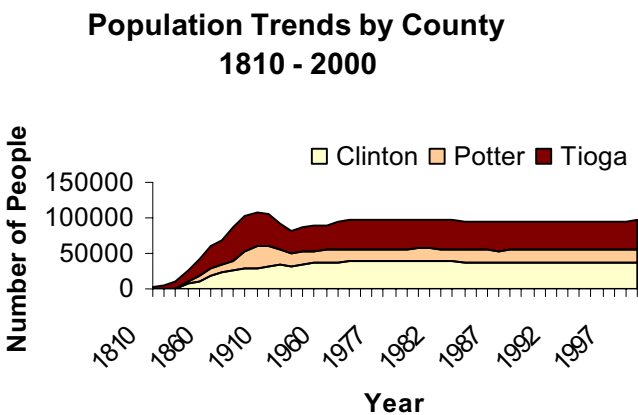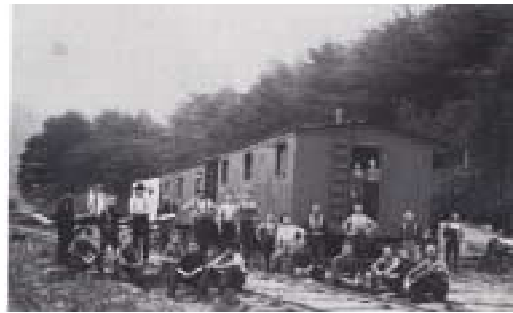

Population Trends by County 1810 - 2000

Legend: Clinton, Potter, Tioga

Figure 2.10 - Population trends as seen at the township level can also be seen at the county level. This is due to the relatively homogenous -- rural, low density development -- landscape of Kettle Creek.

Historical Population Trends

Throughout the past two centuries, the population trends in Kettle Creek have experienced dramatic transformations due to a shift in the economy from industrial resource extraction to service based industry. From the organization of the earliest townships in the early 19th century, the watershed population experienced slow, steady growth. In Potter county, the first commercial pine timber industry opened in 1837; during this time, timber was sent downstream to be cut, processed, marketed and sold and did not provide direct significant economic benefit to the local economy. By the 1880's the Goodyear Lumber Company had begun the first local cutting mills stimulating the local Kettle Creek economy and encouraging an influx of residents in search of employment to the watershed (Clinton County Data Book 1990). The rapid growth of steam power further intensified the efficiency of both timber production and in turn timber consumption further stimulating the local economy; a sharp increase in population occurred as a result of this.

The boom in the logging industry paralleled that of the population. Populations in Kettle Creek watershed increased exponentially during the period of 1890- 1910; however this boom was short-lived. The timber industry had effectively cleared the once rich, forested landscape. As the last hemlocks and hardwoods were cut, and as the mechanization of agricultural production resulted in fewer avail-

Percent Change in Population: 1980 - 2000		% change 1980 - 1990	% change 1990 - 2000
Clinton	Leidy	-18.63%	7.01%
	East Keating	-33.33%	9.09%
	Noyes	-26.62%	-9.50%
Potter	East Fork	-97.74%	-6.67%
	Stewardson	-45.45%	12.12%
	Wharton	-32.69%	30.00%
	West Branch	-23.73%	37.06%
	Abbot	-27.92%	30.64%
Tioga	Elk	-8.70%	21.43%

LEFT Figures 2.11 & 2.12 - 2000 census data revealed a dramatic increase in population within and accross the boundaries of the watershed despite 1990 census projection numbers that suggested a general decline in population (see figure below).

Projected Population Trends by County 1990 - 2020
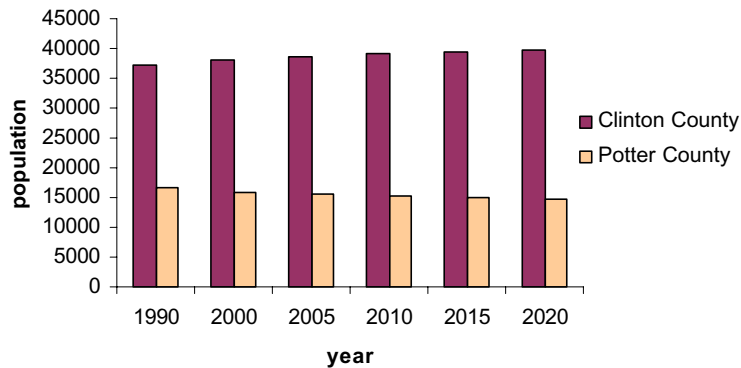
LEFT Figure 2.12 - 1990 Census projection data suggested a general decline in population in Potter County and a subtle increase in population in Clinton County.

able jobs, unemployed settlers were forced to follow lumber operations westward or move back to the cities. Between 1900 and 1930 the Kettle Creek population declined rapidly at the township and county level leaving behind a barren and economically stagnant landscape. Many settlers flocked to the cities where there was a strong wartime demand for factory production (Miller 1995). Others followed lumber operations westward and south.

Limited available jobs during the depression in the late 1920's and through the early 1930's reversed this migration pattern outside of the rural areas. During this time, a small increase in population can be seen in Kettle Creek. While the overall population trends decline, another minor population peaks occurred circa 1960

during the post-war baby boom (Miller 1995). (figures 2.9 & 2.10).

While a trend towards population decline continued up through 1996, the 2000 census data revealed a population increase by as much as 38% in Kettle Creek townships (See Figure 2.12 - percent population change). In light of the census population project numbers that projected Potter County to decline in population through the year 2020, this increase is quite a surprise. (See Figure 2.11 & 2.12: 1990 county projection data & percent change in population 1990 - 2000). (Bureau of Census 1990).
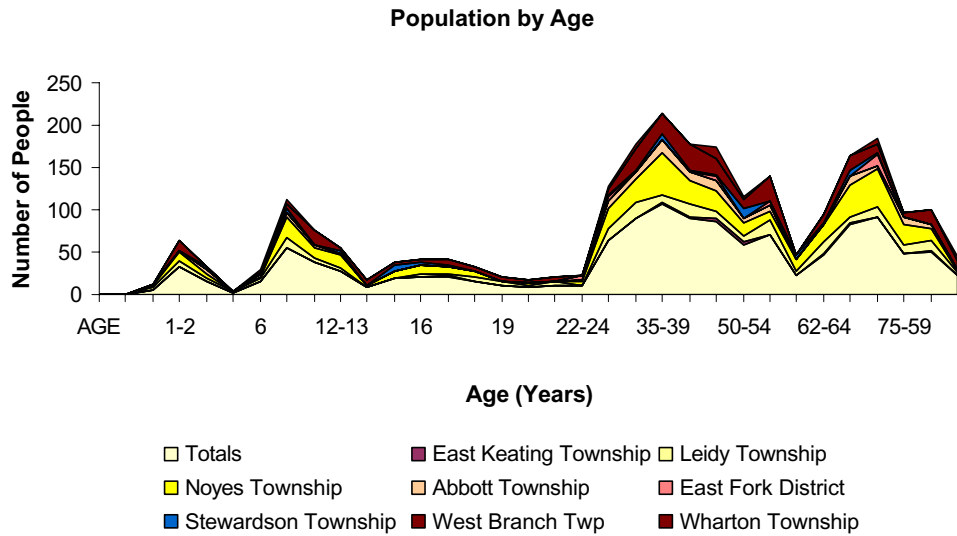
Population by Age

Figure 2.13 - Following 1990 census data, the majority age group was between 30 and 40. This age distribution can be attributed to the post-WWII 'baby boom' and associated period of American affluence.

Population and age trends

Following trends across the state of Pennsylvania, the watershed population is aging. The majority of residents in the watershed are between the ages of 30 and 40. From 1980 - 1990 the average township population age increased from 29 to 33 years old. Similarly, county and township populations within the watershed have experienced declines in the younger generation ages 18 and under (See Figure: 2.13) in conjunction with an increase in people over the age of 65 (See Figure: 2.14 - change in population by age, 1990; See Figure 2.13 - distribution of population by age 1990). These trends are common across the state as people today simply live longer today (Miller 1992). However this trend is occurring for a different reason in Potter and Clinton County. Positive birth to death rations in these counties suggest that the birth rate exceeds the death rate. Housing occupancy numbers that

show two-person households as an average for the watershed further supports this. Thus, the decline in population can be largely attributed to younger generations leaving the watershed in search of more diverse employment opportunities (Clinton County Comprehensive Plan, 1992). (Figure 2.14)

Change in Population by Age Group 1980 - 1990

	Under 18	65 & Older
Clinton County	-16.60%	25.90%
Potter County	-17.30%	19.70%

Figure 2.14 - While the younger population is declining in the watershed, the older population is increasing. This can be attributed, in part, to a decline in available local jobs.

Land-ownership and Housing Occupancy

Land Ownership

Less than 18% of all landowners in Kettle Creek are permanent, year-round residents. Based upon the mailing addresses of the 2,063 landowners in Kettle Creek watershed, nearly 82% can be considered seasonal residents as their permanent mailing is listed outside of the watershed (See Figure 2.15 - residency and land ownership). While the majority of seasonal residents reside in the Commonwealth of Pennsylvania, some come from as far as Minnesota and California. Within the state, a strong majority reside in the southeastern and south central areas of Lancaster and Philadelphia. (See Figure 2.16: Place of residence by state).
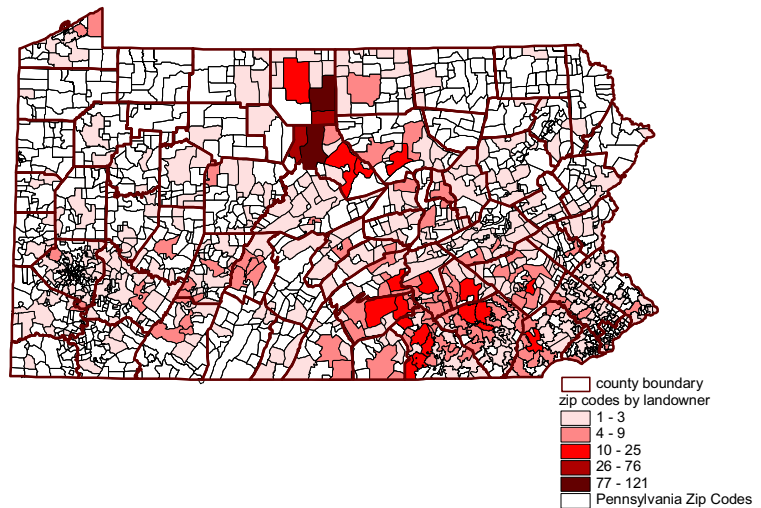
Figure 2.15 - This map illustrates where watershed landowners permanently reside. Recreational opportunities attract seasonal residents to the watershed from all over the state .

Housing Occupancy

Much of the housing that stands in the watershed today was constructed prior to 1939. The fact that a majority of housing today is seasonally used, suggests that much of this early housing has been since transformed into seasonal housing or service industry establishments such as hotels and stores. Further research and inventory of the existing housing in the watershed could serve to clarify this.

From 1940 to 1980 seasonal housing doubled (and in some instances tripled) in number (See Figure 2.18: percent increase in seasonal housing over time). This increase can be accounted for, in part, by New Deal programs that sought to revitalize the country's economy and resulted in a post-war surge in recreational use of the landscape (Miller 1995: See page 71 for a discussion of recreation today).
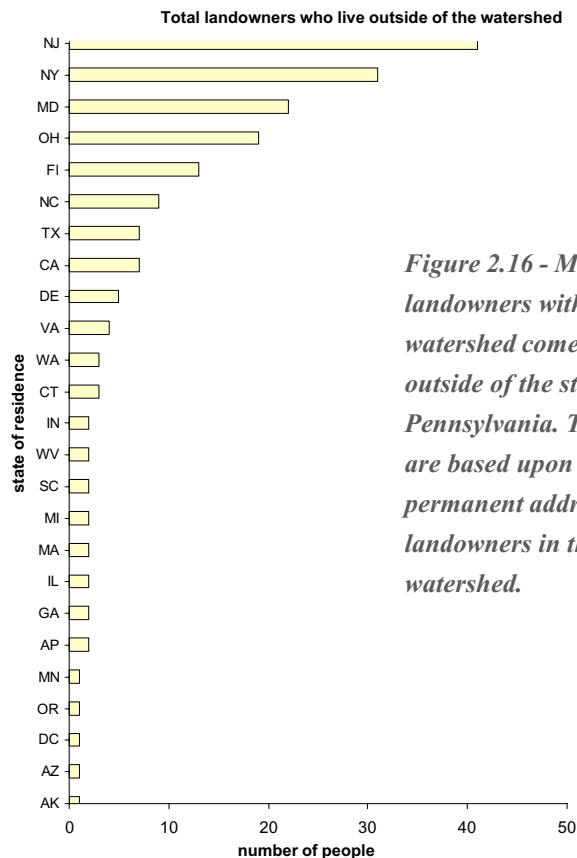

Figure 2.16 - Many of the landowners within the watershed come from outside of the state of Pennsylvania. These data are based upon permanent addresses of landowners in the watershed.
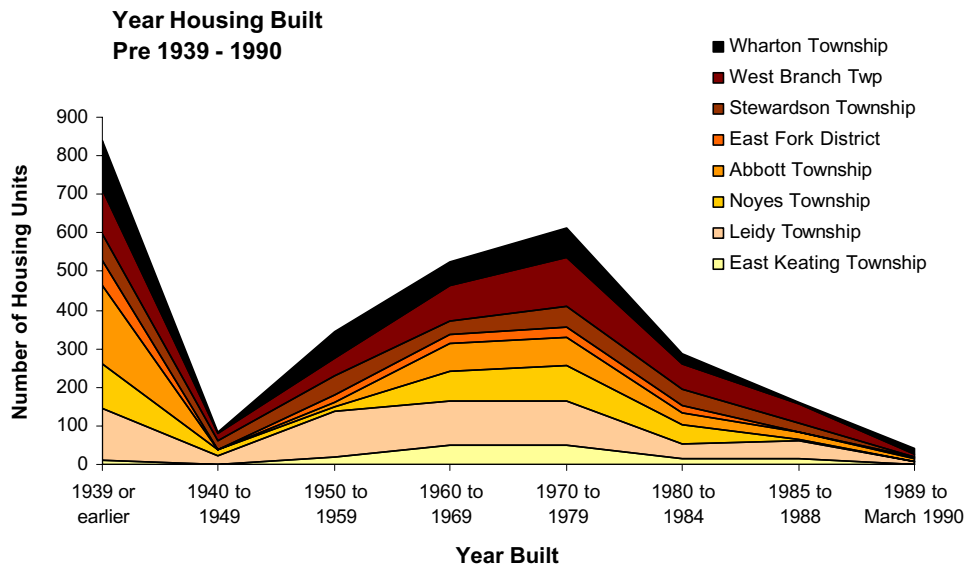
Year Housing Built
Pre 1939 - 1990

Figure 2.17 - Housing in the watershed according to the year it was built. A large portion of the housing in the watershed was constructured during early twentieth century logging boom.
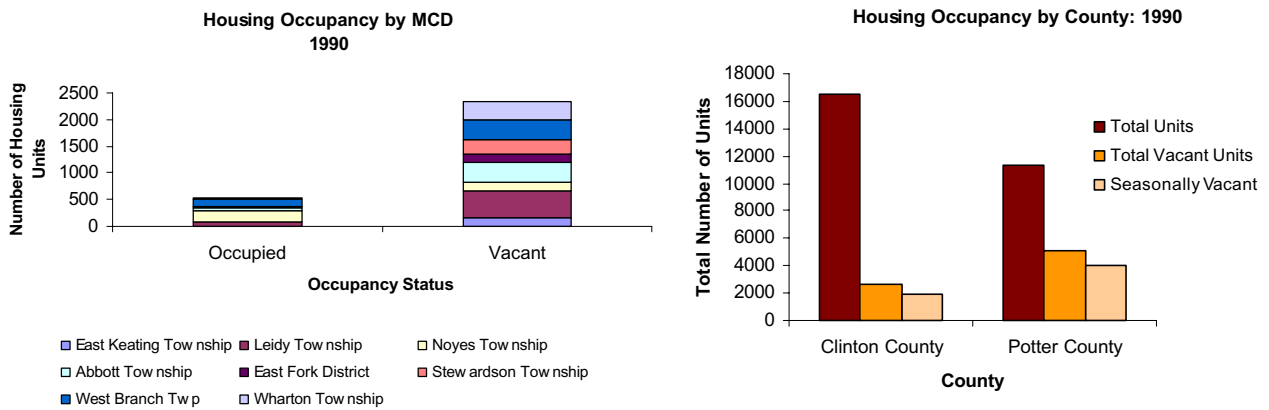

Figure 2.18 - The preponderance of seasonal residents accounts for the high housing vacancy rates wtithin the watershed.Compared to the housing occupancy by MCD, county trends reveal similar trends in high seasonal vacancy rates.

Introduction

Historically, logging, mining, agriculture and natural gas have supported the economy of Kettle Creek. The early twentieth century marked the end of the logging boom. While gas, agriculture and manufacturing have since declined in importance to the watershed, the timber industry still thrives within the state forests. The decline in manufacturing has also brought about a seasonally based economy that is driven by the heavy recreational use of the watershed.

Industry Trends Today

Following the early twentieth century logging boom, the watershed economy became strongly seasonal following hunting, fishing and recreational uses. Jobs available to the community and dollars spent within the community became limited to these high use seasons and thus unstable. During the nationwide recession of the 1980's, several key manufacturing industries left the local area resulting in an economic low point for the watershed in 1983. During this time, Clinton and Potter Counties documented unprecedented unemployment rates -- as high as 18%. Economic instability left the watershed ten years behind the rest of the country in recouping from this recession (Clinton County Comprehensive Plan, 1992). Recently, the International Paper Company, located outside of the watershed and one of the largest job providers in Clinton County left. As the job base continues to decline, the younger generation will continue to leave the watershed.

Today, the economy in the Kettle Creek watershed is supported predominantly by recreation. Seasonally-based establishments that accommodate the needs of recreational watershed user, such as food services and lodging businesses dominate the economy. This seasonal economy yields instability in that available jobs are limited to particular times of the year. (Clinton County Comprehensive Plan 1992). While manufacturing has provided a strong economic base to the watershed throughout the mid twentieth century, (See pages 27 & 37 for further information on the economy in Germania and Crossfork), the watershed has experienced a shift towards a service-based economy in the past two decades. During the 1980's, a sharp decline in the manufacturing industry occurred; as large manufacturing industries left, hotels, and other service industries increased by as much as 43%. This trend continues even today.

Employment and Unemployment

Employment rates in the watershed are just beginning to align with those of the state following the 1980 recession. As long as employment opportunities continue to decline, the decline in working class resident population will continue. In light of this township and county condition, state and county programs have been developed to attempt to rejuvenate the declining economies.

ECONOMIC
ANALYSIS

Percent population employed by industry

Labor
26%

Managerial
18%

27%

19%

25%

Sales/Support
22%

12%

3%

Crafts and
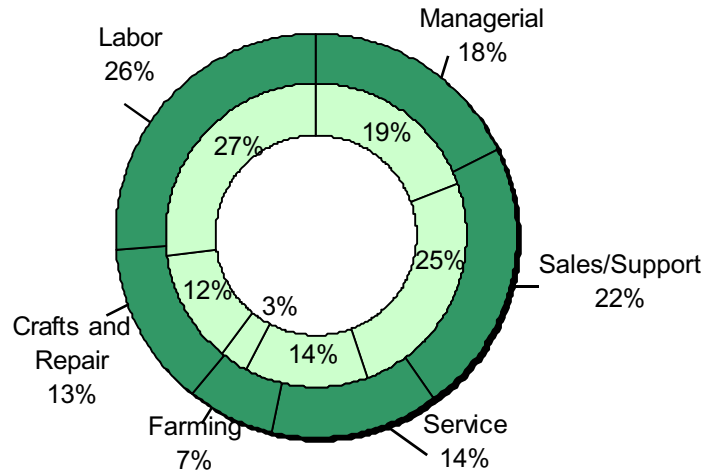Repair
13%

14%

Farming
7%

Service
14%

Figure 2.19 - Today, available jobs in sales, managerial and other service based industries greatly outnumber those in the labor (manufacturing industry). Above: the dark green represents Potter County while the light green represents Clinton County.

Percent Change in Employment: 1980 - 1990

% change in employement by industry

Managerial

Service

Farming

Sales/Supporty

Crafts and
Repair

Labor

Industry

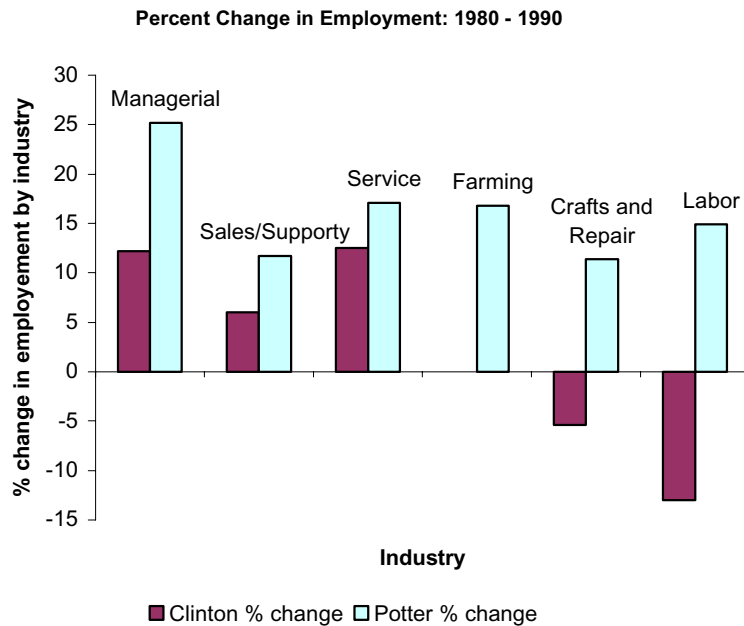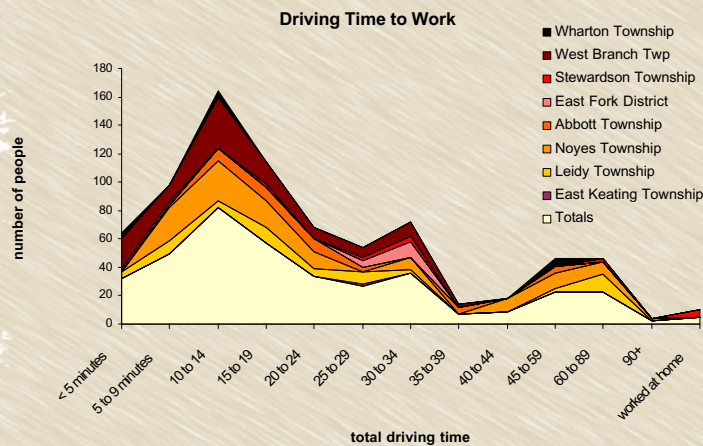■ Clinton % change   □ Potter % change

Figure 2.20 - Employment trends reveal a shift towards the service based industries such as hotels and restaurants. This is a direct result of major manufacturing companies leaving the area in the past few decades. Seasonality has yielded instability in the economy.

Driving Time to Work

number of people (y-axis: 0, 20, 40, 60, 80, 100, 120, 140, 160, 180)

Legend:
- Wharton Township
- West Branch Twp
- Stewardson Township
- East Fork District
- Abbott Township
- Noyes Township
- Leidy Township
- East Keating Township
- Totals

x-axis (total driving time): < 5 minutes, 5 to 9 minutes, 10 to 14, 15 to 19, 20 to 24, 25 to 29, 30 to 34, 35 to 39, 40 to 44, 45 to 59, 60 to 89, 90+, worked at home

Place of Work - County Level

Worked outside county of residence but within Pennsylvania 16%

Worked outside of Pennsylvania 1%

Worked in county of residence 83%

Place of Work by Minor Civil Division (MCD)

Worked in the minor civil division of residence 4%

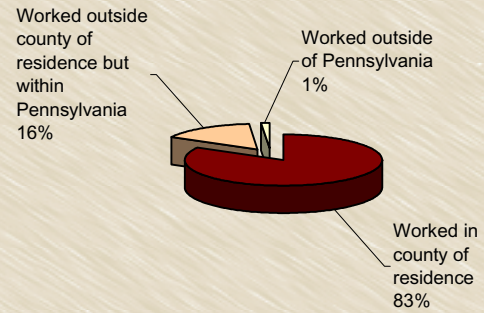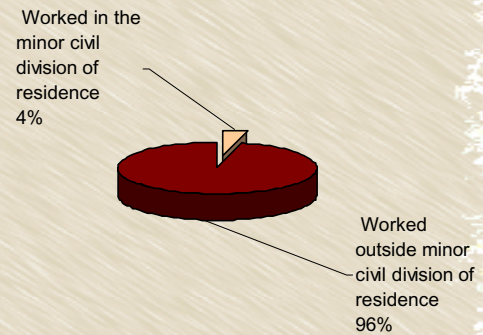Worked outside minor civil division of residence 96%

Figure 2.21 - The majority of residents within the watershed do not work within their home municipality. As the last major manufacturing establishments have left the watershed, residents have been forced to either leave the watershed or seek employment in other areas.

Employment in and Around the Watershed

The major employers that support residents within the watershed include large manufacturing companies and state, county and local governments. Because few of these industries are located specifically within the watershed, residents, particularly young people, are forced to seek employment elsewhere, commuting long distances or relocating. (See Figure 2.21: commuting time to work). Few Kettle Creek residents work within the boundaries of the watershed. Most commute 10-25 minutes to work on average. While 83% of residents work within the county in which they reside, 96% of working residents do not work within their township of residence. (See Figure 2.21 -

place of work by county / MCD). This is mainly due to large, industrial employers in the watershed who have left taking with them a potentially strong job base. The loss of the International Paper Company in Clinton County, left the Woolrich Company as one of the only remaining large manufacturing companies supporting the watershed. Lack of economic development in the watershed can account, in part, for the continued decline in population. Specifically, Leidy, Noyes and East Keating townships, (all of which rest within the boundary of Kettle Creek watershed), have some of the lowest development rates in Clinton county.

CCC timber plantations in Potter County.

Susquehannock State Forest..

Timber
Resources and the Economy

Forestry is a large part of the natural and economic heritage of Pennsylvania and likewise in Kettle Creek. While over 92% of the watershed is state forest land, a significant portion of this is commercially viable timber stands. These stands are abundant with valuable hardwoods such as black cherry and red oak and could provide extra revenue to the townships to support conservation efforts such as easement acquisition within sensitive headwaters areas in the watershed.

Timber in the state forests is managed by the DCNR Bureau of Forestry and all cutting practices must be environmentally certified. Ten percent of the revenue earned from timber harvesting is designated to a statewide forest regeneration fund to be redistributed to state forest districts. This money provides resources for forest regeneration such as saplings, tree shelters and deer exclosures. The remaining 90% of this income is distributed through the main office in Harrisburg, through a timber augmentation fund, to support Bureau district operations. DCNR also pays in lieu of taxes split three ways between the county, township and school districts at a rate of 1.20$ per acre. Noyes Township, located in the watershed, received the highest in lieu of payments in the state of Pennsylvania last year.

Among other changes to the 1996-2000 DCNR State Forest Management Plan, the 2001-2005 State Forest Management plan recommended a higher allocation of funds from Timber Harvesting to the local municipalities. This change, if made, could provide municipalities with fiscal resources to implement landuse conservation measures.

Unit Market Value of Farmland per acre

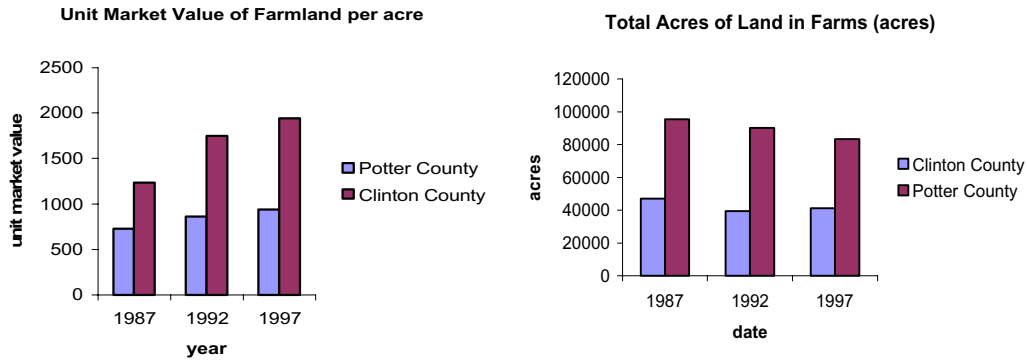**Total Acres of Land in Farms (acres)**

Figure 2.22 - While smaller-scale farmland production might not be as profitable as it once was, the market value of these lands is quickly rising. Declining farmland acreage accross the watershed, county and state is often a result of this land being purchased by development groups.

Agriculture and the Economy

Agriculture is an important source of income and jobs to the economy of north central Pennsylvania. Historically, in Kettle Creek, the agricultural landscape was a strong component of the economy and social system. Yet in recent years, the number of farms and total acreage of farmland has declined throughout the region and the state. Specifically, total farmland declined by over 12% in both Clinton and Potter County between 1987 and 1997 (Agricultural Census) (See Figure: 2.22 - Total acres in farmland and increase in market value of farmland over time). This loss of farmland can be attributed to large-scale agricultural industries that out compete smaller farmers - a trend that is occuring across the state and the nation. In turn, agricultural lands are generally clear and flat making them prime property for development. Thus, as agricultural production continues to decline, the market value of farmland is increasing by as much 57% (See Figure 2.22). This increase in turn encourages small-scale farmers who are losing profit on their land to sell their valuable property for commercial and residential development. (For more information on agriculture in Kettle Creek, see landuse, page 109).

Across the state, a decrease in the total number of farms relative to the farmland acreage suggests a transition towards larger scale agricultural production in the past 15 years. (Agricultural Census of the United States 1997). As these large-scale agricultural establishments out compete smaller family operations, farmers are forced to sell off valuable lands - often to developers.
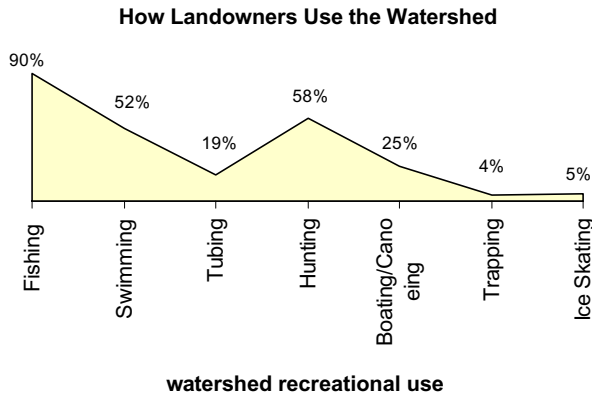

Agriculture in Potter County.

How Landowners Use the Watershed

watershed recreational use

Figure 2.23 - 'How landowners use the watershed', results of the 2000 survey conducted by the Clinton and Potter County Conservation Districts.

KCWA
DEMOGRAPHICS

The Power of Community Participation

At the heart of a cohesive, effective community watershed association are those people who live in the watershed - those people that perhaps value the landscape most - resident stakeholders. Included in this group are not only resident landowners, but also local township, county and state officials who are most familiar with the needs and desires of the community. The collaboration between and among these stakeholders not only ensures that decisions made regarding landuse in their watershed reflect their resident values, but also empowers a watershed association and in many cases, betters the long-term success of the group. Yet collaboration among stakeholders is but one piece of the puzzle.

While the efforts of the watershed association have successfully lead to numerous projects completed, further funding has its limits. Furthermore, increased local participation might assist the watershed association in its efforts to conserve the valuable lands of Kettle Creek. Key characteristics that could facilitate the long-term success of the association include: strong resident support of the association; resident and stakeholder participation in the association and its activities and efforts; uniform resident knowledge of problems and issues in the watershed; and finally partnerships developed with other local organizations, groups, businesses and municipal officials.

Association Membership Strong Resident Support

In the year 2000, Kettle Creek Watershed Association was supported by a healthy membership of 131 people. Considering the relative youth of the watershed association, this degree of membership is not only commendable, but also illustrates a broad interest in the health of the watershed and its association. However, only a small minority of resident landowners in the watershed are actively participating in the watershed association. Of the total membership from the year 2000, 3% were local watershed residents (a total of 4 people). Outreach, particularly to local residents of the watershed, might help the association target its efforts towards the desires of the local community. Local participation could potentially strengthen the long-term sustainability of the association.

Knowledge of Issues & Problems

A survey conducted in the Spring of 2000 by the Conservation Districts in association with the Kettle Creek Watershed Association received broad response from seasonal residents who owned camps or businesses in the watershed. Further survey of residents to identify trends in opinions about issues in the watershed might assist the association in its education and outreach strategies.
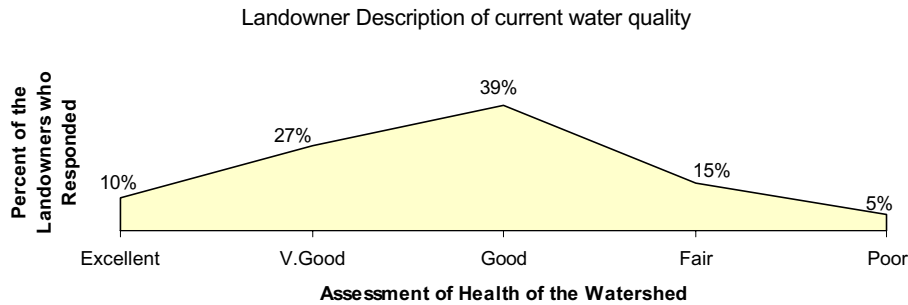
Landowner Description of current water quality

Figure 2.24 - *Landowner assessment of water quality in the watershed was highly varied. This suggests a need for information regarding water quality in the watershed. Further survey of the community could serve to identify education and outreach strategies that could be used to spread valuable information about the 'state of the watershed'. (Graph Data: Clinton & Potter County Conservation District 2000)*

A strong baseline understanding of watershed issues and the clear dissemination of information by the watershed association are identified strategies for an effective watershed association . Following the Clinton and Potter County Conservation District survey, the question regarding the overall watershed 'health' suggested that landowners in the watershed are not uniformly aware of basic watershed issues. While 13% thought it had improved, the rest were unsure or suggested it had declined (See Figure 2.24). While it might not be a realistic goal to seek community consensus on this question, response rates suggest that educational programs that emphasize the basic 'state of the watershed' information could be beneficial to the efforts of the association. For example: are Kettle Creek and its tributaries 'healthy'? What are the greatest issues or challenges that face the watershed and its residents concerning natural resources? What can be done about these issues individually? As a group? In addition to informing stakeholders about issues in the watershed (both positive and negative) this could also foster the establishment of a clear watershed based association mission which community members can understand and support.

Partnerships

Partnerships with other watershed and conservation organizations, municipalities and government officials and representative resident stakeholder groups could further strengthen the efforts of the watershed association. Similar collaborative efforts have begun in other areas and have achieved great success in other states (Michaels 1999). Not only would it provide additional financial, technical and human resources to the association but also it could foster the development of a cohesive watershed community. Municipal partnerships could facilitate landuse conservation strategies at a scale that bridges conventional municipal boundaries. Partnerships with state forests and parks could serve to promote and revive the economy via recreational and interpretation opportunities. (See Community Capacity Recommendations, page 225).

## Conclusions: What does this mean for Kettle Creek?

Trends in development today suggest an overall decline in population in larger cities in addition to a redistribution of population towards recreational and amenity areas such as the Poconos (Miller 1992). Following the increasing market value of land, the heavy recreational use of the watershed and the recent increase in watershed resident population, the private lands in Kettle Creek could become vulnerable to development that does not maintain the rural character that makes Kettle Creek such a unique place (see page 106 for more information about private lands and development in Kettle Creek). The continued monitoring of new development within private lands in the area could bring light to future development pressures before they occur. A comprehensive building inventory that identifies historic and current structures throughout the watershed could facilitate this monitoring. Finally, the implementation of future development guidelines could encourage development that maintains the current, low density development character of the watershed.

Collaboration between the county planners and Township Supervisors could facilitate the monitoring of overall development trends within the watershed. This would further assist in the alignment of township municipal code with county comprehensive plans. Careful guidance of the future development of Kettle Creek in addition to the conservation of the rural agricultural and industrial character of the watershed.

GOALS: SOCIAL

LU 2.1 Monitor growth and development in the watershed

CC 2.2 Increase the dialogue with people and other community organizations in the watershed, counties, and region.
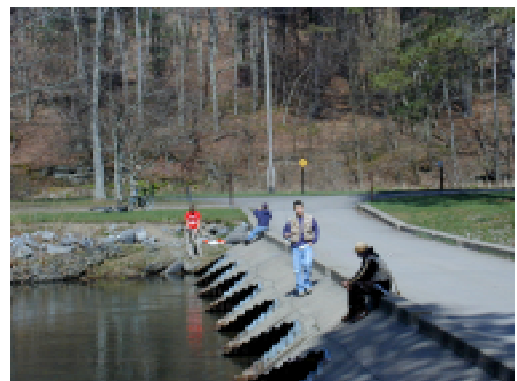
Introduction

Recreational opportunities within the Kettle Creek watershed are well established, well connected, and well documented. The abundance of publicly owned land, estimated at 92% (including 82% of streamside land), establishes easy access to forest- and water-based recreation for watershed residents and visitors alike. Numerous trail connections allow people to move throughout the watershed's recreational areas and the larger region with ease. Both public land managers and private interest groups have made recreational location, use, and regulation information available through brochures, guidebooks, and on-line resources. In addition to the destinations and activities found here, the watershed community further supports recreation with food, lodging, and supply services from its small business sector.

This recreational analysis will identify the role recreation and leisure activities play within the Kettle Creek watershed. It begins with a brief discussion of the role of recreation in our personal and community lives. This is followed by a summary of the types of recreation and leisure opportunities available in the watershed, and the analysis concludes with a discussion of possible, future opportunities and/or roles for recreation and leisure in the Kettle Creek watershed both as a means of enjoyment and as an industry.

The Role of Recreation and Leisure in American Society

According to Dr. Robert W. Douglass (1999) of the Ohio State University, "There has been an increasing trend in outdoor recreation and nature-based tourism participation from the time that record keeping began." He adds that, throughout the history of the United States in particular, "good and bad economic times seem to have direct changes in [recreational] style, but increases in involvement in outdoor recreation have accompanied both of them." Statis-

These hikers are preparing for a day's walk from Cross Fork.

tics generated by numerous agencies monitoring recreational activity seem to support such assertions. For example, a recent study by the National Survey on Recreation and the Environment found that, in 1995, approximately 95% of Americans (age 16 and older) participated in outdoor recreation and that the popularity of recreation and the activity in recreation re-

RECREATION
IN THE WATERSHED

lated industries were growing faster than the general population (Driver 1999; Douglass 1999). In other words, our society has repeatedly demonstrated a preference for outdoor recreation regardless of broader economic conditions (growth or recession) and social contexts (depression, war), and the continued acceleration of this "recreation" trend has become more noticeable over time.

Many would argue that this growing demand for recreational amenities is related to the increasing urbanization of our society. While the urban environment supports industrial efficiency and socio-cultural diversity, in most cases it fails to connect us with the natural environment that has traditionally and still, strongly, influences our national identity. Established as a nation on the frontier of civilization, we have become "an urban society that

As many residents of (and visitors to) the watershed know, Kettle Creek is a renowned trout fishing destination. Recently the Creek was featured on Trout Unlimited's National TV Program - TUTV

still clings to the concepts of the great outdoors and self reliance" (Douglass, 1999). Thus, as Americans continue to migrate toward urban areas, they will also demand continued public access to the undeveloped regions in order to preserve a part of their heritage. Recreation also provides many modern American citizens with their most intimate contact with our nation's natural resources and, for this reason, it can play both direct and indirect roles in the evolving concept of how America's lands should be cared for, used, and valued (Douglass 1999).

Subsequently, shifting social and community priorities of the last decade have seen changes in outdoor recreation and its management. Many community stakeholders are continually demanding increased involvement in environmental decision-making processes that directly affect the biophysical qualities of (and recreation on) both public and private lands (Driver 1999). This can be attributed to the recognition that informed, local changes in environmental and recreation policy can have noticeable, positive impacts on one's own recreation experience as well as a community's economic, social, and environmental well-being. Consequently, many American communities and local governments (chambers of commerce, regional planning offices) have taken a more critical look of the quality of life they offer. Their analyses have led to the allocation of additional resources for improving or enhancing their quality of life including the provision and proper management of open space and recreation resources.

Given this increased focus on recreation as a vehicle for improving quality of life, researchers and professionals tasked with documenting the growing importance of recreation and leisure in the U.S. have brought a number of other interesting recreation-related issues to light. These include the identification of benefits to individual and community health associated with recreation and leisure activities and a more specific analysis of the economic opportunities presented by the recreation and leisure industry.

While most of us accept recreation as "good for us," we rarely consider the range of benefits that recreation provides. According to Barry L. Driver, USDA Forest Service, (1999) the benefits of recreation and outdoor leisure activities for individuals and communities "pervade practically all aspects of [human] behavior and performance: mental and physical health, family and community relations, self-concept, personal value clarification, perceived personal freedom, sense of fitting in, pride in one's community and nation, performance in school and at work, ethnic identity, formation of social networks and systems of social support, spiritual renewal, involvement in community affairs, environmental stewardship, and economic growth, development, and stability." Driver's comments reflect the fact that recreation is not strictly a physical activity but a social and psychological one as well. Regardless of the type of activity-bicycling, bird watching, fishing, or sports-recreation can offer the participants or groups of participants fulfillment in a variety of ways. His statement also implies that recreational participation often incorporates travel costs and/or equipment investments that both directly and indirectly benefit local economies.

Recreation and leisure related industries have repeatedly been identified as one of the top five industries in the U.S. and often rank in the

top three economic sectors as revenue generators for most states (Driver 1999). A watershed with many recreation opportunities, like Kettle Creek watershed, is a prime example of the ways in which economic activity can be generated by the recreation industry. Land values in northern Potter County have been rising steadily as more and more people throughout the state of Pennsylvania relocate their homes or build second homes closer to the tranquil setting and recreation opportunities found within northern and central Pennsylvania. Several small businesses have been established for some time to meet the needs of recreationists in the watershed and, as recently as 1990, the services industry in and around the Kettle Creek watershed accounted for 26% of watershed resident employment (Look to the Demographics and Economics Sections of this document for more related information). Service establishments like tackle shops, snack shops, motels, and rental cabins all support and depend upon the recreational quality of the local environment.

In conclusion, recreation and leisure opportunities are vital to a healthy community or region like the Kettle Creek watershed. In addition, and because of continued accelerating nation-wide growth trends in the recreation industry, Kettle Creek stands to offer many opportunities for health, well-being, and resource appreciation to future generations of Pennsylvanians. It is very important to recognize the central role of recreation and recreation planning in maintaining the quality of life, its role in bringing people to Kettle Creek, and it role in fostering resource stewardship in the watershed. With a proper perspective, the future of (and for) recreation in the Kettle Creek watershed could be quite positive.

The tackle shop, pictured above, is just one example of a local business supported by the recreation industry.

Recreational Opportunities Within Kettle Creek Watershed

Recreational and leisure activities supported and/or provided within the Kettle Creek watershed include boating, camping, fishing, horseback riding, hunting, hiking, biking (trail and roadway riding), swimming, picnicking, ATVing, environmental education and interpretation, sledding, tobogganing, ice fishing, ice skating, snowmobiling, skiing, scenic driving, and several others. In some instances, these activities can be pursued on privately owned landholdings, but the majority of these activities are supported on the 92% of watershed land under public and institutional management.

As stated above, the watershed's public lands are very well connected. A vast network of trails (e.g. hiking, snowmobiling) and roads within each of the parks and forests allows access to many remote parts of the watershed. Two, larger regional trail systems (The Donut Hole and Susquehannock Trail Systems) connect recreational destinations within the watershed with many more recreational sites beyond the watershed boundary for most of the year. For example, Cherry Springs State Park,

Major Trail Systems Passing through the Kettle Creek Watershed

Legend:
- Watershed Boundary
- r Vistas
- Watershed Roadways
- $ Fire Towers
- Watershed Stream Network
- Donut Hole Trail System

State Parks
- Kettle Creek State Park
- Ole Bull State Park
- Susquehannock Trail System
- Minor Civil Divisions

State Forests
- Elk State Forest Inholding
- Sproul State Forest
- Susquehannock State Forest
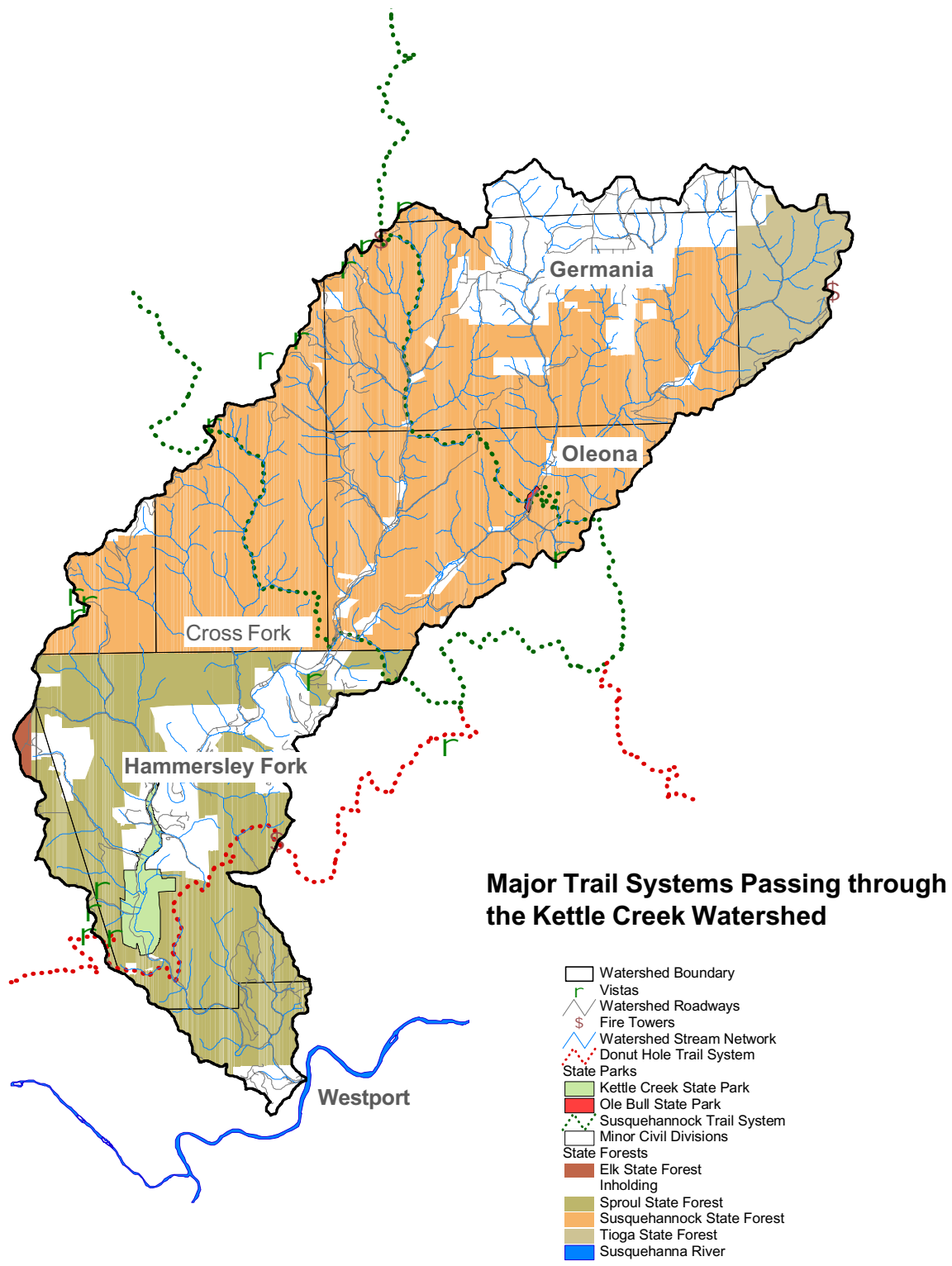- Tioga State Forest
- Susquehanna River

Figure 2.25 - Major Trail Systems Passing Through the Kettle Creek Watershed

Denton Hill Ski Area, and Lyman Run State Park can be reached via the Susquehannock Trail System. Other destinations, like Bucktail State Park and Natural Area, Elk State Forest and State Park, Hyner Run State Park, Johnson Run Natural Area, and Sinnemahoning State Park can be reached via the Donut Hole Trail. (See Figure 2.25 - Trail Systems). In the winter months, alternative travel routes and destinations become available as many township roads and trails open for snowmobile use (See Figure 2.26 - Snowmobile Trails).

The following paragraphs provide a brief summary of the Kettle Creek watershed's public lands (parks and forests) and the services provided by their managing agencies.

State Parks

In the years following the establishment of Valley Forge State Park in 1893, Pennsylvania has developed one of the nation's largest parks systems with over 116 outdoor recreational areas. The PA Bureau of State Parks was formed in 1929 "to provide outdoor recreation facilities in a natural setting, to preserve park areas and to provide environmental education opportunities" (PADCNR 2001). Since that time the state parks system has grown consistently, with the largest growth occurring under former Department of Environmental Resources Secretary Maurice K. Goddard (1955-1970).

During his administration, Goddard strove to establish a state park within roughly 25 miles (40.2km) of every Pennsylvanian, to insure that all citizens would have ample access to outdoor recreation opportunities. Goddard would most likely be pleased with the state parks system of today (now managed by the PA Department of Conservation and Natural Resources), which offers recreational, educational, and leisure opportunities to everyone with relatively short travel times. The system includes two state parks, Kettle Creek State Park and Ole

Bull State Park, within Kettle Creek watershed. Elk State Park lies outside the watershed boundary on the western side of Elk County but is linked to the state parks within the watershed through regional trail systems.

Kettle Creek State Park: Kettle Creek State Park encompasses 1793 acres (725.6 ha) along the main stem of Kettle Creek in western Clinton County. The focus of the park is the 1300 foot (396m) long reservoir and the resultant 4.5 miles (7.2km) of shoreline. The reservoir, created by the Alvin R. Bush Dam in 1962, arose from a joint flood control project with the U.S. Army Corps of Engineers and the former Pennsylvania Department of Environmental Resources (DER).

The reservoir offers warm water fishing and seasonal swimming, non-powered and electric boating, ice fishing and ice skating. Land-based activities within the park include camping (tent or trailer), picnicking, environmental education and interpretation, horseback riding, hiking, mountain biking, and winter sports (sledding, tobogganing, snowmobiling, and cross country skiing).

More information about Kettle Creek State Park can be obtained on-line at http://www.dcnr.state.pa.us/stateparks/parks/kettle.htm or by contacting the park office.

The reservoir created by the Alvin Bush Dam supports boating and a warm water fishery in the summer months. In the winter, it is an excellent ice fishing destination.
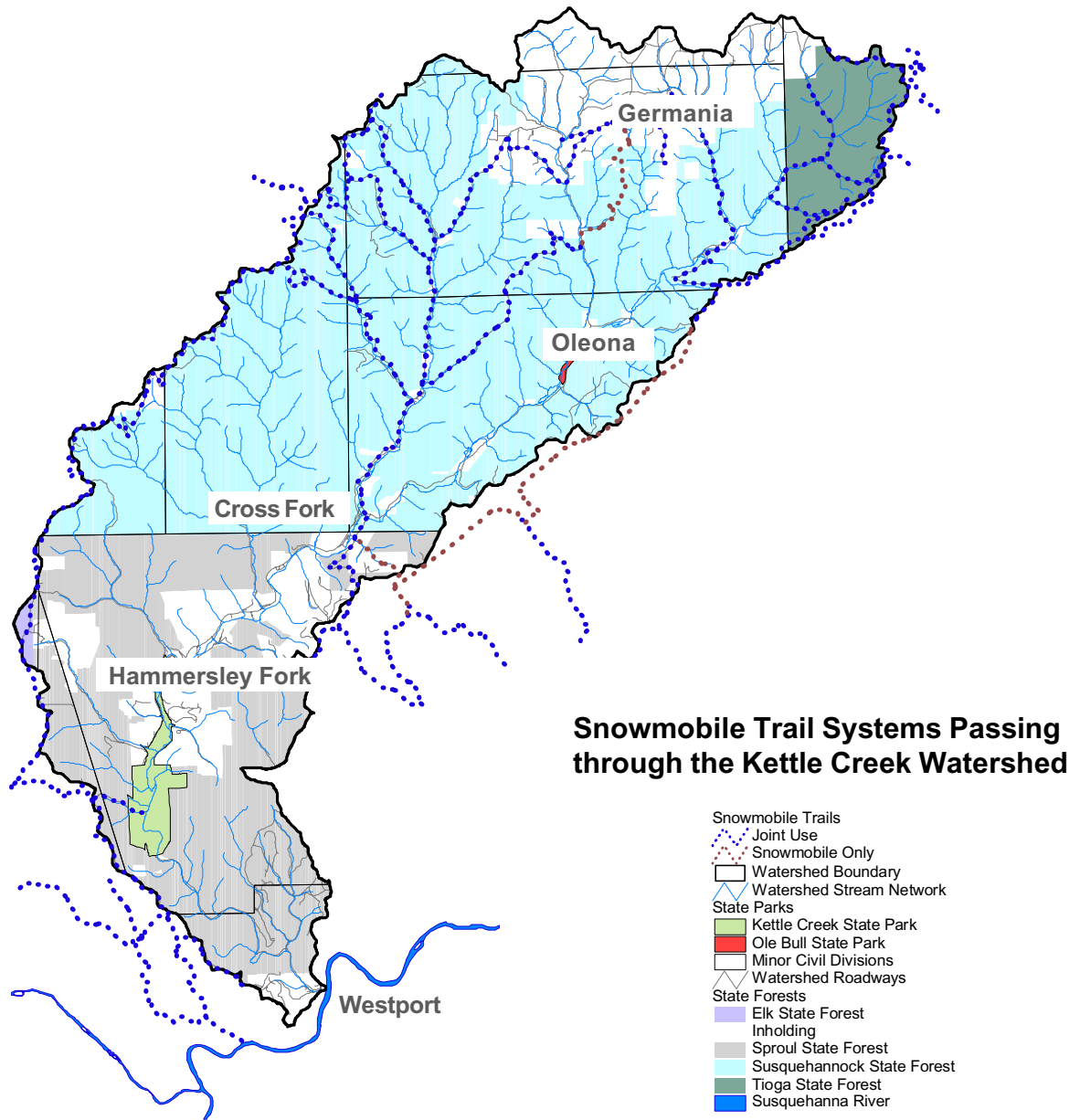
Snowmobile Trail Systems Passing through the Kettle Creek Watershed

Snowmobile Trails
····· Joint Use
····· Snowmobile Only
☐ Watershed Boundary
Watershed Stream Network
State Parks
■ Kettle Creek State Park
■ Ole Bull State Park
☐ Minor Civil Divisions
Watershed Roadways
State Forests
■ Elk State Forest Inholding
■ Sproul State Forest
■ Susquehannock State Forest
■ Tioga State Forest
■ Susquehanna River

Figure 2.26 - Snowmobile Trail Systems Passing Through the Kettle Creek Watershed

Ole Bull State Park: Located in southern Potter County, Ole Bull State Park is named for Ole Bornemann Bull-a famous Norwegian violinist who attempted to settle a Norwegian colony in the area in 1852. The land that now comprises the park was purchased from timber companies between 1909 and 1925. Civilian Conservation Corps (CCC) Camp S-87, which was located within the park, built most of the current park facilities in the 1930's.

Recreational opportunities at Ole Bull State Park include camping in both fields and forest areas, vacationing in the Ole Bull Cabin, environmental education and interpretation through provided programs and the self-guided Beaver Dam Nature Trail, swimming, fishing in both standard stocking and special regulation areas, picnicking, hunting, hiking, and winter sports (cross country skiing, snowshoeing, and snowmobiling).

More information about Ole Bull State Park can be obtained on-line at http://www.dcnr.state.pa.us/stateparks/parks/ole.htm or by contacting the park office.

State Forests

Following the industrial boom of the late 19th century, Pennsylvania, or "Penn's Woods," was virtually devoid of forest cover. Many of the trees were taken for lumber and wood products or to fuel the furnaces of the state's early iron and steel industries. However, it was under the guidance of Dr. Joseph Trimball Rothrock (a Civil War veteran, a professor of botany, human anatomy, and physiology, the first President of the Pennsylvania Forestry Association, and the first commissioner of PA's Division of Forestry in the Department of Agriculture, which would later become the Bureau of Forestry) that the state began to purchase abandoned timberland in 1895. The purchases were made with the intent of reclaiming

The beach at Ole Bull State Park

A portion of the Ole Bull Castle's foundation in Ole Bull State Park.

the woodland for forest and water conservation. Consequently, Pennsylvania has seen many of its once vast forests rejuvenated. Today, there are roughly 4.3 million acres (1.7 million ha) of publicly owned forests and approximately 17 million acres (6.9 million ha) of forested land (both publicly and privately owned) within the state today.

Snowmobiling is both a popular recreation activity and a mode of transportation in the winter..

Of these 4.3 million acres (1.7 million ha) under public management, 2.1 million acres (849,843 ha) are under the stewardship of 20 separate state forest districts. Pennsylvania's state forests are managed to provide some of the world's most valuable timber, clean water for the state's streams, and recreation opportunities for all Pennsylvanians. Three of Pennsylvania's state forests have significant holdings on the Kettle Creek watershed: Susquehannock, Sproul, and Tioga State Forests. A fourth, Elk State Forest, covers only a small portion of the western part of the watershed and is not discussed here in detail.

Susquehannock State Forest: The Susquehannock State Forest derives its name from the Native American tribe that once inhabited much of northern and central Pennsylvania. It encompasses 262,000 acres (105,000 ha) in Clinton, McKean, and Potter Counties, 82,645 acres (33,445 ha) of which lie in the

Kettle Creek watershed. Recreational opportunities in the Susquehannock State Forest include sight-seeing from trails and roadside vistas, hiking (89 trail miles, or 142 km, are actively maintained with signs), hunting, fishing, ATVing and snowmobiling (in designated areas), and cross country skiing.

The Hammersley Wild Area can also be found within the Susquehannock State Forest along the Hammersley Fork tributary of Kettle Creek. The Bureau of Forestry manages this tract of land as a wild area, though private mineral and gas rights in a portion of the area prevent its full designation. The Hammersley Wild Area is officially closed to motorized vehicles and possesses the last of the "old growth" hemlock trees in the watershed in the Forest H. Duttlinger Natural Area. The significance of the Duttlinger Natural area is recognized throughout the state of Pennsylvania.

More information about Susquehannock State Forest can be obtained on-line at http://www.dcnr.state.pa.us/forestry/forests/susuq.htm or by contacting the district forester's office at Coudersport, PA.

Sproul State Forest: At 290,000 acres (117359 ha), Sproul State Forest is the largest state forest in Pennsylvania. Roughly 31,470 of those acres (13000 ha) are in the Kettle Creek watershed. Because of its size, the Sproul State Forest offers a variety of both forest and streamside settings and opportunities for recreation. Possible activities include hunting, fishing on 400 miles of freestone and cold water streams with 12 reaches designated as Wilderness Trout Streams (two of which are located in the Kettle Creek watershed-John Summerson Run and the upper portion of Hammersley Fork), hiking with connections to both the Chuck Keiper and Donut Hole Trails, horseback riding, canoeing, bicycling, scenic driving, ATVing and snowmobiling in designated areas, and cross country skiing.

More information on Sproul State Forest can be found on-line at http:// www.dcnr.state.pa.us/forestry/forests/ sproul.htm or by contacting the district forester's office in Renovo, PA.

Tioga State Forest: Tioga State Forest derives its name from the Native American word "tyoga," meaning "two rivers," in recognition of the Seneca tribe who once owned much of the land that is today's state forest. Tioga State Forest encompasses 160,000 acres (64,750 ha) in Tioga and Bradford Counties, including less than/roughly 7357 acres (2977 ha) in the Kettle Creek watershed. Much of the land in the Tioga State Forest was former property of timber and land holding companies and, thus, the landscape within the forest is reflective of past resource extraction through the composition of existing timber stands. Much of the parks forest's present infrastructure was developed and built by the Civilian Conservation Corps when the land became property of the state of Pennsylvania.

More information on Tioga State Forest can be obtained on-line at http:// www.dcnr.state.pa.us/forestry/forests/ tioga.htm or by contacting the district forester's office in Wellsboro, PA.

Recreation and Cultural history

The contemporary Kettle Creek landscape, which supports such a diverse recreational environment, is the result of many historical actions taken by the landowners and residents of the watershed. Previous attitudes toward commercial resource extraction, land management, and the importance of providing outdoor recreation opportunities are apparent in the mosaic of existing forest communities, patterns of current land development, and the location of existing recreation facilities. Consequently, many sites of culturally and/or historic significance

lay within (or adjacent to) public park and forest holdings. In addition, Kettle Creek's parks and forests contain artifacts (structures, structural foundations, bridge abutments, rail beds) that reveal the watershed's unique history.

While the most actively supported recreation and leisure activities in the watershed are physically challenging, forest- and water-based activities, historic interpretation and heritage tourism offer yet other possible avenues for public and private land management. The Pennsylvania Heritage Tourism Study, completed in 1999, reported that heritage tourism represented 12% of the tourist population and 25% of the state's tourism revenue in 1997 (Shifflet 1999), generating jobs, income, and tax revenue for local economies. With the potential for increased local revenue, heritage tourism has been used as both the lead and supporting components of economic revitalization projects in other Pennsylvania counties (for example, Bucks County) and has been supported by a wide range of community interest groups.

At its core, heritage tourism serves two purposes: commemoration and education. It has economic and recreational factors as well, but fundamentally it is about honoring historic people, places and events by sharing their significance with current generations. In the case of Kettle Creek, the interpretation of historical sites that overlap the existing recreational network could compliment a strong recreation industry. Historic interpretation and recreation destinations have already been intertwoven in the form of the sign at the castle vista at Ole Bull State Park-allowing for an initial understanding of the colony. This state park was also logged by the Lackawanna Lumber Company, leaving a changed forest and a narrow railroad grade that rides the lower slope of the mountain. The park later benefited from the work of the Civilian Conservation Corps, Camp

A snow covered foundation of a cabin built by the Civilian Conservation Corps Camp S-87 in Ole Bull State Park.

S-87, from 1933 to 1941 in the planting of trees across the degraded logging lands, construction of picnic and swimming facilities, and trailblazing for recreation and fire control. These historical occurrences are also evident in the landscape in many ways and present their own interpretation opportunities.

Ole Bull State Park is one of many sites in the Kettle Creek watershed that subtly express the repeated use of the landscape by various people and could enhance the recreational network with additional interpretation. Sites relevant to resource extraction are found throughout the state forests, since logging and mining occurred on such a large scale. Still others are located along the main stem corridor, where the stream network provided fertile soils for early Kettle Creek farms and mills. (See Scenic and Visual Analysis for more details on history along the main stem.) These sites offer opportunities to share, celebrate, and promote rich cultural and environmental history of Kettle Creek through the recreational network.

Recreation and Cultural Events

Recreation in the Kettle Creek watershed also includes several cultural events hosted within the watershed boundary and regional and events for which Kettle Creek businesses and institutions offer lodging and food services. Of course, Kettle Creek is always a popular destination for the first days of trout season, but many other events offer enjoyable opportunities to the both watershed residents and visitors alike. Ole Bull State Park has hosted an early summer music festival in recent years, and the Cross Fork Snake Hunt bring visitors from across the country to Kettle Creek each June. The Barkpeeler's Convention and the Woodsman Show are also held each summer at the Pennsylvania Lumber Museum and nearby Cherry Springs State Park, respectively. Late autumn draws seasonal residents and visitors to public and private camps for the first days of buck and bear season.

These events represent the culture of Kettle Creek and its surrounding region. They provide opportunities for learning about the condition and use of the environment and about others in the watershed community. They also contribute to the identity of the watershed as a high quality natural environment that both past and present generations value.

Future Recreation Possibilities for the Kettle Creek Watershed

Recreation indeed plays a significant role in the lives of watershed residents and other members of the watershed community. There are abundant and diverse activities enjoyed throughout the watershed and the year, and the popularity of these activities supports camps, stores, and restaurants owned and operated by watershed residents. But it is still important to note that at the core of recreation is the quality of Kettle Creek's natural resources,

for it is the natural environment that provides the quality of life that residents desire and that visitors enjoy.

Consequently, maintaining a high quality of life will require the conservation of natural resources and recreational opportunities in the Kettle Creek watershed. With such a high percentage of public land, an active and open dialogue with state park and state forest management is vital to the future of recreation in this watershed. Private landowners can also contribute and expand the collective knowledge of watershed history and culture by through their voluntary participation in interpretive and conservation projects-thus improving the quality of the resources under their ownership as well. Finally, visitors and non-residents interested in the quality of natural resources may supply conservation projects with knowledge, funding, and manpower. Together, the collective management and support of both natural and cultural resources and programs can maintain and enhance both recreational opportunities and the existing character of the watershed.

It is important to note that there are programs and land management initiatives available to collaborative resource managers, communities, and other stakeholders that are intended to recognize, promote, and protect outstanding regional natural resources, recreational opportunities, or culturally significant open space networks. Greenways are one of the more popular types of these initiatives (others include conservation easements and transfers of development rights). A greenway, by definition, is a linear overland corridor established along a natural feature or transportation corridor which may be established to meet a variety of needs. To learn more about greenways as a possible alternative for preserving and en-

GOALS: RECREATION

LU3.2 Designate and protect high value areas. Encourage the protection of these areas through buffers and the promotion of natural areas or recreational open spaces.

• Greenways

WI1.4 Recognize tand protect the unique natural features of the watershed that have influenced resident life and visitor attendance.

WI1.2 Explore and celebrate the rich cultural history of the watershed as acommunity and for visitors.

• Continue to integrate local history with recreational opportunities.

hancing many of the positive aspects that support recreation and a high quality of life, see the greenways appendix on page 267.

These photographs illustrate the pastoral character of the northern watershed landscape.

VISUAL
ASSESSMENT

Introduction

There are several reasons for undertaking a visual assessment within the Kettle Creek watershed. They include the need to recognize the existing scenic quality within the watershed, to qualitatively characterize that scenic quality so that it can be more accurately promoted and conserved, and to establish a baseline to evaluate future change in the watershed landscape.

This visual assessment is composed of three parts. The first part is a broad categorization of the scenic qualities of the watershed. Kettle Creek is truly beautiful for a number of quite specific reasons. This section will characterize the current state of the landscape in both words and images in the hopes that these

qualities may be preserved for future reference and analysis in the face of landscape change.

The second part of this visual study identifies the unique character, nature, and importance of the central travel corridor through the watershed, namely the roadway along the main stem of Kettle Creek (from Westport to Oleona) and Rt. 144N along Little Kettle Creek to Germania. This "roadway study" is intended to recognize 1) the visual character, spatial character, and value of the several Kettle Creek watershed roadways as "scenic driving routes," 2) the visible historical significance of some parts of their alignments and adjacent historical sites, 3) the visual significance of Kettle Creek, itself, from the roadway, and 4) the ability of these roads to speak of the character of the watershed to motorists "through the windshield."

The third, and final, part of this particular study is dedicated to Kettle Creek's potential for inclusion in Pennsylvania's Scenic Rivers System, a product of the Pennsylvania Scenic Rivers Act. The PA Scenic Rivers Act was enacted to recognize the outstanding recreational and aesthetic values of many of the state's waterways and adjacent land areas. This chapter will include a brief summary of the Scenic Rivers Program, more information about the Scenic Rivers program as it may, potentially, apply to Kettle Creek can be found in the appendices at the end of this report.

Visual Condition of Kettle Creek watershed

As many residents of Kettle Creek have stated, the watershed landscape is beautiful. The truth of this statement is rooted in our unique American values for the qualities of rural landscapes: their wildness juxtaposed by their visible pastoral and agricultural heritage, their field, woodland, and wildlife productivity, and their similar appearance to the landscapes on which our founding fathers lived-composed of

lush forests, rich fields, flowing streams, idyllic farms, and small, personable villages.

In each of these rural qualities, we find a myriad of colors, textures, forms, and spaces appearing across the landscape that draw our admiration again and again, throughout seasonal changes. The watershed's many acres of hardwood forest display lush green foliage in late spring and crisp colors in autumn. Its fields and meadows roll across the gentle slopes of the valley floor and the headwaters uplands. Its riffling waters mask distant sound and still pools mirror the changes in the vegetation as well as the ever-changing sky above. Residences are also scattered throughout the landscape. Some are clustered in small villages, while others are situated among the fields, woodlands, and springs. Many, however, are constructed from local materials and styles and appear as if they, too, were grown from this very landscape.

Together, they comprise our view of the watershed from the road, from the ridge, and from the stream. The roads allow glimpses of the stream through the streamside vegetation and draw attention to the mountainous terrain through their course. From the ridges we can see into the valleys, patterned with forest, plantation, and clearing, and across the rolling uplands of a cultivated landscape. From the stream, the views are cast through the stream corridor itself and contained within the adjacent streamside forests.

In addition to patterns we see in the natural environment, there are patterns or trends in the design and placement of structures that we see today. Residences are typically two-story buildings, while camps are generally only one-story. Many residences were likely built before 1900, while camps have flourished since the 1920s. In the valley, structures are built at the foot of the mountain, nestled into a hollow, or sited on a knoll. Along the ridges, buildings

are typically sited for views across the landscape, rather than within it. Buildings in the villages closely line the road, while others are set back several yards, at least. In addition, there may also be patterns in the placement of porches or windows. These characteristics give a sense of coherence and a consistent character to the Kettle Creek watershed.

One of the best ways to understand and preserve the appearance of the watershed is through photography. Current digital imaging applications allow us to create realistic images of land use applications, proposed develop-

Undisturbed woodland and stream environments exhibit the intrinsic beauty of north central Pennsylvania.

ABOUT VISUAL ASSESSMENTS

This study is filled with images of the watershed in its current condition; both residents and visitors can contribute to this collection with relative ease. These watershed images can serve as both a baseline indicator for the current quality of the watershed landscape and as a tool to evaluate future change.

This evaluation process can also be done by hand cutting and pasting several photographs (of the same size and scale) together. One image (the base image) is typically a photograph of the landscape in question. The other images (from which objects are cut) are of typical development (homes, offices, and so on). These objects are then pasted onto the landscape (base) image to better visualize what the landscape could look like if it is developed.

These images (taken from Sinking Valley in central PA) demonstrate the capabilities of digital photo editing for evaluating landscape change. (Photos by R. Binkowski, A. Feldman, and M. Little; PSU Dept. of LArch)

ment, or forestry practices in order to evaluate the visible landscape change. These composite images are often more easily understood by a general audience, who can then discuss and vote for or against the proposal with a more comprehensive understanding of the impact of development.

In short, it is necessary to recognize the outstanding visual quality of the Kettle Creek watershed and to identify the significant visual components (for example, open fields, forested hillsides, or works of architecture) of that quality in order to conserve the watershed character that so many enjoy. These components, when identified and analyzed, can then be used to guide development that contributes to, rather than significantly alters or degrades, the watershed character.

The Kettle Creek Corridor Roadway Study

When was the last time you drove a truly beautiful route? What made it beautiful? Was it the focal points or objects in view? Was it a dramatic background? Was it the constantly changing composition that you saw through the windshield? Or was it the sense or rhythm of motion imparted by the turns in the road? Each of these factors can contribute to a positive travel experience, and many of them can be found along major routes through the Kettle Creek watershed.

In The View from the Road, Donald Appleyard (1964) writes, "Those who are alarmed by the ugliness of our roadways emphasize the repression of vice rather than the encouragement of virtue." He believes that it is possible to emphasize the potential beauty of roadways rather than to accept them as "one more price of civilization." In truth, we Americans spend an overwhelming amount of time in our cars as a captive audience-our eyes fixed on the scene framed by windshield during our daily commutes and many of our other travels. Travelers

These views from the roadway corridor between Westport and Germania illustrate the dramatic scenic quality of the landscape: a sinuous valley; forested hillsides of pine, hemlock, and hardwoods; pastoral headwaters; and a stream that seems to braid with the road and riparian vegetation.

in the Kettle Creek watershed (both residents and visitors) are no exception.

Throughout our daily, weekly, and monthly travels we observe far too many "ugly" roadways and too few visually engaging routes. This roadway study contends that the roadway corridor from Westport to Oleona and along Little Kettle Creek to Germania is not an ugly roadway. Rather, it is a rare, attractive roadway that engages the viewer with both eye-catching sites and a unique sense of motion. Therefore, it deserves to be recognized for many of the positive qualities that it possesses.

The overall goal of this roadway study is to raise awareness for the driving experience in the Kettle Creek watershed. As Appleyard proposes, "road watching could be a delight ... a dramatic display of space and motion, or light and texture, all on a new scale" (1964). Travel along the corridor from Westport to Oleona to the headwaters of Little Kettle Creek could be both a kinesthetic and rich visual experience in

which motorists knowingly feel the turns and the rise and fall of the road across the landform and anticipate the views found around each bend.

In addition to the moving and visual experience, roadside historical and natural sites in the Kettle Creek watershed can also be included as educational and enlightening sidelights because of their significance and their proximity to the roadway. The drive from Westport to Germania along the main-stem and Little Kettle Creek could in fact tell the cultural history of the watershed through a series of interpreted locations, including the settlement at Westport, the three Civilian Conservation Corps camp sites and their plantations, the Summerson farm (the lower campground of the Kettle Creek State Park), the local gas supply for light and heat, the village of Cross Fork, once a booming lumbering town, the (rebuilt) home of Dr. Edward Joerg and the Henry Andresen farm (both of the Norwegian colony), Carter Camp (and its role in road construction, the Norwegian colony and cheese

production), farms of distinctly historic character, and their historic business and social center, Germania.

There are yet other benefits to completing a scenic roadway study. The first of which is a "snapshot" in time which documents the current qualities that make an attractive roadway corridor and identifies areas for possible future enhancement. A second benefit is that a completed roadway analysis may help examine alternatives for improving existing roadways that are short of constructing or reconstructing them-saving both time and money. For example, a confusing or dangerous stretch of roadway or intersection could be improved by removing excess vegetation to improve visibility and through the provision of additional signage in places that the driver's eye is most likely be drawn. A third and final benefit is the identification of areas, frequently seen by travelers in the watershed, that posses valuable or unique characteristics (i.e. exceptional vistas) that may face significant pressures (i.e. development or infrastructure and utility installation) and should therefore be identified as possible preservation efforts to preserve the visual quality and the popular identity of the watershed.

Before discussing the scenic roadway study graphic(s) (on pages 281 and 283) included in the appendix, it is important to note several factors associated with automobile travel. Appleyard argues that the modern car interposes a "filter" between the driver and the world he or she is experiencing and that our senses of sound, smell, and touch are all subordinated to our sight, which is, in turn, framed by the windshield due to our relative inactivity. Thus, this study focuses mostly on the visual aspect of driving.

It is also important to note that two people rarely have the exact same experience while driving and that they rarely travel the very

same route from start to finish at any given time. The highway experience is both "reversible" (we can travel in the opposite direction on the same segment of road and sometimes see things in an entirely different manner), and "interruptible" (drivers frequently start and stop at different points) (Appleyard 1964). For the purposes of this study, however, it was necessary to establish a single study route.

The corridor beginning in Westport, traveling through Oleona, and traveling portions of Rt. 144N to the northern border of the watershed, was selected for its consistent use by residents and watershed visitors. It encompasses not only the most heavily traveled road segments in the watershed (according to the Pennsylvania Department of Transportation), but also the particular routes used by many Pennsylvanians (arriving from PA Routes. 80, 220, 144, 120) to access recreational sites at both Kettle Creek and Ole Bull State Parks. The roadway along Little Kettle Creek, which passes through Germania, was also selected because of its serpentine nature, the fact that it passes through a beautiful part of the pastoral northern reaches of the watershed, and because it serves as a link to destinations north of the watershed like those on PA Route 6 in Potter County.

The following paragraphs are also intended to aid in interpreting the diagrams in the appendices, on pages 281 and 283. A GIS generated map has also been provided as a reference for locating areas of interest on the diagrams. The composition of the visual roadway analysis diagrams, is as follows: Photographs taken at one mile intervals along the study route are located in the column at the far left to provide orientation on the sheet. Profiles of the roadway which indicate the relative position of the roadway, the stream and the ridgelines are located in the next column (a fine line has been
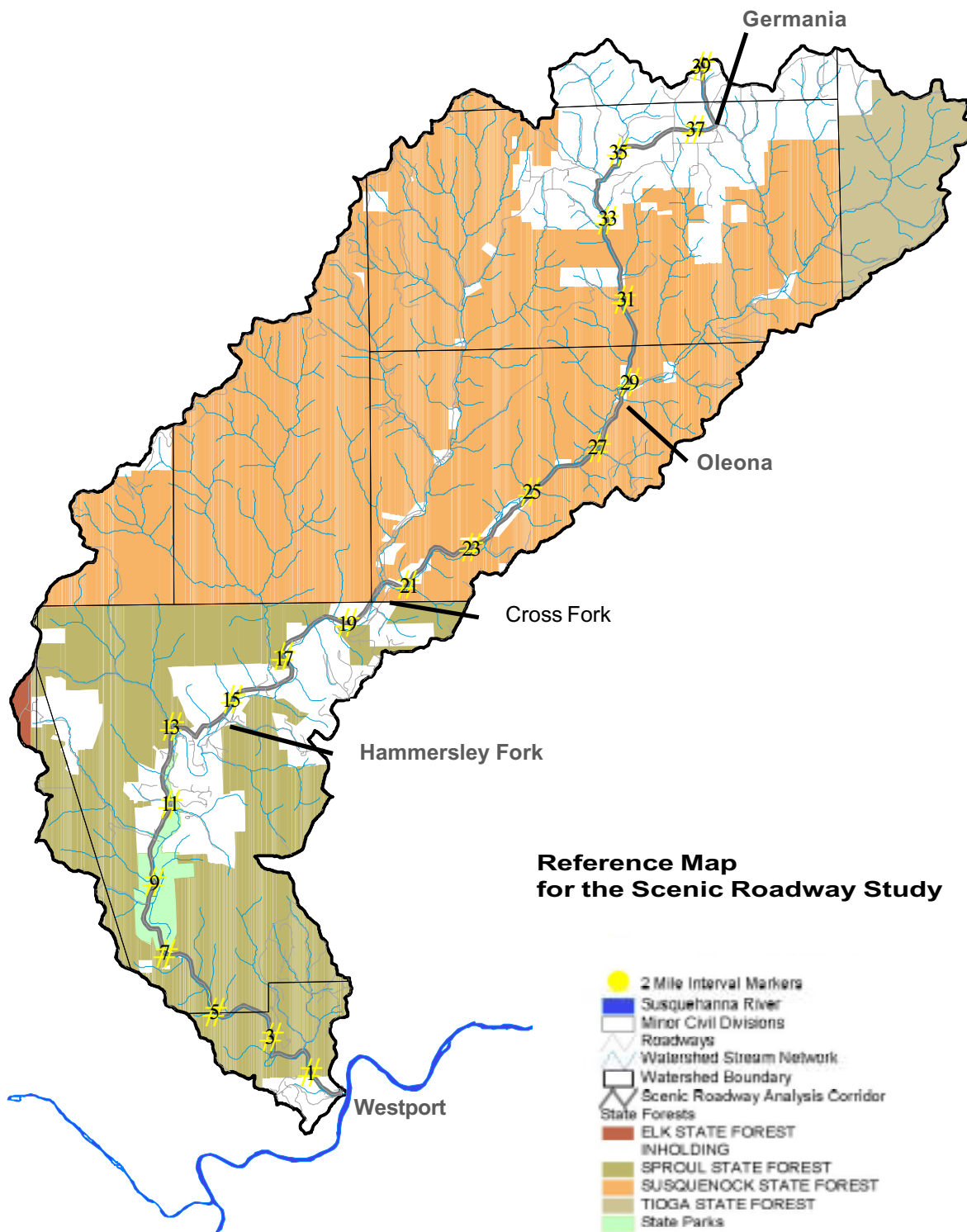
Germania

Oleona

Cross Fork

Hammersley Fork

Westport

**Reference Map
for the Scenic Roadway Study**

● 2 Mile Interval Markers
▬ Susquehanna River
▢ Minor Civil Divisions
〰 Roadways
〰 Watershed Stream Network
▭ Watershed Boundary
⬡ Scenic Roadway Analysis Corridor
State Forests
  ELK STATE FOREST
  INHOLDING
  SPROUL STATE FOREST
  SUSQUENOCK STATE FOREST
  TIOGA STATE FOREST
  State Parks

Figure 2.27 - Reference map for the scenic roadway study

included on these sections to indicate the relative position of the roadway centerline).

The third column contains an interpretive diagram which relates both the spatial character (the degree of enclosure) and the sense of directional change one experiences when traveling the route. The notation used in these diagrams is relatively simple. The relative width of the blocks located along the (dashed) roadway centerline indicates the relative enclosure of the roadway (in the valley and, in cases, within vegetation which enhances the sense of enclosure). The relative curvature of those same blocks is intended to portray the degree which the roadway curves as one travels along it. In locations where there is a break between blocks, this indicates a change in the character of the roadway. For example, such a break is located at mile marker six, where the narrow, densely vegetated experience of the roadway from Westport gives way to the open expanses near Alvin Bush Dam.

The diagrams, themselves, are intended to show how the relationship between the road, the landscape, and the stream changes constantly along the route from Westport to Germania and to identify important sites along that same route (i.e. sites of historical signifi-

cance, desirable views). At times viewers are more aware of their proximity to the stream than to the ridges that define the valley, or vice versa. As the road climbs and descends the mountain slopes, travelers sense changes in their vertical distance from the streambed. As the stream meanders back and forth along the valley floor, travelers may sense their horizontal separation from the water, always knowing approximately where the stream lies, but not exactly as camps, meadows, and forest obstruct their view. At particular times, viewers may have a strong sense of feeling enclosed in the landscape or riding gently on the landscape. They can take notice of spatial enclosure provided by the mountains-how it helps anticipate the direction the roads will take and directs views to mountainside fall color displays. The roadside vegetation also provides enclosure, opening and closing views to the stream. Depending on the direction of travel, these views may be cast upstream, downstream, or across the stream. The evergreen vegetation creates dark tunnels within the lightly filtered hardwood forest. Where roads pass along or through pine and spruce plantations, viewers may notice the highly ordered planting in contrast with the organically ordered forests.
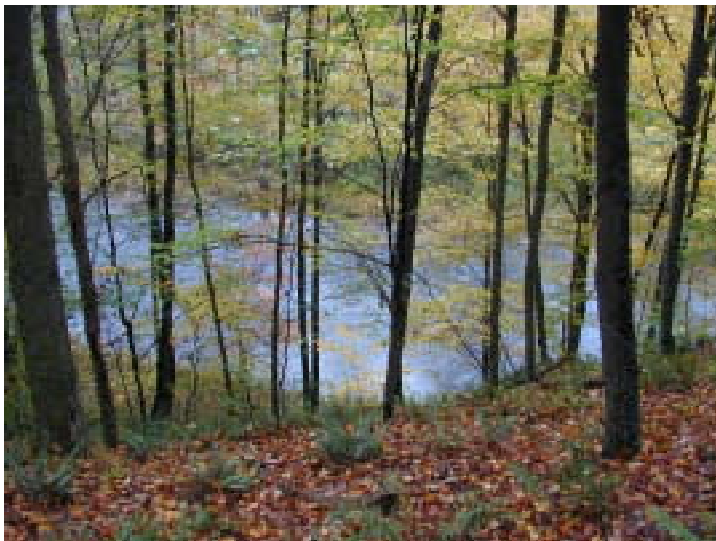
Kettle Creek and the Pennsylvania Scenic Rivers System

As was indicated in earlier parts of this document, the pressures of increasing land values and development both in and around the Kettle Creek watershed (see Land Use, Economics, Demographics, and Recreation) present almost definite future changes and possible negative visual impacts within the watershed landscape. The PA Scenic Rivers designation is yet another tool available for the preservation of land and water resources in the face of development in the Kettle Creek

Kettle Creek, near the confluence with Hammersley Fork.

watershed where no other measures exist (for example, public land ownership, zoning regulations that regulate development, conservation easements, or transferred development rights).

In certain locations, a Scenic Rivers designation may also reinforce already existing protections. Therefore, this introduction to the PA Scenic Rivers Program has been included to familiarize watershed stakeholders with the opportunities, benefits, and process of the Scenic Rivers Program.

The Pennsylvania Scenic Rivers Act (#283) was passed in order to preserve the outstanding aesthetic and recreational value of many of the state's rivers and adjacent land areas for the potential benefit of Pennsylvania citizens. The Scenic Rivers system is comprised of free-flowing rivers, streams, or tributaries thereof, that are recognized in five categories (wild, scenic,

pastoral, recreational, or modified rivers) by the Department of Conservation of Natural Resources and are authorized for inclusion by law. Today, there are approximately 500 miles of Pennsylvania's streams and rivers included in this program.

> While many river corridors are often referred to as "blueways," many terrestrial corridors are referred to as "greenways". To learn more about blueways and greenways, refer to the previous discussion of recreation and the greenway appendix (page 267).

There are many benefits associated with river conservation and protection as provided by the PA Scenic Rivers Act. Healthy, free-flowing rivers are increasingly seen as assets to healthy communities. Throughout history, rivers have been the threads of the landscape connecting our communities and providing water, transportation, and recreation opportunities. In addition to these social benefits, these rivers are also ecological corridors (often referred to as "blueways") that link many frag-

mented terrestrial habitats and are vital to the function of many of our ecosystems within the state of Pennsylvania.

In many cases, Scenic Rivers designations work to preserve the existing, outstanding qualities of Pennsylvania's rivers and other waterways (as well as adjacent lands) by recognizing their present outstanding qualities and their exceptional natural and cultural heritage. Scenic rivers designation is intended to generate greater public recognition of a waterway and, in some cases, to benefit the social, cultural, economic, and environmental conditions surrounding it (17 PA § Code 41.2). A Scenic Rivers designation can also help to prevent further degradation of the waterway through the inhibition of dredging and mining operations and through the preservation of critical habitats, e.g. wetlands (25 PA § Code 11.5, 25 PA Code § 86.102, and 25 PA Code § 105.17). Under Pennsylvania Scenic Rivers designations, any such activities that may present potential negative impacts for a scenic river must first be evaluated and obtain proper permitting (Allegheny Watershed Network 1999). It is important to note that a Scenic Rivers designation and subsequent policies/requirements are not intended to override local or municipal land use ordinances where they exist. Instead, Scenic Rivers protection is meant to function as a supplement to local land preservation strategies and/or a measure of protection where no other means (i.e. desired ownership, zoning, conservation easements, or transferred development rights) are currently established. In either case, community participation in the application process is entirely voluntary.

Please refer to the recommendations section (page 255) of this document for a more complete explanation of the Pennsylvania Scenic Rivers System process and a sample eligibility study applied to the main stem of Kettle Creek.

GOALS: SCENIC

LU 3.2 Designate and protect high values areas. Encourage the protection of these areas through large buffer and the promotion of natural areas or recreational open spaces.

- Scenic by-ways or corridors

WI 1.2 Explore and celebrate the rich cultural history of the watershed as a community and for visitors.

WI 1.3 Recognize that the current visual quality of the watershed is characterized by forested slopes and ridges.

WI 1.4 Recognize and protect the unique natural features of the watershed that have influenced resident life and visitor attendance.

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