COMMUNITY PROFILES

OF

EIGHT EAST IRON RANGE COMMUNITIES

Draft Report

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CONTENTS

CHAPTER TWO

THE VERMILION AND EAST MESABI

During the 1700s the area of the east Mesabi and Vermilion was practically untouched by civilization. Virgin white pine covered the hillsides and caribou trails wound through thick woods and miles of muskeg to watering places on streams kept constantly high by colonies of beaver. The area abounded in fur bearing animals and its natural waterways made it accessible to the rapidly advancing fur trade. Just when the first representatives of the white man's world of "trade and finance" reached the "Iron Range" is not known, but French maps of the 1740s indicate that traders came early to this empire in furs created by the French Royal Company of the Associates. At the time George Washington was marching his troops in the cold snows of Valley Forge, the Ojibway, Indian people skilled in the trapping and trading of furs, were establishing themselves at Lake Vermilion, Shagawa Lake, Esquagama Lake, and other places along various waterways. They replaced the Dakota, the original inhabitants of the area, and tradition tells of hostilities and pitched battles between the two groups.

After 1763 British traders replaced the French, and organizations like the Hudson's Bay Company and the Northwest Fur Company set up trading posts in such areas as Vermilion Lake, Little Vermilion Lake, and Basswood Lake just a few miles north of the present site of Ely. Competition between the British syndicates and the newly formed American Fur Company led to a border dispute involving the region. Anthony Barclay, Commissioner General of Canada, insisted that the framers of the Treaty of 1783 in Paris had

placed the true border between American and Canadian territories along the St. Louis, Embarrass, Pike, and Vermilion river system crossing the east end of the Mesabi Range. A resulting survey in 1825, involving such famous individuals as Samuel and David Thompson, produced a series of beautiful maps. Counter-claims begun by Peter Porter, American Commissioner, led to continued controversy that was not settled until 1842, when as a result of compromise the Webster-Ashburton Treaty placed the border along the Pigeon River.

Indian treaties in Michigan, Wisconsin, and Ontario caused a vast population movement of Indian people to the region and surprisingly large Indian villages, numbering sometimes in the thousands, were seen at Lake Vermilion and Lake Esquagama during the 1850s. The Treaty of LaPointe in 1854, and the Treaty of 1855 placed all these people on government-created reservations and opened the region to anxious timber cruisers, prospectors, and land speculators.

The area's mineral wealth began to be suspected after James Norwoods' famous iron discovery in 1849 on Gunflint Lake at the eastern end of the Mesabi, but it was gold bearing quartz on the Vermilion Range that brought large numbers of prospectors to the region. In 1865 Henry Eames, state geologist, began a wild gold rush to Lake Vermilion as the result of statements he made on gold mining possibilities in northeastern Minnesota. Thousands swarmed to Lake Vermilion, and a gold town, Winton City, flourished briefly on its shore. Hundreds casually noted "cliffs of iron" nearby, but it was only 1866 and the "age of steel" had not quite arrived. Cheap methods of steel production were just emerging, and most felt the iron deposits closer to Lake Superior on the Michigan shore were sufficient to meet any demand.

With the collapse of the gold rush in 1866, the area fell back into its original remoteness, except, of course, for remains of crushers, steam boilers, picks, and debris left by the rush--and a well marked overland trail from Duluth to the Range, the Vermilion Trail. This trail would never "grow over with brush" and would be in constant use for hauling supplies after 1870.

In that year an "Ontonagan Syndicate" from northern Michigan sent Peter Mitchell to the Mesabi, near the present site of Babbitt, to prospect for iron. Steel mills were now crying for endless amounts of iron, and the possibilities for profit were rapidly increasing. Mitchell's efforts led to the first land survey on the Mesabi Range in 1972, but met with failure because funds were not raised to bring in a railroad from Duluth.

However, George Stuntz and George C. Stone of Duluth, veterans of the gold rush, saw strong possibilities of iron mining the Vermilion, and sent samples of these and Mesabi ores to two eastern mining men, Samuel Munson and Charlemagne Tower. Their money financed a well-equipped mining expedition to the region in 1875 led by Professor Albert Chester, famous mineralogist from Hamilton College, New York. The Vermilion Trail was used to tote in supplies to Wynne Lake, where a trail was cut through thick woods to a large log camp set up just south of the Embarrass River in Township 59-14, not far from the Ontonagan Syndicate's mine. It was the Chester Expedition of 1875 that condemned Mesabi ores as "too lean" and caused a loss of interest in investing in the Ontonagan Syndicate's Duluth and Iron Range Railroad. At the same time, Chester reports glowed over the richness of Vermilion hematite.

Five years would pass before anything more was done in the area—at least it seemed so at the surface—for during those five years from 1875-1880, George Stone managed to get himself elected to the state Senate and personally saw to the passage of legislation allowing large giveaways of land to any company willing to build a railroad and setting a very low taxation policy for mining enterprises. Then in 1880, Albert Chester was asked to lead a second expedition to the area, this time to concentrate entirely on the Vermilion Range, and to evaluate thoroughly the extent of the ore bodies. Tower kept in weekly touch with the mining exploration crew with the use of Indian runners along the Vermilion Trail, and was apparently satisfied with his reports for in August of that year he began buying up specific land that George Stuntz had been assigned to survey. He used "entrymen" to pick up these properties at the going homestead rate and also bought properties from fur trader Francis Roussain for $4 an acre.

By 1882 he had control of the land and sent the first mining crews to the region in the employ of what was then called the "George C. Stone and Company Mining Enterprise." In December of that year the "Stone Company" was reformed into the Minnesota Iron Mining Company in the control of Charlemagne Tower and including Edward Breitung of Michigan mining fame, Richard H. Lee, George Stuntz, John Armstrong, and Sandy McMaster. Hard-rock miners from northern Michigan, Swedes and Cornishmen for the most part, were recruited by Elisha Morcom to do the first iron mining on the Vermilion. They were offered top contract pay and signed papers with Captain Morcom in the same way sailors sign onto a ship.

Small company-built locations huddling close to small open pits marked the beginning of iron mining on the Range. In time seven district mines

were being operated by the Minnesota Mining Company. They were the Stone, Lee, Bre[illegible]ng, Tower, Armstrong, Stuntz, and Montant mines, and when the pits could be dug no deeper, underground stope mining was launched, and the city of Tower with its "company location" of Soudan boomed into existence. In 1884 the D & I R Railroad, taken over from the Ontonagan group, was extended from Two Harbors on Lake Superior to the Vermilion mining districts. The first shipment occurred on July 31, 1884, and Elisha Morcom was, by this time, in charge of a crew of 350 miners. Tower quickly became a commercial and lumbering center approaching a population of 5000 while Soudan remained a company town. In 1886 the D & I R extended a spur to the Chandler Mine, and Ely boomed into existence, soon surpassing Tower in population.

The Vermilion Range was settled by company-picked men schooled in "hard rock mining." Hailing mostly from northern Michigan and Cornwall, England, they rose to high leadership positions in the mines and related industry. Some actually became millionaires. Cornish ways dominated; all mining terms were theirs—captain, stope, drift, crew, skip—and captains commanded their mines and locations as if they were commanding a ship. Immigrants from Finland and Austria formed the work crews and were settled into "tight little mining locations," patterned after those developed in Cornwell. Early Tower and Ely were boom towns, and vice, prostitution, drinking, and gambling were the order of the day. As the mines developed and transportation improved, however, the Vermilion Range adopted a settled way of life; a strong temperance movement, strict law enforcement, and the establishment of many churches were probably also helpful in bringing stability to Tower, Ely, and Winton.

The Mesabi Range was bypassed for about ten years, and then iron strikes by John McCaskill, the Merritt Brothers, David Adams, Frank Hibbing, and others caused a rush on land and the establishment of a long string of mining hamlets from Birch Lake to the Grand Rapids on the Mississippi River. The early years of mining saw the Merritt family of Duluth fall victim to such eastern entrepreneurs as John Rockefeller and Henry Oliver. The resulting United States Steel Corporation and its subsidiary, Oliver Mining Company, soon dominated the Mesabi mining scene by controlling railroad rates, and mining advanced rapidly. There was 1 mine on the Mesabi in 1892, 20 in 1900, and in 1910 111 mines were shipping Mesabi hematite to eastern steel mills.

Every single Mesabi mining effort resulted in some sort of settlement or "location." Some were crude shack towns while others were sophisticated developments complete with electricity and running water. Few people on the Range would remember such places as Adriatic, Stephens, Miller, Syracuse, Bangor, Canton, Elba, Franklin, Kellog, Malta, Grant, Jordan, Exmore, Pillsbury, Clark, Sellers, Leetonia, Utica, or Carson Lake. They are all gone now, having fallen victim to the development of large open pits.

Most early Mesabi mining was underground shaft mining, but with a greater knowledge of the ore body, these were replaced with the huge open pits that we see today. Mesabi towns that survived were those that were next to the richest ore bodies, or those that could be moved to another area. At the same time they grew rapidly. It took only 10 years for Virginia to reach a population of 10,000 people, and population estimates for towns in those early years are misleading due to the rapid changes in population

that occurred. Early Mesabi towns were composed mostly of young adventurous men, and all sorts of vice prevailed. This was probably one reason for the great number of violent deaths witnessed during the Mesabi's first thirty years of existence. Life was cheap, immigrant miners were expendable, and accidents abounded in the mines.

Most notable is the cosmopolitan nature of the Mesabi Range; in 1910, 50 percent of the people living in Hibbing were native born, and 40 percent of those native born were sons and daughters of immigrants. Figures for Eveleth and Virginia are similar, but out in the mining locations the percentage of foreign born could rise as high as 95 percent for that is where most recent arrivals found their American beginnings—at the location, and in the mines.

These new arrivals came from almost anywhere. It was common to hear Finnish, Swedish, Slovenian, Italian, French, Danish, Norwegian, Croatian, Dutch, Bulgarian, Czech, Russian, Serbian, Chinese—and even Arabic—spoken on Iron Range streets before 1920. By that year the total Mesabi population approached 80,000, and a class structure prevailed. The recent arrivals lived in the mining locations, and unless they were part of the "mining aristocracy," they were considered the lowest of people. Newspapers attacked them. The Virginia Enterprise stated in 1908:

> The Montenegrin was an importation on the Range a year ago, but his worthlessness as a laborer is fast becoming apparent to the mining companies, and his existence on the Range is a matter of but a short time.
>
> Not only as a laborer has his worthlessness been proven, but to the businessman this has been the size-up since the day he first arrived. There are none who will object to his passing.

The businessmen, saloon keepers, store owners, restaurant operators, lumber dealers, and hotel keepers formed a certain "middle class" who were usually first to attack the newcomers. Many of these were foreign born who had arrived earlier and now made their living by supplying the mines and miners with their needs.

The aristocracy of the time were the English-speaking Americans, Canadians, and Cornishmen who looked upon the immigrant groups as "children" and who comprised the "high society" of the time.

There has never been a place like the Mesabi in terms of extravagant spending for public buildings. Shack towns with beautiful city halls, schools with swimming pools, and "white ways" predominated, and the Iron Range prior to 1940 saw no equal in luxurious public buildings. Of course, all of this was paid for by funds obtained from mining companies, and Mesabi villages actually seemed to compete with each other to see who could get the most out of the "companies."

However, seasonal employment, high rents, high prices, dangerous working conditions, and contract pay in the mines plagued immigrant workers. The aborted strikes of 1907 and 1916 were the result of strong syndicalist influences such as the Western Federation of Miners and the IWW. A seeming exercise in futility, they indicated the strong labor unrest that marked the age, and led to a period of repression that saw no real union movement on the Range until the 1930s.

Iron Range towns have been in an economic transition from hematite mining days to the present with sophisticated taconite processing plants now

operating in various places. This transition, beginning in the late 1940s, saw the development of two new towns and also witnessed the death of many old ones, such as Frazer, Elcor, and Cooley.

AURORA

The casual passerby would be hard-pressed to imagine Aurora's beginnings in the small uninhabited clearing littered with rubble and debris about two miles north of the town. Yet it was at this very place that Aurora came into existence in 1898. Like other Mesabi towns, the entire village was removed to a place more favorable to the same mining activities that caused its birth.

Aurora came into existence as the result of the discovery of rich hematite ore at what was to become known as the Meadow Mine. The original townsite was platted close to the underground operation by two men, Stein and O'Rourke of Virginia, and it was called "Norlander" after an engineer on the Duluth and Iron Range Railroad in the hope that a spur would be extended to the new mine. The railroad didn't come, so the name was dropped when the incorporation papers were finally drawn up in September of 1903. According to local legends, the name "Aurora" was inspired by a particularly brilliant display of northern lights occurring at that same time. Thomas Flaherty was elected president of the village and George Kitto became its first recorder.

A number of businesses mushroomed along its deeply-rutted main street: the Knuti-Ongalo General Store, the Hotel Northern, Leroy and Flain Public Store, Charles Young's Dry Goods Store, and the Public Store of Thomas Flaherty. Many families moved in almost immediately; they came from Michigan and the towns of the Vermilion Range. Some of these families were Finnish, Irish,

and Swedish, but all had previous experiences in other American mining communities.

When the Duluth and Iron Range Railroad finally extended a spur to the new Mesabi mining district, it bypassed Aurora and its mine by just over two miles, and as the railroad afforded the only practical transportation, a new townsite was platted next to the tracks by Edmund J. Longyear in 1905. Building on the new site began in the spring of that year, and most of the businesses were moved over from what was now being referred to as "old town."

More mines opened: the Stephens in 1903, the Mohawk in 1906, the Fowler in 1907, and the Hudson in 1910. Hundreds of miners came to the area to take positions in what were all, prior to 1910, underground shaft mines driven by steam power. They came from Sweden, Finland, Italy, and the Austro-Hungarian Empire; most of them were unskilled and ready to take any job that was offered them. They became contract miners, trammers, timberers, laborers, mule tenders, drillers, carpenters, and landers. They worked 10-hour shifts, without sick leave, hospitalization or other benefits. Instead, most drew their pay on a percentage of the merchantable ore that they helped to bring to the surface under a contract agreed to with the mining companies.

Each mine was captained by experienced mining men schooled in practical skills of mining. Many had their beginnings in the Great Wheals of Cornwall: the Cambourn, the Poldory, or the Ale and Cakes operating near Dolcoath. They knew about contract mining, about sinking, raising, and driving. They understood the earth, and the sounds it made underground,

and they knew the hard discipline needed in those dark places. They talked of tough work and tribute and drove their crews hard, commanding their mines in much the same way that sea captains commanded their vessels, demanding absolute obedience from their men.

Therefore, by 1910, such people as Captain John Redfern, Captain Richard Sellwood, Captain Joe Vickers, Captain Samuel Richard, Captain Tom Wivell, and others of this "order" established themselves as a special "aristocracy" among the hundreds of foreign-speaking men now living in Aurora and its nearby mining locations. These captains looked upon their workers as "children" and took complete responsibility for their mines, attached "locations," and people. Some were kind and humanitarian; others could at times show almost inhuman cruelty.

By 1915 more mines had opened: the Weed, the Syracuse, the St. James, the Aurora Reserve, the Donora, and the Bennett. Aurora's population, including its surrounding locations, approached 3000. Long boardwalks, raised high above the muddy ground, connected Aurora to such "mine locations" as Stephens, St. James, Miller-Mohawk, and Meadow; and its business establishments boomed.

By 1915 an excellent water and sewer system had been completed at a cost of $42,000, a 50,000-gallon water tank had been raised to an elevation of 110 feet above the town, a well-drilled and well-equipped fire department had been established, and hotels, saloons, and department stores were doing a lively business. An electric light plant was constructed, streets were paved, a fine school and city hall had been established, and the old boardwalks were being replaced with concrete. By World War I the frontier village atmosphere had all but disappeared, and Aurora took on a rather cosmopolitan urban atmosphere.

Beginning in the mid-1920s mines began to close; they were either pronounced exhausted or "too expensive to operate." As a result, a gradual population decline began. Mining locations died, the walkways were torn down, and buildings were removed to other places. Stores closed, hotels stood empty, and the large schools that once had accommodated over a thousand students emptied until a mere handful were attending at the end of World War II.

However, taconite processing breathed new life into the community, and today Aurora's population, which had once been under 800, stands at 2531. Its sister town of Hoyt Lakes is joined with it in a consolidated school district that serves the needs of nearly 2000 students. Without taconite mining, Aurora might have joined the ranks of many of the towns and communities that vanished from the hillsides of the Mesabi many years ago.

BABBITT

Over the vast acreage of what was once the "certified seed potatoe farm" of Dr. Charles B. Lenont of Virginia, Minnesota, stretches the taconite town of Babbitt. It is a very modern appearing community, quite unlike its mining predecessors on the Vermilion and East Mesabi Ranges. Spacious lots, semi-circular patterned streets, and modern single, double and split-level homes mark its site. In fact, however, Babbitt has always been, and remains, a "company town" in ways that are not always immediately obvious.

Modern Babbitt is linked to an exciting past of early taconite development and failure—and to a ghost town from which it derives its name. To the east, near the top of the high ridge of the Mesabi, old foundations, strewn boards, and a decaying skeleton of an old office building mark the site of "Old Babbitt." (An amateur archeologist would have a field day here marking

the rectangles of varying undergrowth that betray the presence of ancient building sites.) Nearby the old processing plant, a 1920 wonder, stands empty, condemned and rapidly deteriorating.

It was at the site of "Old Babbitt" that the world's first attempt to produce salable iron from taconite took place. It failed, and the remains of the 1920 conglomerator bear mute testimony to the excitement that once took place here.

In 1870 Peter Mitchell from Ontonagan, Michigan, with help from the Wieland family of Beaver bay, drove a drift into the nearby hillside with hand tools and black powder to establish the first mine on either the Mesabi or Vermilion ranges. The rock was hard, the ore banded and varying in richness, and eventually the whole attempt was condemned by experts, and the mine was abandoned. The Ontonagan Syndicate's holdings at what was to become Babbitt passed on to the Mesaba Iron Company, composed of such individuals as A. G. St. Clair, J. G. Williams, and Samuel Mitchell, who in turn let their holdings out to two companies which merged in 1915 as the Dunka-Mesaba Security Company. It is this company that pioneered the attempt to get iron out of what was mostly lean taconite.

In 1916 this group, under the leadership of D. C. Jackling of Utah copper fame, established an experimental plant in Duluth to test methods of developing concentrated iron from the low grade ore. These methods had been successfully developed by Dr. E. W. Davis of the University of Minnesota, who had taken a few pounds of taconite from "Sulfur Siding," a test camp near the "Old Mitchell Mine," and with the use of a magnet under water was able to produce a concentrate that tested 68.99 percent iron—equal to the richest ores of the Mesabi. The Duluth plant had a rated capacity of

concentrating one hundred tons of taconite a day, and it was the "grand-daddy" of all present taconite processing in America. Between 1916 and 1918 twenty men were employed at the "Sulphur Camp" on the Mesabi and they lived in almost absolute isolation—except for a single wire telephone that was strung from tree to tree to Old Mesaba Station on the D & I R Railroad. A supply trail with deep rutted tracks called the "Syndicate Trail" ran from the taconite mine to Mesaba. At times the road was impassable and when it was good, supplies could be brought to camp only with superhuman effort. The whole setup was crude, to say the least, but experimenters did learn a great deal about taconite development. The cost of the whole effort totaled a half million dollars after three years of operation.

In 1920 the decision was made to go ahead with a full production plant near the old Sulphur Camp Mine, and "Old Babbitt" came into existence. A new Mesabi Iron Company was organized and a tremendous amount of stock was sold. The plant was finally located on the north side of the Mesabi Ridge where an unlimited supply of water could be obtained from Birch Lake, and a townsite was platted at the top of the hill. It was first known as Argo, but the name was later changed to Babbitt in honor of Judge K. R. Babbitt, legal advisor to the firm Hayden, Stone and Company, which set up the new Mesabi Iron Company. The old judge died at the time his name was being considered, so he never knew that it was used.

At any rate, in a matter of months forty buildings were erected including homes, boarding houses, mess halls, company offices, and a school. A gigantic star-shaped dining hall that could accommodate hundreds of workers at a time was built, and Babbitt took on the aura of a place far ahead of its time. Within a year 400 people were living on the townsite, and the

miners' cottages were heralded as being "models of utility." At all times the company controlled the town, restricting housing, and limiting independent business endeavors, and most goods could be obtained only at the company-approved store run by Ian B. Marshall. The Mesabi Company, with its own deputized marshalls, enforced the 18th Amendment vigorously, and no saloons or bootlegging were permitted within the town limits.

From the beginning, the new sinter plant was beset with troubles: crushers broke down, sintering processes fluctuated, and variable product resulted. Demand for Babbitt sinter declined as a result, and the whole project collapsed. The last sale of Babbitt Concentrate occurred in 1937 when 3679 tons of the material were shipped. As a result Babbitt became a ghost town.

In 1939 Reserve Mining Company, incorporated by Ogleby Norton, acquired all holdings including the Babbitt Plant. During World War II a reopening of the plant was considered, but the idea was dropped with the feeling that it would take too long to get things in operation again.

The success of the Erie project in the late 1940s encouraged the Reserve Mining Company to begin operations again in the 1950s. However, the location of the mine and plant on the very top of the Mesabi Ridge made it impossible to get the needed amounts of water for processing pellets of the type that Erie was producing. It seemed that the problem would be impossible to overcome, and an elaborate and almost desperate plan was devised. This plan would set up a 50-mile inter-plant railroad and a final processing plant on the north shore of Lake Superior where unlimited quantities of water were available. From there the final product could be loaded directly onto boats.

The Mines Experimental Station immediately investigated the feasibility of the plan, paying particular attention to the project's impact on the environment. They decided that the tailings produced would follow the lake bottom to the deepest point and not remain in suspension. In December, 1947, the Water Pollution Control Commission, satisfied that it was ecologically safe, gave permission to pump water from the lake and return it as tailings.

Reconstruction of Babbitt began in 1951. The mine was redesigned and named the "Peter Mitchell Mine," and a brand new village was built further away to the north on the old farm site. By 1956 the village of Babbitt had been reincorporated, and a second town, Silver Bay, was established near the pelletizing plant on Lake Superior.

Six hundred and fourteen homes were built on the new site, and Babbitt's population soon surpassed 3000. It has been, since 1956, a quiet, clean town with low taxes. Company planning has prevailed in all areas. The houses are modern, neat, and simple, and were at first sold only to company employees. The shopping center was designed by the company and the community center was built by the company.

Now, some twenty years later, earlier restrictions have been relaxed, but the mark of the "company town" remains. Company fortunes are synonymous with town fortunes. When the company prospers Babbitt schools and village government shine with abundance. When markets drop and workers are laid off, an air of dejection pervades. Workers tend to espouse the company point of view on most issues, and Reserve Mining Company has, in return, provided many amenities for the residents of Babbitt. No resident of the town has to rent a building for a wedding or other social event. He can get

it free at the company-built and maintained community center. Even the sewer lines of Babbitt belong to the company. The village has never bothered to take them over. Reserve equipment helps with the golf course, and if the local teen center needs upkeep, Reserve usually comes to the rescue.

And, although Galbreath Company, Babbitt real estate firm and agent for Reserve Mining Company, doesn't usually put its holdings on the open market, a sign designed for Reserve employees living elsewhere proclaims the prevailing company and town attitude: "If you lived in Babbitt, you would be home now."

BIWABIK

Biwabik's beginnings can be traced back to a muggy August afternoon in 1890 when a violent storm cut a swath through the tall timber just northwest of Embarrass Lake, uprooting trees and exposing rich soft blue hematite. That fall John McCaskill, a Canadian prospector, made notes on these deposits and dug a test pit in the vicinity, bottoming it in rich ore. A rush to the area followed immediately, and the Merritt family of Duluth, working day and night, proved the existence of a huge body of the material and founded the Biwabik Mountain Company.

The very next fall P. L. Kimberly of Sharon, Pennsylvania, and John T. Jones of Iron Mountain, Michigan, took a lease on Merritt land, organized the Biwabik Ore Company, and brought the first steamshovel to the Mesabi Range. This they transported in parts from Mesaba Station on the D & I R Railroad a distance of some sixteen miles along a rough brushed-out path known then as the "Mesabi Ridge Trail." It was a "monstrous undertaking owing to the

almost impassible character of the road for twelve miles, but it was successfully accomplished," and the shovel was soon put to work digging out an approach to the ore body. Other discoveries followed immediately, and the Cincinnati, Konaway, and Hale mines joined the Biwabik mine in yielding immense quantities of very rich iron ore.

The companies built barracks, rooming and individual dwellings for miners that they were hiring, and soon four distinct mining locations were existing just north and west of Embarrass Lake. With all this activity, it seemed natural to O. P. Kinney, Joseph Sellwood, James Hale, and others to establish a town in the vicinity. By the spring of 1892 Merritt has been established on the top of an open hill overlooking the mining operations. It was described in a newspaper account of the time:

> Beside the Embarrass Lake there has sprung up with Aladin-like quickness the town of Merritt, which is already incorporated, has elected its municipal officers, boasts of a good hotel, a newspaper, and other appointments of a mining center...

With plans being made to bring a railroad to the four mining operations, no one doubted that Merritt was to grow and prosper. This was not to be. Conflicts between the Merritt family, other mining companies, and powerful eastern financial interests caused the Merritts to bring their railroad in from the west to their Biwabik mine, completely bypassing the rapidly growing town. This, along with a disastrous woods fire, which completely gutted the buildings along Merritt's main street in the summer of 1893, put an end forever to the town, and led businessmen to establish themselves on the site of Biwabik Station on the D M & N Railroad.

From that time on Biwabik developed into a busy mining town of 2500 people. Its election for incorporation had occurred on November 10, 1892, in

A. P. Dodge's General Merchandise Store. A. P. Dodge, a few weeks later, became Biwabik's first village president.

By 1895 Biwabik was a town of miners and lumberjacks. Every spring great log drives were made down Embarrass Lake and connecting rivers to Cloquet where huge sawmills had been established. A "sluice dam system" allowed the waters of Embarrass and sister lakes to rise to tremendous heights, giving the force needed to send countless numbers of logs through shallow places along the Embarrass and St. Louis rivers. It took only five years to completely cut the beautiful forest of white pine, and Biwabik was very quickly surrounded by open hills and barren stumpland stretching as far as the eye could see.

It was to this lonely town of high boardwalks, mud streets, and roughsawn shacks and shanties that multitudes of immigrant people came to experience "America." The tall wood "headframes," high stacks, and shaft houses of the mines dominated the scene, and powerful mining captains established themselves in luxurious houses that bespoke special class position and prestige. On "Main Street" saloons became centers of the "new society" and even the boardwalks were raised to just the right height so that barrels of beer could be easily rolled in to meet the thirsty needs of the young mining crowds. Law was weak, and gambling, prostitution, fighting, and heavy drinking prevailed.

Two main immigrant groups made up the early work force in the mines, Finns and "Austrians," who were actually Slovenes from The Austro-Hungarian Empire. Two special locations were set up for them, "Austrian Location" and "Finn Location." Slovenian workers were mostly single men, while residents of "Finn Location" tended to live in family groups.

By 1907 Biwabik had taken on a more citified atmosphere; it had a bank, a hospital, three major hotels, a public school, and five churches. Concrete sidewalks were swiftly bringing an end to the days of boardwalk lawlessness and ethnic locations. Nine active mines were in operation: the Duluth, Biwabik, Cass, Kellog, Hector, Williams, Holland, Syracuse, and Bangor; and mixed populations of Swedes, Finns, Italians, Croatians, Slovenians, Montenegrins, Serbians, Irish, Cornishmen, and native Americans lived at special residential locations, each bearing the name of the mine to which they were attached. Long boardwalks now stretched out to connect these places with Biwabik's main street. The Finns erected a huge Temperance Hall on Mountain Avenue, and traveling theatre groups played at the Biwabik Theatre.

Two major labor upheavals, the Syndicalist Strike of 1907, and the IWW-led strike of 1916 are strong evidence of hardship and unrest among immigrant workers in mines. Mines were dangerous and accidents were almost daily occurrances. They were so frequent, in fact, that Biwabik residents sometimes referred to the mines as "the graves." Lasting unionization of miners did not occur until the 1930s when the steelworkers began organizing, and the Committee (later Congress) of Industrial Organization was established.

As years passed, mines closed and Biwabik's position declined, although the Great Biwabik Mine continued operating. Inevitably, however, in 1956, after operating steadily for 62 years, and after shipping over 25 million tons of ore, the Biwabik Mine closed. It had been the second mine to open on the Mesabi, and its closing marked the end of an era.

During 1975 and 1976 Erie Mining Company expressed an interest in mining the deposit of taconite upon which Biwabik sits. As of November, 1977, the people of Biwabik gave approval for the relocation of the community. The preferred relocation site among five possibilities is along the shore of Cedar Island and Esquagama lakes. The new site is designed for three thousand people, about twice the present size of Biwabik.

ELY

Except for Tower, Ely is the oldest town on the "Range," having come into existence in 1886, as the result of iron discoveries near Shagawa Lake. It was at first a "residence location" for the resulting Pioneer Mine, and a year later for the Minnesota Iron Company's Chandler operation. As the "Ely Location" grew, a number of businesses, an outfitting station, and a post office, with the name "Florence" nailed above the door, were locating at a place called "Spaulding," about two miles east of the mines. Spaulding developed around the log cabin of H. R. Harvey, a former Cornish tin miner, who had been in the vicinity prospecting for gold and other metals since 1875. However, as the Chandler Mine prospered, the Ely site was further developed, and it soon became obvious that business could prosper better in that vicinity, so the buildings were very swiftly moved to the Ely site, leaving Spaulding vacant by 1886.

Ely boomed. A commercial sawmill was set up by Walter and Harry Mee, a hardware store was established by Fenske and Lawrence, a general store was set up by James Cormack, the "Pioneer Hotel" which provided rooms for young miners was established by Robert Whiteside, the General Store of Dobie Brothers and Miller was established, and board sidewalks soon lined the

muddy,stumpstrewn streets. Ely's population was 177 in 1887; it incorporated as a village in 1888, and by 1891 almost 4000 people were living on the site. Ely petitioned to become a city.

Mining companies brought in experienced "captains" who proceeded to sink shafts into ore bodies all along the range of hills south of the lake. By 1916 the Pioneer, Chandler, Zenith, Sibley, Chippewa, White Iron, Romberg, Fargo, and Lucky Boy mines were all operating, and thousands came to Ely to seek employment or to find jobs in the deep woods where many lumber camps were operating. However, it was the ore of the Chandler Mine that contributed the most to Ely's substantial growth. Not only was it the hard Bessemer type ore so much in demand by Eastern steel mills, but it was already broken into shipping-size chunks by nature; so all that was necessary was to load and ship the material. Because of its richness and low overhead, the Chandler paid its stockholders an average of $100,000 a month net profit for its first 19 years of operation! By 1906 the Chandler had sent over 10 million tons of ore to feed the nation's advancing industry.

Ely retained its pioneer atmosphere during those years, changing little except for growing larger. Saloons, false-fronted shops and stores, hotels where the beds were never cool for lack of sleepers (day or night), mud streets, gambling halls, Chinese laundries and greasy spoon restaurants, fronted with hitching posts for horses, received a gathering crowd, most of whom were immigrants. In 1910 the major groups of foreign-speaking people were Swedes, Finns, and "Austrians" fresh from the Slovenian regions of the Austro-Hungarian Empire.

There is the story of the young girl who left her native Finland with her mind filled with images of America's "streets of gold" and abundance. She learned one phrase of English: "I yam going to Eelee," for that was where her folks had a job. After an all night train ride from Duluth, the family arrived to see Ely in the early light of morning—streets of mud, rows of bleak frame buildings, litter and broken bottles strewn along dirty ore-colored board walks, shacks and tar paper shanties, and the dreary sight of miners wending their way to the mines. The epitomy of the immigrant experience in Minnesota's mining districts in the early years of the twentieth century is illustrated by her ramark, "Father, Father, did we pass America in the night?"

Shaft houses, head frames, and tall stacks of the mines dominated the horizon and close by magnificent houses of captains testified to their special privilege. Captains such as E. G. Gilbert, John Pengilly, Charles Trezona, Frank Kent, and Nick Cowling were far more than just mine operators. Their word was law, their power was absolute over the crews they commanded, and they knew how to mine. Driving shafts with steam power through formations of greenstone and jasper, they hit the ore bodies at 100-foot intervals, and sent down men, 60 to a cage, to bring the ore to the surface. Through such ingenious methods as shute-carving and slicing they brought "to grass" (to the surface) quantities of ore never before thought possible. The captains became rich; Captain Frank Kent was Ely's first millionaire.

Ely's population stabilized at around 5000 by the 1930s, and the mines were shut down during the depression. Lay-offs usually occuring only in winter now stretched on into the summer. There was little market for good Ely

Bessemer hematite, but the late 1920s had seen a new industry emerge—tourism.

The 3 million-acre Superior National Forest and the international Minnesota-Canada border waters, along with nearby lakes, made Ely "the Playground of the Nation" for vacationers and fishermen. Outfitting stations, canoe posts, and resorts made Ely more well known to the nation than the iron ore that had caused its birth.

EVELETH

There is a peculiar bend in the iron formation called the "Horn," caused in some ancient age by intrusions of greenstone and granite. It is at this place where the "Mesabi hooks to the South" that Eveleth had its beginnings in 1892 and 1893, with the iron strikes of Noble Beatty, David T. Adams, George H. St. Clair, and others. Work had hardly begun on these operations when a townsite was platted by Peter Kimberly, John T. Jones, and Fred Robinson in 1893. There was some discussion as to what the new town should be called. Consideration was given to such names as Iron Point, Robinson, and Iron City before Eveleth was decided upon; Eveleth being the name of a timber cruiser who had estimated the value of the timber upon which the townsite was platted.

Primitive living prevailed: a cabin with a surgical case in it was the hospital; a log cabin was a mining office; tarpaper shacks served as boarding houses; tents were temporary homes for company captains who saw moose meat on their tables more often than not; and all mail was brought in by dog sled from Virginia during the winter of 1893-1894. Miners came and went, working for the embryonic mining companies only to get enough for a "grubstake" for themselves and move on to other areas.

By the spring of 1894 David Adams' Spruce Mine was in full operation, and it was followed by the Fayal No. 1 in 1895 and the Fayal No. 4 and the Hull-Nelson in 1901, and Eveleth grew rapidly into one of the Mesabi's largest mining towns. The first village election was held on October 18, 1894, and Marvin Van Buskirk became the first village president. The village wasn't ten months old before over half a million tons of extremely rich hematite had been shipped from its mines.

Fires threatened the village all through the hot summer of 1894; grasshoppers ate the gardens and people came and left. The population turnover in Eveleth during its early years numbered in the thousands. Eveleth was never really to prosper in the 1890s as did the towns of Biwabik, Virginia, and Hibbing. The main reason was that people refused to believe that there was much ore in the vicinity. So much did the "Hook" fool mining prospectors, that the founders of Eveleth platted their town right on top of the richest ore body in that part of the Mesabi. Therefore, important mining did not really take place until after 1900, when the whole town was moved a quarter of a mile up the hill.

Newspaper accounts portray Eveleth for the first ten years of the 1900s as a lusty mining camp filled with murders, suicides, drunken brawls, and exposure of homeless unknowns in drunken stupors. Criminals from all parts of America arrived to lose their identities among the multitudes. Cases of counterfeit money, forged mining company checks, unpaid rooming house board bills, and the operation of "blind pigs"—saloons without proper licensing—are well-documented during those early years. While other mining towns cleaned up their crime and prostitution, moral reform came late to Eveleth. In 1905 a civic league was organized in sheer desperation. Its stated

purpose was to secure anti-saloon ordinances, law enforcement, and health regulations for Eveleth's residents, now numbering in the thousands. The papers of the time were filled with articles describing crusades against slot machines and red light districts years after such reforms had come to Ely and Virginia.

In spite of this Eveleth's population in 1907 was 7700. The Adams, Spruce, Fayal, and Troy mines employed most of Eveleth's work force; and there were three schools, five hotels, two banks, two weekly newspapers, and two fine hospitals that had established pre-paid clinic ties with the mines: the More Hospital and the Fabiola Clinic. In pre-paid clinic plans, mining companies deducted monies from workers' checks to give them accident insurance to cover injuries incurred in mining.

After 1910 Eveleth reached its peak population of 8000 and John S. Saari was its mayor. Large blocks and halls, City Hall, Elk's Hall, Messabe Township Hall, Monitor Block, Fee Owners Building, Rabinowitz Block, Urania, and Walon Lahde Halls made of wood, brick, and stone gave the place an urban appearance. Three theaters were operating: the Bijou, the Othello, and the Vail Opera House run by P. McIntyre. Huge residence locations tied to the town with boardways surrounded the place. The Spruce location was at the west end of the Fayal Road, the Adams rimmed the north end of the town, and the Fayal location was between.

Immigrants abounded: Finns, Irish, Cornish, Swedes, Italians, Slovenians, Croations, and Germans made up the largest groups. There were 33 Andersons, 23 Petersons, and 29 Makis living in the town and its surrounding locations. Italians and Slovenians filled the homes of Spruce location: Springhetti,

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Antonio, Anzelc, Bonach, Drobnick, Primozich, Prebilich, and Blatnik were common names among trammers and contract miners living in that area.

The large homes were dominated by the English-speaking, among whom the Cornish element prevailed: Henry Tregillis, John Treblecock, John Tregillis, Gordon Trengrove, Tom Trengrove, Sidney Tregillis, Richard Trevarthen, James Trezona, Richard Trezona, John Tredinnick, Thomas Davey—all held important positions in the mines or related industry. The Irish seemed to transcend all classes, and a number of them even filled the traditional role of the "Irish cop." Jerry Sullivan became the first police chief of Eveleth.

Eveleth's ethnics held on to their European ways longer probably than in other Mesabi towns; Italian and Slovenian could be heard in the streets as late as the 1950s, and in 1953 the Finns of the community hosted the 50th Jubilee of the Finnish Midsummer Festivals, and Finnish song and dance prevailed. However, in recent years the breakdown of ethnic backgrounds has been extensive. Third generation Eveleth ethnics seldom can count less than two countries as the place of origin of their ancestors, and none seem to be able to speak the language of their forefathers. Yet they continue to refer to each other as "Finns, Bohunks or Dagos."

The mines of Eveleth have had their share of accidents, layoffs, and strikes, but for the most part they have provided continued employment for the town, and with the coming of the "age of taconite" a huge Ford plant has been established in the vicinity to exploit the gigantic formation of taconite found nearby.

GILBERT

The city of Gilbert with a population of 2500 people has its roots in one of the Mesabi Range's greatest ghost towns—Sparta. Gilbert is the result of Sparta's death, and Sparta died long before most Iron Range residents were born.

In 1900 Sparta was only four years old, but was already one of the most attractive places to live on the Mesabi Range. Its 1000 or so residents lived in well-cared-for white and yellow houses, and its main street, which ran close to the blue waters of Ely Lake, was lined with thriving shops, businesses, hotels, and department stores.

The iron ore which had given Sparta life would destroy it at a very early age. The town lived only fifteen years, but in that short span of time it rose to become the fourth largest town on the Mesabi. However, rich hematite was found but a few feet beneath its paved streets, and to officials of the Oliver Mining Company this meant just one thing—the town would have to go. Had any person living in Sparta in 1905 been told that in six short years the entire town would be gone, he would never have believed it. Yet after a certain amount of indecision, some wild rumors, many heated arguments, and armed rebellion on the part of some, the homes, shops, sidewalks, churches, halls, and other buildings were either destroyed or moved to a new townsite on an open windy hill called Gilbert. In 1911 three votes were cast on the half-excavated empty townsite. All favored dissolution of the village. Sparta was dead.

Gilbert, incorporated in 1909, received the citizens of the old town and only a year later boasted a population of 2500. The "Gilbert idea" was

conceived by four Eveleth residents: W. J. Smith, J. A. Robb, C. E. Baily, and D. W. Freeman. They platted an eighty-acre townsite on "cut over land" about two miles west of the dying village and very close to the shaft that Captain Richard Trezona was sinking by steam power into a pocket of rich hematite. Trezona's mine, called the Gilbert, after Giles Gilbert, fee owner, would be the first of a long string of iron strikes that would result in employment for over a thousand miners in a myriad of separate and distinct mines.

The company had already developed a "residence area" complete with houses called "Gilbert Location" by the time the Eveleth town planners arrived, and they simply borrowed the name for their own. The town was, of course, an immediate success and its places of business, shops, saloons, gambling houses, and theaters were soon attracting people from all over the Range. A huge all-concrete "Baily Block," housing offices, shops, stores, and even the editorial office of the Gilbert Booster was a 1910 wonder and would not be surpassed until 1915, when the beautiful city hall was completed with the aid of mining money at a cost of $24,000. The Gilbert Hotel, on the corner of Broadway and Wisconsin Avenue, boasted some of the finest accommodations in northeastern Minnesota, and the nearby "China Restaurant of Ah Wong" developed a reputation for its Cantonese cuisine. Other establishments such as the Commercial Hotel, the First National Bank, the State Bank of Gilbert, and numerous department stores, business establishments, saloons, theaters and houses of prostitution brought together a cosmopolitan group of business people.

After 1912 Gilbert was connected to major Range cities by hourly electric street car service established by the Mesabi Railway Company. It wasn't

long before a reputation for entertainment, gambling, and night life was developed, and on Saturday evenings crowds of high-living, heavy-spending miners and lumberjacks, hailing from as far away as Hibbing and Chisholm, packed Gilbert's night spots.

When the Fabiola Clinic extended pre-paid health care services to the Gilbert Mine, Dr. Fred Barrett arrived in town and was soon joined by a second physician, Dr. Francis, who settled in town as a permanent resident physician.

The expansion of town limits to include Gilbert Location and other mining properties in 1914 brought in great sums of money. A beautiful "white way" and fine school system was established, including an excellent high school building complete with a swimming pool, certainly a show piece of education in its time.

The height of mining activity was reached just at the end of World War I even seven mines were operating in the vicinity. At this time Pettit Location, just east of Michigan Avenue, grew into a large residential area and was filled with miners fresh from eastern and southern Europe, who found ready employment as laborers, miners, and trammers at such places as the Schley, Pettit, and Mariska mines.

The great depression of the 1930s brought about a rather abrupt halt to mining, and lay-offs and unemployment hit Gilbert hard. The resumption of liquor sales in February, 1933, however, brought back Gilbert's night life, gambling, and prostitution, and Gilbert upheld its much-deserved reputation for vice until the early 1940s.

Today Gilbert is but a shadow of its old self as far as night life and business are concerned; yet it has retained its population, having become mainly a residential area for people employed in other towns.

HOYT LAKES

Hoyt Lakes is a neat little town five miles east of Aurora with gently curving streets, two fine modern schools, a handsome community center and city hall, and a lovely beach and picnic grounds called Birch Cove. It burst into existence in 1955 at a place where but a year before there was nothing but "rock, chipmunks, brush, trees, deer, and an occasional bear." It is, therefore, the youngest of Mesabi mining towns. It glitters in every way with signs of modern planning, and "planning" is the key word in the development of the town and its great taconite mine and plant.

The research that led to the entire development was begun in 1931 by scientists and engineers from the University of Minnesota and Pickands Mather and Company. The great dream in those years, while the Mesabi was rapidly being depleted of its high grade ores, was to mine the iron formation itself and not just the pockets of rich ore. The Biwabik formation was composed mostly of an iron-bearing rock called taconite. The iron was low grade, but the rock was extensive. Its produce could be measured in cubic miles rather than yards, and the possibilities for profit were positively staggering!

By 1948 Erie Mining Company, which today operates the entire project, built a pilot plant just northwest of Aurora to test the machinery that it had spent great amounts of money developing. This pilot plant had a capacity of producing 200,000 tons of high iron content pellets a year, and after a

few minor adjustments was labeled a complete success. (Other experiments conducted in the vicinity were not destined to be so successful. For instance, in those same years a State of Minnesota attempt to produce a pure iron powder from iron carbonate slate, a waste product of mining, failed miserably.) By 1951 the Erie pilot plant was the only plant in the vicinity successfully using refined and fully-developed commercial units.

Meanwhile, all the planning begun in the mid-1930s began to take shape. In 1941 the state had passed what, at that time, seemed an insignificant law stating that taconite could be taxed only on a production basis. At the same time the Erie Mining Company, owned primarily by Bethlehem Steel Corporation, began exchanging and buying up unmined land on the iron formation that, at the time, seemingly contained only worthless ore. With the success of the pilot plant, Pickands Mather and Company was authorized, as managing agent, to develop a plant on the same principle that would have an annual production rate of 7½ million tons. Announcement of the project was made in late 1953. By then $300 million of private money had been spent, and 22 years had passed since the project had begun.

Two years later like magic a full-blown town, Hoyt Lakes, was in existence, and the huge taconite plant with buildings over a quarter of a mile long was near completion. The plant itself was designed by engineers from the Anaconda Copper Company, construction was by Foley Construction Company, the village was entirely pre-planned, platted and laid out by J. W. Galbreath and Company, and all the houses were constructed by the J. D. Harold Company of Duluth.

The village flourished; its first residents were Mr. and Mrs. Harvey Sandstrom who moved into their new house at 102 Suffolk Drive on September 15, 1954.

Mrs. Sandstrom later recalled seeing only one light that first night—the one from the Partridge Lakes Development office a few hundred yards away. That is what they called it at first—Partridge Lakes. Only later was it decided to label the place Hoyt Lakes, in honor of Elton Hoyt II, senior partner of Pickands Mather and Company and president of Erie Mining Company. There seems to be no record that Mr. Hoyt has ever visited the village that bears his name.

The Sandstroms were not alone for long. In a matter of days more people arrived: Mr. and Mrs. Melvin Dunkley, Mr. and Mrs. Charles Stiles, and Mr. and Mrs. Stanley Tregillis moved into their newly finished houses. There were, at the time, no phones, no paved streets, no shopping centers, and these early arrivals spent a few months feeling like real pioneers. Shopping was done once a week, and a trip had to be made all the way to Aurora to reach a telephone. By October, 1954, all the houses in Phase I of the planned community had been filled, and the houses in Phase II were being occupied as fast as they could be completed.

Hoyt Lakes grew into a strange town by 1956. There were no old people living there, and activities and attitudes reflected youth, growth, and vigor. Children were literally born by the hundreds, and there was a woeful lack of babysitters for the youthful parents.

By 1966 Hoyt Lakes abounded in teenagers and school population swelled to new heights. Interest centered around teen centers, athletics, and high

school activities. No high school was built on the townsite, and all Hoyt Lakes children were bussed to Aurora to attend what was now the very large comprehensive Aurora-Hoyt Lakes High School.

This burst of children has since passed and the Aurora-Hoyt Lakes School district now faces a steadily declining school population. Now many of its present population of 3634 have passed the age of child bearing, and at the same time the turnover at the plant and mine has been minimal. Consequently, Hoyt Lakes is fast becoming a town of predominantly older, established citizens.

The town retains today an atmosphere of a carefully planned company town situated just far enough from the concentrators and agglomerators to be free of their dust and vapors. Its shopping center is filled to capacity with a variety of businesses which are strictly regulated and limited by village officials. The last large scale building project on the site was the construction of a gigantic hockey arena, installed at great expense to the taxpayers.

At present close to 900 homes stand on the townsite, most having been built between 1954 and 1957 to house the employees of Erie Mining Company.

VIRGINIA

The first sign of settlement on the present site of Virginia was a drill exploration camp manned by A. E. Humphreys, P. L. Kimberly, John T. Jones, O. D. Kinney, David Adams, and Niel McGinnis in 1892. It seems each of these individuals located bodies of ore, and all were to evolve into mines. By the time the first snow fell in 1892, the A. E. Humphreys' Virginia

Improvement Company had platted a townsite which was almost immediately incorporated as a village, with John Owens moving in from Tower to become its first president.

Virginia's growth was phenomenal, and within a month's time the Owens-McGruder Mill, located on the east shore of Silver Lake, had cut boards for walkways and provided the necessary lumber for business establishments, such as the Maas Hardware Company, Crockett's Opera House, the McGarry Hotel, and the very unique "Hayes Hall" which served as a village hall, church, public forum, barber shop, theater for minstrel shows, and saloon all at the same time. On Sunday mornings, red-eyed men sat on planks thrown over beer barrels on the second floor to hear the sermons of pioneer minister E. N. Raymond, while others continued their Saturday night drinking and gambling on the floor below. It was not unusual in those early days for a miner to ride into a saloon on horseback; and when the village streets were graced with lamp posts, it was not uncommon to see a line of drying clothes attached to them.

Virginia attracted all kinds of people. Wave after wave came to the booming mining town—the daring, the adventuresome, the lonesome lumberjack, the seasonal immigrant who returned to his homeland annually with his savings, the gambler, the prostitute, the outcase as well as the respectable and the elite. All came to seek fortune and fame among the rough sawn buildings, sawmills, and timbered headframes.

In 1893 the whole place burned to the ground in one of many brush fires that ravaged the cut-over land of the Mesabi. The town's 5000 people were completely unprepared for fire fighting and could do nothing as the hot

August winds swept the fire through the town, destroying every single building! A financial panic in that same year slowed down rebuilding to the extent that many felt that the town would never be rebuilt, but in 1897 the town had recovered and its population once again stood at 5000. Mining expanded, the town grew, and in 1900 it all burned to the ground a second time! In the rebuilding that followed, construction was limited to stone, brick, and concrete, and by 1905 Virginia's population was 5000 once again, and the town had more brick and concrete construction than any other place on the Range. It had a beautiful Carnegie Library, a huge fire department, a water and light plant, and paved creosote-soaked wood block streets. Virginia was recognized as a center for trade for both the Mesabi and Vermilion ranges.

By 1910 lumbering and sawmilling had surpassed mining as Virginia's prime industry. The Virginia and Rainy Lake Company established the largest white pine mill in the world. Three horizontal resaws, eight band saws, and one gangsaw churned out 500,000 feet of boards every 20 hours. Its planing mill planed 250,000 board feet of lumber and 600,000 board feet of lath a day. Four drying kilns operated day and night, and it was here that 1800 men found employment.

At the same time mining activity reached an all time high with the development of twenty separate operations including the Franklin, Missabe Mountain, Yawkey, Commodore, Union, Victoria, Ohio, Lonejack, Lincoln, Higgins, Norman, Auburn, Moose, Shaw, Minnewas, Sauntry, Alpena, Larkin, Onandaga, and Columbia operations. With all this activity Virginia's population swelled to over 16,000 by the mid-1920s. In the census of 1920 it was ranked as the fifth largest city in Minnesota, and was rightly

labeled "the Queen City of the Iron Range." Some of the finest buildings in northeastern Minnesota lined its famous concrete "white way" called Chestnut Street: Alexander Reid and Company, the Swea Hotel, the European Hotel, the Hawkinson Hall, the Fay Hotel, the Socialist Opera, four theaters, a $270,000 courthouse, and a "sky scraping" office building. Along with all this Virginia was, in the 1920s, the central terminus for four railroad lines, and its stations received over twenty train arrivals a day. Its shopping area was by far the most comprehensive north of Duluth, and its theaters and restaurants surpassed any on the Range, including Hibbing.

The Virginia and Rainy Lake operation continued until 1929 when the "long whistle" blew and the company shut down forever. There followed a quick decline in population which leveled off at just under 13,000. Virginia has held this population until present times.

Virginia's mines were, in the beginning, mostly underground shaft mines which attracted the same immigrant populations living in locations as did other Range towns. In 1915 a number of these locations were incorporated into the Village of Franklin. It developed into a well-administered mining village of over a thousand people by 1915 with many of the conveniences of larger communities. Franklin and Virginia existed side by side for a time. The casual visitor could not have been able to tell where one began and the other left off. However, mining advancement removed most Franklin's company houses, and today most of the old town is a large open pit just east of Virginia.

It is a unique experience to cross the tracks from Chestnut Street and go to what remains of the old village. Company houses and the village hall with the name "Franklin" above the door reminds one of earlier days, and streets and sidewalks run right to the edge of the pit—and disappear.

CHAPTER THREE
REGIONAL CHARACTERIZATION

INTRODUCTION

This chapter provides an overview of selected physical, social, and economic factors characterizing the Arrowhead Region, St. Louis and Lake counties, and the East Range subregion (Figure 1). Topics addressed within this chapter are selected physical characteristics, demography, housing, land use, land cover, political units, and regional economy. This discussion serves as a background to the detailed comparisons among the eight Iron Range communities, contained in Chapter Four.

SELECTED PHYSICAL CHARACTERISTICS

Climate*

Overview--During the mid-fall to mid-spring period the primary climatic influences are polar air masses flowing into the Arrowhead Region from the north and west. From late spring through the summer the dominant factors affecting the climate are breezes from Lake Superior. Northeastern Minnesota possesses, however, two climatic zones. At distances greater than 60 kilometers (37 miles) from Lake Superior the climate features mild, humid summers and cold, dry winters. Along Lake Superior, and for approximately 25 miles inland, the lake tempers this continental climate, although the lake influence is not generally significant more than 20 kilometers (12 miles) inland.

*Edited climatic summaries written by Bruce Watson, Consulting Meteorologist, 1976.

Winds--Northwesterly winds generally prevail over the area, although southeasterlies are nearly as prevalent in the summer. The northwesterlies are tied to the dominance of a general low pressure system prevailing in northeastern North America. From March to October, northeasterlies prevail along the lake. These winds are caused by differential heating and cooling of Lake Superior and the high ground along the North Shore.

Precipitation--In northeastern Minnesota, precipitation is well-distributed throughout the year. Rainfall, with an annual average of about 27 inches, is heaviest during the month of June. Snowfall is greatest in the months of January and March, with a total seasonal average of about 60 inches. The lake influence on snowfall extends at least 60 kilometers (37.3 miles) inland. Certain locations, such as Isabella, receive substantially more snow than Ely, Hibbing, and other interior locations.

Temperatures--There is considerable difference in temperatures between Lake Superior communities and Iron Range cities. During the warmest month inland (July) the temperatures range from a mean low of 13°C (55.4°F) to a mean high of 20°C (77°F). At Grand Marais, on the North Shore, the warmest month (August) has a mean low of 11°C (51.8°F) and a mean high of 21°C (69.8°F). In January, the coldest month, temperatures along the Lake Shore average 5° to 10° warmer than those inland.

Frost-free days range from 100 to 140 days. In the hinterlands, however, frosts occur year-round in many cold air pockets that dot the area.

Bedrock Geology

The bedrock geology of the Arrowhead Region consists of Precambrian rocks

that can be divided into three sequences: (1) Lower Precambrian (greater than 2600 million years old); (2) Middle Precambrian (1800-2600 million years old); and (3) Upper Precambrian (600-1800 million years old). Middle Precambrian rocks are bound on the north by Lower Precambrian rocks and on the east by Upper Precambrian rocks (Figure 2).

The Lower Precambrian is characterized by a thick sequence of rocks formed by submarine volcanic activity, intense deformation at depth, intrusive emplacement, and, at a later time, uplift. This includes highly faulted and folded metavolcanics (Ely Greenstone and Soudan Iron-formation) and metasediments (Knife Lake Group), the Saganaga batholith and Felsic-intermediate intensives (the Giants Range and Vermilion Granite). The transition to the Middle precambrian was marked by uplift and accompanying erosion, deposition of the Iron-formation (Mesabi and Gunflint ranges), and thick erosional sequences of argillite and graywacke in a tectonically quiet environment of shallow marine basins. Volcanic activity started again in the Upper Precambrian where the North Shore Volcanic Group was formed mainly on land surface and the emplacement of the Duluth Complex within the volcanic pile at depth. Copper-nickel mineralization occurs at the basal contact of the Duluth Complex. To the south the Hinckley Sandstone was deposited in a near shore environment.

Landforms

The present topography in the Arrowhead Region is the result of erosional and depositional processes of continental glaciation. The northern portion was subjected to differential glacial erosion, whereby the softer bedrock formations were scoured and the material was carried along with the ice and

deposited further south. Although phases of glaciation eroded some of eastern St. Louis and southern Lake and Cook counties, most of the existing land forms in the southern two-thirds of the region are due to deposition of contained rock material released by the melting of the ice.

In general, the Arrowhead Region is part of the Lake Superior Highland physiographic province with a nearly flat, eroded land surface and occasional areas consisting of more resistant rock forming the higher hills and ridges. The province can be divided into several physiographic regions. The highest elevations which form drainage divisions are in the North Shore Highlands which border Lake Superior, and the east-west trending Giants Ridge which lies just north of the Mesabi Iron Range. The drift-covered Cook-Embarrass Region stretches from the southwest to northeast from Itasca through Lake counties. The Border Lakes Region to the north is found in St. Louis, Lake, and Cook counties and contains scoured bedrock lakes. The Toimi Drumlin Field is located between the highland areas from the Iron Range to Duluth. Throughout the region are several Glacial Lakes and Moraine Areas (ARDC, 1974a).

Drainage Basins

Four major drainage basins are contained within the Arrowhead Region (Figure 3). In order of size laying within the Region, they are the Rainy River Basin in the north, the Lake Superior Basin, the Upper-Upper Mississippi River Basin, and a small segment of the Upper-Red River Basin which includes a small portion of both Itasca and Koochiching counties. The Laurentian Divide, which separates the Rainy River-Lake Superior basins and Rainy River--Upper-Upper Mississippi basins, represents the dividing

Itasca, Lake, Carlton, and St. Louis counties (Table 1). St. Louis County (outranked only by Beltrami County) is estimated to have approximately 1.7 billion short tons of peat. Koochiching County, the third ranking county with peat deposits, is estimated to have approximately 1.4 billion short tons.

Table 1. Estimates of peat deposits in Arrowhead Region.

COUNTY	AREA (acres)	AVERAGE (feet)	QUANTITY (short tons)
Aitkin	397,000	6	476,760,000
Carlton	35,000	10	70,000,000
Itasca	250,000	6	300,000,000
Koochiching	1,000,000	7	1,400,000,000
Lake	150,000	6	180,000,000
St. Louis	1,192,000	7	1,668,800,000

SOURCE: Soper and Osbon, U. S. Geological Survey Bulletin 728, 1922.

A majority of the peatlands in St. Louis County is included within the Cloquet State Forest, Kabetogama State Forest, Sturgeon River State Forest, Whiteface River State Forest, and the Superior National Forest. Privately-owned land holdings of peat are located near Floodwood, Meadowlands, and Toivola. The major peat lands generally lie outside of the Copper-Nickel Study region, though clusters of peat which are located in Lake County do lie in the southeast corner.

Soils

The soils in the Arrowhead Region vary from fine to coarse textual forest soils derived primarily from glacial till, outwash, and laucastrine deposits (Figure 5). Descriptions of the associations can be found in Soils of Minnesota (Arneman, 1963).

Residential development, with on-site sewage treatment, may be limited in the Region. Seventy percent of the total land within the Region may have limitations, conditions which generally prohibit use unless extensive studies and soil reclamation are undertaken. Only 11.5 percent of the land in the Region has slight limitations. In Lake County 11.8 percent of the total land has slight limitations, as does 11.5 percent of the total land in St. Louis County (ARDC, 1974a).

LAND USE-LAND COVER

Introduction

This portion of the regional characterization describes general land use-land cover patterns within the Arrowhead Region and the East Range study area. While land cover could conceivably be discussed under the sub-chapter heading of "Selected Physical Characteristics," such a discussion would not accurately describe cultural features on the earth's surface within the study areas. In a similar vein, if this section were only describing land use, an inaccurate picture would also be painted regarding the surface cover in the study region. The boundary, then, between land use and land cover is somewhat ambiguous. For instance, forest cover describes a surface feature and would be appropriate for a land cover map. However, we could

line of water flowing northward to Hudson's Bay, southward to the Gulf of Mexico, and eastward to the Atlantic. Water in the Rainy River Basin flows through the Boundary Waters Canoe Area and Voyageurs National Park (ARDC, 1974a).

Mineral Resources

The mineral resources in the Arrowhead counties include iron ore, copper, nickel, clay, peat, sand, and gravel. Iron ore, the most important of these minerals, provided the original basis for the area's growth and has been a mainstay of the economy since the late nineteenth century. These iron ore deposits (the Biwabik Formation) extend across a relatively narrow band running from Grand Rapids in Itasca County to Babbitt on the east-central border of St. Louis County (Figure 4).

Potential copper-nickel resources have been approximated along areas of the Duluth Contact. The actual extent and quality of the mineralization have not been determined. At the present time attention is being focused on the Contact beginning at the Boundary Waters Canoe Area near Ely and extending southwesterly to an area south of Hoyt Lakes. Combined copper-nickel reserves in the Hoyt Lakes-Ely Region are estimated at between 2.2 and 5.85 billion tons, for an average grade of 0.8 percent copper plus nickel (Bonnichsen, 1974).

A third "mineral resource" is peat. To date, Minnesota's peat lands have been principally used for horticultural and agricultural purposes, but peat also has the potential for use as an energy source, petrochemical feedstock, and a wastewater filtration medium (Larson and Stern, 1976). In the Arrowhead Region peat lands are located in Koochiching, Aitkin,

not put a category of forest cover on a land use map since this would not describe man's activities utilizing the natural resource forests. This is to say that forests could be managed for timber production, recreation, wildlife, or for water management. In order, then, to get an accurate picture of land uses on those lands which are covered by forest, a relatively indepth research effort would be required in order to discern the actual land uses. As a second example, if we were seeking to locate and symbolize cities or towns on a land cover map, we could only describe these features as structures and/or paved areas. On a land use map, however, we could indicate that the structures are being used for residences, commercial enterprises, or industrial uses. Therefore, land use is a function of man's manipulation, modification, or economic activity on the surface of the earth. For purposes of generalization, however, we have combined land use and land cover.

Regional

The most dominant land use-land cover in the seven county Arrowhead Region, according to the Minnesota Land Management Information System (MLMIS)*, is forested lands varying from 43.8 percent of total lands in Lake County to 85.6 percent of total lands in Koochiching County (Table 2). The percentage of cultivated, residential, extractive, urban-nonresidential, and transportation lands varies from 0.6 percent of lands in Cook County to 16.9 percent of total lands in Aitkin County. Five of the seven counties are recorded as having less than ten percent of total lands in these five categories. The categories, then, of forested, open-pasture, water, and swamps comprise a majority of the land use-land cover in the Arrowhead Region.

*Jointly sponsored by the Center for Urban and Regional Affairs-University of Minnesota, and the Minnesota State Planning Agency.

Table 2. Land use-land cover categories in the Arrowhead Region by county (in percent).

CATEGORY	AITKIN	CARLTON	COOK	ITASCA	KOOCHICHING	LAKE	ST. LOUIS
Forested	65.2	67.2	74.8	80.7	85.6	42.8	81.4
Cultivated	5.3	8.2	0.0	1.3	0.9	8.1	1.8
Water	8.2	1.4	24.4	8.6	1.5	26.6	8.0
Swamp	9.4	4.4	0.1	1.3	7.3	17.5	1.1
Residential	1.1	1.1	0.4	1.2	0.3	0.2	1.4
Extractive	0.0	0.1	0.0	1.0	0.0	0.0	1.0
Open	10.5	16.2	0.2	5.4	4.2	4.7	4.2
Urban-nonresidential	0.3	1.3	0.2	0.5	0.2	0.1	0.9
Transportation	0.0	0.1	0.0	0.0	0.0	0.0	0.1

SOURCE: MLMIS, 1969.

ST. LOUIS-LAKE COUNTIES

The most dominant land use in St. Louis and Lake counties is forest land which comprises 82 percent of the total two-county area (Table 3, Figure 6). Approximately 6.5 percent of the total state forest lands are located in Lake County, as compared to 18.8 percent in St. Louis County.

Mining, the seventh ranking land use in St. Louis County, is significant not in terms of gross acreage devoted to that use, but rather its juxaposition with urban lands. MLMIS did not, however, include tailings ponds, stockpiles, or mine structures in their estimates of extractive land uses. Including these acreage totals with those of water reservoirs in mining, land estimates would increase the total mine lands to 124.5 square

miles (Barton-Aschman, 1975); an increase of 57.15 square miles from the MLMIS estimate (Table 4).

Table 3. Land uses in St. Louis and Lake counties.

LAND USE	ST. LOUIS Sq. Miles	ST. LOUIS % of Total Land[b]	ST. LOUIS Rank	LAKE Sq. Miles	LAKE % of Total Land[b]	LAKE Rank
Land use						
Water	536.9	8.0	2	365.9	15.9	2
Marsh-Swamps	73.8	1.1	6	6.9	0.3	5
Open Pasture	281.9	4.2	3	9.2	0.4	4
Forest	5462.7	81.4	1	1898.3	82.5	1
Cultivated	120.8	1.8	4	2.3	0.1	7
Mining	67.1[c]	1.0	7	1.56[d]	.07	8
Urban Residential	93.9	1.4	5	11.5	0.5	3
Urban Mixed	60.4	0.9	8	4.6	0.2	6
Transportation	6.7	0.1	9	----[a]	----[a]	-[a]
TOTAL	6704.2	99.9		2300.3[e]	99.9[c]	

SOURCE: Barton-Ashman Assoc. Draft EIS--Reserve Mining Company, 1975.

[a]Due to the calculating of land uses by the dominant use in each 40 acre tract, at times specific land uses were not recorded; i.e. the transportation system in Lake County.

[b]Due to rounding, the percentages and totals do not equal 100.

[c]The calculation of this figure did not include tailings basins, stock piles, or mine structures.

[d]The calculation of this figure includes tailings basins, stock piles, and mine structures.

[e]Approximate figure.

Table 4. Mine land inventory-area utilized by mining operations (in acres).

County	MINE PITS & U.G. CAVES	SURFACE LEAN ORE &TACONITE STOCKPILES	TAILINGS PONDS	WATER RESERVOIRS	MINE PLANTS & FACILITIES	TOTAL MINE LAND ACRES	TOTAL COUNTY ACREAGE
Lake							
Area	0	0	280	40	680	1000	1,471,168
% of Mine Land	0	0	28	4	68	100.00	
% of County	0	0	b	b	b	b	
St. Louis							
Area	22,760	25,080	12,160	3520	16,000	79,520	5,089,280
% of Mine Land	29	32	15	4	20	100.00	
% of County	b	b	b	b	b	2	

SOURCE: Barton-Aschman Assoc., Draft EIS--Reserve Mining Co., 1975.

b = less than 1 percent.

Under these circumstances extractive land use would rank fourth within St. Louis County.

Cultivated acreage comprises only 1.8 percent of total land in St. Louis County and 0.1 percent in Lake County. Forage and hay are the predominant crops grown on this acreage.

State and federal agencies have purview over significant tracts of recreational land in the two counties (Figure 7). Federal land management agencies include the U. S. Forest Service, Bureau of Indian Affairs, and National Park Service. State parks, forests, and waysides comprise the majority of state-managed areas within St. Louis and Lake counties. State forest acreage also overlaps somewhat with federal areas in portions of the Superior National Forest.

In the two counties there are a multitude of recreation sites: 294 tent camping sites, 1681 vehicular camping sites, 1168 picnicking sites, and 505 miles of trails for horseback riding, snow travel, hiking, or bicycling. In addition there are canoe trails, historic sites, swimming beaches, boat accesses, marinas, and ski areas throughout the counties (MDNR, 1974).

East Range Land Uses

General Patterns--Within the East Range area forest land is again the dominant use (Figure 8). Only two southwestern townships (Clinton and Missabe Mountain) have under 30 percent of total township land in forests. More than half of the townships have over 80 percent of land in forest use. Water, extractive uses, open-pasture, and urban lands comprise small proportions of land cover in the East Range (Figure 9). Since the MLMIS extractive land classification did not include tailings basins, lean ore stockpiles, or mine structures, we might assume that some open lands adjacent to mining-dominated townships are occupied by these related mining uses.

A division of the East Range into two generalized land use regions may be appropriate (Figure 9). The southwestern area is under greater cultural influence of urbanization, cultivation, clearings, and extractive activities. The southeastern and northeastern areas are under greater influence of forest-cover, swamps, marshes, and waterbodies, with the exception of the Babbitt area.

Urban-Mining Interface--The interface of urban and residential land uses within existing iron and taconite mining areas is striking and abrupt (Figure 10). For example, in Virginia, Eveleth, Ely, Aurora, Gilbert, and

Biwabik mining occurs or has occurred immediately adjacent to urban and residential uses. Within the municipal boundaries of Babbitt and Hoyt Lakes mining continues, but their boundaries extend beyond the incorporated areas of the cities. Encroachment and conflict extends into forestry and recreational uses in the Iron Range, and for this analysis, within the East Range.

An excellent example of attempts to resolve encroachment conflict is that of approval by the Biwabik City Council to allow Pickands Mather Mining Company to commence feasibility and cost studies for relocating the entire town (Duluth News Tribune, 1976b; Mesabi Daily News, 1976). Biwabik is perched atop an estimated 750 million tons of crude taconite ore with a present value of approximately $9 billion. The city council had rejected a plan outlined by Pickands Mather Company to open two new mines within areas of potential housing and public projects (Duluth News Tribune, 1976a). The authorized study is projected to approximate relocation costs, detail a relocation scheme, and evaluate the overall feasibility of moving the community. With the proximity of mining pits and facilities immediately adjacent to Range communities, little land within these communities is available for residential, commercial, and industrial growth.

POLITICAL UNITS

Counties

The potential copper-nickel development area occurs within two northeastern Minnesota counties—Lake and St. Louis. These two adjoining counties, along with the counties of Aitkin, Carlton, Cook, Itasca, and Koochiching comprise Region 3, which is one of eleven Minnesota Economic Development Regions

(Figure 11). Region 3 constituted 8.4 percent of Minnesota's total population in 1974. This was a .3 percent decrease from the 8.7 percent figure of 1970. The seven counties of Region 3 comprise 21 percent of Minnesota's total area in square miles.

Lake County--Bounded on the north by Canada's Quetico Provincial Park of Ontario and on the south by Lake Superior, Lake County is Minnesota's fifth largest county in area (2300 square miles) but ranks 64, out of the 87 counties, in population (13,351 persons in 1970). The Boundary Waters Canoe Area (BWCA) is located along the county's northern boundary. The city of Two Harbors, the largest in Lake County (4435 persons in 1970), provides limited port facilities and is the county seat.

St. Louis County--Ranking third among Minnesota counties in population (220,695 persons in 1970), St. Louis County is the state's largest county in area (6704 square miles). The northern border includes Canada's Quetico Provincial Park of Ontario, the BWCA, and Voyageur's National Park. The western border is comprised of Aitkin, Itasca, and Koochiching counties. The southern border is a combination of Lake Superior and Carlton County linked by Duluth, the largest city in St. Louis County. Duluth is Minnesota's third largest city in population (100,570 persons in 1970) and has the eighth largest port facility (measured in tonnage) in the United States. Additionally, Duluth contains the county government headquarters and is the major trade center for the Arrowhead Region.

Townships

Of the four townships and two unorganized territories in Lake County, only the Unincorporated Territory of West Lake is within the proposed East Range

study area. This territory's population represents fourteen percent of the total Lake County population. St. Louis County has a total of 70 townships and 12 unorganized territories. Of these, ten townships and two unorganized territories are within the study area. As of 1970 population within these 12 political units represented 4 percent of the total St. Louis County population.

Municipalities

Lake County has a total of three municipalities--Beaver Bay, Silver Bay, and Two Harbors. None of these municipalities lie within the East Range study area.

St. Louis County has a total of 27 municipalities, 8 of which are within the East Range study area. Ely is located on the Vermilion Range, while Aurora, Babbitt, Biwabik, Eveleth, Gilbert, Hoyt Lakes, and Virginia are located on the Mesabi Range. In 1970 these 8 municipalities constituted 16 percent of St. Louis County's population.

Arrowhead Regional Development Commission (ARDC)

Genesis--The Arrowhead Regional Development Commission (ARDC) is a regional development commission established under and pursuant to 1969 Laws of Minnesota, Chap. 1122 (Minnesota Statutes, 1969, Sec. 462, 381 et seq.) establishing Regional Commissions. The commission, established to coordinate federal, state, and local planning and development programs, is headquartered in the city of Duluth, St. Louis County.

Area of Influence--The commission functions within the following seven Minnesota counties: Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, and

St. Louis. More than 300 local units of government are included within this area.

Purpose--The mandate of the ARDC, also referenced as Region 3, is the promotion of inter-governmental cooperation to meet common problems of governmental units on a regional basis. To effectually fulfill this charge, the commission has assumed the following responsibilities: human resources planning—comprehensive planning, aging, and criminal justice; physical resources planning—coastal zone management, Voyageur's Planning Area, economic planning, water resources planning, forest management, housing, and technical assistance; and metropolitan planning—Metropolitan Interstate Committee, technical assistance, transportation planning, and housing (ARDC, 1975e).

Minnesota Department of Iron Range Resources and Rehabilitation (IRRR)

Genesis--The State of Minnesota established the Department of Iron Range Resources and Rehabilitation (IRRR) during the 1941 legislative session as a result of previous efforts on the part of the late state Senator Richard Kelly and then state Representative John Blatnik, both members of the Chisholm Junior Chamber of Commerce. The catalyst for their initial proposal was the loss of lumbering through timber depletion as the major industry and the drastic reduction of payrolls at operating natural iron ore mines. At the time the northeastern section of Minnesota had been labeled one of the six "permanently depressed areas" of the United States.

Area of Influence--The service area of the IRR is comprised of twenty-two Minnesota counties which are Aitkin, Becker, Beltrami, Carlton, Cass,

Clearwater, Cook, Crow Wing, Hubbard, Itasca, Kanabec, Koochiching, Lake, Lake of the Woods, Mahnomen, Mille Lacs, Morrison, Pine, Roseau, St. Louis, Todd, and Wadena.

Purpose--The objectives of the IRRR are to promote sound resource management, to develop a well-trained work force, and to assist in technological advancement for the communities, citizens, and industries of the twenty-two counties. The thrust of the environmental and humanistic programs is to conserve and promote the potential of the richly endowed Northern Region. The department engages in research and contributes to the development of the area's economy and quality of life through the promotion of agriculture, forestry, peat, wild rice, copper-nickel, taconite, water survey, topographic mapping, geological mapping, vocational training, industrial expansion, and, most recently, tourism and speech therapy (IRRR, 1976).

DEMOGRAPHY

Data Sources

A majority of the secondary data used to demographically profile the eight communities and to develop the regional and comparative analyses was drawn from the U. S. Census-Characteristics of the Population. We recognize that the data obtained from the 1970 Census may be outdated regarding present day populations. The data does, however, define the general characteristics of the region while emphasizing the unique qualities of the individual communities. Even during the present time (late 1977), the 1970 Census data is still the best population information currently available.

Population Changes

Trends--The historical population fluctuations in the Iron Range and northeastern Minnesota have been well-documented. These "boom bust" cycles are typical of a resource extraction-based economy which has been and remains largely dependent on the availability and economic viability of ferrous ores and timber.

Like the Arrowhead Region, the East Range communities experienced rapid early growth between 1890 and 1921, followed by periods of stagnation or decline until iron demands, precipitated by World War II, resulted in a short period of renewed growth (Table 5). With the depletion of natural iron ores (hematite) and a forest products industry weakened by increased scarcity of prime timber, an overall population decline ensued during the post war period. Concurrently, Minnesota population as a whole increased. The twin catalysts of large-scale taconite development and the phenomenal post war increase in birth rate reversed this trend for most of the Range communities during the 1950s. Significantly, however, Ely and Eveleth on the East Range continued to decline, although at reduced rates.

The period from 1950 to 1960 was characterized by unequal distribution of growth within the Arrowhead Region and the East Range (Figure 12).

A similar picture of uneven distribution of population change is evident in the 1960-1970 population data, although a general decline for the Arrowhead Region is mirrored by similar declines at the subregional and community levels. The population of Babbitt, Hoyt Lakes, and several of the suburban townships increased at a rate well above the state and national averages (Figure 13). This growth can be reasonably attributed to the

Table 5. Population changes, 1940-1970.

PLACE	1940	1950	1940-1950 CHANGE IN%	1960	1950-1960 CHANGE IN%	1970	1960-1970 CHANGE IN%
Minnesota	2,792,000	2,982,483	+ 6.8	3,413,864	+14.5	3,804,971	+11.5
Arrowhead Region[a]	308,906	305,885	- 1.0	344,957	+12.8	329,603	- 4.5
Koochiching County	16,930	16,910	- 0.1	18,190	+ 7.6	17,131	- 5.8
Itasca County	32,996	33,321	+ 1.0	38,006	+14.1	35,530	- 6.5
Aitkin County	17,865	14,327	-19.8	12,162	-15.1	11,403	- 6.2
Carlton County	24,212	24,584	+ 1.5	27,932	+13.6	28,072	+ 0.5
Cook County	3,030	2,900	- 4.3	3,377	+16.4	3,423	+ 1.4
Lake County	6,956	7,781	+11.9	13,702	+76.1	13,351	- 2.6
St. Louis County	206,917	206,062	- 0.4	231,588	+12.4	220,693	- 4.7
St. Louis County, excluding Duluth	105,852	101,551	- 4.0	124,704	+22.8	120,115	- 3.8
Duluth, City of	101,065	104,511	+ 3.4	106,884	+ 2.3	100,578	- 5.9
Virginia, City of	12,264	12,486	+ 1.8	14,034	+12.4	12,450	-11.3
Eveleth, City of	6,887	5,872	-14.7	5,721	- 2.6	4,721	-17.5
Gilbert, City of	2,504	2,247	-10.3	2,591	+15.3	2,287	-11.7
Biwabik, City of	1,304	1,245	- 4.5	1,836	+47.5	1,483	-19.2
Aurora, City of	1,528	1,371	-10.3	2,799	+104.2	2,531	- 9.6
Hoyt Lakes, City of	27	20	-25.9	3,186	+15,830.0	3,634	+14.1
Babbitt, City of	118	117	- 0.8	2,587	+2,111.1	3,076	+18.9
Ely, City of	5,970	5,474	- 8.3	5,438	- .7	4,904	- 9.8

SOURCE: U. S. Bureau of Census, 1940-1970.

[a]Koochiching, Itasca, Aitkin, Carlton, Cook, Lake, and St. Louis Counties.

localized prosperity brought about by the rapid development of the taconite facilities at Babbitt and Hoyt Lakes and the suburbanization in nearby townships. Population decreases in the rest of the area were due to a decreasing birthrate and outmigration, particularly in certain age groups.

Projections--At the onset of the 1970s the general decline of the Iron Range was predicted to continue. Population projections were radically altered, however, when announcements of major expansions were made by most of the Iron Range taconite companies. These expansions were predicted to increase mining employment by over 4000 workers, with an increase of over 8000 in construction jobs (DED, 1976).

The volatility of the employment situation has introduced increased uncertainty into the validity of population projections for the area. Both the Arrowhead Regional Development Commission and the state demographer have revised their projections for the Iron Range. Also, Gilbert and Aurora sponsored official special censuses in their respective cities. Results indicated that the actual populations in each town were lower by 200-300 persons than had been predicted (Figures 14 and 15).

Three factors limit the usefulness of these population projections. First, decisions by private enterprise and governmental bodies on the advisibility and feasibility of pursuing copper-nickel mining have not yet been made. Second, present population growth on the Range may be attributable to the influx of construction workers who may be viewed as temporary residents. Third, the use of sophisticated projection methodologies is generally limited to highly urbanized areas because of the reliance on detailed metropolitan population data.

Because of these limitations, two individual communities (Gilbert and Aurora) have felt it necessary to conduct special mid-decade censuses. For a regional study, these data provide only transient indicators. Planning for population changes and the induced impacts resulting from these changes is made even more difficult by the crudity or absence of intercensal data.

Age Structure--Basic demographic features of Iron Range communities—in this case, age structure--have often been radically altered by economic "boom and bust" cycles. These "boom" cycles were sparked by the openings of new mining operations, expansion or revitalization of existing operations, or accelerated demand for a mineral product. Cessation or diminution of an important base industry (for example, forestry or hematite mining) has resulted in "bust" cycles or recessions. With this economic volitility a community's age structure can be fundamentally altered within ten years. In light of this situation an analysis of the area's age structure for a twenty year period is sufficient only to develop generalized commentary.

Between the three census dates (1950, 1960, 1970), the eight East Range communities profiled in this report show a continuing trend toward an aging population with little mitigation from the influx of newcomers. Other communities in the Iron Range, however, have undergone a definite rejuvenation as a younger working force with young families has responded to the expanded employment opportunities provided by taconite development. Since the study area's age structure composition is highly differentiated, it is more thoroughly examined in Chapter 4.

Most recent attempts to estimate or predict populations changes in the East Range study area (and other Iron Range communities) to plan for taconite or copper-nickel development have focused almost exclusively on total numbers of people expected to leave or arrive in the area. Equally important, or perhaps more important, is the need to anticipate the kinds of age structure adjustments which would likely take place as a result of a significant population shift in response to a new industry, such as copper-nickel.

HOUSING

Region 3 Overview

In 1970 Region 3 contained 112,680 housing units (occupied and vacant year-round), or 2.925 persons per unit. This number was projected to increase in 1975 to 118,700 total units (11,640 total additions minus 5620 removals), or 2.837 persons per unit based on an alternative Region 3 population projection (MHFA-SPA, 1976; State Planning Agency, 1975b). Conventional housing was estimated to account for 6800 of the additional units with mobile homes adding 3800 units and other shelter-types adding 1040 units. The total need for new housing units for 1975 to 1985 has been estimated at 30,910 units. This estimate considers the net increase in the number of households, vacancy requirements, replacement of units lost, and replacement of dilapidated units.

Housing subsidy needs in 1970 were estimated at 13,400 households, or 13 percent of the total households (MHFA-SPA, 1976; ARDC, 1976a). From 1970 to 1985, 6020 additional households will have needs for subsidies (MHFA-SPA, 1976). Sixty percent of the 1970 estimated subsidies were

proportioned to elderly households, and 54 percent are estimated for 1970 to 1985. In response to these estimated needs the Minnesota Housing Finance Agency consistently included Region 3 in a group of three regions—Regions 2, 3, and 5—which collectively were targeted to receive the second or third highest allocations (of 5 regional groupings) for the HUD Section 8 Housing Assistance Payments Program (new construction and substantial rehabilitation), the Home Improvement Grant Program, and the Home Improvement Loan Program.

Housing Problems

Overview--Numerous housing supply problems have been confronting Iron Range communities. Two generalizations summarize the specific problems:

1) An acute housing shortage has existed until early 1977. Under current estimates and trends in labor force needs, housing supply and new unit construction, a housing supply deficit of approximately 3820 units for all Iron Range communities is projected for 1980 (ARDC, 1975a). Specifically, a deficiency of 1480 units for the eight Range communities is projected (Table 6).

2) The cost of single family units is out of reach for approximately 82 percent of the Iron Range population (Knudson, 1976). It appears that mobile homes may provide the most economical shelter option.

Outline of Problems--There are at least four major problems with simulating new housing developments. One is the deficiency of sewer, water, and street extension services in potential development areas. This may be due to the inability or unwillingness of communities to incur General Obligation Bonds to extend these services and a reluctance to maintain these services as part of a community's operating budget. Transferring these investment costs to the private developer would probably increase the cost of new units beyond the reach of those most needing new housing units.

Table 6. Housing statistics, April 1975.

CITY	POPULATION 1974 ESTIMATES	PROJECTED POPULATION INCREASE	OCCUPIED HOUSING 1974(est.)	PROJECTED FUTURE NEED HOUSING[a]	VACANT HABITABLE HOUSING[b]	NEEDED ELDERLY HOUSING[c]
Aurora	3,134	288	927	90	21	50
Babbitt	3,131	288	735	90	37	--
Ely	5,406	352	1,897	110	0	50
Hoyt Lakes	3,842	480	902	150	0	--
Eveleth	4,826	352	1,732	110	7	40
Virginia	12,760	2,048	4,657	640	12	100
Biwabik	1,502	256	462	210	9	--
Gilbert	2,336	672	737	80	3	--

SOURCE: From ARDC, "Assessment of Growth Impacts on the Iron Range" May, 1974, revised June, 1974, amended April, 1975.

[a]The projected distribution of this housing demand is based on the growth capacity of various communities including such factors as available land in proximity to utilities, highways, compatible zoning, employment centers, public service facilities, etc. Projected year--1980.

[b]June, 1974, Postal Vacancy Survey and Realtor's Survey.

[c]These figures do not include additional needs for replacement of substandard housing stock or needs of other low-income families.

With the cost of a new single-family unit being approximately $35,000 to $42,000 in August, 1976, many low and moderate income families are excluded from home ownership (Knudson, 1976). These costs include high construction costs, high land costs, and high tax rates. For instance, in 1974 housing costs (mortgage of $22,500 at 8 percent interest over 20 years, taxes, insurance, utilities, and maintenance) would total approximately $289.50 per month or 52 percent of monthly take-home income, assuming an annual gross income of $8304 ($4 hourly wage for 173 hours per month). Even with a $13,000 mortgage for 30 years at 6.5 percent interest, monthly payments of $161.50 still would represent 28.9 percent of monthly take home income; 3.9 percent over the federal guidelines of 25 percent of adjusted income for shelter.

Mobile homes pose the third problem. Increasingly, the most economic shelter option appears to be that of mobile homes in scattered rural patterns. This trend is projected to continue and increase (Knudson, 1976). Unfortunately, this settlement pattern creates problems for governments in supplying essential services and in promoting the general public welfare through health codes, zoning, and land use controls. Further, the individual is often faced with longer commuting distances and associated hardships, such as increased transportation costs, shopping inconvenience, and social isolation. The results of a statewide mobile home study presently being conducted by the Minnesota Housing Finance Agency may provide additional insights into this market trend.

A final problem in housing involves planning for the high proportion and increasing numbers of elderly persons in the Iron Range, a group whose needs must be increasingly considered in housing development programming.

REGIONAL ECONOMY

Overview

The industrial composition of the study area from 1950 to 1970 was characterized by a very slight diversification with a declining importance in mining and an employment increase in wholesale-retail services and professional services (Figure 16). Other industrial sectors (construction, manufacturing, public administration, transportation) also showed changes during this time. These changes were, however, inconsistent or unspectacular. Despite this diversification, mining remains the predominant employer in most of the towns.

The economies of towns with little commercial activity and restricted service functions also tend to be those most dominated by mining. The cities of Hoyt Lakes (developed by Erie Mining Company) and Babbitt (developed by Reserve Mining Company) were created in the mid-fifties to house and provide services for the respective mining company's employees. They were "new towns" in every sense of the phrase and remain directly tied to the single mining company for their existence, although the companies now claim a "hands off" policy in community affairs.

Other communities (for example, Virginia, Eveleth, and, to some extent, Ely) draw on several other categories of employment for their economic base. Mining, then, comprises a proportionately smaller segment of the total labor force. It remains apparent, however, that much of this diversified employment which competes with mining in importance is dependent upon the basic resource extraction industrial activity.

Employment in professional services (for example, doctors, dentists, lawyers) changed from a total of 1366 persons in 1950 to almost 2300 by 1970 (an increase of about 68 percent), although the total population increased by only 22 percent. These data suggest that the study area is moving toward a higher level of self-sufficiency than it has had in the past, especially in health care. Traditional reliance, therefore, on Duluth or the Twin Cities for some professional services may weaken as the quality and availability of professional services increase.

Base Industries

It is often said that the Arrowhead Region's economy depends upon the three T's—Taconite, Timber, and Tourism—with Transportation as a weaker fourth. Timber and tourism are less significant and are more difficult to document than the taconite mining industry.

Mining--The economy of the East Range study area is dominated by the iron ore and taconite industry. Each community within the study area is or was at one time very heavily dependent upon taconite or iron ore in terms of employment, tax base, and cash flow. The taconite industry is currently undergoing a tremendous expansion program that will add about 4000 permanent jobs. This expansion will also provide for an additional 8000 construction jobs during the duration of expansion (expected to end by 1980) as well as an additional $1.5 billion capital investment and will expand capacity by about 75 percent of 1975 production levels. By 1984 some 14,000 people will be employed by taconite and iron companies and will carry home and distribute throughout the region a total annual payroll of $215 million. Total capital investment will reach nearly $2.5 billion, and capacity will

reach 71 million tons of iron ore and taconite annually (DED, 1976). Taconite reserves are estimated to last more than one hundred years at present production rates.

Timber--The timber resources of northeastern Minnesota are obvious to anyone traveling through the region. Forested lands cover 10.36 million of the 13.02 million acres (79.5 percent) in the Arrowhead Region. St. Louis County itself has a ratio of 82 percent of total acres forested—3.5 million of 4.29 million acres (MDNR, 1975). Employment in the forestry sector, however, remains relatively low in St. Louis County. Approximately 800 employees in the forestry sector in 1972 made up a mere 1.5 percent of total employment in St. Louis County. Other Arrowhead counties are more dependent on forestry—Koochiching (39 percent of total employment), Carlton (32 percent), and Itasca (19 percent)(ARDC, 1975c).

According to the U. S. Department of Agriculture, pulpwood accounts for about 90 percent of the total estimated value of forest products harvested in Minnesota (DED, 1976). The estimated value of pulpwood produced in St. Louis County in 1972 was nearly $120 million, and St. Louis County contributed about a third of the Arrowhead Region's pulpwood production: 305,000 of 920,000 cords. This production totaled 23 percent of the state's total pulpwood production (ARDC, 1975c).

An annual payroll of about $1.2 million to the 800 employees gives some insight into the nature of the timber industry in St. Louis County (DED, 1976). The seasonal and part-time nature of the employment pattern is reflected in the $1500 average annual salary for timber products employees in St. Louis County. Certainly, a full range of employment opportunities exist—from

spent by local residents. These hospitality services—such as the gas stations, drug stores, grocery stores—make up a sizable portion of the economic contribution of tourism as a whole. Without primary data gathering and surveying, the true economic contributions of tourism can only be approximated.

Summary--The economy of northeastern Minnesota in general and the East Range area specifically can be characterized as one which is dominated by a single industry, mining. Mining serves as catalyst for induced and indirect economic activity as well as providing a tremendous direct economic base for the area.

Aside from taconite mining, the region is blessed with forests, lakes, and rivers which provide economic as well as aesthetic benefits to the area. While considerably smaller than the economics of mining, the economic contributions of timber and tourism are significant and cannot be ignored. Decisions concerning the economic structure of the East Range will have to be made considering the projected economic impacts on each of these base economies that will result from any type of copper-nickel development.

Personal Income

Average gross incomes in the Arrowhead Region rank somewhat below the state gross average income per individual tax filer (Table 7). Within the Region, Aitkin County had the lowest average gross income in 1970 and 1974, while Lake County had the highest average gross income during the same period (Minnesota Department of Revenue, 1970 and 1974).

St. Louis County ranked just below the state gross income level, considerably behind Washington County (the state's highest 1974 average), and comfortably ahead of Clearwater County (the state's 1974 low average) in 1974. Twenty-one counties had average gross incomes greater than St. Louis County; sixty-five counties had lower average gross incomes.

Increases in average gross incomes for four Arrowhead counties (St. Louis, Lake, Cook, and Aitkin) were greater than the state average, while the other three counties (Koochiching, Itasca, and Carlton) equaled or were below state averages for percent change in average gross incomes.

the capital—intensive, high-paying mill work to the part-time forester who owns only a chain saw and a tractor, but the average annual salary reflects the influence of the part-time forester.

The timber sector could be characterized as one possessing potential. The resource exists in great numbers, it is renewable, and at present the sector seems to be operating below its capacity.

Tourism--With the North Shore of Lake Superior, the Boundary Waters Canoe Area (BWCA), and the newly created Voyageurs National Park, the Arrowhead Region offers a recreation package unmatched by many areas in the country. In 1970 there were more than 650 resorts providing services throughout the region to vacationers. In St. Louis County alone there were more than 5500 second homes used on a seasonal basis. The ARDC reports that each second home contributes $1800 to the local economy each year (ARDC, 1975c). At this rate the second-home owners in St. Louis County contribute nearly $10 million annually.

Determining total economic contribution of tourism and recreation is exceedingly difficult. Several studies have arrived at economic contributions of tourism in specific areas, but none have dealt with the East Range area. A figure of $139 million was attributed to the economic expenditures of tourists in the Arrowhead Region as a whole in 1975 (DED, 1976).

A primary difficulty in assessing tourism's impact on an economy is defining the tourism sector itself. The hospitality services which are utilized by travelers are intertwined with the local economy to such a degree that it is nearly impossible to separate the dollars spent by tourists from those

Table 7. Minnesota gross income per filer.

	1970 AVERAGE GROSS INCOME	PERCENT OF STATE AVERAGE	1974 AVERAGE GROSS INCOME	PERCENT OF STATE AVERAGE	PERCENT CHANGE IN GROSS INCOME
ARROWHEAD COUNTIES	$6093	94	$7614	94	+25
St. Louis	6246	96	7853	97	+26
Lake	6330	98	8087	100.2	+28
Cook	4861	75	6311	78	+30
Aitkin	4303	66	5383	67	+25
Koochiching	6058	93	7312	91	+21
Itasca	5851	90	7251	90	+24
Carlton	5901	91	7197	89	+22
METRO AREA					
Washington (highest in state)	7467	115	9508	118	+27
REGION TWO					
Clearwater (lowest in state)	4043	62	5217	65	+29
STATE	6485	100	8067	100	+24

SOURCE: Minnesota Department of Revenue, State Individual Income Tax, 1970 and 1974.

CHAPTER FOUR
COMPARISONS OF THE PROFILE COMMUNITIES

INTRODUCTION

This chapter identifies political, social, and economic features which varied significantly among the eight profile communities. Many of the comparative discussions utilize a ranking of the towns according to some parameter. The rankings themselves, however, do not purport to convey any value judgments about any of the communities. Conclusions were drawn from the comparisons, but none have been tested by statistical manipulation.

The comparisons reflect data that was valid in 1970. Substantial changes in many parameters, and, therefore, in the ranking patterns, may have occurred in subsequent years due, in part, to recently expanded taconite operations.

DEMOGRAPHY

Population Changes

Population changes for the eight study communities have occurred in disparate patterns since 1970 in terms of direction and rates of change (Table 1). While all of the towns are dependent on a resource based economy, the differentiation caused by the presence or absence of taconite mining, the rate of decline of the natural ore and timber industries, and the effects of a regional business and service hierarchy have resulted in many local variations of population change. In looking at all of these towns, no one population change factor can be separated out, except in the case of the area's two new towns, Babbitt and Hoyt Lakes, whose origin,

Table 1. Population changes 1940-1970.

PLACE	1940	1950	%Δ	1960	%Δ	1970	%Δ
Duluth City	101,065	104,511	+ 3	106,884	+ 2	100,578	- 6
St. Louis	206,917	206,062	- 1	231,588	+ 12	220,693	- 5
St. Louis, excluding Duluth	105,852	101,551	- 1	124,704	+ 23	120,115	
Virginia	12,264	12,486	+ 2	14,034	+ 11	12,450	-11
Eveleth	6,887	5,872	-15	5,721	- 3	4,721	-17
Gilbert	2,504	2,247	-10	2,591	+ 15	2,287	-12
Biwabik	1,304	1,245	- 5	1,836	+ 42	1,483	-19
Aurora	1,528	1,371	-10	2,799	+ 104	2,531	-10
Hoyt Lakes	27	20	-25	3,186	+15,830	3,634	+14
Babbitt	118	117	- 1	2,587	+ 2,111	3,076	+19
Ely	5,970	5,474	- 8	5,438	- 1	4,904	-10

SOURCE: U. S. Bureau of Census, 1940-1970.

sustenance, and growth have all depended almost exclusively on the taconite industry. Population change in nonmetropolitan areas with resource-based economies is almost exclusively the product of changes in employment opportunity.

Another critical growth factor for several of the communities is the availability of land suitable for development. In a number of towns—especially Virginia, Ely, Eveleth, Biwabik, and Gilbert—room for expansion within present corporate boundaries is limited or nonexistent due either to existing development or to direct and indirect encroachment on potential sites by active mining. Several of these towns are like islands in appearance, surrounded by vast mine pits and overburden dumps. More

favorable conditions for employment and growing room exist presently in Hoyt Lakes and Babbitt, although current litigation between the state and federal governments and Reserve Mining Company could result in altered trends for Babbitt. Ely's prospects, on the other hand, could change perceptibly if copper-nickel development were to occur.

Age Structure

The different rates and circumstances of population change for each of the towns has created a marked difference in their age structures (Table 2). The dependency ratio relates the percentage of people over 65 and under 20 to that of the supporting ages—20 to 64 (thus, a dependency ratio of 75 means there are 75 people over 65 and under 20 for every 100 who are 20 to 64). Ely, for example, had the lowest number of inhabitants under age 20 per 100 working age persons (64), and Hoyt Lakes had the highest number of inhabitants in this group (115). Concurrently, more elderly persons per 100 persons aged 20-64 resided in Ely, Eveleth, and Virginia than the other towns (29, 34, and 30, respectively).

These differences have substantial ramifications for a town, requiring either an orientation toward providing higher levels of services uniquely required by youth (schools, recreational facilities) or the elderly (nursing home and medical care, public transportation, etc.) and concommitant municipal expenditures. The presence of higher-than-average numbers of youth or elderly can affect the ability of a town, such as Virginia, to respond adequately and in a timely manner to the additional demands for goods and services created by a rapid influx of newcomers composed largely of young adults or young families. This described situation has developed

Table 2. Dependency ratios.

	MINORS[a]			AGED[b]			COMBINED[c]		
	1950	1960	1970	1950	1960	1970	1950	1960	1970
State	61	81	82	16	21	22	77	102	104
County	55	79	79	17	23	24	72	102	101
Aurora	56	83	76	17	14	13	73	97	89
Babbitt	--	131	110	--	2	2	--	132	111
Biwabik	55	78	78	21	21	24	76	98	102
Ely	54	64	64	13	21	29	67	85	93
Eveleth	52	66	64	21	30	32	73	96	96
Gilbert	53	84	76	18	27	19	71	112	95
Hoyt Lakes	--	121	115	--	1	2	--	123	117
Virginia	49	72	67	18	27	30	67	99	97

SOURCE: U. S. Bureau of Census, 1950-1970.

[a] $\frac{\text{Persons aged 0-19}}{\text{persons aged 20-64}}$

[b] $\frac{\text{Persons aged 65+}}{\text{persons aged 20-64}}$

[c] $\frac{\text{Persons aged 0-19 + 65+}}{\text{persons aged 20-64}}$

in the Range to some degree with recent taconite plant expansions, and could be exacerbated by copper-nickel development if adequate planning and preparation does not occur.

Migration

Northeastern Minnesota, St. Louis County, the Iron Range communities, and other nonmetropolitan areas in the Midwest have typically experienced heavy out-migration of certain age groups in the past. Table 3 shows how this out-migration has affected the various study area communities by evaluating the net change in specific age groups. This data shows only

Table 3. Age-specific net change of populations.

PLACE	COHORT I 1960 # 5-9	COHORT I 1970 # 15-19	COHORT I %NET CHANGE	COHORT II 1960 # 10-14	COHORT II 1970 # 20-24	COHORT II %NET CHANGE	COHORT III 1960 # 15-19	COHORT III 1970 # 25-29	COHORT III %NET CHANGE
State	380,650	373,405	-2	324,710	292,037	-10.1	251,352	249,516	- .7
St. Louis Cnty	25,188	22,700	-9.9	22,074	15,318	-30.6	16,919	11,767	-30.5
Aurora	314	279	-11.1	265	135	-49.1	194	72	-62.9
Babbitt	488	360	-26.2	312	139	-55.4	135	167	+23.7
Biwabik[a]	411	225	-45.3	NA	NA	NA	NA	NA	NA
Ely	456	417	-8.6	529	240	-54.6	411	250	-39.2
Eveleth	518	444	-14.3	469	241	-48.6	389	158	-59.4
Gilbert	289	252	-12.8	248	104	-58.1	172	109	-36.6
Hoyt Lakes	554	425	-23.3	394	164	-58.4	147	208	+41.5
Virginia	1,442	1,320	-8.5	1,209	767	-36.6	960	556	-42.1
ALL TOWNS	4,472	3,722	-16.8	3,426	1,790	-47.8	2,408	1,520	-36.0

SOURCE: U. S. Bureau of Census, 1970.

[a]Biwabik-10 year cohorts used (5-14 and 15-24); 5 year data not published.

total change in numbers due to both death and net migration; age-specific death rates are not available for individual communities. The likelihood of death occurring at this time of life (ages 5-29) is low and most of the change can be attributed to persons in these age groups arriving or leaving. As can be seen from the table, only two communities, Virginia and Ely, show a lower rate of net change for 15-19 year olds than for St. Louis County as a whole. Two communities, Babbitt and Hoyt Lakes, show excessive decline of this group (26.2 percent and 23.3 percent, respectively). Less differentiation among the towns is noticeable for the 20-24 age group, although Virginia again lost proportionately the fewest in this age group.

The data for net change in the cohort aged 15-19 in 1960 and 25-29 in 1970 shows some interesting differences among the towns. While the county and six of the communities lost persons in this age group between 1960 and 1970, two of the communities, Babbitt and Hoyt Lakes, registered increases. Evidently local employment conditions were attracting these young adults (perhaps from some of the other towns) whild conditions in the other communities failed to provide such an incentive.

Out-migration in these age groups, however, is dependent on a number of factors, only some of which can be alleviated by job opportunities. The propensity to move is higher everywhere for young adults, conditioned by the search for educational opportunities, life-style changes, detachment from parental influences, as well as employment opportunity. It seems likely that another factor at play between 1960 and 1970 was military service proscription during the Vietnam conflict. Different local conditions may also have influenced the variation between towns in the out-migration trends of youths. A town's size or its relative isolation, or, on the other hand, higher educational aspirations of parents for their children, could have contributed to this pattern. Since only one decade is examined, it cannot be said that this data represents a trend. Subsequent observation and analysis of local factors would be required before any policy-relevant assumptions could be proposed.

Educational Characteristics Comparison

In order to provide some perspective on the variety of educational characteristics among the eight towns, Table 4 rank orders the towns according to the percent of the population with high school, college

Therefore, this data gives an indication only of who was in a town in terms of educational experience in 1970, but can say nothing about the ability of the town or extraneous forces to continue or change the structure of the hierarchy.

Personal Income

Hoyt Lakes alone has remained above the median income for the state as a whole in both census years, although Virginia slipped just slightly below the state figure in 1970 (Table 5). Between 1960 and 1970, the remaining towns showed considerable rearrangement within the hierarchy. Aurora and Ely both declined compared to the other towns, while Babbitt and Gilbert advanced. The per capita income table shows a ranking according to the estimated personal income levels in 1972 for all persons in each community. When compared to the median income list, the distortion produced by the lower female participation rates and larger families in Babbitt and Hoyt Lakes becomes apparent, since they are outstripped by Virginia, Eveleth, Aurora, and Minnesota.

Personal income in Hoyt Lakes and Babbitt ranked first among the eight profile communities, while Ely registered at the bottom in comparisons of incomes. In the 1970 Census Babbitt had the highest average family income with $10,736. Hoyt Lakes was next highest with $10,287, and Ely was the lowest with $8115—more than $2600 per family lower than Babbitt, a community not more than 25 miles away (Table 6).

diplomas, and vocational training. This data gives an indication of the presence or absence of measures of "formal" education at the time of the data collection. It is a reflection of previous attitudes, incentives, and opportunities. The presence or absence of college graduates or persons with vocational training may be indicative merely of a town's distance from institutions of post-high school education or training. Local economic factors can condition the opportunity to seek high school or higher educational training, as well as influence the type of in-migrants and their educational background.

Table 4. Comparison of educational levels, 1970.

% HIGH SCHOOL GRADUATES[a]		% COLLEGE GRADUATES[a]		% VOCATIONAL TRAINING[b]	
Hoyt Lakes	78.5	Virginia	29.3	Biwabik & Biw.Twp	25
Virginia	60.2	Hoyt Lakes	14.6	Aurora	20
Eveleth	56.1	Eveleth	7.9	Virginia	19
Gilbert	55.5	Aurora	7.8	Hoyt Lakes	18
Aurora	55.0	Gilbert	6.8	Babbitt	16
Babbitt	54.8	Ely	6.5	Eveleth	14
Biwabik	54.8	Babbitt	4.9	Ely	11
Ely	51.9	Biwabik	4.9	Gilbert	7
AVERAGE	58.4		10.3		16.25

← % DECREASING

SOURCE: U. S. Bureau of Census 4th Count Summary Tapes, 1970.

[a]Of persons 25 and over.
[b]Of persons 16-64 with less than 3 years college.

Table 5. Comparison of income characteristics.

1960 MEDIAN FAMILY INCOME		1970 MEDIAN FAMILY INCOME		1972 PER CAPITA INCOME[b]	
TOWN	AMOUNT	TOWN	AMOUNT	TOWN	AMOUNT
Hoyt Lakes	$6132	MINNESOTA	$9931	Virginia	$3776
Virginia	5744	Hoyt Lakes	9843	MINNESOTA	3666
MINNESOTA	5573	Babbitt	9490	Aurora	3302
Aurora	5572	Biwabik	9206	Eveleth	3287
Babbitt	5291	Virginia	9120	Hoyt Lakes	3123
Ely	5073	Aurora	8941	Babbitt	3041
Eveleth	5017	Gilbert	8938	Ely	3003
Gilbert	4765	Eveleth	8406	Biwabik	2999
Biwabik[a]		Ely	7770	Gilbert	2970

SOURCE: U. S. Bureau of Census 4th Count Summary Tapes, 1970.

[a]Data not available.
[b]Estimated by U. S. Bureau of Census.

The data from the Department of Revenue's income tax reports shows that Babbitt and Hoyt Lakes experienced the slowest growth in gross income per filer. Gross income per filer in Hoyt Lakes grew 25 percent from 1970 to 1974, while Babbitt's increased 22 percent. On the other end of the scale, income per filer in Biwabik increased by 37 percent, in Gilbert by 34 percent, and in Eveleth by 33 percent.

If the growth rates generated by the income per filer data for each city are applied to the 1970 Census figure for average family income, an estimated 1974 family income can be derived for each community.

Table 6. Family income.

	COLUMN A	COLUMN B	COLUMN C
	1970 FAMILY INCOME[a]	1970-74 GROWTH RATE[b]	ESTIMATED 1974 FAMILY INCOME[c]
Babbitt	$10,736	22%	$13,098
Hoyt Lakes	10,287	25	12,859
Virginia	9,819	29	12,667
Biwabik	9,177	37	12,572
Aurora	8,963	30	11,652
Gilbert	8,848	34	11,856
Eveleth	8,575	33	11,405
Ely	8,115	28	10,387

SOURCES: U. S. Bureau of Census, 1970; Minnesota Department of Revenue Individual Income Tax Reports, 1970 and 1974.

[a]From 1970 Census. Average income per family.
[b]From Department of Revenue individual income tax reports, 1970 and 1974, percentage change in four years.
[c](Column A multiplied by Column B) + Column A = C

Income data must be tempered by a realization of the effects of inflation. A 25 percent increase in gross income per filer, for example, should not be equated with a 25 percent increase in buying power.

Of special significance to this report is the position of Ely at the bottom of the 1970 ranking for median incomes, as well as the disparity between actual dollar amounts for Ely and for the state. Coupled with Ely's high level of unemployment at the time, the data suggests that although conditions associated with economic prosperity have fluctuated a good

deal for all the communities, Ely has tended to show, in recent years, a greater and more continuous absolute decline than the others, although Eveleth also shows a steadily lower level of prosperity.

The prosperity attendant to the taconite development in the 1960s, as well as the current "boom" resulting from expanded operations, apparently had not, as of 1970, provided the economic buoyancy for Ely that the other towns with more favorable geographical and geological situations experienced. Reserve Mining Company's operations in Babbitt have taken up some of the slack caused by cyclic or seasonal unemployment in Ely, as well as that resulting from the abandonment of natural ore production. With respect to present taconite activity, Reserve was the only major taconite mining enterprise operating on the Iron Range which did not project expansion or increased employment during this decade or the next (ARDC, 1975a). Ely, because of its proximity to that portion of the copper-nickel mineralization which has elicited the most initial interest, could be affected sooner and to a greater degree by new copper-nickel mine development than the other seven towns.

The people of Ely, on the whole, feel that their town's future prospects are probably linked to resource extraction, even though tourism is, and will continue to be, an increasingly important factor as well in the town's economy. Thus, considering the documented evidence provided by income ranking and comparison to state levels which suggest that Ely has not had a proportionate share of the "taconite prosperity," it is understandable that there is probably a greater local interest in, and voiced need for, the new industry in Ely than in any of the other towns.

Poverty indicators as defined by the Census for the eight profile communities are displayed in Table 7. These four indexes do not provide, however, an exhaustive or perhaps even comprehensive picture of the existence or absence of poverty; they merely are broad and generally recognized indicators.

Table 7. Relative poverty levels.

FAMILIES RECEIVING SOCIAL SECURITY INCOME		FAMILIES 1970 RECEIVING PUBLIC WELFARE		FAMILIES BELOW 1970 POVERTY LEVEL		UNRELATED INDIVIDUALS BELOW 1970 POVERTY LEVEL	
TOWN	%	TOWN	%	TOWN	%	TOWN	%
Eveleth	32.3	Biwabik	9.2	Eveleth	10.6	Aurora	51.1
Ely	26.7	Eveleth	5.0	Gilbert	10.6	Ely	49.2
Virginia	22.2	MINNESOTA	3.8	Virginia	9.5	Gilbert	44.2
MINNESOTA	20.1	Virginia	3.4	MINNESOTA	8.2	Virginia	42.7
Gilbert	18.1	Hoyt Lakes	2.8	Biwabik	6.8	Eveleth	41.8
Biwabik	15.4	Aurora	2.6	Ely	6.6	Hoyt Lakes	41.3
Aurora	15.0	Ely	1.9	Aurora	4.9	MINNESOTA	32.8
Babbitt	5.4	Babbitt	1.4	Hoyt Lakes	4.0	Babbitt	31.3
Hoyt Lakes	5.3	Gilbert	1.1	Babbitt	.7	Biwabik	28.4

SOURCE: U. S. Bureau of Census 4th Count Summary Tapes, 1970.

Ely, Virginia, and Eveleth have the highest numbers of individuals receiving Social Security and also tend to be at or near the top in at least one of the poverty indexes. Thus, there is some evidence that poverty, as defined by the Census, may be concentrated disproportionately among the elderly in the study towns. While this is reflective of general national trends, the effect on towns with a simultaneously declining and

aging population could be serious. Further analysis of this phenomenon is outside the scope of this report, but the planning implications of growing levels of poverty associated with the elderly, as evidenced in some of the towns, are significant and should not be overlooked.

In reviewing the average 1970 incomes in selected occupations, the ordering of the towns closely approximates that seen in 1970 median incomes for the Total Male Civilian Labor Force category (Table 8). A considerable rearrangement of the hierarchy occurs for the individual professions listed, especially for males employed as craftsmen and foremen, and laborers. In the category of professionals, none of the towns equal the state average, and Ely and Eveleth share the lowest positions in the ranking. For craftsmen and foremen Eveleth has moved toward the top of the ranking, surpassing other communities, with the exception of Babbitt. Operatives in Babbitt and Hoyt Lakes lead the other six communities in earnings. Earnings for operatives show the lowest degree of spread, indicating that while there is some internal differentiation in the study area, the differences among the towns are not as extreme as for some of the other professions. In the 1970 data, Ely has both one of the highest proportions of its employed male labor force occupationally defined as laborers, and the highest average earning level in this category of the eight communities. Babbitt has the lowest proportion of laborers.

Table 8. Average earnings by occupation, 1970 — Men

TOTAL EMPLOYED CIVILIAN LABOR FORCE		PROFESSIONAL, MANAGERIAL AND KINDRED			CRAFTSMEN, FOREMEN AND KINDRED		
TOWN	AMOUNT	TOWN	AMOUNT	%LABOR FORCE	TOWN	AMOUNT	%LABOR FORCE
Babbitt	$8,676	MINNESOTA	$12,000	26	Babbitt	$9,413	56
Hoyt Lakes	8,297	Hoyt Lakes	11,904	18	Eveleth	8,853	25
MINNESOTA	8,165	Virginia	11,722	28	Hoyt Lakes	8,769	37
Virginia	8,144	Biwabik[a]	11,242	13	Biwabik[a]	8,412	43
Biwabik[a]	7,604	Aurora	10,501	16	Virginia	8,396	28
Aurora	7,302	Babbitt	10,188	13	MINNESOTA	8,269	20
Eveleth	7,226	Gilbert	10,021	10	Aurora	7,880	37
Gilbert	7,116	Eveleth	8,762	23	Gilbert	7,439	40
Ely	6,628	Ely	8,729	18	Ely	7,198	34

OPERATIVES, INCLUDING TRANSPORT			LABORERS		
TOWN	AMOUNT	%LABOR FORCE	TOWN	AMOUNT	%LABOR FORCE
Hoyt Lakes	$7,079	31	Ely	$5,356	9
Babbitt	6,938	25	MINNESOTA	4,741	6
Gilbert	6,773	30	Gilbert	4,700	4
MINNESOTA	6,596	17	Eveleth	4,173	6
Biwabik[a]	6,498	25	Aurora	3,747	10
Virginia	6,349	17	Biwabik[a]	3,655	7
Eveleth	6,281	28	Hoyt Lakes	3,550	3
Aurora	5,949	23	Virginia	3,490	5
Ely	5,897	28	Babbitt	1,802	2

SOURCE: U. S. Bureau of Census 4th Count Summary Tapes, 1970.

[a]Biwabik City and Township combined.

Incomes for females in Eveleth rank at or near the top in all categories (Table 9). This could be reflective of a higher rate of full-time labor force participation in that city, a greater proportion of jobs in specific occupational classes (within a large category) that are particularly well-paid, or a combination of both factors.

Table 9. Average earnings by occupation, 1970 — Women.

TOTAL EMPLOYED CIVILIAN LABOR FORCE		CLERICAL AND KINDRED			OPERATIVES		
TOWN	AMOUNT	TOWN	AMOUNT	%LABOR FORCE	TOWN	AMOUNT	%LABOR FORCE
Eveleth	$3,860	Gilbert	$5,362	19	Eveleth	$5,350	22
Babbitt	3,829	MINNESOTA	3,411	31	Biwabik[a]	3,817	5
Biwabik[a]	3,367	Eveleth	3,270	22	MINNESOTA	3,492	16
MINNESOTA	3,330	Virginia	2,788	34	Gilbert	3,108	12
Gilbert	3,297	Ely	2,762	8	Aurora	2,953	36
Virginia	2,810	Biwabik[a]	2,378	21	Virginia	2,738	14
Ely	2,662	Babbitt	2,230	19	Babbitt	2,368	3
Aurora	2,241	Hoyt Lakes	1,962	18	Ely	2,350	10
Hoyt Lakes		Aurora	1,670	22	Hoyt Lakes	1,934	10

SOURCE: U. S. Bureau of Census 4th Count Summary Tapes, 1970.

[a]Biwabik City and Township combined.

EMPLOYMENT

Analysis of employment data indicates that the profile communities possess relatively unique characteristics—the antithesis of the notion that Iron Range towns are part of a homogeneous unit. Virginia is the only one of the eight profile communities in which mining is not the dominant industrial sector in terms of employment. The city's role as a regional retail,

wholesale, and service center is apparent in its employment structure. Virginia's employment in the wholesale and retail sector makes up 22.1 percent of total employment, the second highest percentage (behind Ely) for this sector among the profile communities. Virginia's mining sector comprises only 16.6 percent of employment, the smallest percentage among the communities. (Eveleth was next smallest with 26.9 percent of its employment in mining.)

Virginia shows a diverse mixture of occupational types, indicating a variety of employment opportunities and thus a relatively wide spectrum of services. Nearly 18 percent of employment fits within the professional, technical, and kindred sector, and another 14 percent are service (except household) jobs as defined by the Census.

The employment structure of Ely reveals a rather startling dependence on mining (principally Reserve Mining Company in Babbitt) as an economic force. The mining sector comprises 34.4 percent of total employment in Ely. Ely also has a large portion of jobs in the retail sector (26 percent) affirming its position as a tourist center and jumping-off point to the BWCA.

Babbitt and Hoyt Lakes are conspicuously different from the other profile communities in their obvious dependence on single mining companies for their existence. Both communities were originally created by individual mining companies, and in each city nearly two of every three jobs is in mining. The two cities also have extremely small retail sectors, if employment data is a believable indicator of actual goods and services offered. Babbitt's retail sector makes up only 6.4 percent of total

employment. In Hoyt Lakes the retail section comprises 5.3 percent of total employment other than eating and drinking establishments which add another 6.1 percent.

Eveleth and Gilbert are distinctive in that both have significant manufacturing employment. Eveleth, with 12.5 percent of employment in manufacturing, and Gilbert, with 16.1 percent, shows the influence of the Arrow Company, a textile concern. In fact, the 1970 Census shows that 75 percent of Gilbert's manufacturing employment and 78 percent of Eveleth's were in the textile sector.

In terms of total employment Virginia clearly dominates, with 4570 employed persons in the 1970 Census. Eveleth (1605 total employment) and Ely (1534 total employment) fit within a second grouping. Aurora (with employment of 984), Babbitt (with 982), and Hoyt Lakes (with 1186) each have total 1970 employment of about the same magnitude. Biwabik and Gilbert are the smallest, with employment of 731 and 803, respectively. In calculating the percentage of each community's total population which was employed in 1970, Biwabik ranked first with 49.3 percent of the total population being employed (Table 10). Ely ranked eighth at 31 percent.

Table 10. Percent of 1970 population employed.

Biwabik	49%
Aurora	39
Virginia	37
Gilbert	35
Eveleth	34
Hoyt Lakes	33
Babbitt	32
Ely	31

SOURCE: U. S. Bureau of Census, 1970.

Unemployment figures reveal a distinctive pattern. The Virginia-Eveleth-Gilbert cluster all have, in 1970, unemployment rates of around five percent of the total labor force. Cities away from this cluster have significantly lower unemployment. Biwabik has a rate of 1.5 percent, Aurora has 2.9 percent, Hoyt Lakes has 3.4 percent, and Babbitt has 1.5 percent. The glaring exception to this is Ely, where 9.7 percent of the total labor force is unemployed in 1970.

BUSINESS ACTIVITY

The 1975 gross sales for Virginia are $155.8 million (Table 11). The next largest city in terms of absolute gross sales is Ely with $26.6 million in 1975, less than one-fourth that of Virginia. The smallest sales volume is registered by Hoyt Lakes, with only $4.2 million in 1975.

Biwabik, with $192,000 sales per filer, ranks second to Virginia with $356,000 in this indicator. Sales per filer in the remaining six cities range from $100,000 to $130,000. Aurora and Hoyt Lakes register sales per filer of $102,000. Each community has experienced an increase in sales per filer from 1969 to 1975. Hoyt Lakes has experienced the smallest increase, 48 percent, while Gilbert has had a phenomenal 287 percent increase in sales per filer. Sales in Gilbert have very nearly quadrupled in six years, which makes it the fastest growing business community of the eight profile cities.

Bank assets indicate a hierarchy nearly identical to gross sales and employment. Virginia again dominates the other seven profile communities in bank assets, although banking assets in Ely and Eveleth are significantly greater than the other five cities.

Table 11. Business activity.

	1975 GROSS SALES[a] ($\times 10^6$) (in millions)	1975 SALES PER FILER[b]	% CHANGE 1969-1975[c]	BANK ASSETS[d] ($\times 10^6$) (in millions)
Virginia	$155.8	$356,434	180	$133.7
Ely	26.6	117,119	102	23.2
Eveleth	20.3	131,945	89	27.9
Hoyt Lakes	4.2	101,925	48	10.2
Babbitt	13.3	183,394	276	7.4
Aurora	8.4	102,476	94	6.0
Gilbert	7.0	121,439	287	5.4
Biwabik	7.9	191,770	175	4.1

SOURCE: Department of Revenue Report on Sales and Use Taxes, 1960-1975.

[a] Department of Revenue report on sales and use taxes, 1975.
[b] Department of Revenue report on sales and use taxes, 1975.
[c] Department of Revenue Report on sales and use taxes, 1969-1975.
[d] Call reports for March 31, 1976 (except Northwestern State Bank of Virginia, which is December 31, 1975) from FDIC, Federal Reserve, and Regional Administrator of National Banks.

The ratio of a bank's total loans to assets is computed as a measure of a bank's propensity to administer credit to its patrons. Most of the banks in the 8 profile communities hover near the 50 percent range. The highest ratio is that of the First National Bank of Virginia (62 percent) while the lowest is the First National Bank of Gilbert (36 percent). Virginia, which controls 61 percent of the total assets among the 8 profile communities, has a ratio of 54 percent for its 3 banks.

Savings and loan institutions and credit unions represent another valuable resource to the cities' residents. Virginia is again the hub of activity

with assets totaling $54.6 million (88 percent of the total among profile communities). Other cities which have these resources available are Babbitt ($2.6 million in assets), Ely ($2.3 million), and Hoyt Lakes ($2.3 million).

The data presented above establishes Virginia as the dominant retail and business node of the East Range. It obviously has a sphere of influence which is far reaching and, no doubt, includes each of the seven other profile communities. The city offers health, recreation, service, and business opportunities which are not available in the other cities.

RETAIL AND COMMERCIAL

Various financial and business indicators can be utilized to establish a hierarchy of shopping center importance (Table 12). At the bottom of this hierarchy are small communities which offer such ubiquitous services as gas stations, grocery stores, and taverns.

The next plateau contains those cities which have restaurants, hardware stores, building supplies, and a bank. All of these services are also available in the higher levels of shopping centers where there is a larger selection of these particular services, plus additional ones such as saving and loan associations, new car dealers, and mortuaries. The Upper Midwest Council (Gustafson, 1973) has organized these service areas into a classification scheme (Table 13 and Figure 1).

This scheme allows comparison of function and identification of relationships among trade centers. Population density does correspond to a service center hierarchy. The profile area is removed, however, in time

Table 12. Retail and commercial services.

	BANK	BUILDING SUPPLY	GAS STATION	GROCERY STORE	HARDWARE STORE	MORTUARY	NEW CAR DEALER	RESTAURANT	SAVINGS & LOAN	SHOPPING CENTER	TAVERN
Aurora	1	2	7	4	3	1	1	5	0	0	3
Babbitt	1	0	3	2	1	0	0	3	0	1	1
Biwabik	1	1	2	3	1	0	0	1	0	0	1
Ely	1	3	12	5	4	1	4	13	1	0	5
Eveleth	2	1	10	6	2	2	4	10	0	0	3
Gilbert	1	0	2	1	2	1	1	3	0	0	1
Hoyt Lakes	1	0	2	1	1	0	1	1	0	1	0
Virginia	3	3	21	14	8	3	5	27	1	2	6

SOURCE: Telephone directories of the above communities, 1976.

as well as distance, from the more specialized and exclusive services found in higher order trade centers. The lack of a centralized shopping center could be bothersome to newcomers who are accustomed to the amenities offered by city life.

Table 13. Hierarchy of profile communities.

REGIONAL SERVICE CENTER	COMMUNITY SERVICE CENTER	FULL CONVENIENCE CENTER	PARTIAL CONVENIENCE CENTER
Virginia-Eveleth	Ely	Aurora-Hoyt Lakes Gilbert	Babbitt Biwabik

SOURCE: Upper Midwest Council, 1973.

MUNICIPAL GOVERNMENT FINANCE

The data presented for each of the eight profile cities establish several very distinct patterns pertaining to municipal government finance. There has been an obvious trend of decreasing burden on local taxpayers for contribution to total local government receipts. When combined with a general trend of increasing taxable valuation, the result has been a decreasing mill rate and a decreasing effective tax rate (defined as the amount of taxes paid by local taxpayers for local government per $1000 of taxable valuation).

Each of the eight profile communities now depends less on local taxpayers for government receipts than in 1965. Concurrently, the percentage of receipts made up by state and federal shared taxes has increased markedly. For example, Virginia's local contribution to receipts has decreased from

73 percent in 1965 to 21 percent in 1974. At the same time state and federal shared taxes have gone from 2 percent to 28 percent of total receipts. Though Babbitt has perhaps experienced the least change, the local contribution to receipts has never been very high.

The exceptions to the trend of increasing taxable valuation are Gilbert, Ely, and Virginia. Gilbert experienced the most dramatic fall in valuation, dropping 62 percent from 1965 to 1974. Ely, with a reduction of 51 percent, and Virginia, with a reduction of 26 percent, also experienced significant falls in valuation. This results in a diminished tax base from which to draw revenues. Among those cities which have experienced gains in taxable valuation, the largest increase is registered by Babbitt with a 61 percent gain in ten years. The smallest is Eveleth's 11 percent gain from 1965 to 1974.

Perhaps the clearest way to illustrate and summarize municipal government finance is to examine the effective tax rate, or more precisely, the amount of taxes paid by local residents to local government per $1000 of taxable valuation (Table 14).

The most distinguishing feature of the table is Babbitt's low rate of $3.97 in 1976. This is the result of a local tax levy of only $13,000 in 1976. The 83 percent decrease in effective tax rate reflects the increasing taxable valuation relative to local government receipts and decreasing local percentage of total receipts.

Virginia and Gilbert's growth in effective tax rate primarily reflects their eroding tax base. While local taxes in most cities have declined both absolutely and as a percentage of total receipts, taxes in Hoyt Lakes

have increased absolutely by 85 percent from 1965 to 1974. This far outweighs the 21 percent gain in taxable valuation and results in an effective tax rate which is 6 percent greater in 1976 than it was in 1967.

Table 14. Effective tax rate[a].

	1967	1976	% CHANGE
Virginia	$43.23	$56.09	+30
Ely	57.06	47.95	-16
Eveleth	97.98	41.55	-58
Hoyt Lakes	20.31	24.04	+18
Babbitt	23.78	3.97	-83
Aurora	58.09	32.64	-44
Gilbert	58.06	61.61	+ 6
Biwabik	112.18	56.27	-50

SOURCE: Minnesota State Auditor Reports on the Revenues; Expenditures, and Debt of the Cities.

[a]Effective tax rate is defined as the amount of taxes paid by residents for every $1000 of taxable valuation.

Another way to illustrate the comparisons and contrasts in municipal government finance is by per capita receipts in expenditures (Table 15).

Table 15. Per capita receipts and disbursements.

	PER CAPITA RECEIPTS 1976	PER CAPITA CURRENT EXPENDITURES 1976	PER CAPITA CAPITAL OUTLAY 1976
Virginia	$335.11	$177.23	$181.17
Ely	149.00	162.72	14.30
Eveleth	229.79	160.50	58.00
Hoyt Lakes	259.86	181.57	61.07
Babbitt	208.36	110.17	19.91
Aurora	137.60	110.36	17.17
Gilbert	180.27	149.41	32.64
Biwabik	187.66	119.70	20.38

SOURCE: Minnesota State Auditor, Cities per Capita Receipts, Disbursements, and Indebtedness, 1976.

The table illustrates the difference between Virginia and the rest of the cities. In the column of current expenditures Virginia is comparable with the other seven communities. The difference emerges in the capital outlay column where the magnitude of difference between Virginia and the rest is significantly greater. Among the seven other communities Hoyt Lakes has the highest per capita receipts ($259.86) and Aurora the lowest ($137.60); Aurora and Hoyt Lakes are only six miles from each other and share the same school district.

Indebtedness varies sharply among the communities. Ely and Biwabik carry no debt at all and Virginia has nearly $400 debt per person (Table 16).

Table 16. Per capita indebtedness, 1976.

Virginia	$396.79
Ely	0.00
Eveleth	110.15
Hoyt Lakes	107.32
Babbitt	211.18
Aurora	52.74
Gilbert	76.52
Biwabik	0.00

SOURCE: Minnesota State Auditor, Cities per Capita Receipts, Disbursements, and Indebtedness, 1976.

EDUCATION

Public Elementary and Secondary Schools

Enrollment--Grade 1 to 12 enrollment trends for the seven school districts, except School District 693 (Biwabik), show a five-year decline in enrollment (Figure 2). School district enrollment trends in the study area historically reflect patterns of prosperity due to mining operations and patterns of general decline during periods of recession as indicated by Aurora-Hoyt Lakes School District 691 (Tables 17-19). This district experienced an enrollment increase in grades 1 through 12 of 7.3 percent from 1970 to 1972, but an 8.7 percent enrollment decrease from 1973 to 1975. School Districts 693 and 696 (Biwabik and Ely) experienced enrollment

Table 17. Kindergarten enrollment, 1970-1975.

COMMUNITY	SCHOOL DISTRICT	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	% CHANGE 1970-75
Aurora-Hoyt Lakes	691	160	168	113	154	141	165	+ 3
Babbitt	692	104	109	96	75	78	81	-22
Biwabik	693	62	59	48	50	58	53	-15
Ely	696	106	112	100	87	108	94	-11
Eveleth	697	128	112	96	93	112	102	-20
Gilbert	699	73	57	41	49	65	50	-32
Virginia	706	211	206	152	189	161	203	- 4

SOURCE: Personal communication with individual superintendents of the above school districts, June, 1976.

Table 18. School enrollment, 1970-1975.

COMMUNITY	SCHOOL DISTRICT	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	% CHANGE 1970-75
Aurora-Hoyt Lakes	691	2,324	2,390	2,493	2,425	2,469	2,261	- 4.8
Babbitt	692	1,885	1,898	1,763	1,673	1,694	1,411	-18.7
Biwabik	693	797	822	796	791	819	805	0.4
Ely	696	1,624	1,639	1,475	1,447	1,583	1,471	- 9.4
Eveleth	697	1,841	1,893	1,728	1,687	1,725	1,584	-14.0
Gilbert	699	901	927	886	827	868	755	-16.2
Virginia	706	3,160	3,252	2,979	2,815	2,895	2,576	-17.7

SOURCE: Personal communication with individual superintendents of the above school districts, June, 1976.

Table 19. School enrollment, 1975-1976.

COMMUNITY	SCHOOL DISTRICT	ENROLLMENT	KINDERGARTEN				ELEMENTARY					SECONDARY				
			CAPACITY	% UTILIZED	TEACHERS	STUDENT/ TEACHER RATIO	ENROLLMENT	CAPACITY	% UTILIZED	TEACHERS	STUDENT/ TEACHER RATIO	ENROLLMENT	CAPACITY	% UTILIZED	TEACHERS	STUDENT/ TEACHER RATIO
Aurora-Hoyt Lakes	691	149	400	37	3	~~49.7:1~~ 24.8:1	973	1500	65	53	18.4:1	1288	1500	86	83	15.5:1
Babbitt	692	94	175	54	2	~~47:1~~ 23.5:1	536	1100	49	21	25.5:1	875	1200	73	43	20.4:1
Biwabik	693	64	85	75	1½	~~42.7:1~~ 21.3:1	334	525	64	14	23.9:1	471	700	67	26	18.1:1
Ely	696	113	180	63	2	~~56.5:1~~ 28.2:1	643	1080	60	34	18.9:1	832	1344	62	34	24.5:1
Eveleth -	697	128	150	85	2	~~64:1~~ 32:1	690	800	86	34	20.3:1	937	1000	94	51	18.4:1
Gilbert	699	71	120	59	2	35.5:1 17.7:1	344	600	57	21	16.4:1	449	650	69	26	17.3:1
Virginia	706	162	280	58	4	~~40.5:1~~ 20.3:1	1046	1600	65	42	24.9:1	1530	1800	85	92	16.6:1

SOURCE: Personal communication with individual superintendents of the above school districts, June, 1976.

decreases from 1970 to 1972, but had slight enrollment increases from 1973 to 1975. Enrollment in grades 1 through 12 for School District 692 (Babbitt) decreased by 18.7 percent from 1970 to 1975. This is the largest percentage decrease of the seven school districts. School District 693 (Biwabik) was the only school district to show any increase, albeit slight.

Capacity--Each school district is not enrolled to capacity (Figure 3). School District 697 (Eveleth) is the only school district which uses over 80 percent of the District's student capacity in kindergarten, elementary (1-6), and secondary (7-12) schools. Currently, Babbitt could assimilate more than 900 additional students, while Ely could absorb an increase of more than 1000 students. Each school district could accommodate from 200 to 1000 additional students.

Student-teacher ratios vary considerably throughout the seven school districts. The average 1974-75 school year student-teacher ratios for the State of Minnesota were 17.6 for elementary and 15.3 for secondary schools. (Student-teacher ratios are not presented as a basis for evaluation of quality, but only to offer perspective. Currently, the criteria for judging educational quality is undergoing detailed re-evaluation by educational evaluators.)

In general, the school facilities are well-maintained and in good condition. No new schools, however, have been erected in the last ten years. More than half of the structures were built over forty years ago. Maintenance costs increase with the age of the building, and, therefore, the school districts are faced with increasingly higher operating costs. The major

costs for a school district are instruction, plant operations, transportation, and administration.

All districts have at least one elementary school (grades 1-6), while the secondary schools are a combination of junior high schools, senior high schools, and junior-senior high schools (grades 7-12). Biwabik has the only Six school, while Babbitt and Gilbert have a combined junior-senior high school.

Post-Secondary Education

There are four tertiary educational facilities within the profile communities. Eveleth is the site of an Industrial Arts School and the Area Vocational Technical Institute (AVTI). Mesabi Community College is located in Virginia, and Vermilion Community College is located in Ely. Currently, the lack of student housing severely limits school enrollment at both colleges. The AVTI offers twelve occupational programs, while Mesabi Community College offers seven occupational programs and Vermilion Community offers eight occupational programs. Additionally, Mesabi Community College and Vermilion Community College each offers twelve academic programs.

The Iron Range Regional Center, comprised of the University of Minnesota-Duluth, College of St. Scholastica, Bemidji State University, Mesabi Community College, Rainy River Community College, Hibbing Community College, Vermilion Community College, Eveleth AVTI, and Hibbing AVTI offers post-secondary courses to area residents. Under the regional center approach areas lacking a four-year college but having the population which needs upper division offerings may have their needs met without the construction

of new buildings or a large appropriation of money. In addition, students may earn degrees from participating institutions that are coordinated by the center even though the center itself does not grant degrees.

Private Schools

The only private school within the profile communities is Marquette Catholic Elementary in Virginia. Enrollments from 1970 to 1975 have fluctuated consideratly (Table 20).

Table 20. Marquette Elementary School enrollment.

1970	1971	1972	1973	1974	1975
158	127	112	88	128	150

SOURCE: Personal communication with Marquette Elementary School principal, September, 1976.

School District Finance

Each school has been faced with increasing faculty salaries, expenditures, and operating costs. As a result, school district mill rates have increased. Babbitt and Aurora-Hoyt Lakes are the exceptions, reflecting the fact that taxable valuation has increased at a more rapid rate than has the school district tax levy.

The Equalization and Review Committe (EARC) mill rates in Aurora-Hoyt Lakes, Babbitt, Biwabik, and Eveleth are below the state average, while EARC rates

in Virginia, Gilbert, and Ely are above the state average (Table 21). Of special note is Babbitt's exceptionally low rate of 3.08 of Gilbert's high rate of 66.19.

Table 21. School district costs, mill rates, and valuation.

COMMUNITY	TOTAL PUPIL UNITS (1974-1975)	TOTAL EXPENDITURES PER PUPIL UNIT	EARC[a] MILL RATE	1974[b] EARC VALUATION PER PUPIL UNIT
Aurora-Hoyt Lakes	2882	$1653	$19.05	$6739
Babbitt	2029	1609	3.08	3197
Biwabik	1014	1254	41.10	8468
Ely	1860	1277	49.01	6421
Eveleth	2094	1035	35.15	6643
Gilbert	983	1378	66.19	5822
Virginia	3416	1489	50.92	11556
STATE AVERAGE	2380	1442	43.33	13946

SOURCE: Special Report, Minnesota Department of Education, Volume 10, No. 2, Spring, 1976.

[a]Equalization and Review Committee Mill Rate based on Adjusted Assessed Value.

[b]Equalization and Review Committee Adjusted Assessed Value.

GOVERNMENTAL STRUCTURE AND SERVICES

Structure

The St. Louis County Board, comprised of seven members elected to four-year terms, is headquartered in Duluth. At present, St. Louis County does have a zoning ordinance and subdivision regulations but is without an official comprehensive plan. The nine-member planning commission and county planning and zoning department are working on a comprehensive plan.

St. Louis County provides a complete array of governmental services: law enforcement, welfare, property assessment, highways, parks and recreation, judicial, agricultural extension, and health. The County Wefare Department offers the following services: foster care, day care, homemaker, and medical. The county also provides the following services to families, children, and adults: child abuse protection, unmarried parent, family services, school social aid, immediate family services intervention, chemical dependency, behavioral disability, developmental disability, court services, crisis shelter, and adult services (for example, WIN—Work Incentive Program).

All communities have a mayor-council form of municipal government (Table 22). The number of city council members ranges from three in Biwabik and Gilbert to eight in Virginia. A city attorney is employed full-time in the municipalities of Aurora, Ely, and Virginia.

All municipalities have advisory planning commissions, but only Virginia has a full-time planner. All profile communities, except Babbitt and Gilbert, have a zoning ordinance. Eveleth is the only municipality that is not enforcing the State Building Code (Table 23).

Table 22. Governmental structure.

COMMUNITY	FORM	CITY COUNCIL MEMBERS	COUNCIL MEETING SCHEDULE	CITY ATTORNEY[a]	# OF CITY EMPLOYEES (FULL TIME)	PLANNING COMMISSION		ZONING ORDINANCE	STATE BUILDING CODE ENFORCED
						MEMBERS	STAFF (FULL TIME)		
Aurora	Mayor-Council	4	1st Tuesday	Yes	13	7	Ø	Yes	Yes
Babbitt	Mayor-Council	4	1st & 3rd Tuesday	Yes[1]	18	9	Ø	Yes	Yes
Biwabik	Mayor-Council	3	1st & 15th	Yes[2]	11	10	Ø	Yes	Yes
Ely	Mayor-Council	6	1st & 3rd Tuesday	Yes	65	6	Ø	Yes	Yes
Eveleth	Mayor-Council	4	1st & 3rd Tuesday	Yes[3]	45	4	Ø	No	No
Gilbert	Mayor-Council	3	1st & 3rd Tuesday	Yes[3]	35	7	Ø	Yes	Yes
Hoyt Lakes	Mayor-Council	4	2nd & 4th Tuesday	Yes[2]	21	5	Ø	Yes	Yes
Virginia	Mayor-Council	8	2nd & 4th Tuesday	Yes	499	5	Ø	Yes	Yes

SOURCE: Personal communication with individual mayors of the above communities, June, 1976; Mesabi Daily News, May 13, 1977.

[a]1. Ely; 2. Aurora; 3. Virginia

Table 23. Zoning ordinance sections.

COMMUNITY	ZONING DISTRICTS	MOBILE HOMES	MINIMUM LOT SIZE	SUBDIVISION REGULATIONS	SEPTIC TANKS	BUILDING PERMITS	AMENDMENT PROVISION
Aurora	X	X	X	X	X	X	X
Babbitt[a]	X	X	X	X	—	—	X
Biwabik	X	X	X	—	—	X	X
Ely	X	X	X	X	—	X	X
Eveleth	—	—	—	—	—	—	—
Gilbert	X	X	X	X	—	X	X
Hoyt Lakes	X	X	X	X	X	X	X
Virginia	X	X	X	—	—	X	X

SOURCE: Zoning ordinances of the above communities.

[a]Currently no zoning ordinance exists.

Services

Fire Protection--The only full-time fire departments are maintained at Ely, Eveleth, and Virginia (Table 24). Volunteer fire departments are located in Aurora, Babbitt, Biwabik, Gilbert, and Hoyt Lakes.

The Insurance Services Office (ISO) rating is based upon four criteria: water supply, fire department, fire service communication, and fire safety control (ISO, 1974). The ratings are based on a scale of one to ten, with one being the best rating. Of the eight profiled communities, Virginia has the best rating with five. (To further illustrate the relationship of ISO codes, the cities of Minneapolis, Rochester, and St. Paul have ratings of 3 while Duluth has a rating of 4.)

Table 24. Fire protection.

COMMUNITY	ORGANIZATION TYPE	PERSONNEL	CITY ISO CLASS[a]	PUMPERS		TANKERS	LADDER TRUCKS	INSPECTIONS PERFORMED	RUNS/YEAR	
				GPM[b]	TANK				INSIDE CITY	OUTSIDE CITY
Aurora	Volunteer	25	7	1-1000 1-500	750 500	0	0	No	12	13
Babbitt	Volunteer	31	7	2-750	500	1-1000	0	Yes	2	2
Biwabik	Volunteer	28	6	1-750 1-500	500 500	1-5000	0	Yes	13	3
Ely	Paid/ Volunteer	4/22	6	1-1000 1-1000 1-500	500 150	2-1000	1	Yes	42	17
Eveleth	Paid/ Volunteer	11/6	6	1-750 1-600	250 500	1-1000	1	Yes	81	21
Gilbert	Volunteer	20	7	1-750 1-750	500 750	0	0	Yes	12	7
Hoyt Lakes	Volunteer	25	6	1-750 1-750	500 500	0	0	Yes	16	0
Virginia	Paid	26	5	1-1250 1-1000 1-750	750 500 125	0	1	Yes	142	7

SOURCE: Fire Service Information, Research, and Education Center, University of Minnesota, 1976.

[a]Insurance Services Office Code.
[b]Gallons per minute.

Law Enforcement--Among the profile communities, Aurora is the only community without its own municipal police department (Table 25). Currently, Aurora contracts with the St. Louis County Sheriff's Department for police protection. The continuation of this arrangement is under examination.

Table 25. Law enforcement, 1976.

COMMUNITY	TOTAL PERSONNEL			VEHICULAR RESOURCES		JAIL
	FULL-TIME	PART-TIME	PERSONS PER PATROLMAN[b]	PATROL VEHICLES	SPECIAL PURPOSE VEHICLES[c]	
Aurora	ON CONTRACT TO ST. LOUIS COUNTY SHERIFF'S OFFICE					
Babbitt	4	0	769	1	0	No
Biwabik	3	1	494	1	1	Yes
Ely[a]	8	0	613	1	0	Yes
Eveleth	11	0	429	2	0	Yes
Gilbert	5	0	457	1	1	No
Hoyt Lakes	5	3	726	2	1	Yes
Virginia	24	0	518	4	1	Yes

SOURCE: Arrowhead Regional Criminal Justice Plan: Data Section, 1976. ARDC.

[a]Has an auxiliary snowmobile patrol.
[b]Full-time only.
[c]Snowmobile, boats, motorcycles, etc.

The Virginia Police Department has a total of 24 full-time personnel, while Biwabik has a total of 3 full-time personnel. The persons-per-patrolman figure ranges from 429 in Eveleth to 769 in Babbitt. A figure of 1000 persons per patrolman is generally accepted as a standard (ARDC, 1976).

Jails are located in all communities except Babbitt and Gilbert. In addition the St. Louis County Sheriff maintains an office and jail in the courthouse in Virginia.

Arrest data can do little but provide a baseline with which to compare data which is collected later (Table 26). The total number of arrests for 1975 ranges from 7 in Eveleth to 414 in Virginia. Most of these arrests were for drug and liquor law violations and larceny. None of these arrests were for murder. The total arrest figure includes data other than categories listed.

Other Services--Biwabik, the only community without a separate library building, uses the junior-senior high school library. The libraries in Ely and Gilbert are located within the community buildings, while the libraries in Aurora, Babbitt, and Hoyt Lakes are located in the city hall. Eveleth and Virginia have libraries located in separate buildings. Many of the profile communities also use their library as a community meeting place.

A post office is located within each profile community. Courthouses are maintained in Ely, Eveleth, and Virginia. Each municipality provides a community center and youth recreational center.

Consolidation of Services

Currently, Eveleth, Gilbert, and Virginia have entered into an agreement to study the feasibility of combining fire, law enforcement, and refuse pickup departments. The outcome is uncertain at best. Additionally, Gilbert and Virginia are studying the possibility of entering into a

Table 26. Arrest statistics.

	TOTAL ARRESTS[a]	ROBBERY	AGGRAVATED ASSAULT	MURDER	NEGLIGENT MAN-SLAUGHTER	NARCOTICS	LIQUOR LAW	LARCENY	RAPE
1975									
Aurora	80	—	2	—	—	1	6	11	—
Babbitt	14	—	—	—	—	1	2	3	—
Biwabik	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ely	34	—	—	—	—	1	9	5	—
Eveleth	9		—	—	—	—	—	—	
Gilbert	NA	—	—	—	—	NA	NA	—	—
Hoyt Lakes	7	—		—	—	—	—	2	1
Virginia	315	1	1	—	—	9	34	52	2
1974									
Aurora	53	2	—	—	—	3	1	3	—
Babbitt	31	—	—	—	—	—	1	8	—
Biwabik	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ely	19	—	1	—	—	1	3	6	—
Eveleth	1	—	—	—	—	—	—	1	—
Gilbert	NA	—	—	—	—	—	—	—	—
Hoyt Lakes	1	—	—	—	—	—	—	1	—
Virginia	270	1	3	1	—	6	30	53	—
1973									
Aurora	53		—	—	—	2	3	5	—
Babbitt	30	—	—	—	—	—	3	—	—
Biwabik	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ely	20	—	—	—	—	—	3	7	—
Eveleth	2	—	—	—	—	—	—	—	—
Gilbert	5	—	—	—	—	—	—	—	—
Hoyt Lakes	2	—	—	—	—	—	—	—	—
Virginia	350	1	1	1	—	15	38	98	—

SOURCE: Minnesota Department of Public Safety, 1976.

[a]Total arrests includes data other than categories listed (for example, auto theft, arson).

NA-data not available.

Range-wide power agreement. A recently-passed state law allows municipalities to enter into such arrangements.

Consolidation of police services in Eveleth, Gilbert, and Virginia is under study by the Missabe Intergovernmental Project (MIP). MIP is a division of the Arrowhead Regional Development Commission and was established to offer improved and cheaper public services for these three communities. After a thorough analysis of the data, a study committee will present alternatives to the MIP steering committee and to the respective city councils.

At present the profile communities are served by the St. Louis County court system. The local communities are questioning the costs of the system and suggestions have been made to return to a municipal court system. Special legislation allowing this arrangement is expected to be introduced in the State Legislature (Duluth News Tribune, August 12, 1976).

PUBLIC AND COMMERCIAL UTILITIES

Electricity

The Virginia Department of Public Utilities is in the process of constructing an additional 170,000 pound per hour steam generating unit. The capability of the department's electrical system is 44,500 KW.

Minnesota Power and Light (MP&L), the Arrowhead Region's major electric supplier, provides electric energy to the other seven profile communities. The municipalities of Biwabik, Ely, and Gilbert purchase electric power from MP&L and retail electricity to their residents (Table 27).

Table 27. Electrical usage, 1975.

COMMUNITY[a]	ELECTRICITY SOLD (GWH)[b]	SUMMER PEAK (MW)	WINTER PEAK (MW)	SUPPLIER	CUSTOMERS	
					RESIDENTIAL	NONRESIDENTIAL
Aurora	14.03	2.75	3.02	MP&L[d]	952	121
Babbitt	10.14	1.76	2.315	MP&L	632	63
Biwabik	6.7	.96	1.35	MP&L	547	70
Ely	22.4	5.214	5.118	MP&L	2000	128
Eveleth	22.863	3.445	4.619	MP&L	1607	168
Gilbert	8.701	1.39	1.909	MP&L	868	67
Hoyt Lakes	10.04	3.08[c]	4.0[c]	MP&L	921	64
Virginia	70.0	14.68	16.22	Municipal	4863	1960

SOURCE: Richard Wollen, Minnesota Energy Agency, June, 1976.

[a] Community use only, no mining.
[b] One million kilowatts.
[c] Estimated.
[d] Minnesota Power and Light.

The East Range is dependent upon fossil fuels for energy production. In electric energy production the profile communities seem to be in a relatively advantageous position due to Minnesota Power & Light's and Virginia's Department of Public Utilities reliance on subbituminous Montana coal rather than other fossil fuels.

Virginia is the only profile community generating its own steam heat and electricity. Peat may replace oil and coal in one boiler at Virginia's Department of Public Utilities Power Plant. A demonstration project proposal has been submitted to the U. S. Energy and Research Department Administration by the Midwest Research Institute and the Minnesota Department of Iron Resources and Rehabilitation (IRRR). Peat from Fenn's Bog south of Virginia would be truck-transported and used over a two-month

trial period. At a later time the peat would be used over an entire heating season in the generating facility. Approval of this grant by ERDA has not yet been granted (Larson and Stern, 1976).

Natural Gas

The communities of Babbitt and Ely are without natural gas service. The Virginia Department of Public Utilities provides a combination of natural gas and steam heat to the community of Virginia. More than 3000 customers utilize steam heat. Inter-City Gas Ltd. and People's Natural Gas provide service to the other five communities. The recent tendency of natural gas suppliers to shift away from heavy industry service indicates that some difficulty might arise for new industries wishing to use natural gas (Table 28).

Water Supply

All profile communities have municipal water supply systems (Table 29). Aurora, Babbitt, Biwabik, Gilbert, and Virginia depend on wells and/or abandoned mine pits or shafts for their water supply. Ely, Eveleth, and Hoyt Lakes obtain their water from nearby lakes. The number of service connections ranges from 539 in Biwabik to 4250 in Virginia.

Water storage capacity for each community is a combination of elevated and ground facilities except for Hoyt Lakes. Hoyt Lakes utilizes elevated water storage only. At present water supply appears to be adequate. Eveleth, however, has had to supplement its water supply, due to the spring and summer drought of 1976. A pipe between St. Mary's Lake and Ely Lake has been opened in an effort to raise the water level of St. Mary's Lake.

Table 28. Natural gas usage, 1975.

COMMUNITY[a]	SUPPLIER	MINIMUM LOAD (MCF/DAY)	PEAK CAPACITY (MCF/DAY)	NUMBER OF INTERRUPTIBLE USERS	TOTAL 1975 USAGE (MCF)	CUSTOMERS	
						RESIDENTIAL	NON-RESIDENTIAL
Aurora	Inter-City Gas Ltd., Inc.	25	540	0	66,729	328	42
Babbitt	None	0	0	0	0	0	0
Biwabik	Inter-City Gas Ltd., Inc.	19	496	0	60,775	260	21
Ely	None	0	0	0	0	0	0
Eveleth	Inter-City Gas Ltd., Inc.	85	1959	1	257,767	702	130
Gilbert	Inter-City Gas Ltd., Inc.	27	713	2	90,219	420	38
Hoyt Lakes	People's Natural Gas	75	950	2	124,932	541	34
Virginia[b]	Virginia Dept. of Public Utilities	800	1335	14	335,248	3855	345

SOURCE: Personal communication with natural gas suppliers serving the above communities, July, 1976.

[a] Residential and commercial only, no mining.
[b] Includes municipal plant.

Table 29. Water supply data, 1976.

COMMUNITY	OWNERSHIP	PLANT CLASS.	SERVICE CONNECTIONS	SOURCE	WELLS NUMBER	WELLS DEPTH	TREATMENT[c]	STORAGE CAPACITY ELEVATED 1000 gal	STORAGE CAPACITY GROUND 1000 gal	DAILY CONSUMPTION (1000 gal) MAXIMUM	DAILY CONSUMPTION (1000 gal) AVERAGE	STATE PLUMBING CODE
Aurora	Municipal	B	820	Drilled Well & St.James Mine Pit	1 2 2	180' 115' 115'	D,F,C,S, Se,Fl,Cc	50	300	650	375	Adopted w/Permits and Inspections
Babbitt	Municipal	C	630	Drilled Well	2 3	148' 160'	D,Fl,Cc	650	450	1074	280	Not Adopted
Biwabik	Municipal	C	539	Drilled Well	1 2	278' 262'	D,Fl,Cc	250	900[a]	232	170	Adopted w/Permits and Inspections
Ely	Municipal	B	1854	Burntside Lake		N/A	D,A,F,T,Am, Se,Fl,Cc	300	1500	1500	750	Adopted
Eveleth	Municipal	B	1800	St. Mary's Lake		N/A	D,F,T,Fl	300	100	1000	750	Adopted
Gilbert[b]	Municipal	B	1000	Drilled Well	1 2	55' 55'	D,A,F,C,S, Se,Fl,Cc	500	75	500	350	Not Adopted
Hoyt Lakes	Municipal	B	680	Colby Lake		NA	C,S,Fl,D, Cc,Se	1500	0	1500	434	Not Adopted
Virginia	Municipal	B	4250	Mine Shaft & Drilled Well		157' 96'	D,F,C,Se, Fl,Cc	3050	1000	4700	2500	Adopted

SOURCE: Minnesota Department of Health, Division of Environmental Health, June, 1976.

[a] Standpipe.
[b] 1975 data.
[c] A-Aeration, Am-Ammoniation, C-Coagulation, Cc-Corrosion Control and Stabilization, D-Disinfection, F-Filtration, Fl-Fluoridation, S-Softening, Se-Sedimentation, T-Taste and Odor.

The water plant classification code is based on the degree of hazard to the public health, together with the type and loading of plant and the population affected (MDH, Division of Environmental Health, 1976). This applies to all water supply systems actually used or intended for use by the public or by any considerable number of persons.

Sewage Treatment--All profile communities maintain municipal sewage treatment facilities. At present the treatment plants in Ely, Eveleth, and Virginia utilize tertiary (chemical) treatment, while the other communities use only secondary (biological) treatment. Those communities using secondary treatment facilities have either applied for or have received funding to upgrade their treatment facilities. This upgrading of treatment processes is necessary because of the high water quality standards established by federal-state pollution regulations regarding Lake Superior. All of these communities, except Ely, fall within the St. Louis River sub-basin of the Lake Superior Basin. All communities are approaching or exceeding design capacity (Table 30), except for Ely which has recently expanded its capacity, and Hoyt Lakes which had high initial capacity. Virginia has recently completed construction of a larger capacity treatment plant, but the plant has not yet been approved by the contractor, the city of Virginia, or the Minnesota Pollution Control Agency. A consulting firm is now conducting smoke tests to determine if and where storm water might be backing up in the system and polluting the sanitary water supply.

Table 30. Sewage treatment.

COMMUNITY	PEAK CAPACITY[a]	TYPE OF TREATMENT[b]	AVERAGE FLOW[a]
Aurora	500,000	2	403,000
Babbitt	500,000	2	336,000
Biwabik	172,500	2	290,000
Ely	1,500,000	3	930,000
Eveleth	800,000	3	705,000
Gilbert	423,000	2	503,000
Hoyt Lakes	1,200,000	2	296,000
Virginia	2,000,000	3	2,300,000

SOURCE: Minnesota Pollution Control Agency, August, 1976.

[a] Gallons per day.
[b] 1. Primary (Physical)
2. Secondary (Biological)
3. Tertiary (Chemical)

Solid Waste Disposal--Sanitary landfills, most of which are abandoned mine pits, offer the profile communities at least six years of capacity. There are no municipal incinerators operating in the study area (Table 31).

Table 31. Landfill information.

COMMUNITY	NAME	SIZE (ACRES)	CAPACITY (CU.YDS.)	LIFE EXPECTANCY	OPERATOR	POPULATION SERVED
Aurora	Hudson Sanitary Landfill	15	126,000	10 yrs. 1983	Hudson Sanitary Landfill Authority	7,250
Babbitt	Northwoods Sanitary Landfill	44	571,400	10 yrs. 1982	Al James	39,000
Biwabik	Hudson Sanitary Landfill	15	126,000	10 yrs. 1983	Hudson Sanitary Landfill Authority	7,250
Ely	Northwoods Sanitary Landfill	44	571,400	10 yrs. 1982	Al James	39,000
Eveleth	East Mesabi Sanitary Landfill	128	6,000,000	200 yrs. 2172	East Mesabi Sanitary Disposal Authority	30,000
Gilbert	East Mesabi Sanitary Landfill	128	6,000,000	200 yrs. 2172	East Mesabi Sanitary Disposal Authority	30,000
Hoyt Lakes	Hoyt Lakes Sanitary Landfill	40	133,000	18 yrs. 1989	Hoyt Lakes	5,000
Virginia	East Mesabi Sanitary Landfill	128	6,000,000	200 yrs. 2172	East Mesabi Sanitary Disposal Authority	30,000

SOURCE: Minnesota Pollution Control Agency, Duluth Regional Office, June, 1976.

OTHER COMMUNITY SERVICES

Health

Facilities--Medical facilities in the study area include four hospitals, eight clinics, one mental health clinic, and two nursing homes.

The four hospitals, located in Aurora, Ely, Eveleth, and Virginia, have a total of 287 beds. Hospital occupancy levels range from 31 percent at Eveleth to 67 percent at Virginia. The presence of competing hospitals appears to have more effect on low occupancy rates than does size of the hospital. For example, Eveleth Fitzgerald Community Hospital is within fifteen minutes of the Virginia Municipal Hospital. Travel to Virginia for medical care is encouraged because of the more complete range of services available (Table 32). Occupancy rates for hospital-connected convalescent and nursing care units range from 91 percent at Aurora and Eveleth to 98 percent at Ely and Virginia (Table 33).

All communities except Biwabik, Gilbert, and Hoyt Lakes have medical clinics. The clinic staff complements range from a 1-physician facility to a 29-member facility.

The only mental health care facility is located in Virginia. It has a staff of four physicians and a fifteen-bed capacity, but due to its recent opening, occupancy rates have not been established.

A branch of this facility opened in the Ely-Bloomensen Hospital on October 5, 1976.

Table 32. Hospital facilities and services.

COMMUNITY	BLOOD BANK	CLINICAL LABORATORY	PATHOLOGY LABORATORY	ELECTROCARDIOGRAPH	DENTAL FACILITIES	PHARMACY	OCCUPATIONAL THERAPY	PHYSICAL THERAPY DEPT.	PREMATURE NURSERY	INTENSIVE CARE UNIT	EMERGENCY ROOM	OPERATING ROOM	OBSTETRICAL DELIVERY ROOM	POSTOPERATIVE RECOVERY ROOM	X-RAY, DIAGNOSTIC	X-RAY, THERAPEUTIC	X-RAY, ROUTINE CHEST-ADMITTANCE	ORGANIZED HOSPITAL AUXILIARY	SOCIAL SERVICE PROGRAM	CORONARY CARE UNIT
Aurora	X	X	X	X				X	X		X	X	X	X	X			X	X	
Ely	X	X		X			X	X	X	X	X	X	X	X	X		X	X	X	
Eveleth	X	X		X				X	X		X	X		X	X		X	X		
Virginia	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

SOURCE: Minnesota Department of Health, Division of Health Facilities, June, 1976.

X-service provided.

Table 33. Hospital information.

	STAFF			OCCUPANCY		CONVALESCENT AND NURSING CARE			
						STAFF		OCCUPANCY	
	PHYSICIANS	NURSES[a]	OTHER	BED CAPACITY	OCCUPANCY RATE	NURSES[a]	OTHER	CAPACITY	RATE
Aurora	5	9	31	16	47%	3	10	43	91%
Babbitt	NA[b]	NA	NA	NA	None	NA	NA	NA	NA
Biwabik	NA	NA	NA	NA	None	NA	NA	NA	NA
Ely	7	9	77	45	66%	6	24	100	98%
Eveleth	3	4	11	26	31%	2	NA	24	91%
Gilbert	NA	NA	NA	NA	None	NA	NA	NA	NA
Hoyt Lakes	NA	NA	NA	NA	None	NA	NA	NA	NA
Virginia	36	105	186	173	67%	NA	NA	122	98%

SOURCE: Minnesota Department of Health, Division of Health Facilities, June, 1976.

[a]RNs and LPNs.
[b]NA-not applicable.

The only two nursing homes within the study area are located in Eveleth and Virginia. The occupancy rate in Eveleth's home is 97 percent, while in Virginia's home it is 99 percent (MDH, Division of Health Statistics, 1976). More than 24 percent of Eveleth's population is 60 years of age or older and over 21 percent of Virginia's population is over 60 years of age. The three communities of Ely, Eveleth, and Virginia are all experiencing an increase in the number of older citizens (U. S. Bureau of Census, 1970). The need for facilities to care for the chronically ill will increase as the number of elderly persons in the area increases. Presently, hospital-connected convalescent and nursing care units are providing this service.

There are no chemical dependency facilities within the profile communities. The recent state chemical dependency law will, however, provide funds for an outreach program to be managed by the Range Mental Health Center in Virginia.

Professionals--Medical professionals in the study area include physicians, nurses, registered and licensed practical nurses, dentists, and veterinarians. The communities of Gilbert, Hoyt Lakes, and Biwabik are without the services of a physician (Table 34). In the other communities the number of physicians ranges from 2 in Babbitt to 44 in Virginia. There are a total of 175 nurses in the study area.

Table 34. Doctors and dentists.

COMMUNITY	1970 POPULATION	PHYSICIANS		DENTISTS	
		NUMBER	RATIO	NUMBER	RATIO
Aurora	2531	9	281:1	5	506:1
Babbitt	3076	2	1538:1	1	3076:1
Biwabik	1483	0		0	
Ely	4904	12	408:1	4	1226:1
Eveleth	4721	5	944:1	4	1180:1
Gilbert	2287	0		1	2287:1
Hoyt Lakes	3634	0		1	3634:1
Virginia	12450	44	283:1	19	655:1

SOURCES: Minnesota Department of Health, Health Manpower Information System, September, 1976 and Minnesota State Board of Densistry, July, 1976.

Each community, except Biwabik, has at least one dentist. The number of dentists in a community ranges from one in Babbitt, Gilbert, and Hoyt Lakes to nineteen in Virginia.

The only communities with licensed veterinarians are Ely and Virginia, each having two veterinarians.

It should be noted that the number of medical professionals or the availability of medical facilities should not be used as a basis for evaluating the quality of either health care or health delivery systems in the study area.

Churches

Religion has always been important on the Iron Range. The Rev. Bert Stanway, with a packsack on his back and a miniature folding organ, began teaching the Gospel to people on the Iron Range 56 years ago. According to historical records, in 1890 a Congregational church was the first Iron Range church to open for religious services (Mesabi Sunday News, October 3, 1976). At present, many religious affiliations are represented and active within the Iron Range communities (Table 35).

Recreation and Leisure

Few areas of the state possess the wide range of both indoor and outdoor recreational facilities of the profile communities. Lakes, streams, and rivers abound for boating, swimming, and canoeing. In addition, the study area is within and adjacent to the Superior National Forest. The Boundary Waters Canoe Area (BWCA) is the "backyard" of Ely, and the Voyageur's National Park is within 100 miles of all profile communities.

Table 35. Church information.

COMMUNITY	PROTESTANT	CATHOLIC	JEWISH
Aurora	6	1	0
Babbitt	5	1	0
Biwabik	2	1	0
Ely	7	1	0
Eveleth	5	2	0
Gilbert	3	1	0
Hoyt Lakes	3	1	0
Virginia	20	3	1

SOURCE: Personal communication with individual mayors of the above communities, July, 1976.

Outdoor recreational activities range from downhill skiing, cross country skiing, and snowmobiling in the winter to camping, fishing, and hunting in the spring, summer, and fall. Additionally, large areas of state and county forest lands are open to the public. The area is a veritable playground for outdoor recreational activities.

Enthusiastic local interest in school athletics has led to the building of some of the finest indoor and outdoor athletic facilities in the state (Table 36). As a result of this concerted effort on the part of the community and individual student teams, numerous state athletic championships have been brought home to the area.

Table 36. Leisure and recreation.

	BASEBALL DIAMONDS	BASKETBALL COURTS	BOWLING ALLEYS	FOOTBALL FIELDS	GOLF COURSES	HOCKEY RINKS	RIFLE RANGES	SWIMMING POOLS	TENNIS COURTS	FRATERNAL GROUPS[a]	MOVIE THEATERS
Aurora	2	0	1	2	0	2	1	2	6	1,2,5,6, 7,9,	1-in
Babbitt	2	1	1	1	1 public	0	1	0	4	1,2,9,10	0
Biwabik	2	1	0	1	0	1	1	0	3	2,5,6	0
Ely	1	1	1	1	1 public	1	1	1	1	1,2,3,5, 6,8,9,10	2-in
Eveleth	1	1	0	1	1 public	1	0	1	1	1,2,4,5, 6,9,11	1-out
Gilbert	3	3	0	1	0	3	1	1	2	1,2,6	1-in
Hoyt Lakes	1	2	1	1	1 public	1	1	0	3	1,2,5,6, 11-5 miles	0
Virginia	15	10	2	10	1 public	14	1	5	6	1,2,3,4, 5,6,7	2-in

SOURCE: Personal communication with individual mayors of the above communities, July, 1976.

[a]1. VFW 2. American Legion 3. Kiwanis 4. Elks 5. Masons 6. Knights of Columbus 7. Moose 8. Rotary 9. Lions 10. Other 11. Chamber of Commerce.

Eighteen-hole golf courses are located in Ely and Virginia, while only nine-hole courses are offered in Babbitt, Eveleth, and Hoyt Lakes. Each community maintains baseball diamonds, basketball courts, football fields, tennis courts, and playground equipment. Within this range of recreational opportunities, Hoyt Lakes merits individual attention. Colby Lake, north of the city, is reserved for swimming and boating, while Whitewater Lake, south of the city, is well stocked for fishing and provides quality campsite facilities. The Fisherman's Point Recreation Area on Whitewater Lake offers a boat-launching ramp, fish-cleaning house, picnic area, and bicycle trails.

Bowling alleys are located within each community except Biwabik, Eveleth, and Gilbert. Rifle ranges are found in each community except Eveleth. Eveleth has the only outdoor movie theater, while indoor theaters are found in Aurora, Ely, Gilbert, and Virginia. Community buildings with large seating capacities are located in Eveleth and Virginia (Table 37). In addition, the Virginia building offers complete dining facilities.

Table 37. Seating capacity.

	ACTIVITIES		
COMMUNITY	HOCKEY	BASKETBALL	CONVENTIONS
Eveleth	2000	4000	4000
Virginia	2500	6000	6000

The United States Hockey Hall of Fame in Eveleth honors Americans who have made significant contributions to hockey as players, coaches, referees, or administrators. Olcott Park in Virginia features a green house, lighted fountain, picnic tables, four playgrounds, Peace Garden, and a small animal menagerie of bear, deer, and peacocks. Other points of interest are Peter Mitchell Monument in Babbitt, U. S. Forest Service Voyageur's Visitor Center in Ely, Viewpoint in the Sky in Virginia, and the Eveleth Area Museum in Eveleth. In addition, the following companies offer scheduled plant tours: Arrow Company in Eveleth, Gilbert, and Virginia; Eveleth Taconite Company; and Erie Taconite in Hoyt Lakes.

Transportation

The Range transportation network, generally following along the ore formation, connects the string of incorporated cities. U. S. 169 is the principal east-west route. The upgrading of the entire route to expressway standards is an urgent local consideration. Two of the East Range communities, Biwabik and Aurora, are connected by Minnesota Highway 135. The other East Range community, Hoyt Lakes, is accessible only by St. Louis County 110. A proposal by Hoyt Lakes to extend National Forest Highway 11 to U. S. 61 on the North Shore has been presented but has not been acted upon. The St. Louis County and Lake County Highway Departments have held public meetings to discuss the present status and to receive public input. Aurora, Babbitt, and Hoyt Lakes are not accessed by the state trunk highway system.

Eveleth-Virginia and Ely Municipal Airports offer air transportation facilities. Mesaba Airlines offers scheduled passenger service between both Ely and Duluth International Airport. In addition, a number of private companies provide charter flights and ambulance service.

Three common carrier rail lines serve the freight needs of the communities: Burlington Northern; Duluth, Mesabe, and Iron Range; and Duluth, Winnepeg, and Pacific. In addition, both Reserve Mining and Erie Mining operate and maintain private rail lines. The nearest rail passenger service is in Duluth.

All communities are served by inter-city buses, except Hoyt Lakes and Babbitt. Intra-city bus passenger service is available only in Virginia. Until 1927 an electric trolly provided mass transit service between Gilbert and Hibbing via Virginia and Eveleth, but no proposals exist for a modern version of this service.

Communications

Each community is able to receive radio and television broadcast signals from all major networks. In addition, two radio stations are located in Virginia (WKKG and WHIB), one radio station in Ely (WELY), and one radio station in Eveleth (WEVE).

All communities, except Hoyt Lakes, have either a daily or weekly newspaper. The Mesabi Daily News provides daily (except Saturday) coverage, while the Ely Echo, Ely Miner, Babbitt Weekly News, Biwabik Times, Gilbert Herald, and East Range Journal Facts provide weekly coverage. The daily newspapers of Duluth, St. Paul, and Minneapolis also serve the area.

SUMMARY

Contrary to a widely-held perception that the Iron Range is a homogeneous unit and, essentially, that all towns are really the same, this comparative analysis concludes that the eight profile communities may actually be divided into five distinct groups.

Virginia is the dominant city in the East Range in terms of economic activity, population, services, and transportation linkages. This community, in fact, is a regional service center (as defined by Gustafson for the Upper Midwest Council) for the East Range.

Ely falls into a second community group. While depending somewhat on the mining industry for employment opportunities, this community is widely known for its tourism industry (outfitters, restaurants, recreation and tourist suppliers, and resorts). In addition, Ely functions as a community service center (Gustafson, 1973). Unlike Virginia, Aurora, Biwabik, Eveleth, and Gilbert, no active mines are located within ten miles of the town.

Eveleth, the sole town in community group three, is also a commercially active community, but it is dominated by nearby Virginia. (These two towns together have registered gross sales of $136.1 million in 1975.) The major factors which, in combination, distinguish Eveleth from the seven other communities are its active retail and commercial sector, close proximity to the regional service center, and easy highway accessibility.

Babbitt and Hoyt Lakes comprise a fourth grouping. Each was a "new town," having been developed by a mining company during the mid-1950s. The towns are not located immediately adjacent to mining operations, but are within a fifteen-minute drive. Further, each town possesses a relatively minor retail and commercial sector in comparison with Virginia, Ely, or Eveleth.

Aurora, Gilbert, and Biwabik, which have three factors in common, comprise a fifth group. First, gross sales levels in all three cities are relatively low in comparison to Virginia, Eveleth, and Ely. Second, these three cities rank sixth, seventh, and eighth in population. Third, the largest single employment sector is overwhelmingly that of mining.

CHAPTER FIVE
COMMUNITY PROFILES-AURORA

DEMOGRAPHY

Population Trends and Prospects

Aurora provides the best example of a community (within the study area) which has undergone a rebirth as a result of taconite mining. As one of the Iron Range's early-established hematite mining towns, it had begun the inevitable and relentless stages of decline by the 1950s as accessible natural ore deposits diminished. However, between 1950 and 1960 a dramatic reversal took place and within ten years Aurora more than doubled its population. During the 1960s the town did not avoid the area-wide economic stagnation and its population declined moderately. However, increasingly favorable mining conditions and availability of adequate space for new development has prompted the ARDC to project population growth in Aurora for the next two decades (Table 1).

Table 1. Aurora population.

YEAR	POPULATION	% CHANGE
1950	1371	- 10 (from 1940)
1960	2799	+104
1970	2531	- 10
1976[a]	2927	+ 16

SOURCE: U. S. Bureau of Census, 1950-1970.

[a]special census conducted August, 1976.

Aurora is one of the towns in the study area which recently carried out a special census of its population in August, 1976. Preliminary results of that count indicated that substantial growth has occurred in the town, but perhaps not as fast as had been predicted in 1976 by the ARDC (Assessment of Growth Impacts in the Iron Range). ARDC estimated Aurora's 1974 population to be 3134. One possible explanation is that the severe housing shortage in most Range communities (including Aurora) may have forced a good deal of the population increase into outlying rural areas where land for mobile homes and conventional housing has been cheaper and more plentiful.

Aurora has undergone at least two notable changes in its age-sex composition since 1950 (Table 2). First, the proportion of persons over 65 decreased dramatically between 1950 and 1960. Since then this percentage has increased steadily, reflecting the maturation of the initial population surge of the 1950s. Second, a shift in the sex composition had occurred by 1970, which brought Aurora closer to a balance between males and females (from 109 males/100 females in 1960 to 103 males/100 females in 1970). While the effect of the large influx of single males which created the original imbalance may have diminished by 1970, in-migration since that time has already reversed that trend.

As was mentioned in Chapter 4, the dependency ratio relates the percentage of people over 65 and under 20 to the percentage of people of the supporting ages—20 to 64. The growth in Aurora's dependency ratio between 1950 and 1960 indicates that the population growth of that period resulted in a rapid increase in the number of people less than 20 years old as

families of child-rearing age came to Aurora. Since 1960 this had diminished, largely as a result of the maturing of children of the 1950 to 1960 surge.

Table 2. Aurora population breakdown.

YEAR	TOTAL POPULATION	FEMALE	MALE	M/F RATIO	% 65+	% >20	DEPENDENCY RATIO
1950	1371	656	715	1.09	10	33	73
1960	2799	1341	1458	1.09	7	42	97
1970	2531	1249	1282	1.03	7	40	89
1976	2927	1338	1455	1.09	9	35	79

SOURCE: U. S. Bureau of Census, 1960-1976.

Educational Characteristics

Data on the average schooling received by persons 29 and older shows a slight increase in the median between 1960 and 1970 (Table 3). During this period the number of people with high school diplomas increased by 24, or about 3 percent. Also, during the same period the number of college graduates dropped by 29 persons, or just over 2 percent.

Table 4 shows the 1970 breakdown of school years completed by men aged 20 to 49 and women aged 15 to 44. Also indicated are the number of people of each sex with vocational training but less than three years of college.

Table 3. Aurora level of education.

	1960		1970	
Median School Years Completed	12.1		122	
Number and % High School Graduates	741	52.4%	765	55.0%
Number and % College Graduates	138	9.9%	109	7.8%

SOURCE: U. S. Bureau of Census, 1960-1970.

Table 4. Aurora educational characteristics of the labor force pool, 1970.

	MALE[a]		FEMALE[b]	
	NUMBER	PERCENT	NUMBER	PERCENT
Years of School Completed				
Less than high school	55	12.9	45	10.3
1-3 years high school	73	17.1	115	26.4
4 years high school	176	41.1	180	41.4
1 or more years college	124	29.0	95	21.8
Persons with less than 3 years of college completed[c]				
With vocational training	151	23.9	97	15.7
Without vocational training	481	76.1	522	84.3

SOURCE: U. S. Bureau of Census, 1970.

[a]Males aged 20-49.
[b]Females aged 15-44.
[c]Persons aged 16-64.

Residency

Figure 1 gives some idea of the residential stability in Aurora as it was measured in 1970. The map shows: 1) the proportion of people over five years old who in 1970 occupied the same residence where they had lived in 1965; and 2) the percentage of the 1970 Aurora population which in 1965 had resided in one of the other designated places.

Among the study communities Aurora had one of the lowest percentages of same-house, five-year residents and also one of the highest levels of lately-arrived persons whose residence in 1965 was elsewhere in St. Louis County.

Income

Data on various aspects of income for Aurora are presented in Tables 5 and 6. While Aurora's average family income rose between 1960 and 1970, it did not rise as fast as incomes in the state as a whole (Table 5). Also, gross income per income tax filer was substantially larger than the state figure, and that difference has increased since 1970.

Table 5. Aurora income.

	MEDIAN FAMILY INCOME			MINN. GROSS INCOME/FILER		
	1960	1970	% Δ	1970	1974	% Δ
$ Amount	5572	8941	+60	6614	8616	+30
% of State Median	99.9	90.0		105.1	106.8	

SOURCES: U. S. Bureau of Census, Department of Commerce Series P-25, No. 568, 1975; Minnesota Department of Revenue, Individual Tax Report, 1970 and 1974.

Table 6. Aurora poverty.

	% FAMILIES BELOW POVERTY THRESHOLD		
	1950[a]	1960[b]	1970[c]
Aurora			
Minnesota	36.6	21.4	8.2

SOURCE: U. S. Bureau of Census, 1970.

[a]Families with income less than $2000.
[b]Families with income less than $3000.
[c]An index based on a total of family money income which is less than 3 times the cost of an adequate diet ("economy food plan"). In 1970 the average threshold for a nonfarm family of four headed by a male was $3745.

LABOR FORCE

Two points of reference are available for comparison of the labor force data—1960 and 1970 (Table 7). The total labor force of the community declined only slightly between those two census dates, while the town's population actually declined by ten percent; the increase in labor force participation by women during this time was making a substantial contribution. Between 1960 and 1970 the percentage of Aurora's population considered to be in the labor force increased from 36.5 percent to 40.0 percent.

Unemployment rates at the time of the census show a considerable decline from 1960 to 1970, suggesting that, perhaps, by 1960 Aurora had attracted an excess of labor, which subsequently left during the following decade.

Reflecting national trends, the labor force participation rate of women climbed substantially between 1960 and 1970, reaching the highest level of any of the study area communities at the time of the last census.

Table 7. Aurora labor force characteristics.

	1960	1970	% Δ
Population	2799	2530	-10
Labor Force			
Male	790	701	-11
Female	234	312	+33
TOTAL	1024	1013	- 1
Employed Labor Force			
Male	735	684	- 7
Female	226	300	+33
TOTAL	961	984	- 1
Percent Unemployed	6.2	2.9	-53
Percent Aged 16 and over in Labor Force			
Male	81.9	77.9	- 5
Female	26.2	37.9	+45

SOURCE: U. S. Bureau of Census, 1960-1970.

Labor Force = persons 14+ (16+ in 1970) employed, unemployed, or members of the Armed Forces.

EMPLOYMENT

Employment data, as an indicator of the local economic structure, are available from the 1960 and 1970 census. These provide breakdowns of employment by both industry and occupation. During this time Aurora's continued dependency on mining as an employer declined somewhat, from

almost 50 percent of employment in 1960 to about 43 percent by 1970. The loss of mining employment was accompanied by some degree of diversification, with gains registered in most other sectors but most notably whole-retail, transportation-communications-utilities, and professional services (Tables 8 and 9, and Figure 2). All of these categories increased in absolute numbers, while absolute mining employment declined.

Table 8. Aurora employment for selected industries.

INDUSTRY	1960 No.	1960 %	1970 No.	1970 %	% Δ 1960-1970
Mining	463	48.2	421	42.8	- 9.1
Wholesale & Retail	97	10.1	147	14.9	+51.5
Education	NA	--	122	12.4	---
Transport Communications & Utilities	38	4.0	74	7.5	+94.7

SOURCE: U. S. Bureau of Census, 1960 and 1970.

NA - not applicable.

This breakdown shows that the retail and service sectors play a growing vital role in the local economy and indicates that these sectors provide their services to an area larger than the immediate community.

Table 9. Aurora employment for selected occupations, 1960 and 1970.

OCCUPATION	1960 No.	1960 %	1970 No.	1970 %	% Δ 1960-70
Craftsmen, Foremen, and Kindred	249	25.3	187	19.5	+33.2
Operatives	147	14.9	238	24.8	-38.2
Professional, Technical & Kindred	144	14.6	149	15.5	- 3.4
Service Workers	126	12.8	66	6.9	+90.9

SOURCE: U. S. Bureau of Census, 1960 and 1970.

BUSINESS ACTIVITY

Gross sales, as reported by the Minnesota Department of Revenue, give some indication of the business activity of Aurora. Though the data are subject to error due to misinterpretation of Department of Revenue definitions, it is an excellent indicator of overall economic activity in the community.

Table 10. Aurora business activity, 1969 to 1975.

	GROSS SALES	FILERS	SALES/FILER
1969	3,963,715	75	52,850
1971	4,628,799	77	60,114
% Δ 69-71	+17		+14
1973	6,200,308	75	82,671
% 71-73	+34		+38
1975	8,403,042	82	102,476
% Δ 73-75	+36		+24
% Δ 69-75	+112	+9	+94

SOURCE: Minnesota Department of Revenue, 1976.

Aurora shows gross sales that more than doubled over the period 1969 to 1975. Sales per filer nearly doubled during that time.

The State Bank of Aurora, which is the only bank in the community, presents the figures in Table 11 in its March 31, 1976, call report.

Table 11. Aurora bank data.

Deposits	$5,513,000
Assets	6,038,000
Liabilities	5,513,000
Total Loans	2,743,000
Total Debits (previous 12 mos.)	28,881,000

SOURCE: Federal Deposit Insurance Corporation, Federal Reserve Bank, 1976.

Bank debits for the previous 12 months represent a 10 percent increase from the year before.

MUNICIPAL GOVERNMENT FINANCE

Revenues

The most comprehensive source of information in this area is the annual report of the state auditor on revenue, expenditures, and debt of the cities. These reports are available through the 1974 calendar year and provide excellent time series information. From $160,524 in 1965, total municipal receipts for Aurora have climbed steadily to $348,268 in 1974. This

represents a more than doubling in ten years. During this same period taxes paid by residents for local government have diminished both absolutely and as a percentage of total receipts. In 1975 the $104,420 in local taxes represented only 30 percent of the total receipts, reflecting a 23 percent drop in actual taxes paid from 1965.

Meanwhile, the amount of state-shared taxes has increased significantly. In 1965, $9544 in state-shared taxes was only 6 percent of total receipts. By 1974 a steady increase in this source of funds had resulted in nearly 50 percent of total receipts being from state-shared taxes. The 1974 amount of $169,571 is nearly 18 times the 1965 amount.

Federal revenue sharing has also been a new source of funds for the Aurora city government. Prior to 1972 there were no funds. In 1974 the $31,545 from revenue sharing represented 9 percent of that year's total receipts.

Disbursements

Disbursements for the city of Aurora have been greater than receipts in five of the ten years between 1967 and 1974. During this period disbursements have doubled from $160,673 in 1965 to $323,100 in 1974. Aurora had $133,494 in revenue bond debt as of 1974. It has been retiring this at about $10,000 to $12,000 per year.

Taxable Valuation

From 1967 to 1975 Aurora's taxable valuation increased only 10 percent, from $2,628,048 to $2,891,033. However, in 1976 the city experienced a 16 percent jump to $3,341,277 so that the overall increase from 1967 was 27 percent.

As a result of the increasing tax base and the decreasing burden on local taxpayers to produce revenue, city mill rates have decreased 54 percent from 60.89 in 1967 to 32.64 in 1976 (Table 12).

Table 12. Aurora taxable valuation, mill rates, 1967 to 1976.

YEAR	TAXABLE VALUATION	% CHANGE	CITY MILL RATE	% CHANGE
1967	$2,628,048		60.89	
1968	2,007,171	-24	71.45	+17
1969	2,434,362	+21	69.36	- 3
1970	2,353,950	- 3	69.93	0
1971	2,672,001	+14	57.41	-18
1972	2,657,325	- 1	52.28	- 9
1973	2,721,805	+ 2	49.10	- 6
1974	2,806,893	+ 3	47.14	- 4
1975	2,891,033	+ 3	39.88	-15
1976	3,341,277	+16	32.64	-18
% Δ 1967-76	+27		-54	

SOURCE: Minnesota State Auditor, 1967-1976.

The tax burden, as represented by local taxes paid per thousand dollars of taxable valuation, has decreased from $62.58 per thousand in 1967 to $37.20 per thousand in 1975.

SCHOOL DISTRICT FINANCE

The Aurora-Hoyt Lakes School District (number 691) is consolidated to include both communities.

The school district mill rate has decreased in recent years. In 1972 to 1973 the mill rate was 20.72, but by 1974 to 1975 it had decreased to 18.63. The school district's rising assessed valuation provided sufficient revenues to more than compensate for a decrease in the funds from state and federal sources and increased per pupil expenditures and operating costs. This allowed the cut in mill rates over this period.

The portion of total receipts from state and federal sources was 73 percent in 1972 to 1973, 79 percent in 1973 to 1974, and 75 percent in 1974 to 1975.

Per pupil operating costs and total expenditures increased 36 percent and 50 percent, respectively, in the two-year period for which data is available

Table 13. Aurora school district disbursements, 1972 to 1975.

YEAR	PER PUPIL UNIT TOTAL EXPENDITURE	% CHANGE	PER PUPIL UNIT OPERATING COST	% CHANGE
1974-75	$1653	+39	$1152	+26
1973-74	1188	+ 7	916	+ 8
1972-73	1102		845	
1973-1975		+50		+36

SOURCE: Minnesota Department of Education, 1972-1975.

Even though the number of pupils has declined dramatically, School District 691 actually increased their staff from 149 in 1972-1973 to 155 in 1974-1975.

This has resulted (when combined with an 18 percent average salary increase during the same period) in a rise in total payroll from $1.6 million to $2.0 million, a 25 percent increase.

EDUCATION—SCHOOL DISTRICT 691

Facilities

Aurora and the city of Hoyt Lakes are within the same school district. Aurora has two schools—Fred A. Cina Elementary School and the Aurora-Hoyt Lakes High School complex. The elementary school is less than 10 years old and the high school is over 50 years old.

Enrollment

The kindergarten enrollment figures for the Aurora-Hoyt Lakes School District show a 7 percent decrease from 1970 to 1975 (Table 14). This is the only school district in this study that shows any kindergarten enrollment increase. The elementary and secondary enrollment trends show a five-year decrease of 4.8 percent. The district could absorb another 1000 students based upon current enrollment and capacity data (Table 15).

Table 14. Aurora school district enrollment, 1970 to 1976.

SCHOOL DISTRICT 691	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	% Δ 5 YEARS
Kindergarten	160	168	113	154	141	149	-6.9
Elementary & Secondary	2324	2390	2493	2425	2469	2261	-4.8

SOURCE: Personal communication with Aurora-Hoyt Lakes school district superintendent, June, 1976.

Table 15. Aurora school district capacity, student-teacher ratios, 1976.

SCHOOL DISTRICT 691	ENROLLMENT	CAPACITY	% UTILIZED	TEACHERS	S/T RATIO
Kindergarten	149	400	37	3	50:1
Elementary	973	1500	65	53	18:1
Secondary	1288	1500	86	83	16:1

SOURCE: Personal communication with Aurora-Hoyt Lakes school district superintendent, June, 1976.

GOVERNMENTAL STRUCTURE AND SERVICES

Form

Aurora's municipal government is a mayor-council arrangement. The mayor is elected for a two-year term, while the four-member council is elected for a four-year term. The annually appointed clerk-treasurer is the chief administrator. Council meetings are scheduled for the first Tuesday of each month. A city attorney is employed by the city in addition to thirteen full-time city employees. Aurora, which enforces the State Building Code, has a seven-member advisory planning commission and a zoning ordinance (Table 16 and 17).

Fire Protection

Aurora's fire protection is summarized with Table 18.

Table 16. Aurora governmental structure

FORM	CITY COUNCIL MEMBERS	COUNCIL MEETING SCHEDULE	CITY ATTORNEY	# OF CITY EMPLOYEES (FULL-TIME)	PLANNING COMMISSION MEMBERS	PLANNING COMMISSION STAFF (FULL-TIME)	ZONING ORDINANCE	STATE BUILDING CODE ENFORCED
Mayor-Council	4	1st Tuesday	Yes	13	7	0	Yes	Yes

SOURCE: Personal communication with mayor of Aurora, June, 1976.

Table 17. Aurora zoning ordinance sections.

ZONING DISTRICTS	MOBILE HOMES	MINIMUM LOT SIZE	SUBDIVISION REGULATIONS	SEPTIC TANKS	BUILDING PERMITS	AMENDMENT PROVISION
X	X	X	X	X	X	X

SOURCE: Aurora zoning ordinance.

Table 18. Aurora fire protection.

ORGANIZATION TYPE	PERSONNEL	CITY ISO CLASS[a]	PUMPERS GPM[b]	PUMPERS TANK	TANKERS	LADDER TRUCKS	INSPECTIONS PERFORMED	RUNS/YEAR INSIDE CITY	RUNS/YEAR OUTSIDE CITY
Volunteer	25	7	1-1000 1- 500	750 500	0	0	No	12	13

SOURCE: Fire Service Information, Research and Education Center, University of Minnesota, 1976.

[a] Insurance Services Office Code; scale of 1(best) to 10(lowest).
[b] gallons per minute.

Law Enforcement

Aurora has no jail and contracts with the St. Louis County Sheriff's Department for police protection.

Public and Commercial Utilities

The following tables summarize Aurora's utility services:

Table 19. Aurora water supply.

OWNERSHIP	PLANT CLASS.	SERVICE CONNECTIONS	SOURCE	WELLS NUMBER	WELLS DEPTH	TREATMENT[a]
Municipal	B	820	Drilled Well & St. James Mine Pit	1 2	180' 115'	D,F,C,S, Se,Fl,Cc

STORAGE CAPACITY ELEVATED 1000 gal	STORAGE CAPACITY GROUND 1000 gal	DAILY CONSUMPTION (1000 gal) MAXIMUM	DAILY CONSUMPTION (1000 gal) AVERAGE	STATE PLUMBING CODE
50	300	650	375	Adopted w/permits & inspections

SOURCE: Minnesota Department of Health, Division of Environmental Health, June, 1976.

[a]C-Coagulation, Cc-Corrosion Control and Stabilization, D-Disinfection, F-Filtration, Fl-Fluoridation, S-Softening, Se-Sedimentation.

Table 20. Aurora sewage treatment.

PEAK CAPACITY	TYPE OF TREATMENT[a]	AVERAGE FLOW	% OF CAPACITY
500,000 gals/day	2	403,000 gals/day	81

SOURCE: Minnesota Pollution Control Agency, August, 1976.

[a] 1. Primary (Physical)
2. Secondary (Biological)
3. Tertiary (Chemical)

A tertiary plant, under construction, is due for completion in 1977.

Table 21. Aurora landfill information.

NAME	SIZE (ACRES)	CAPACITY (CU YDS)	LIFE EXPECTANCY	OPERATOR	POPULATION SERVED
Hudson Sanitary Landfill	15	126,000	10 years 1983	Hudson Sanitary Landfill Authority	7250

SOURCE: Minnesota Pollution Control Agency, Duluth Regional Office, June, 1976.

Table 22. Aurora[a] electrical usage.

ELECTRICITY SOLD (GWH)[b]	SUMMER PEAK (MW)	WINTER PEAK (MW)	SUPPLIER	CUSTOMERS RESIDENTIAL	CUSTOMERS NON-RESIDENTIAL
14.3	2.75	3.02	MP&L[c]	952	121

SOURCE: Minnesota Energy Agency, June, 1976.

[a] Community use only, no mining.
[b] One million kilowatts.
[c] Minnesota Power and Light.

Table 23. Aurora[a] natural gas usage.

SUPPLIER	MINIMUM LOAD (MCF/DAY)	PEAK CAPACITY (MCF/DAY)	NUMBER OF INTERRUPTIBLE USERS
Inter-City Gas Ltd, Inc.	25	540	0

TOTAL 1975 USAGE (MCF)	CUSTOMERS	
	RESIDENTIAL	NON-RESIDENTIAL
66,729	328	42

SOURCE: Inter-City Gas Ltd, Inc., July, 1976.

[a]Residential and commercial only, no mining.

OTHER COMMUNITY SERVICES

Transportation

Inter-city bus passenger service is available, but there are no air, rail, or taxi passenger services provided in Aurora. Aurora is not accessed by the State Trunk Highway System, but is served by St. Louis County Highway 110.

Communication

All major network-affiliated television and radio signals are received in Aurora. The Aurora Shopper and East Range Journal Facts provide weekly newspaper coverage for the community.

Health

The hospital has a staff complement of five physicians and nine nurses (Table 24). A branch of the East Range Clinic, Inc. has a separate staff of four physicians. There are five dentists providing dental health care in the community.

Table 24. Aurora hospital information.

STAFF			OCCUPANCY		CONVALESCENT AND NURSING CARE			
			BED	OCCUPANCY	STAFF		OCCUPANCY	
PHYSICIANS	NURSES[a]	OTHER	CAPACITY	RATE	NURSES[a]	OTHER	CAPACITY	RATE
5	9	31	16	47%	3	10	43	91%

SOURCE: Minnesota Department of Health, Division of Health Facilities, June, 1976.

[a]RNs and LPNs

BABBITT

DEMOGRAPHY

Population Trends and Prospects

As one of the East Range's "new" taconite towns, Babbitt has undergone spectacular population changes in its two decades, giving it unique demographic characteristics, problems, and advantages. Virtually nonexistent until the mid-1950s, by 1970 Babbitt's population had reached 3076. From Table 1 it can be seen that the rate of growth, phenomenal during the 1950s, had slowed to a rate of 19 percent in the 1960s.

Table 1. Babbitt population.

YEAR	POPULATION	% CHANGE
1950	117	- 1 (from 1940)
1960	2587	+2111
1970	3076	+19

SOURCE: U. S. Bureau of Census, 1950-1970.

Projections for the future show a healthy increase for the present and coming decades; however, these projections consider neither the current dilemma facing Reserve Mining Company over tailings pollution and disposal sites, nor the potential effect of copper-nickel development in the immediate area.

The peculiar nature of Babbitt's short history has given it population characteristics which are somewhat extraordinary in terms of the present Iron Range area. The most striking feature of its age distribution is the virtual absence of a segment of population aged 60 or over.

The uniformity of its population—confined largely to school-age youngsters and mature adults—gives it the aspect of a suburb in a metropolitan area rather than a self-contained community (Table 2).

Table 2. Babbitt population breakdown.

YEAR	TOTAL POPULATION	FEMALE	MALE	M/F RATIO	% 65+	% >20	DEPENDENCY RATIO
1960	2587	1314	1273	97	1	56	132
1970	3076	1501	1575	105	1	52	11

SOURCE: U. S. Bureau of Census, 1960-1970.

The dependency ratio relates the percentage of people over 65 and under 20 to the percentage of people of the supporting ages--20 to 64. The high dependency ratio in Babbitt in 1960 is attributable to the high number of children (56 percent) of its instant population. By 1970 Babbitt's dependency ratio had shrunk to 111 as the initial population of under 20 matured and either became part of the supporting age group or left the city.

Educational Characteristics

Between 1960 and 1970 Babbitt showed a significant increase in both the level of median school years completed, and the percentage of high school and college graduates in its population over 25 years of age (Table 5). The advance gained by the latter group, college graduates, is one of the highest of the communities in the study area.

Table 3. Babbitt level of education.

	1960		1970	
Median School Years Completed	11.7		122	
Number and % High School Graduates	480	52.4%	765	55.0%
Number and % College Graduates	43	9.9%	109	7.8%

SOURCE: U. S. Bureau of Census, 1960-1970.

The number of persons with vocational training, but less than three years of college, is listed in Table 4. Census data is not tabulated in a manner which makes it possible to express this group as a percent of total population.

Table 4. Babbitt educational characteristics of the labor force pool, 1970.

	MALE[a]		FEMALE[b]	
	NUMBER	PERCENT	NUMBER	PERCENT
Years of School Completed				
Less than high school	73	12.0	41	6.0
1-3 years high school	84	13.9	157	23.2
4 years high school	314	51.8	344	50.7
1 or more years college	135	22.3	136	20.1
Persons with less than 3 years of college completed[c]				
With vocational training	168	18.5	85	12.3
Without vocational training	741	81.5	605	87.7

SOURCE: U. S. Bureau of Census, 1970.

[a]Males aged 20-29.
[b]Females aged 15-44.
[c]Persons aged 16-64.

Residency

Figure 1 gives some idea of the residential stability in Babbitt as it was measured in 1970. The map shows: 1) the proportion of people over five years old who in 1970 still occupied the same residence where they had lived in 1965; and 2) the percentage of the 1970 Babbitt population which in 1965 had resided in one of the other designated places.

In keeping with Babbitt's status as a "new" town, in existence for only about fifteen years by 1970, the map shows a fairly low level of five-

year residents. Compared to data from other towns a higher than average level of immigrants came from counties in Minnesota other than St. Louis. The north-central region also was a large contributor.

Income

Between 1960 and 1970 median family income in Babbitt tended, on the average, to increase at a greater rate than median family income in Minnesota as a whole. Likewise, the Babbitt average gross income, according to the Minnesota Department of Revenue, substantially exceeded state averages in 1970 and 1974 (Table 5).

Table 5. Babbitt income.

	MEDIAN FAMILY INCOME			MINN. GROSS INCOME/FILER		
	1960	1970	% Δ	1970	1974	% Δ
$ Amount	5291	9490	+79	7475	9088	+22
% of State Median	94.9	95.6		118.8	112.7	

SOURCES: U. S. Bureau of Census, Department of Commerce Series Senior P-25, No. 568, 1975; Minnesota Department of Revenue, Individual Tax Report, 1970 and 1974.

Data on indexes of poverty show that in both 1960 and 1970 Babbitt had few persons living in a state of poverty, as defined by the U. S. Bureau of Census, and, in contrast to the older towns, virtually none of them were 65 or older (Table 6).

Table 6. Babbitt poverty.

	% FAMILIES BELOW POVERTY THRESHOLD	
	1960[a]	1970[b]
Babbitt	5.5	.7
Minnesota	21.4	8.2

SOURCE: U. S. Bureau of Census, 1950-1970.

[a] Families with income less than $3000.

[b] An index based on a total of family money income which is less than 3 times the cost of an adequate diet ("economy food plan"). In 1970 the average threshold for a nonfarm family of four head by a male was $3745.

LABOR FORCE

Table 7 shows the labor force characteristics of Babbitt's population for 1960 and 1970. The labor force, employed and total, registered a slight increase during this period with gains for both males and females, although proportionately the gain for females was far more dramatic. The increase in the female labor force participation rate, from 18.8 percent to 26.7 percent, emphasizes the growing contribution of women to the total. However, a high birth rate and tendency toward large families in Babbitt during this same period caused a drop in the percentage of the total population in the labor force, from 35.6 percent in 1960 to 32.4 percent in 1970.

Table 7. Babbitt labor force characteristics.

	1960	1970	% Δ
Population	2587	3076	+ 19
Labor Force			
Male	604	768	+ 27
Female	116	229	+ 97
TOTAL	720	997	+ 38
Employed Labor Force			
Male	601	757	+ 26
Female	101	229	+127
TOTAL	702	982	+ 40
Percent Unemployed	2.5	1.5	- 40
Percent Aged 16 and over in Labor Force			
Male	89.0	85.0	- 4
Female	18.8	26.7	+ 42

SOURCE: U. S. Bureau of Census, 1960-1970.

Labor Force = persons 14+ (16+ in 1970) employed, unemployed, or members of the Armed Forces.

EMPLOYMENT

Employment data, as an indicator of the local economic structure, are available from the 1960 and 1970 censuses and provide a breakdown by industry and occupation. Babbitt's employment showed some sign of diversification although it remained heavily dominated by mining (Figure 2). A breakdown of employment by industry shows that in 1970 nearly two of every three jobs in the community were still within the mining sector (Tables 8 and 9, and Figure 2).

Table 8. Babbitt employment for selected industries.

INDUSTRY	1960 #	1960 %	1970 #	1970 %	% Δ 1960-1970
Mining	499	71.1	645	65.7	+29.3
Professional Services	72	10.3	139	14.3	+93.1
Retail	60	8.5	64	6.4	+ 6.7

SOURCE: U. S. Bureau of Census, 1960 and 1970.

Table 9. Babbitt employment for selected occupations, 1960 and 1970.

OCCUPATION	1960 #	1960 %	1970 #	1970 %	% Δ 1960-1970
Craftsmen, Foremen, & Kindred	225	32.1	435	44.3	+ 93.3
Operatives	231	32.9	130	13.2	- 43.7
Professional, Technical & Kindred	53	7.5	135	13.7	+154.7
Service Workers	50	7.1	60	6.1	+ 20.0

SOURCE: U. S. Bureau of Census, 1960 and 1970.

Employment by occupation shows the cross-section of jobs expected in light of the influence of the mining industry. Craftsmen, professionals, and operatives are the dominant sectors, while jobs in service and other occupations are barely visible.

BUSINESS ACTIVITY

The state sales and use tax reports prepared annually by the Minnesota Department of Revenue provide some indication of Babbitt's business activity. Although the data are subject to error due to misinterpretation of Department of Revenue definitions, it is an excellent indicator of overall economic activity in the community (Table 10).

In Babbitt gross sales in the period from 1969 to 1975 experienced a 356 percent increase. The number of filers also increased 24 percent so that sales per filer, while increasing 275 percent, had not risen at the same rate as absolute sales.

Table 10. Babbitt business activity, 1969 to 1975.

	GROSS SALES	FILERS	SALES/FILER
1969	$ 2,878,680	59	$ 48,791
1971	12,103,129	68	177,987
% Δ 69-71	+320		+265
1973	12,188,060	65	187,509
% Δ 71-73	+ 1		+ 5
1975	13,380,483	73	183,394
% Δ 73-75	+ 10		- 2
% Δ 69-75	+365	+24	+276

SOURCE: Minnesota Department of Revenue.

It can be seen that from 1969 to 1970 gross sales experienced a phenomenal 320 percent increase in just two years. Since then gains in gross sales have been almost negligible in comparison. One might surmise that a single event such as a new industry coming to town was responsible for this bulge.

Call reports from March 31, 1976, give insight into the First State Bank of Babbitt, the only bank in the community. Bank data reveals the resources available in the city (Table 11).

Table 11. Babbitt bank data.

Deposits	$ 6,824,000
Assets	7,364,000
Liabilities	6,924,000
Total Loans	4,018,000
Total Debits (previous 12 mos.)	45,986,000

SOURCE: Federal Deposit Insurance Corporation, Federal Reserve Bank, 1976.

Bank debits for the previous 12 months represent an 18 percent increase from the year before. Total loans comprise 55 percent of assets. It is interesting to note that liabilities of the bank equal deposits. This means that the only liabilities First National has are in the form of demand and time deposits held by its patrons.

Also available to residents of Babbitt are the resources of the Steel Workers Credit Union. In December, 1975, according to the Savings League of Minnesota, its assets totaled $2.6 million.

MUNICIPAL GOVERNMENT FINANCE

Revenues

Total receipts for Babbitt's municipal government have risen very steadily year after year. In 1965 total receipts were $339,403. By 1974 receipts had increased to $650,521, a gain of 92 percent over ten years.

During this ten-year period, unlike most other cities in the area, Babbitt's percentage of total receipts derived from local taxes remained surprisingly constant. The 1965 local taxes of $49,536 made up 15 percent of receipts in that year. In 1974 local taxes of $91,632 were 14 percent of total receipts. In between these years there was some fluctuation. The percentage reached as high as 37 percent in 1969 and as low as 5 percent in 1973 when only $24,949 was collected from local taxes for the municipal budget.

The level of state-shared taxes (collected mostly from taconite concerns) has also remained surprisingly constant. During the ten years from 1965 to 1974 the percentage which state-shared taxes have made of total receipts has hovered in the 50 percent to 60 percent range. In 1965 taxes of $163,294 were 48 percent, a bit below the range, and in 1975 they were $396,708, or 61 percent, a little above the range. The change from 1965 to 1974 represents a 143 percent increase.

Since 1971 federal revenue sharing funds have aided the municipal budget. In 1974, $38,256 in federal revenue sharing funds were received and made up 6 percent of the total receipts.

Disbursements

In eight of the ten years between 1974 and 1965 Babbitt's municipal disbursements have been less than receipts, in most years considerably less (Table 12).

Table 12. Babbitt difference between receipts and disbursements, 1965 to 1974.

1974	160,790
1973	(92,284)
1972	92,799
1971	159,264
1970	75,504
1969	52,047
1968	17,917
1967	44,847
1966	(28,649)
1965	41,398
TOTAL	523,633

SOURCE: Minnesota State Auditor.

( ) represents deficit

This difference between receipts and disbursements represents a reserve fund, probably in the form of interest-bearing investments, which Babbitt has to protect itself from the potential need to drastically increase local taxes to cover the cost of any extraordinary event.

Babbitt has annually been decreasing its outstanding indebtedness. In 1965 bonded indebtedness totaled $835,000. By 1974 it had been decreased to $85,000, and one expects that by 1976 the total debt should have been retired as annual debt redemption in the past has been in the neighborhood of $80,000.

Taxable Valuation

Taxable valuation in Babbitt has increased, but only very gradually. The increase in valuation from $2,350,686 in 1967 to $3,271,233 in 1976 represents a gain of 39 percent. Most of this was made in one year, from 1967 to 1968, when valuation increased 28 percent. Since 1968 valuation has gone up only 9 percent.

Table 13. Babbitt taxable valuation, mill rates, 1967 to 1976

YEAR	TAXABLE VALUATION	% CHANGE	CITY MILL RATE	% CHANGE
1967	$2,350,686		19.96	
1968	3,002,259	+28	14.84	-26
1969	3,190,419	+ 6	17.49	+18
1970	3,246,042	+ 2	17.12	- 2
1971	3,643,518	+12	16.27	- 5
1972	3,652,125	0	11.33	-30
1973	3,672,390	+ 1	8.36	-26
1974	3,184,267	-13	4.18	-50
1975	3,142,426	- 1	3.20	-23
1976	3,271,233	+ 4	3.67	+15
% Δ 1967-76	+39		-87	

SOURCE: Minnesota State Auditor, 1967-1976,

Perhaps the most amazing thing about Babbitt's municipal finance is its incredibly low city mill rate. In 1976, despite a 15 percent increase from the year before, the mill rate was only 3.67. Rates as high as 100 are not uncommon in equally populated cities. From its rate of 19.96 in 1967 the rate has shrunk 82 percent to its present 3.67.

This low mill rate translates to a very small burden on local taxpayers for its city government. Above it was noted that local residents pay only about 15 percent of total receipts. In 1973 when local taxes were their lowest only $6.79 was paid per thousand dollars of taxable valuation. In 1974 this figure was $28.78, considerably higher because of a combination of much higher tax collection and a dramatic 13 percent decrease in valuation.

SCHOOL DISTRICT FINANCE

Contrary to trends in other school districts in the region, the amount of state and federal aid to Babbitt's school has increased in the last few years. In 1972-1973, 67 percent of total receipts came from nonlocal resources. By 1974-1975 this had increased to 79 percent. As this percentage goes up the burden on local residents goes down.

The mill rate for the school district dropped from 15.15 in 1972-1973 to only 4.01 in 1974-1975.

As has happened across the Range, operating costs per pupil have increased, necessitating increased total expenditures. Per pupil unit expenditures and operating costs have increased 31 percent and 36 percent, respectively, the last two years (Table 14).

As shown in Table 14, professional services (of which education is a large part) is the second largest employment sector behind mining. Despite a staff cutback from 101 to 90 over the three years of data, total payroll has increased 8 percent from $1.07 million to $1.14 million. This is due to the increase in average salary from $10,555 in 1972-1973 to $12,763 in 1974-1975, a 21 percent gain.

Table 14. Babbitt school district disbursements, 1972 to 1975.

YEAR	PER PUPIL UNIT TOTAL EXPENDITURE	% CHANGE	PER PUPIL UNIT OPERATING COST	% CHANGE
1974-75	$1609	+15	$1212	+22
1973-74	1400	+14	996	+12
1972-73	1229		888	
1973-1975		+31		+36

SOURCE: Minnesota Department of Education, 1972-1975.

EDUCATION—SCHOOL DISTRICT 692

Facilities

Babbitt has three schools—J. William Bryant and Emanuelson Elementary, and J. F. Kennedy High School. These structures vary from less than 10 years old to almost 30 years old.

Enrollment

The kindergarten figures for the school district show a 10 percent decrease from 1970 to 1975 (Table 15). The elementary and secondary enrollment trends show a five-year decrease of 18.7 percent (Table 15). The district could absorb another 1000 students based upon current enrollment and capacity data (Table 16).

Table 15. Babbitt school district enrollment, 1970 to 1976.

SCHOOL DISTRICT 692	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	% Δ 5 YEARS
Kindergarten	104	109	96	75	78	94	- 9.6
Elementary & Secondary	1885	1898	1763	1673	1694	1411	-18.7

SOURCE: Personal communication with Babbitt school district superintendent, June, 1976.

Table 16. Babbitt school district capacity, student-teacher ratios, 1976.

SCHOOL DISTRICT 692	ENROLLMENT	CAPACITY	% UTILIZED	TEACHERS	S/T RATIO
Kindergarten	94	175	54	2	47:1
Elementary	536	1100	49	21	26:1
Secondary	875	1200	73	43	20:1

SOURCE: Personal communication with Babbitt school district superintendent, June, 1976.

GOVERNMENTAL STRUCTURE AND SERVICES

Form

Babbitt's municipal government is a mayor-council arrangement. The mayor is elected for a two-year term, while the four-member council is elected for a four-year term. The annually appointed city clerk is the chief administrator. Council meetings are scheduled for the first and third Tuesdays of each month.

The number of full-time city employees is eighteen, and the city attorney from Ely renders legal counsel to the city. The mayor and council appoint a Recreation Commission for youth activities and a Public Utilities Commission of three people who handle all matters concerning water and sewage. Additionally, the mayor and council appoint a nine-member Library Board and a nine-member Planning Commission which deals with short and long-range planning and expenditures. At present the Planning Commission is in the process of writing a zoning ordinance (Table 17).

Table 17. Babbitt governmental structure.

FORM	CITY COUNCIL MEMBERS	COUNCIL MEETING SCHEDULE	CITY ATTORNEY	# OF CITY EMPLOYEES (FULL-TIME)	PLANNING COMMISSION MEMBERS	PLANNING COMMISSION STAFF (FULL-TIME)	ZONING ORDINANCE	STATE BUILDING CODE ENFORCED
Mayor-Council	4	1st & 3rd Tuesday	Yes[1]	18	9	0	No	Yes

SOURCE: Personal communication with mayor of Aurora, June, 1976.

[1] 1. Ely 2. Aurora 3. Virginia

Public Safety Services

Tables 18 and 19 summarize Babbitt's fire and police services, respectively.

Table 18. Babbitt fire protection.

ORGANIZATION TYPE	PERSONNEL	CITY ISO CLASS[a]	PUMPERS GPM[b]	PUMPERS TANK	TANKERS	LADDER TRUCKS	INSPECTIONS PERFORMED	RUNS/YEAR INSIDE CITY	RUNS/YEAR OUTSIDE CITY
Volunteer	31	7	2-750	500	1-1000	0	Yes	2	2

SOURCE: Fire Service Information, Research and Education Center, University of Minnesota, 1976.

[a] Insurance Services Office Code; scale of 1(best) to 10(lowest).
[b] gallons per minute.

Table 19. Babbitt law enforcement.

TOTAL PERSONNEL			VEHICULAR RESOURCES		
FULL-TIME	PART-TIME	PERSONS PER PATROLMAN	PATROL VEHICLES	SPECIAL PURPOSE VEHICLES	JAIL
4	0	769	1	0	No

SOURCE: Arrowhead Regional Criminal Justice Plan, Data Section, 1976, ARDC.

PUBLIC AND COMMERCIAL UTILITIES

The following tables summarize Babbitt's public utilities, which include water, sewage treatment, landfill, and electrical services. There is no natural gas service to the community.

Table 20. Babbitt water supply.

OWNERSHIP	PLANT CLASS.	SERVICE CONNECTIONS	SOURCE	WELLS NUMBER	WELLS DEPTH	TREATMENT[a]
Municipal	C	630	Drilled Well	2 3	148' 160'	D,Fl,Cc

STORAGE CAPACITY ELEVATED 1000 gal	STORAGE CAPACITY GROUND 1000 gal	DAILY CONSUMPTION (1000 gal) MAXIMUM	DAILY CONSUMPTION (1000 gal) AVERAGE	STATE PLUMBING CODE
650	450	1074	280	Not Adopted

SOURCE: Minnesota Department of Health, Division of Environmental Health, June, 1976.

[a]Cc-Corrosion Control and Stabilization, D-Disinfection, Fl-Fluoridation.

Table 21. Babbitt sewage treatment.

PEAK CAPACITY	TYPE OF TREATMENT[a]	AVERAGE FLOW	% OF CAPACITY
500,000 gals/day	2	336,000 gals/day	67

SOURCE: Minnesota Pollution Control Agency, August, 1976.

[a]1. Primary (Physical)
2. Secondary (Biological)
3. Tertiary (Chemical)

Table 22. Babbitt landfill information.

NAME	SIZE (ACRES)	CAPACITY (CU YDS)	LIFE EXPECTANCY	OPERATOR	POPULATION SERVED
Northwoods Sanitary Landfill	44	571,400	10 yrs 1982	Al James	39,000

SOURCE: Minnesota Pollution Control Agency, Duluth Regional Office, June, 1976.

Table 23. Babbitt[a] electrical usage.

ELECTRICITY SOLD (GWH)[b]	SUMMER PEAK (MW)	WINTER PEAK (MW)	SUPPLIER	CUSTOMERS	
				RESIDENTIAL	NON-RESIDENTIAL
10.14	1.76	2.315	MP&L[c]	632	63

SOURCE: Minnesota Energy Agency, June, 1976.

[a] Community use only, no mining.
[b] One million kilowatts.
[c] Minnesota Power and Light.

OTHER COMMUNITY SERVICES

Transportation

There are no bus, rail, air, or taxi passenger services available in Babbitt. The state trunk highway system does not serve the community, but the county highway system does provide access.

Communication

All major network-affiliated television and radio signals are received in Babbitt and, in addition, Cable TV is available. The Babbitt Weekly News provides newspaper coverage for the community.

Health

The Babbitt Clinic Ltd., offering limited outpatient services only, is the only medical facility serving the community. There are two physicians and one dentist located in the community.

BIWABIK

DEMOGRAPHY

Population Trends and Prospects

During the past 30 years Biwabik has had one of the more markedly fluctuating populations of the study area communities. During the first taconite "boom" its population increased by almost 50 percent, followed by a decade in which the rate of population loss was the highest of the eight communities (Table 1).

Table 1. Biwabik population.

YEAR	POPULATION	% CHANGE
1950	1245	- 5 (from 1940)
1960	1836	+47
1970	1483	-19
1976[a]	1483	0

SOURCE: U. S. Bureau of Census, 1950-1970.

[a]Special census conducted August, 1976.

Recent taconite industry expansions were thought to have a positive influence on the town's growth, but 1976 data shows no net change in population since 1970. Local factors have constrained this expected growth. Housing shortages in Biwabik may have hampered growth or diverted it into the rural hinterlands, and the recent announcement of significant

Educational Characteristics

Because of its small size data on changes in the educational levels in Biwabik is not available previous to 1970. Tables 3 and 4 show the 1970 figures.

Table 3. Biwabik level of education.

	1970	
Median School Years Completed	12.2	
Number and % High School Graduates	461	54.8%
Number and % College Graduates	41	4.9%

SOURCE: U. S. Bureau of Census, 1970.

Table 4. Biwabik educational characteristics of the labor force pool, 1970.

(including Biwabik Twp)	MALE[a] NUMBER	MALE[a] PERCENT	FEMALE[b] NUMBER	FEMALE[b] PERCENT
Years of School Completed				
Less than high school	55	17.1	29	6.7
1-3 years high school	63	19.6	162	37.5
4 years high school	138	43.0	151	35.0
1 or more years college	65	20.2	90	20.8
Persons with less than 3 years of college completed[c]				
With vocational training	210	40.2	98	13.7
Without vocational training	313	59.8	618	86.3

SOURCE: U. S. Bureau of Census, 1970.

[a] Males aged 20-29.
[b] Females aged 15-44.
[c]

Residency

Figure 1 gives some idea of the residential stability in Biwabik as it was measured in 1970. The map shows: 1) the proportion of people over five years old who in 1970 still occupied the same residence where they had lived in 1965; and 2) the percentage of the 1970 Biwabik population which in 1965 had resided in one of the other designated places.

Biwabik shows a higher than average level of residents who had not changed houses between 1965 and 1970. The bulk of in-migrants to Biwabik were largely from other places in St. Louis County (a total of 14.6 percent). Negligible numbers came from outside the county or state.

Income

Census data for Biwabik prior to 1970 is not available due to the town's size. Biwabik made a strong gain in income per person who filed a Minnesota income tax return as it went from well below the state average in 1970 to well above in 1974 (Table 5).

Table 5. Biwabik income.

	MEDIAN FAMILY INCOME 1970	MINN. GROSS INCOME/FILER 1970	1974	% Δ
$ Amount	9206	6180	8494	+37
% of State Median	92.7	92.3	105.3	

SOURCES: U. S. Bureau of Census, 1970; Minnesota Department of Revenue, Individual Tax Report, 1970 and 1974.

Table 6. Biwabik poverty.

	% FAMILIES BELOW POVERTY THRESHOLD 1970[a]
Biwabik	6.8
Minnesota	8.2

SOURCE: U. S. Bureau of Census, 1970.

[a]An index based on a total of family money income which is less than 3 times the cost of an adequate diet ("economy food plan"). In 1970 the average threshold for a nonfarm family of four headed by a male was $3745.

LABOR FORCE

No comparison of Biwabik's labor force overtime is possible because of data limitations before 1970. By that year, however, data shows that there was a relatively low labor participation rate for men, suggesting that a considerable portion of the labor force (persons 16+) was over 65 years of age (Table 7). Females showed a participation rate which was also low for the study area. In 1970 almost one-third (32 percent) of the total population was considered part of the labor force.

Table 8. Biwabik employment for selected industries.

INDUSTRY	1970 #	1970 %
Mining	341	46.6
Manufacturing	82	11.4
Retail	70	9.6
Education	58	7.9

SOURCE: U. S. Bureau of Census, 1970.

The data for employment by occupation shows a high percentage of workers in the craftsmen, foremen, and kindred classifications. Other than this sector there is a fairly even, diverse employment mix.

Table 9. Biwabik employment for selected occupations.

OCCUPATION	1970 #	1970 %
Craftsmen, Foremen, & Kindred	240	32.8
Operatives, except Transport	126	17.2
Professional, Technical & Kindred	66	9.0
Service Workers	79	10.8
Clerical & Kindred	66	9.0

SOURCE: U. S. Bureau of Census, 1970.

BUSINESS ACTIVITY

Gross sales, as reported by the Minnesota Department of Revenue, give some indication of the business activity of Biwabik. Though the data are subject to error due to misinterpretation of Department of Revenue definitions, it is an excellent indicator of overall economic activity in the community. Table 10 shows that gross sales in Biwabik have more than tripled from 1969 to 1975, and sales per filer have nearly tripled.

Table 10. Biwabik business activity, 1969 to 1975.

	GROSS SALES	FILERS	SALES/FILER
1969	$2,514,999	36	$ 69,861
1971	3,967,862	39	101,740
% Δ 69-71	+58		+46
1973	4,191,644	40	104,791
% Δ 71-73	+ 6		+ 3
1975	7,862,558	41	191,770
% Δ 73-75	+88		+83
% Δ 69-75	+213	+14	+175

SOURCE: Minnesota Department of Revenue.

The call report dated March 31, 1976, presents a picture of the resources available to the patrons of the Biwabik State Bank (Table 11).

The Biwabik bank's ratio of loans to assets, which may become important should the demand for credit increase significantly as development occurs, is 47 percent.

There are no credit unions or savings and loan institutions in Biwabik.

Table 11. Biwabik bank data.

Deposits	$3,832,058
Assets	4,110,803
Liabilities	3,870,823
Total Loans	1,912,037

SOURCE: Federal Deposit Insurance Corporation, 1976.

MUNICIPAL GOVERNMENT FINANCE

Revenues

The pattern seen in other study communities of a decreasing tax burden on local residents and an increasing percentage of total municipal government receipts from state-shared taxes (generated from taconite taxes) and federal revenue-sharing sources also holds true in Biwabik.

Local taxes for local government have decreased both absolutely and in terms of percentage of total receipts. From 1965 to 1974 local taxes have gone from $117,850 to $78,633, a 33 percent reduction. In 1965 local tax revenue made up 74 percent of total receipts of $159,504. By 1974 this percentage had been reduced to 28 percent of receipts of $281,591.

Concurrently, the percentage of receipts coming from state- and federal-shared taxes has increased enormously over time. In 1965, 26 percent of total receipts came from these sources. By 1974 state- and federal-shared taxes made up two-thirds of receipts ($187,569 of $281,591).

Table 7. Biwabik labor force characteristics.

	1970
Population	1483
Labor Force	
Male	355
Female	120
TOTAL	475
Employed Labor Force	
Male	344
Female	120
TOTAL	464
Percent Unemployed	2.3
Percent Aged 16 and over in Labor Force	
Male	73.9
Female	22.5

SOURCE: U. S. Bureau of Census, 1970.

EMPLOYMENT

The 1970 Census includes employment data for Biwabik Township as well as the municipality of Biwabik, so that the area of consideration is considerably larger than the city of Biwabik itself. Nonetheless, since the structure of employment is of more importance than the absolute size of employment, the data is useful (Table 8).

Employment by industry shows that mining once again dominates the job structure. In addition, manufacturing employment is greater than the number of jobs in the retail sector.

taconite deposits near and under the present city site presents a familiar Iron Range dilemma to the townspeople of Biwabik—the possibility that the whole town might have to relocate.

Biwabik's age and sex distribution (Table 2) shows a three-decade pattern of relative balance among the various age groups, with no one group generally predominating. Its percentage of older citizens has not changed markedly over the 30 years.

Table 2. Biwabik population breakdown.

YEAR	TOTAL POPULATION	FEMALE	MALE	M/F RATIO	% 65+	% >20	DEPENDENCY RATIO
1950	1245	598	647	1.08	12	33	76
1960	1836	915	921	1.01	10	39	98
1970	1483	762	721	0.95	12	39	102
1976	1483	739	744	1.01	13	34	87

SOURCE: U. S. Bureau of Census, 1950-1976.

The dependency ratio relates the percentage of people over 65 and under 20 to that of the supporting ages—20 to 64. The growth in the dependency ratio between 1950 and 1970 indicates that the population growth of that same period resulted in a rapid increase in the number of people less than 20 years old as families of child-rearing age came to Biwabik. Since 1970 this dependency ratio has diminished, largely as a result of the maturing of children of the 1950 to 1970 surge.

Disbursements

In the five years from 1970 to 1974 total disbursements by the Biwabik municipal government have been less than total receipts, in effect, adding to a cash reserve for the municipal government each year. In four of the five years previous to that, however, the city registered a deficit.

According to figures for 1965 to 1974 total disbursements actually declined nine percent during that time period. This is due to an unusually high level of disbursements in 1965 and large surplus years previous to 1974. During the ten years the lowest level of disbursements was $138,294 in 1970, and the highest was $255,291 in 1973.

Taxable Valuation

From 1967 to 1976 Biwabik experienced a 65 percent increase in taxable valuation. More than half the increase was registered in 1969 when valuation went up 38 percent (Table 12).

The increasing valuation, when coupled with the increase in state- and federal-shared taxes, has allowed Biwabik to substantially relieve its local taxpayers of their tax burden. As a result the municipal mill rates have been halved in ten years. In 1965 Biwabik taxpayers paid $111.87 per thousand dollars of taxable valuation towards municipal government. By 1974 this figure had decreased to $48.23 per thousand dollars of valuation.

Table 12. Biwabik taxable valuation, mill rates, 1967 to 1976.

YEAR	TAXABLE VALUATION	% CHANGE	CITY MILL RATE	% CHANGE
1967	$1,045,374		110.84	+ 3
1968	1,041,063	0	113.66	+ 3
1969	1,433,214	+38	84.52	-26
1970	1,427,955	0	84.88	0
1971	1,614,129	+13	79.46	- 6
1972	1,601,856	- 1	61.57	-23
1973	1,619,555	+ 2	68.56	+11
1974	1,630,438	+ 1	71.67	+ 5
1975	1,555,128	- 5	61.39	-14
1976	1,728,086	+11	55.50	-10
% Δ 1967-76	+65		-50	

SOURCE: Minnesota State Auditor, 1967-1976.

SCHOOL DISTRICT FINANCE

In order to cover steadily rising operating costs and total expenditures, the school district mill rate has had to increase from 22.24 in 1972-1973 to 26.13 in 1974-1975. In addition to per pupil increases in expenditures and operating costs (Table 13), the absolute number of pupil units (as defined by the Minnesota Department of Education) had also increased. Additionally, average teacher salaries have increased 19 percent in the last 2 years.

Table 13. Biwabik school district disbursements, 1972 to 1975.

YEAR	PER PUPIL UNIT TOTAL EXPENDITURE	% CHANGE	PER PUPIL UNIT OPERATING COST	% CHANGE
1974-75	$1254	+21	$1002	+13
1973-74	1039	+ 4	885	+ 4
1972-73	997		850	
1973-1975		+26		+18

SOURCE: Minnesota Department of Education, 1972-1975.

Total payroll, which equaled $516,460 in 1972-1973 and made up 52 percent of total expenditures for the year ($995,006), had increased to $602,784 in 1974-1975. This represented 47 percent of total expenditures of $1,271,556.

EDUCATION—SCHOOL DISTRICT 693

Facilities

Biwabik has two schools—Bray Elementary, and Horace Mann High School. These school structures vary from less than 20 years old to over 60 years old.

Enrollment

The kindergarten enrollment figures for the school district show a three percent increase from 1970 to 1975 (Table 14). The elementary and secondary enrollment trends show a five-year increase of 0.4 percent (Table 14).

Of the seven school districts in the report Biwabik is the only one showing any increase, albeit slight. The district could absorb another 400 students based upon current enrollment and capacity data (Table 15).

Table 14. Biwabik school district enrollment, 1970 to 1976.

SCHOOL DISTRICT 693	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	% Δ 5 YEARS
Kindergarten	62	59	48	50	59	64	+3.2
Elementary & Secondary	797	822	796	791	819	805	+0.4

SOURCE: Personal communication with Biwabik school district superintendent, June, 1976.

Table 15. Biwabik school district capacity, student-teacher ratios, 1976.

SCHOOL DISTRICT 693	ENROLLMENT	CAPACITY	% UTILIZED	TEACHERS	S/T RATIO
Kindergarten	64	85	75	1½	43:1
Elementary	334	525	64	14	24:1
Secondary	471	700	67	26	18:1

SOURCE: Personal communication with Biwabik school district superintendent, June, 1976.

GOVERNMENTAL STRUCTURE AND SERVICES

Form

Biwabik's municipal government is a mayor-council arrangement. The mayor is elected for a two-year term, while the three-member council is elected for a four-year term. The clerk-treasurer, elected every four years, is the chief administrator. Council meetings are scheduled for the first and fifteenth of each month. Biwabik enforces the State Building Code, and the city attorney from Aurora renders legal counsel to the city. The number of city employees is eleven. In May, 1976, the city established a ten-member planning commission which helped write a zoning ordinance (Table 16). The zoning ordinance includes, but is not limited, to the sections listed in Table 17.

Table 16. Biwabik governmental structure.

FORM	CITY COUNCIL MEMBERS	COUNCIL MEETING SCHEDULE	CITY ATTORNEY[a]	# OF CITY EMPLOYEES (FULL-TIME)	PLANNING COMMISSION MEMBERS	PLANNING COMMISSION STAFF (FULL-TIME)	ZONING ORDINANCE	STATE BUILDING CODE ENFORCED
Mayor-Council	3	1st & 15th	Yes	11	10	0	Yes	Yes

SOURCE: Personal communication with mayor of Biwabic, June, 1976.

[a]Also acts as Aurora's city attorney.

Table 17. Biwabik zoning ordinance sections.

ZONING DISTRICTS	MOBILE HOMES	MINIMUM LOT SIZE	SUBDIVISION REGULATIONS	SEPTIC TANKS	BUILDING PERMITS	AMENDMENT PROVISION
X	X	X			X	X

SOURCE: Biwabic zoning ordinance.

Public Safety Services

Tables 18 and 19 summarize Biwabik's fire and police services, respectively.

Table 18. Biwabik fire protection.

ORGANIZATION TYPE	PERSONNEL	CITY ISO CLASS[a]	PUMPERS GPM[b]	PUMPERS TANK	TANKERS	LADDER TRUCKS	INSPECTIONS PERFORMED	RUNS/YEAR INSIDE CITY	RUNS/YEAR OUTSIDE CITY
Volunteer	28	6	1-750 1-500	500 500	1-5000	0	Yes	13	3

SOURCE: Fire Service Information, Research and Education Center, University of Minnesota, 1976.

[a] Insurance Services Office Code; scale of 1(best) to 10(lowest).
[b] gallons per minute.

Table 19. Biwabik law enforcement.

TOTAL PERSONNEL			VEHICULAR RESOURCES		
FULL-TIME	PART-TIME	PERSONS PER PATROLMAN[a]	PATROL VEHICLES	SPECIAL PURPOSE VEHICLES[b]	JAIL
3	1	494	1	1	Yes

SOURCE: Arrowhead Regional Criminal Justice Plan, Data Section, 1976, ARDC.

[a] Full-time only.
[b] Snowmobile, boats, motorcycles, etc.

PUBLIC AND COMMERCIAL UTILITIES

The following tables summarize Biwabik's utility services.

Table 20. Biwabik water supply.

OWNERSHIP	PLANT CLASS.	SERVICE CONNECTIONS	SOURCE	WELLS NUMBER	WELLS DEPTH	TREATMENT[a]
Municipal	C	539	Drilled Well	1 1	278' 262'	D,Fl,Cc

STORAGE CAPACITY ELEVATED 1000 gal	STORAGE CAPACITY GROUND 1000 gal	DAILY CONSUMPTION (1000 gal) MAXIMUM	DAILY CONSUMPTION (1000 gal) AVERAGE	STATE PLUMBING CODE
250	900[b]	232	170	Adopted w/permits & Inspections

SOURCE: Minnesota Department of Health, Division of Environmental Health, June, 1976.

[a]Cc-Corrosion Control and Stabilization, D-Disinfection, Fl-Fluoridation.

[b]Standpipe.

Table 21. Biwabik sewage treatment.

PEAK CAPACITY	TYPE OF TREATMENT[a]	AVERAGE FLOW	% OF CAPACITY
172,500 gals/day	2	290,000 gals/day	168

SOURCE: Minnesota Pollution Control Agency, August, 1976.

[a]1. Primary (Physical)
2. Secondary (Biological)
3. Tertiary (Chemical)

Table 22. Biwabik landfill information.

NAME	SIZE (ACRES)	CAPACITY (CU YDS)	LIFE EXPECTANCY	OPERATOR	POPULATION SERVED
Hudson Sanitary Landfill	15	126,000	10 yrs 1983	Hudson Sanitary Landfill Authority	7250

SOURCE: Minnesota Pollution Control Agency, Duluth Region Office, June, 1976.

Table 23. Biwabik[a] electrical usage.

ELECTRICITY SOLD (GWH)[b]	SUMMER PEAK (MW)	WINTER PEAK (MW)	SUPPLIER	CUSTOMERS	
				RESIDENTIAL	NON-RESIDENTIAL
6.7	.96	1.35	MP&L[c]	547	70

SOURCE: Minnesota Energy Agency, June, 1976.

[a] Community use only, no mining.
[b] One million kilowatts.
[c] Minnesota Power and Light.

Table 24. Biwabik[a] natural gas usage.

SUPPLIER	MINIMUM LOAD (MCF/DAY)	PEAK CAPACITY (MCF/DAY)	NUMBER OF INTERRUPTIBLE USERS
Inter-City Gas Ltd, Inc.	19	496	0

TOTAL 1975 USAGE (MCF)	CUSTOMERS	
	RESIDENTIAL	NON-RESIDENTIAL
60,775	260	21

SOURCE: Inter-City Gas Ltd, Inc., July, 1976.

[a]Residential and commercial only, no mining.

OTHER COMMUNITY SERVICES

Transportation

Inter-city bus passenger service is available, but there are no air, rail, or taxi passenger services provided in Biwabik. State Highway 135 runs through the center of the community.

Communication

All major network-affiliated television and radio signals are received in Biwabik. The Biwabik Times is a weekly newspaper serving the community.

Health

The community has no medical facilities or any resident practicing physicians or dentists.

DEMOGRAPHY

Population Trends and Prospects

Due primarily to out-migration of the supporting age group (20 to 40), Ely has steadily lost population over the past 30 years (Table 1).

Table 1. Ely population.

YEAR	POPULATION	% CHANGE
1950	5474	- 8 (from 1940)
1960	5438	- 1
1970	4904	-10

SOURCE: U. S. Bureau of Census, 1950-1970.

The prospects of copper-nickel development could alter this picture. Depending on the rate of progress in the new industry, if it is established, Ely could be expected to gain rather than lose substantial population.

Several features of Ely's age-sex distribution are highlighted in Table 2. Most striking is the growth of the over-65 age sector during the two decades. This is the principal factor in the rapid rise in Ely's dependency ratio.

Table 2. Ely population breakdown.

YEAR	TOTAL POPULATION	FEMALE	MALE	M/F RATIO	% 65+	% >20	DEPENDENCY RATIO
1950	5474	2606	2868	110	8	32	67
1960	5438	2631	2787	105	11	35	85
1970	4904	2483	2421	98	15	33	93

SOURCE: U. S. Bureau of Census, 1950-1970.

Educational Characteristics

The level of education in Ely has grown steadily from 1950 to 1970, according to the three indicators in Table 3. The percentage of high school graduates in the population aged 25 and over has shown the most dramatic advance, however, increasing by almost 20 percentage points in that period.

Table 3. Ely level of education.

	1950		1960		1970	
Median School Years Completed	9.6		10.7		12.1	
Number and % High School Graduates	1125	32.7%	1320	40.1%	1584	51.9%
Number and % College Graduates	175	5.1%	171	5.2%	197	6.5%

SOURCE: U. S. Bureau of Census, 1950-1970.

Table 4 shows the educational background of persons in Ely in the indicated age groups, which would comprise a majority of the potential labor force in Ely.

Table 4. Ely educational characteristics of the labor force pool, 1970.

	MALE[a]		FEMALE[b]	
	NUMBER	PERCENT	NUMBER	PERCENT
Years of School Completed				
Less than high school	61	9.0	25	3.4
1-3 years high school	120	17.7	240	32.4
4 years high school	264	38.9	277	37.4
1 or more years college	234	34.5	198	26.8
Persons with less than 3 years of college completed[c]				
With vocational training	239	16.0	97	6.5
Without vocational training	1237	84.0	1398	93.5

SOURCE: U. S. Bureau of Census, 1970.

[a]Males aged 20-29.
[b]Females aged 15-44.
[c]Persons aged 16-64.

Residency

Figure 1 gives some idea of the residential stability in Ely as it was measured in 1970. The map shows: 1) the proportion of people over five years old who, in 1970, still occupied the same residence where they had lived in 1965; and 2) the percentage of the 1970 Ely population which in 1965 had resided in one of the other designated places.

Ely shows an average number of five-year, same-house residents (for the study group of communities), with 72.3 percent of persons over five years

old having resided in the same house in both 1965 and 1970. St. Louis County, the north central states, and Minnesota, in that order, also contributed significantly as former places of residence of the newcomers.

Income

Average family incomes in Ely from 1950 to 1970 showed a growing failure to increase at the same rate as those for the state, declining from 100.7 percent of state levels in 1950 to 78.2 percent by 1970 (Table 5). Gross Minnesota income per filer (from Minnesota Department of Revenue data) shows that Ely is significantly below the state average and holding steadily.

Table 5. Ely income.

	MEDIAN FAMILY INCOME					MINN. GROSS INCOME/FILER		
	1950	1960	% Δ	1970	% Δ	1970	1974	% Δ
$ Amount	2701	5073	+88	7770	+53	5671	7254	+28
% of State Median	100.7	91.0		78.2		90.1	89.9	

SOURCES: U. S. Bureau of Census, 1950-1970; Minnesota Department of Revenue, 1970-1974.

Table 6 shows that despite average incomes below the state level, Ely has had fewer families than the state average below the poverty threshold over the 1950 to 1970 period.

Table 6. Ely poverty.

	% FAMILIES BELOW POVERTY THRESHOLD		
	1950[a]	1960[b]	1970[c]
Ely	25.8	19.4	6.6
Minnesota	36.6	21.4	8.2

SOURCE: U. S. Bureau of Census, 1950-1970.

[a]Families with income less than $2000.
[b]Families with income less than $3000.
[c]An index based on a total of family money income which is less than 3 times the cost of an adequate diet ("economy food plan"). In 1970 the average threshold for a nonfarm family of four headed by a male was $3745.

LABOR FORCE

Ely's population decline between 1950 and 1970 is mirrored by a decline in the size of its labor force, despite significant gains in participation by women (Table 7). Labor force as a percentage of the population also declined in that period, from 39.0 to 34.6 percent. Reflecting the growth displacement of miners associated with the deteriorating natural ore industry in Ely, the unemployment rates for the three census dates show a rapidly rising trend. The decreasing rate of participation in the male labor force is probably the result of Ely's aging population; over 50 percent of those aged 16 and over who are not in the labor force are men over 65 years of age.

Table 7. Ely labor force characteristics.

	1950	1960	% Δ	1970	% Δ
Population	5474	5438	- 1	4904	-10
Labor Force					
Male	1754	1533	-13	1163	-24
Female	381	480	+26	535	+11
TOTAL	2135	2013	- 6	1698	-16
Employed Labor Force					
Male	1676	1418	-15	1055	-26
Female	368	436	+18	479	+10
TOTAL	2044	1854	- 9	1534	-17
Percent Unemployed	4.3	7.9	+84	9.7	+23
Percent Aged 16 and over in Labor Force					
Male	81.4	74.2	- 9	66.6	-10
Female	19.6	24.2	+23	28.9	+19

SOURCE: U. S. Bureau of Census, 1950-1970.

Labor Force = persons 14+ (16+ in 1970) employed, unemployed, or members of the Armed Forces.

EMPLOYMENT

Ely's population employment base between 1950 and 1970 shows a gradual diversification, and by 1970 a decrease in dependence on mining (Figure 2). While the actual number of persons employed in mining declined a little in 1960 (although mining as a percentage of the total increased), a large absolute drop had occurred by 1970 (-320 persons). Four sectors gained percentage-wise in employment between 1960 and 1970 (professional services, wholesale-retail, manufacturing, and construction); and all but the professional services category showed numerical increases as well. As a sign, perhaps, of Ely's growing benefits from the tourist industry its retail sector has grown to the point where it may begin to challenge mining as the major employer.

By 1970 Ely's employment structure was dominated by three sectors: mining, retail, and professional services (primarily education)(Table 8).

Table 8. Ely employment for selected industries.

INDUSTRY	1950 #	1950 %	1960 #	1960 %	% Δ 1950-60	1970 #	1970 %	% Δ 1960-70
Mining	851	41.9	848	45.9	- 1	527	34.4	-38
Retail	327	16.1	268	14.5	-18	399	26.0	+49
Professional Services	205	10.1	255	14.0	+26	244	25.9	- 5

SOURCE: U. S. Bureau of Census, 1950-1970.

By 1970 employment by occupation revealed a relatively diverse structure (Table 9).

Table 9. Ely employment for selected occupations.

OCCUPATION	1970 #	1970 %
Craftsmen, Foremen, & Kindred	369	24.1
Operatives, except Transport	224	14.6
Service Workers, except Household	214	14.0
Professional, Technical & Kindred	193	12.6

SOURCE: U. S. Bureau of Census, 1970.

BUSINESS ACTIVITY

Perhaps the best annually available indicator of business activity in a community is gross sales (available from the Minnesota Department of Revenue Sales and Use Tax reports). These reports give total gross sales from those establishments which file and pay sales and use tax. The definitions are subject to misinterpretation but do remain constant so that the data is useful to change-over-time analysis (Table 10).

Table 10. Ely business activity, 1969 to 1975.

	GROSS SALES	FILERS	SALES/FILER
1969	$10,078,704	174	$ 57,924
1971	15,277,198	196	77,945
% Δ 69-71	+52		+35
1973	20,170,557	231	87,318
% Δ 71-73	+32		+12
1975	26,586,186	227	117,119
% Δ 73-75	+32		+34
% Δ 69-75	+164	+30	+102

SOURCE: Minnesota Department of Revenue.

From 1969 to 1975 gross sales increased 164 percent. During this time period the number of filers increased 30 percent, and sales per filer increased 102 percent.

The March 31, 1976, call report of Ely's only bank, the First National Bank of Ely, lists this breakdown in Table 11.

Table 11. Ely bank data, 1976.

Deposits	$21,356,000
Assets	23,197,000
Liabilities	21,681,000
Total Loans	12,099,000
Total Debits[a] (previous 12 mos.)	48,964,000

SOURCE: Regional Administrator of National Banks.

[a]Federal Reserve Bank, 1976.

Total loans make up 57 percent of assets. Total bank debits for the previous 12 months increased 17 percent from the year before.

In Ely there is a branch of the Queen City Federal Savings and Loan which is headquartered in Virginia. There is also the Ely area Credit Union, with assets of $1,700,000 and the Ely Steel Workers Credit Union, with assets of $516,000 as of December, 1976. This information is available from the Savings League of Minnesota.

MUNICIPAL GOVERNMENT FINANCE

Revenues

The pattern of municipal revenues over the past ten years shows a decreasing burden on local taxpayers, an increase in the percentage of total receipts from state-shared taxes and a large contribution to the Ely budget from federal grants and revenue sharing.

In the period between 1965 and 1974 the percentage that local taxes made of total receipts decreased from 41.4 percent to 4.4 percent. Total receipts increased from $1,290,440 in 1965 to $2,701,586 in 1974 while local taxes decreased from $534,819 to $118,137. The 1974 taxes were 22 percent of the taxes paid by Ely residents in 1965.

Meanwhile, state-shared taxes (originating on the most part from taxes on taconite) have increased more than 16 times from $17,754 (1.4 percent of total receipts) in 1965 to $291,180 (10.8 percent of total receipts) in 1974.

From 1965 to 1974 the city of Ely received a total of $3,193,072 in federal grants. This is an average of $319,302 per year. During this period there was an average of $4,096,933 in federal grants given to cities in Minnesota in Ely's size class, 2500 to 10,000 population. There were 103 cities in this class after 1970 and 106 before. Using 105 as the average, the average federal grant to cities of this size was $39,000. The average Ely grant was eight times as large. It must be noted, however, that a large part of Ely's total grants are tied up in one project, a new sewage treatment plant.

An interesting feature of Ely's pattern of municipal government finance is that since 1971 the city has had no municipal indebtedness. In fact, in the last ten years there has been only a single refunding debt which was retired in 1971.

Disbursements

In five of the ten years surveyed total disbursements have been greater than total receipts. Over the past few years a large portion of total expenditures has gone toward sanitation and waste removal. In 1972, 83 percent and in 1973, 50 percent of total expenditures went toward this end.

Since 1970 the sewage treatment plant has been the significant event in the city's financial affairs. It has placed a burden on the city, in spite of federal aid, at the expense of other departments and projects.

Taxable Valuation

In 1967 the taxable valuation of Ely was $6,907,041. From that point it decreased rapidly to a 1969 low of $3,412,608, a loss of 49 percent. From the low in 1969 valuation has increased each year to 1976's $5,248,500, a 54 percent increase from 1969.

Mill rates have followed an inverse pattern, increasing from 1967 to 1970 and plunging rapidly from 1970 to 1975. The decreases reflect the lessening tax burden on local taxpayers. The rate made a big jump in 1976, ending the downward trend.

The result of this pattern is that the effective tax rate (taxes paid by population per thousand dollars of valuation) has gone from $56.57 in 1965 to $25.70 in 1974, a 55 percent reduction.

Table 12. Ely taxable valuation, mill rates, 1967 to 1976

YEAR	TAXABLE VALUATION	% CHANGE		CITY MILL RATE	% CHANGE	
1967	$6,907,041			76.57		
1968	5,229,606	-24	-49	90.21	+18	
1969	3,412,608	-35		98.73	+ 9	
1970	3,427,593	0		98.99	0	
1971	4,053,300	+15		83.86	-15	
1972	4,138,830	+ 2		52.54	-37	
1973	4,501,025	+ 9	+54	39.63	-25	-88
1974	4,595,897	+ 2		31.39	-21	
1975	5,172,227	+13		21.85	-30	
1976	5,248,500	+ 1		47.95	+119	

SOURCE: Minnesota State Auditor, 1967-1976.

SCHOOL DISTRICT FINANCE

As opposed to city tax levies, which have been decreasing over the past years, the school district tax levy has increased in each of the last four years. In spite of the increasing tax base over this period the mill rates for the school district have jumped from 53.60 in 1973 to 75.45 in 1976, an increase of 41 percent.

Table 13. Ely school district tax levy, mill rates, 1973 to 1976.

YEAR	SCHOOL DISTRICT TAX LEVY	SCHOOL DISTRICT MILL RATE
1973	$241,255	53.60
1974	280,028	60.93
1975	383,314	74.11
1976	395,999	75.45

SOURCE: Minnesota Department of Revenue.

This pattern is a result, perhaps, of two causes. In 1972-1973 state and federal sources made up 80 percent of total receipts. In 1973-1974 and 1974-1975 this percentage had decreased to 74 percent and 75 percent, respectively.

At the same time operating costs and total expenditures per pupil unit have steadily increased.

Table 14. Ely school district disbursements, 1972 to 1975.

YEAR	PER PUPIL UNIT TOTAL EXPENDITURE	% CHANGE	PER PUPIL UNIT OPERATING COST	% CHANGE
1974-75	$1277	+15	$1077	+16
1973-74	1115	+ 8	928	+ 8
1972-73	1034		861	
1973-1975		+24		+25

SOURCE: Minnesota Department of Education, 1972-1975.

Also, average teacher salaries have increased so that in spite of fewer faculty, total payroll has increased from $1,076,118 in 1972-1973 to $1,156,827 in 1974-1975, an 8 percent rise. The average salary was $11,094 in 1972-1973 and $12,439 in 1974-1975.

EDUCATION—SCHOOL DISTRICT 696

Facilities

Ely has five schools—Kennedy Elementary and Lincoln Elementary (which is now closed), Washington Junior High School, Memorial High School, and Vermilion Community College. All structures, except the community college, are more than 20 years old. The original community college opened in 1922, but the present facility was built in 1970.

Enrollment

The kindergarten enrollment figures for the school district show a 7 percent increase from 1970 to 1975, and the elementary and secondary enrollment trends show a five-year decrease of 9.2 percent (Table 15). The district could absorb an additional 1000 students based upon current enrollment and capacity data (Table 16).

Table 15. Ely school district enrollment, 1970 to 1976.

SCHOOL DISTRICT 696	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	% Δ 5 YEARS
Kindergarten	106	112	100	87	108	113	+6.6
Elementary & Secondary	1624	1630	1475	1447	1583	1475	-9.2

SOURCE: Personal communication with Ely school district superintendent, June, 1976.

Table 18. Ely zoning ordinance sections.

ZONING DISTRICTS	MOBILE HOMES	MINIMUM LOT SIZE	SUBDIVISION REGULATIONS	SEPTIC TANKS	BUILDING PERMITS	AMENDMENT PROVISION
X	X	X	X		X	X

SOURCE: Ely zoning ordinance.

Public Safety Services

Ely's fire and police services are summarized in Tables 19 and 20.

Table 19. Ely fire protection.

ORGANIZATION TYPE	PERSONNEL	CITY ISO CLASS[a]	PUMPERS GPM[b]	PUMPERS TANK	TANKERS	LADDER TRUCKS	INSPECTIONS PERFORMED	RUNS/YEAR INSIDE CITY	RUNS/YEAR OUTSIDE CITY
Paid/ Volunteer	4/22	6	1-1000 1-1000 1-500	500 150	2-1000	1	Yes	42	17

SOURCE: Fire Service Information, Research and Education Center, University of Minnesota, 1976.

[a] Insurance Services Office Code; scale of 1(best) to 10(lowest).
[b] gallons per minute.

Table 20. Ely law enforcement.

TOTAL PERSONNEL			VEHICULAR RESOURCES		
FULL-TIME	PART-TIME	PERSONS PER PATROLMAN[a]	PATROL VEHICLES	SPECIAL PURPOSE VEHICLES	JAIL
8	0	613	1	0	Yes

SOURCE: Arrowhead Regional Criminal Justice Plan, Data Section, 1976, ARDC.

[a] Has an auxiliary snowmobile patrol.

PUBLIC AND COMMERCIAL UTILITIES

The following tables summarize Ely's water, sewage, landfill, and electrical services. There is no natural gas service to the community.

Table 21. Ely water supply.

OWNERSHIP	PLANT CLASS.	SERVICE CONNECTIONS	SOURCE	WELLS NUMBER	WELLS DEPTH	TREATMENT[a]
Municipal	C	1854	Burntside Lake	NA	NA	D,A,F,T,Am, Se,Sl,Cc

STORAGE CAPACITY ELEVATED 1000 gal	STORAGE CAPACITY GROUND 1000 gal	DAILY CONSUMPTION (1000 gal) MAXIMUM	DAILY CONSUMPTION (1000 gal) AVERAGE	STATE PLUMBING CODE
300	1500	1500	750	Adopted

SOURCE: Minnesota Department of Health, Division of Environmental Health, June, 1976.

[a]A-Aeration, Am-Ammoniation, Cc-Corrosion Control and Stabilization, D-Disinfection, F-Filtration, Fl-Fluoridation, Se-Sedimentation, T-Taste and Odor.

Table 22. Ely sewage treatment.

PEAK CAPACITY	TYPE OF TREATMENT[a]	AVERAGE FLOW	% OF CAPACITY
1,500,000 gals/day	3	930,000 gals/day	62

SOURCE: Minnesota Pollution Control Agency, August, 1976.

[a]1. Primary (Physical)
2. Secondary (Biological)
3. Tertiary (Chemical)

Table 23. Ely landfill information.

NAME	SIZE (ACRES)	CAPACITY (CU YDS)	LIFE EXPECTANCY	OPERATOR	POPULATION SERVED
Northwoods Sanitary Landfill	44	571,400	10 yrs 1982	Al James	39,000

SOURCE: Minnesota Pollution Control Agency, Duluth Regional Office, June, 1976.

Table 24. Ely[a] electrical usage.

ELECTRICITY SOLD (GWH)[b]	SUMMER PEAK (MW)	WINTER PEAK (MW)	SUPPLIER	CUSTOMERS RESIDENTIAL	CUSTOMERS NON-RESIDENTIAL
22.4	5.214	5.118	MP&L[c]	2000	128

SOURCE: Minnesota Energy Agency, June, 1976.

[a]Community use only, no mining.
[b]One million kilowatts.
[c]Minnesota Power and Light.

OTHER COMMUNITY SERVICES

Transportation

Inter-city bus passenger service is available, but there are no rail or taxi passenger services provided in Ely. Air passenger service is available at Ely Municipal Airport. Mesaba Airlines provides daily scheduled flights to Duluth International Airport. State Highway 1 passes through the community and State Highway 169 ends in Ely.

Communication

All major network-affiliated television and radio signals are received in Ely. The Ely Echo, Ely Miner, both weekly papers, and Mesabi Daily News provide newspaper coverage for the community.

Health

Facilities--Ely-Bloomenson Hospital, a 45-bed facility offering convalescent and nursing care, is located in Ely, as is the Ely Medical Medical Center Ltd. As of October 5, 1976, a branch of the Range Mental Health Center opened in the Ely-Bloomenson Hospital.

Table 25. Ely hospital information.

STAFF			OCCUPANCY		CONVALESCENT AND NURSING CARE			
			BED	OCCUPANCY	STAFF		OCCUPANCY	
PHYSICIANS	NURSES[a]	OTHER	CAPACITY	RATE	NURSES[a]	OTHER	CAPACITY	RATE
7	9	77	45	66%	6	24	100	98%

SOURCE: Minnesota Department of Health, Division of Health Facilities, June, 1976.

[a]RNs and LPNs

Professionals--The hospital has a staff complement of seven physicians and nine nurses, while the medical clinic has a separate staff of five physicians. There are a total of four dentists providing dental health care to the community. Two veterinarians serve the community.

Table 16. Ely school district capacity, student-teacher ratios, 1976.

SCHOOL DISTRICT 696	ENROLLMENT	CAPACITY	% UTILIZED	TEACHERS	S/T RATIO
Kindergarten	113	180	63	2	57:1
Elementary	643	1080	60	34	19:1
Secondary	832	1344	62	34	25:1

SOURCE: Personal communication with Ely school district superintendent, June, 1976.

GOVERNMENTAL STRUCTURE AND SERVICES

Form

Ely's municipal government is a mayor-council arrangement. The mayor is elected for a two-year term, and the six-member council is also elected for a two-year term (Table 17). The annually appointed clerk-treasurer is the chief administrator. The city has a six-member advisory planning commission and a zoning ordinance which includes, but is not limited to, the designated sections in Table 18.

Table 17. Ely governmental structure.

FORM	CITY COUNCIL MEMBERS	COUNCIL MEETING SCHEDULE	CITY ATTORNEY	# OF CITY EMPLOYEES (FULL-TIME)	PLANNING COMMISSION MEMBERS	PLANNING COMMISSION STAFF (FULL-TIME)	ZONING ORDINANCE	STATE BUILDING CODE ENFORCED
Mayor-Council	6	1st & 3rd Tuesday	Yes	65	6	0	Yes	No

SOURCE: Personal communication with mayor of Ely, June, 1976.

EVELETH

DEMOGRAPHY

Population Trends and Prospects

Of the eight communities in the preliminary study area, Eveleth has had the most persistent and precipitous decline in population, losing over 1000 people between 1950 and 1970 (Table 1).

Table 1. Eveleth population.

YEAR	POPULATION	% CHANGE
1950	5872	-15 (from 1940)
1960	5721	- 3
1970	4721	-17

SOURCE: U. S. Bureau of Census, 1950-1970.

Projections by the ARDC show a continuing decline, slowed, but not altered, by the current projected taconite expansions. However, whether the predicted decline becomes a reality could depend on an unanticipated change in local employment and also on the outcome of Eveleth's attempt to annex significantly-sized tracts of Fayal Township on its southeastern edge. Such an annexation would immediately add to the population and provide both a brake to its aging trend (the Fayal area has a significantly younger population) and much needed land for new housing development. However, at this point the proposed annexation has become quite contro-

versial and is not as certain as it once seemed. The situation does not, therefore provide a safe basis for prediction of an increase either in Eveleth's land area or its population.

Eveleth's age and sex distribution shows the process of population decline and aging as well. Starting with a fairly well-balanced population in 1950, with a slight preponderance of men over women, by 1970 the composition pyramid had become top-heavy and the sex ratio had shifted in favor of women—a factor caused by increased longevity in elderly females compared to that of males. Eveleth's work force is also aging, with lower percentages in the 25 to 49 age groups than other study area communities (Table 2).

Table 2. Eveleth population breakdown.

YEAR	TOTAL POPULATION	FEMALE	MALE	M/F RATIO	% 65+	% >20	DEPENDENCY RATIO
1950	5872	2890	2982	103	12	29	73
1960	5721	2918	2803	96	15	34	96
1970	4721	2452	2269	93	17	33	96

SOURCE: U. S. Bureau of Census, 1950-1970

As mentioned previously, the dependency ratio relates the percentage of people over 65 and under 20 to that of the supporting ages—20 to 64. While Eveleth's dependency ratio is no higher than that for several other towns or St. Louis County, it is noteworthy that its percentage of population over 65 is higher than in any of the other places, and its percentage of population less than 20 is small.

Table 4. Eveleth educational characteristics of the labor force pool, 1970.

	MALE[a]		FEMALE[b]	
	NUMBER	PERCENT	NUMBER	PERCENT
Years of School Completed				
Less than high school	44	7.1	61	8.0
1-3 years high school	124	19.9	271	35.5
4 years high school	257	41.3	281	36.8
1 or more years college	197	31.7	150	19.7
Persons with less than 3 years of college completed[c]				
With vocational training	262	27.6	105	7.8
Without vocational training	950	72.4	1246	92.2

SOURCE: U. S. Bureau of Census, 1970.

[a]Males aged 20-29.
[b]Females aged 15-44.
[c]Persons aged 16-64.

in 1965 had resided in one of the other designated places. Eveleth, as one of the study area's older communities, shows a higher-than-average percentage of five-year, same-house residents. Of those persons not living in the same house in Eveleth in 1965, the bulk came either from elsewhere in the county or from other Minnesota counties. A higher number than average did not report their 1965 residence.

Income

While families in Eveleth tended not to keep pace with the average Minnesota family in terms of average income between 1950 and 1970, the relative

Educational Characteristics

Table 3 shows the changes in educational indicators for Eveleth between 1950 and 1970. While all of the indicators show a rising trend, it is interesting to note that the actual number of college graduates in the population has declined, although as a percent of the total population this group has risen. While this pattern is understandable because of Eveleth's population decline, it does suggest a slightly declining residual of college graduates due to out-migration, death, or lowered in-migration tendencies.

Table 3. Eveleth level of education.

	1950		1960		1970	
Median School Years Completed	9.8		11.0		12.2	
Number and % High School Graduates	1365	36.4%	1525	43.5%	1652	56.1%
Number and % College Graduates	250	6.7%	252	7.2%	232	7.9%

SOURCE: U. S. Bureau of Census, 1950-1970.

Data on educational characteristics of persons who make up a majority of the working age population is listed in Table 4.

Residency

Figure 1 gives some idea of the residential stability in Eveleth as it was measured in 1970. The map shows: 1) the proportion of people over five years old who in 1970 still occupied the same residence where they had lived in 1965; and 2) the percentage of the 1970 Eveleth population which

decline appears to have leveled off over the last decade (Table 5). Data from the Department of Revenue shows that Eveleth made a gain on state-wide average gross income per filer between 1970 and 1974.

Table 5. Eveleth income.

	MEDIAN FAMILY INCOME					MINN. GROSS INCOME/FILER		
	1950	1960	% Δ	1970	% Δ	1970	1974	% Δ
$ Amount	1950	5017	+82	8406	+68	5942	7910	+33
% of State Median	102.9	91.0				94.5	98.1	

SOURCES: U. S. Bureau of Census, 1950-1970; Minnesota Department of Revenue, 1970-1974.

Data on poverty indicates that Eveleth, while generally following the same trend as the state, has swung from below the state average in 1950 to above it in 1970 (Table 6).

Table 6. Eveleth poverty.

	% FAMILIES BELOW POVERTY THRESHOLD		
	1950[a]	1960[b]	1970[c]
Eveleth	28.3	21.1	10.6
Minnesota	36.6	21.4	8.2

SOURCE: U. S. Bureau of Census, 1950-1970.

[a]Families with income less than $2000.
[b]Families with income less than $3000.
[c]An index based on a total of family money income which is less than 3 times the cost of an adequate diet ("economy food plan"). In 1970 the average threshold for a nonfarm family of four headed by a male was $3745.

EMPLOYMENT

While the decline in the importance of mining in Eveleth has moderately increased employment diversity, the only sector which actually increased in terms of numbers as well as percentage of total employment during the 20-year period was professional services, from 252 to 358 persons (Table 8). The wholesale-retail sector, while retaining its proportion of employment fairly well, declined numerically by 104 persons. Other sectors displayed similar characteristics.

Table 8. Eveleth employment for selected industries.

INDUSTRY	1950 #	1950 %	1960 #	1960 %	% Δ 1950-60	1970 #	1970 %	% Δ 1960-70
Mining	804	34.1	643	31.5	-20	431	26.9	-33
Professional Services	253	10.1	324	15.9	+28	356	22.2	+10
Wholesale and Retail	378	16.1	385	28.8	+ 2	282	17.5	-27
Manufacturing	322	13.7	242	11.8	-25	203	12.6	-16

SOURCE: U. S. Bureau of Census, 1950-1970.

By 1970 the census of employment by occupation showed that a high percentage of Eveleth residents make their livelihood in the manufacturing sector. Indeed the largest single sector is operatives which includes manufacturing of durable and nondurable goods and nonmanufacturing industries. The largest occupation sectors are listed in Table 9.

Table 9. Eveleth employment for selected occupations.

OCCUPATION	1970 #	1970 %
Operatives	300	18.7
Craftsmen, Foremen, & Kindred	269	16.8
Service Workers	230	14.3
Professional, Technical & Kindred	197	12.3

SOURCE: U. S. Bureau of Census, 1970.

BUSINESS ACTIVITY

Gross sales in Eveleth, according to the Department of Revenue Sales Tax information, have increased dramatically from 1969 to 1975. In this period sales have jumped from $8,600,754 to $20,319,582, an increase of 136 percent. The number of filers has also increased 25 percent and sales per filer have gone up 89 percent (Table 10).

Table 10. Eveleth business activity, 1969 to 1975.

	GROSS SALES	FILERS	SALES/FILER
1969	$ 8,600,754	123	$ 69,925
1971	11,800,346	130	90,772
% Δ 69-71	+37		+30
1973	13,660,531	141	96,883
% Δ 71-73	+16		+ 7
1975	20,319,582	154	131,945
% Δ 73-75	+49		+36
% Δ 69-75	+136	+25	+89

SOURCE: Minnesota Department of Revenue.

LABOR FORCE

While Eveleth's population declined steadily between 1950 and 1970 (20 percent), its total labor force contracted even more precipitously (39 percent) in that period (Table 7). This decrease is reflected in both the declining labor force participation rates and the increasing level of dependency ratios (see population discussion) throughout the two decades. Eveleth reported one of the highest sustained levels of unemployment of all study communities during the three census years.

Table 7. Eveleth labor force characteristics.

	1950	1960	% Δ	1970	% Δ
Population	5872	5721	- 2.6	4721	-17.5
Labor Force					
Male	1803	1509	-17.5	1083	-28.2
Female	687	675	- 1.7	624	- 7.6
TOTAL	2490	2184	-12.3	1707	-21.8
Employed Labor Force					
Male	1712	1433	-16.3	1014	-29.2
Female	661	655	- 0.9	591	- 9.8
TOTAL	2373	2088	-12.0	1605	-23.1
Percent Unemployed	4.7	4.4	- 6.4	6.0	+36.4
Percent Aged 16 and Over in Labor Force					
Male	77.4	73.0	- 5.7	65.6	-10.1
Female	30.1	30.9	+ 2.7	33.2	+ 7.4

SOURCE: U. S. Bureau of Census, 1950-1970.

Labor Force = persons 14+ (16+ in 1970) employed, unemployed, or members of the Armed Forces.

MUNICIPAL GOVERNMENT FINANCE

Revenues

The state auditor reports show that 75 percent ($390,098) of Eveleth's total receipts in 1965 came from taxes collected from local residents. At that time state-shared taxes made up only three percent ($17,850) of that total. A steady increase in total receipts, from $517,336 in 1965 to $1,189,137 in 1974, or 130 percent in 10 years, in combination with a decrease in local taxes to $216,199 in 1974 (only 18 percent of total receipts) has led to a diminished burden, both actual and percentage, on local residents for the costs of local government. Local taxes collected have actually decreased 55 percent in the 10-year period from 1965 to 1974.

As the taxes collected from local residents have decreased, the burden has been shifted to state-shared taxes and federal revenue sharing. In 10 years the amount of state-shared taxes has gone from $17,850 in 1965 (3 percent of total receipts) to $468,587 in 1974 (39 percent of receipts). This is an increase of more than 25 times the 1965 figure.

Federal revenue sharing has gone from zero in 1971 to $106,765 in 1974. The 1974 revenue sharing funds represent 9 percent of total receipts.

Disbursements

In seven of the last ten years Eveleth's disbursements have been less than total receipts, indicating a good record of balancing the budget. Reserves have, no doubt, been built up and then depleted in those years when disbursements have exceeded receipts.

SCHOOL DISTRICT FINANCE

Contrary to city mill rates, the school district mill rate has increased in each of the last four years. The 1973 rate of 36.5 has increased 36 percent to the 1976 value of 49.76.

As a result, the school district tax levy has increased from $171,533 in 1973 to $280,018 in 1976, a rise of 63 percent. Levies have gone up faster than mill rates because of the accompanying increase in taxable valuation.

This pattern of increased local financial responsibility is the result of two apparent forces, diminishing state and federal aid and increased operating costs.

The percentage of state and federal receipts has gone from 83 percent in 1972-1973 to 79 percent in 1974-1975. While a 4 percent decrease may seem insignificant at first glance, in reality it represents a 24 percent increase in local financial responsibility from 17 percent of receipts to 21 percent in receipts. Additionally, operating costs and total expenditures have increased steadily in recent years (Table 13).

Table 13. Eveleth school district disbursements, 1972 to 1975.

YEAR	PER PUPIL UNIT TOTAL EXPENDITURE	% CHANGE	PER PUPIL UNIT OPERATING COST	% CHANGE
1974-75	$1035	+5	$861	+9
1973-74	996	+4	793	+5
1972-73	949		752	
1973-1975		+9	+14	+14

SOURCE: Minnesota Department of Education, 1972-1975.

Total indebtedness of Eveleth has been in the neighborhood of $500,000 in each year from 1965 to 1974. The low, in 1972, was $479,000, and the peak during this period was $633,000 in 1969.

Taxable Valuation

The last ten years have been marked by a gradual increase in the taxable valuation of the city of Eveleth. From 1967 to 1976 valuation increased 38 percent. Big increases occurred in 1969 and 1976 when valuation went up 16 percent and 19 percent, respectively.

Because of the lessening local tax burden and the increased taxable valuation, municipal mill rates have fallen 58 percent in the last ten years. As a result, the effective tax rate (local taxes per thousand dollars of taxable valuation) has gone from $92.10 in 1965 to $74.78 in 1974.

Table 12. Eveleth taxable valuation, mill rates, 1967 to 1976.

YEAR	TAXABLE VALUATION	% CHANGE	CITY MILL RATE	% CHANGE
1967	$4,084,287		98.40	
1968	3,928,758	- 4	98.41	0
1969	4,563,927	+16	91.50	- 7
1970	4,384,632	- 4	98.65	+ 7
1971	4,688,637	+ 7	94.15	- 5
1972	4,710,264	0	73.77	-22
1973	4,699,541	0	72.36	- 2
1974	4,716,749	0	75.29	+ 4
1975	4,743,318	+ 1	74.18	- 1
1976	5,627,375	+19	41.55	-44

SOURCE: Minnesota State Auditor, 1967-1976.

Call reports for March 31, 1976, from the two banks in Eveleth, First National Bank of Eveleth and Miners National Bank, give an indication of the financial resources within the community (Table 11).

Table 11. Eveleth bank data, 1976.

	FIRST NATIONAL	MINERS NATIONAL	TOTAL
Deposits	$16,432,000	$9,236,000	$25,668,000
Assets	17,971,000	9,921,000	27,892,000
Liabilities	16,707,000	9,250,000	25,957,000
Total Loans	9,769,000	4,575,000	14,344,000
Total Debits[a] (previous 12 mos.)			97,838,000

SOURCE: Regional Administrator of National Banks, 1976.

[a]Federal Reserve Bank, 1976.

The ratio of loans to assets (which may become important if strong development pressures arise) for the two banks together is 51 percent. First National, which is the bigger of the two banks, has a ratio of 54 percent, while Miners National had a 46 percent ratio in March, 1976. Debits for the previous 12 months represent a 14 percent increase from the year before. In Eveleth there are no savings and loan institutions or credit unions.

Teachers' salaries have gone up so that in spite of cutbacks in the number of staff total payroll has increased fifteen percent since 1972-1973.

Table 14. Eveleth school district payroll.

YEAR	FULL-TIME EQUIVALENT TOTAL STAFF	AVERAGE SALARY	TOTAL PAYROLL
1974-75	111	$12,169	$1,350,759
1972-73	116	10,135	1,175,600

SOURCE: Minnesota Department of Education, 1972-1975.

EDUCATION--SCHOOL DISTRICT 697

Facilities

Eveleth has six schools—Franklin Elementary, Eveleth Junior High and Eveleth Senior High School, an Industrial Arts School, and an Area Vocational Technical Institute (AVTI) which was dedicated in the fall of 1970. One unused elementary school was recently sold and is now the East Range Day Activity Center, which is used as a day care activity center with special classes for the retarded and handicapped. The elementary, junior, and senior high schools are all over fifty years old.

Enrollment

The kindergarten enrollment figures for the school district show a one percent increase from 1970 to 1975; the elementary and secondary enrollment

GOVERNMENTAL STRUCTURE AND SERVICES

Form

Eveleth's municipal government is a mayor-council arrangement. The mayor is elected for a two-year term, while the four-member council is elected for a four-year term (Table 17).

Table 17. Eveleth governmental structure.

FORM	CITY COUNCIL MEMBERS	COUNCIL MEETING SCHEDULE	CITY ATTORNEY	# OF CITY EMPLOYEES (FULL-TIME)	PLANNING COMMISSION MEMBERS	PLANNING COMMISSION STAFF (FULL-TIME)	ZONING ORDINANCE	STATE BUILDING CODE ENFORCED
Mayor-Council	4	1st & 3rd Tuesday	Yes[a]	45	4	0	Yes	No

SOURCE: Personal communication with mayor of Eveleth, June, 1976.

[a]Also acts as Virginia's city attorney.

The annually appointed clerk-treasurer is the chief administrator. Council meetings are scheduled for every first and third Tuesday. The number of full-time city employees is 45, and the city attorney from Virginia renders legal counsel to the city. Eveleth has a four-member planning commission and a zoning ordinance. The zoning ordinance includes, but is not limited to, the sections listed in Table 18.

Table 18. Eveleth zoning ordinance sections.

ZONING DISTRICTS	MOBILE HOMES	MINIMUM LOT SIZE	SUBDIVISION REGULATIONS	SEPTIC TANKS	BUILDING PERMITS	AMENDMENT PROVISION
X		X	X		X	X

SOURCE: Eveleth zoning ordinance.

trends show a decrease of twelve percent (Table 15). The district could absorb an additional 200 students based upon current enrollment and capacity data (Table 16).

Table 15. Eveleth school district enrollment, 1970 to 1976.

SCHOOL DISTRICT 697	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	% Δ 5 YEARS
Kindergarten	128	112	96	93	112	129	+ 0.8
Elementary & Secondary	1841	1893	1728	1687	1725	1627	-11.6

SOURCE: Personal communication with Eveleth school district superintendent, June, 1976.

Table 16. Eveleth school district capacity, student-teacher ratios, 1976.

SCHOOL DISTRICT 697	ENROLLMENT	CAPACITY	% UTILIZED	TEACHERS	S/T RATIO
Kindergarten	129	150	85	2	64:1
Elementary	690	800	86	34	20:1
Secondary	937	1000	94	51	18:1

SOURCE: Personal communication with Eveleth school district superintendent, June, 1976.

Table 25. Eveleth[a] natural gas usage.

SUPPLIER	MINIMUM LOAD (MCF/DAY)	PEAK CAPACITY (MCF/DAY)	NUMBER OF INTERRUPTIBLE USERS
Inter-City Gas Ltd., Inc.	85	1959	1

TOTAL 1975 USAGE (MCF)	CUSTOMERS	
	RESIDENTIAL	NON-RESIDENTIAL
275,767	702	130

SOURCE: Inter-City Gas Ltd., Inc., July, 1976.

[a]Residential and commercial only, no mining.

OTHER COMMUNITY SERVICES

Transportation

Inter-city bus passenger service is available, but no rail or taxi passenger services are provided in Eveleth. Air passenger service is available at Eveleth-Virginia Municipal Airport. Mesaba Airlines provides scheduled service to Minneapolis-St. Paul International Airport. Eveleth is located just off U. S. Highway 53.

Communication

All major network-affiliated television and radio signals are received in Eveleth. The Mesabi Daily News provides daily (except Saturday) newspaper coverage for the community.

Health

Facilities--Eveleth Fitzgerald Community Hospital, a 26-bed facility offering convalescent and nursing care, is located in Eveleth. The average yearly occupancy rate is 31 percent. The Eveleth Clinic also offers medical treatment, and a branch of the Arrowhead Nursing Home is located in Eveleth. The East Range Day Activity Center offers day care and special classes for the retarded and handicapped (Table 26)

Table 26. Eveleth hospital information.

STAFF			OCCUPANCY		CONVALESCENT AND NURSING CARE			
					STAFF		OCCUPANCY	
PHYSICIANS	NURSES[a]	OTHER	BED CAPACITY	OCCUPANCY RATE	NURSES[d]	OTHER	CAPACITY	RATE
3	4	11	26	31%	2	NA	24	91%

SOURCE: Minnesota Department of Health, Division of Health Facilities, June, 1976.

[a]RNs and LPNs

NA-not applicable.

Professionals--The hospital has a staff complement of three physicians and four nurses, while the medical clinic has a separate staff of two physicians. There are four dentists providing dental health care to the community.

DEMOGRAPHY

Population Trends and Prospects

Gilbert's population has followed a see-saw course over the past 30 years, declining until 1950, gaining substantially by 1960, then reversing the trend once more. By 1970 its population was essentially the same as it had been in 1950, but by 1975 it had climbed back to the 1960 level (Table 1).

Table 1. Gilbert population.

YEAR	POPULATION	% CHANGE
1950	2247	-10 (from 1940)
1960	2591	+15
1970	2287	-12
1975[a]	2563	+12

SOURCE: U. S. Bureau of Census, 1950-1975.

[a]Special Census, September, 1975.

The projected impact of taconite expansions are expected to continue growth in Gilbert, pushing the population to close to 4000 by 1990 (ARDC, 1974). Since Gilbert had a negative or only slightly positive net natural increase rate by 1970, most of its growth can be expected to come in the form of in-migration due to increased employment opportunities in the area and

Table 21. Eveleth water supply.

OWNERSHIP	PLANT CLASS.	SERVICE CONNECTIONS	SOURCE	WELLS NUMBER	WELLS DEPTH	TREATMENT[a]
Municipal	B	1800	St. Mary's Lake	NA	NA	D,F,T,Fl

STORAGE CAPACITY ELEVATED 1000 gal	STORAGE CAPACITY GROUND 1000 gal	DAILY CONSUMPTION (1000 gal) MAXIMUM	DAILY CONSUMPTION (1000 gal) AVERAGE	STATE PLUMBING CODE
300	100	1000	750	Adopted

SOURCE: Minnesota Department of Health, Division of Environmental Health, June, 1976.

[a]D-Disinfection, F-Filtration, Fl-Fluoridation, T-Taste and Odor

Table 22. Eveleth sewage treatment.

PEAK CAPACITY	TYPE OF TREATMENT[a]	AVERAGE FLOW	% OF CAPACITY
800,000 gals/day	3	705,000 gals/day	88

SOURCE: Minnesota Pollution Control Agency, August, 1976.

[a]1. Primary (Physical)
2. Secondary (Biological)
3. Tertiary (Chemical)

Table 23. Eveleth landfill information.

NAME	SIZE (ACRES)	CAPACITY (CU YDS)	LIFE EXPECTANCY	OPERATOR	POPULATION SERVED
East Mesabi Sanitary Landfill	128	6,000,000	200 yrs 2172	East Mesabi Sanitary Disposal Authority	30,000

SOURCE: Minnesota Pollution Control Agency, Duluth Regional Office, June, 1976.

Table 24. Eveleth[a] electrical usage.

ELECTRICITY SOLD (GWH)[b]	SUMMER PEAK (MW)	WINTER PEAK (MW)	SUPPLIER	CUSTOMERS	
				RESIDENTIAL	NON-RESIDENTIAL
22.863	3.445	4.619	MP&L[c]	1607	168

SOURCE: Minnesota Energy Agency, June, 1976.

[a] Community use only, no mining.
[b] One million kilowatts.
[c] Minnesota Power and Light.

Public Safety Services

Eveleth's fire and police services are summarized in Tables 19 and 20.

Table 19. Eveleth fire protection.

ORGANIZATION TYPE	PERSONNEL	CITY ISO CLASS[a]	PUMPERS GPM[b]	PUMPERS TANK	TANKERS	LADDER TRUCKS	INSPECTIONS PERFORMED	RUNS/YEAR INSIDE CITY	RUNS/YEAR OUTSIDE CITY
Paid/ Volunteer	11/6	6	1-750 1-600	250 500	1-1000	1	Yes	81	21

SOURCE: Fire Service Information, Research and Education Center, University of Minnesota, 1976.

[a] Insurance Services Office Code; scale of 1(best) to 10(lowest).
[b] gallons per minute.

Table 20. Eveleth law enforcement.

TOTAL PERSONNEL			VEHICULAR RESOURCES		
FULL-TIME	PART-TIME	PERSONS PER PATROLMAN	PATROL VEHICLES	SPECIAL PURPOSE VEHICLES	JAIL
11	0	429	2	0	Yes

SOURCE: Arrowhead Regional Criminal Justice Plan, Data Section, 1976, ARDC.

PUBLIC AND COMMERCIAL UTILITIES

Eveleth's utility services are summarized in Tables 21 through 26.

land available for development. Gilbert presently has a disproportionate share (for the study area communities) of available new housing—in the form of both conventional housing and apartments and a recently-opened 200-unit mobile home park. By the fall of 1975, according to a special census, its population had expanded to over 2500, and this figure probably continued to climb during 1975, when much of the new housing was first opened for occupancy. A proposed annexation of land south and west of Gilbert could provide a further boost to its growth in the near future. Thus, it may be that Gilbert will exceed its projected population, or reach it ahead of the ARDC timetable.

There are several notable features of the age-sex composition data for Gilbert. First, its over-65 population shrank from 13 percent of the total to a little over 9 percent by 1960. Second, its working age population in 1970 was, on the average, substantially older in 1970 than in 1960, indicating that it was a relatively unchanged group which had aged by ten years without substantial rejuvenation from an influx of younger adults. Finally, the sex ratio between 1950 and 1970 had shifted from a majority of males to a majority of females by 1970 (Table 2).

Table 2. Gilbert population breakdown.

YEAR	TOTAL POPULATION	FEMALE	MALE	M/F RATIO	% 65+	% >20	DEPENDENCY RATIO
1950	2247	1079	1168	1.08	11	32	71
1960	2591	1295	1296	1.00	13	46	112
1970	2287	1182	1105	.94	10	36	95

SOURCE: U. S. Bureau of Census, 1950-1970.

Educational Characteristics

For the two periods during which educational information is available for Gilbert, substantial increases in all three categories are apparent (Table 3).

Table 3. Gilbert level of education.

	1960		1970	
Median School Years Completed	10.9		12.1	
Number and % High School Graduates	605	31.9%	702	55.5%
Number and % College Graduates	69	3.6%	86	6.8%

SOURCE: U. S. Bureau of Census, 1960-1970.

With the possible exception of Babbitt, the percent increase in Gilbert of both high school and college graduates is the most dramatic of the study communities, as is the increased level of median school years completed. Improved local conditions and incentives, the effect of the post-war "baby boom" (creating a "bulge" of high schoolers by 1970), and significant in-migration of groups with relatively higher educational backgrounds than the original population could have contributed, all or in part, to this increase.

The segment of Gilbert's working age population, shown in Table 4, however, has an overall lower level of high school and college graduates, as well as of persons with vocational training, than the eight-town average.

Table 4. Gilbert educational characteristics of the labor force pool, 1970

	MALE[a]		FEMALE[b]	
	NUMBER	PERCENT	NUMBER	PERCENT
Years of School Completed				
Less than high school	26	9.2	15	3.6
1-3 years high school	70	24.7	130	31.0
4 years high school	131	46.3	197	47.0
1 or more years college	56	19.8	77	18.4
Persons with less than 3 years of college completed[c]				
With vocational training	62	10.8	18	3.5
Without vocational training	512	89.2	497	96.5

SOURCE: U. S. Bureau of Census, 1970.

[a]Males aged 20-29.
[b]Females aged 15-44.
[c]Persons aged 16-64.

Residency

Figure 1 gives some idea of the residential stability in Gilbert as it was measured in 1970. The map shows: 1) the proportion of people over five years old who in 1970 still occupied the same residence where they had lived in 1965; and 2) the percentage of the 1970 Gilbert population which in 1965 had resided in one of the other designated places.

Gilbert exhibited the highest percentage of same-house, five-year residents of the study communities. Most recently arrived persons who did not live in Gilbert in 1965 came from elsewhere in St. Louis County.

Income

While median family income in Gilbert has been below average family income at the state level, nevertheless, much progress was made between 1960 and 1970 in narrowing the gap between the two. Data from income tax reports support this trend, with the result that by 1974 Gilbert had reached parity with the state average income per filer (Table 5).

Table 5. Gilbert income.

	MEDIAN FAMILY INCOME			MINN. GROSS INCOME/FILER		
	1960	1970	% Δ	1970	1974	% Δ
$ Amount	4765	8938	+86	5993	8041	+34
% of State Median	85.5	90.0		95.3	99.7	

SOURCES: U. S. Bureau of Census, Department of Commerce series P-25, No. 568, 1975; Minnesota Department of Revenue, Individual Income Tax Report, 1970 and 1974.

Gilbert shares, with Eveleth, the highest percent of families below the poverty level (10.6 percent) in study area towns in 1970 and is well above the state average (Table 6). However, this percentage, for Gilbert as well as for the state, has more than halved since 1960.

Table 6. Gilbert poverty.

	% FAMILIES BELOW POVERTY THRESHOLD	
	1960[a]	1970[b]
Gilbert	23.0	10.6
Minnesota	21.4	8.2

SOURCE: U. S. Bureau of Census, 1960-1970.

[a]Families with income less than $3000.
[b]An index based on a total of family money income which is less than 3 times the cost of an adequate diet ("economy food plan"). In 1970 the average threshold for a nonfarm family of four headed by a male was $3745.

LABOR FORCE

In spite of a decline in total population (-12 percent) between 1960 and 1970, Gilbert's labor force maintained itself at about the 1960 level, due to an increased rate of participation by females. During that period, the percent of the total population considered to be in the labor force increased from 33 percent to 37 percent. The excessive unemployment rate of 1960 also declined to more reasonable levels by 1970. These changes no doubt reflect the economic resurgence occurring in parts of the Range from the replacement of a deteriorating natural ore mining industry with an expanding taconite industry.

The labor force participation rates rose during the ten years for both men and women, and significantly, the group of males over 16 excluded from the labor force were dominated by persons enrolled in schools rather than by retirees (Table 7).

Table 7. Gilbert labor force characteristics.

	1960	1970	% Δ
Population	2591	2287	-12
Labor Force			
Male	632	554	-12
Female	216	296	+37
TOTAL	848	850	0
Employed Labor Force			
Male	531	525	- 1
Female	188	278	+48
TOTAL	719	803	+12
Percent Unemployed	15.2	5.5	-74
Percent Aged 16 and Over in Labor Force			
Male	72.1	75.6	+ 5
Female	24.2	35.2	+45

SOURCE: U. S. Bureau of Census, 1960-1970.

Labor Force = persons 14+ (16+ in 1970) employed, unemployed, or members of the Armed Forces.

EMPLOYMENT

The employment base of Gilbert's population shows a definite trend toward diversification, with declines in mining and public administration but gains in almost every other sector by 1970 (Figure 2). However, the Census Bureau's technique for tabulating employment by industry changed between the two census years, and indicators of this diversification trend may not be conclusive. (In 1960 employment data was compiled on a place of work basis rather than by place of residence.) For most of the towns this change was not felt to create incompatibility of data, because place

of work—predominantly mines—was sufficiently close to place of residence. However, for Gilbert, the closeness of a regional commercial and service center (Virginia) may have distorted the town's 1970 employment data, especially for the nonbasis industrial sectors such as manufacturing and professional services. Therefore, it would probably be correct only to say that the employment base of the population—not that of the city itself—had diversified.

In terms of actual numbers the employment in all sectors except mining and public administration increased along with its proportion of the total employment.

In 1970 employment by industry shows the decline in percentage of employment in mining (Table 8). More interesting, however, is the growth in jobs in the manufacturing sector. Of the 120 persons employed in manufacturing (up from 76 in 1960), 90 were in textile production (75 percent of manufacturing employment and 11.2 percent of total employment). Eighty of these were female.

Table 8. Gilbert employment for selected industries.

INDUSTRY	1960 #	1960 %	1970 #	1970 %	% Δ 1960-70
Mining	352	49.0	280	34.9	-20.5
Professional Services	80	11.1	132	16.4	+65.0
Manufacturing	76	10.6	120	16.1	+57.9
Retail	70	9.6	101	12.7	+44.3

SOURCE: U. S. Bureau of Census, 1960-1970.

By occupation, employment is weighted heavily towards operatives and craftsmen, foremen, and kindred. Again, the textile manufacturing sector shows up quite clearly as nondurable goods manufacturing which employs 108 persons or 13.4 percent of total employment (50 percent of the operatives sector)(Table 9).

Table 9. Gilbert employment for selected occupations.

OCCUPATION	1970 #	1970 %
Operatives, except Transport	217	27.0
Craftsmen, Foremen & Kindred	205	25.5
Service Workers	101	12.6
Professional, Technical & Kindred	95	11.8

SOURCE: U. S. Bureau of Census, 1970.

BUSINESS ACTIVITY

The best indicator of business activity available on an annual basis is the level of gross sales per community as reported by the annual reports of the Minnesota Department of Revenue concerning sales and use tax. While this data is consistent through time and allows comparison over the time span, it is subject to error due to misinterpretation of Department of Revenue definitions and guidelines. However, the data does give an indication of overall economic activity in the community (Table 10).

Table 10. Gilbert business activity, 1969 to 1975.

	GROSS SALES	FILERS	SALES/FILER
1969	$2,039,793	65	$ 31,381
1971	2,576,723	55	46,850
% 69-71	+26		+49
1973	4,251,258	62	68,569
% 71-73	+65		+46
1975	7,043,487	58	121,439
% 73-75	+66		+77
% 69-75	+245	-11	+287

SOURCE: Minnesota Department of Revenue.

In the six years from 1969 to 1975 reported gross sales have more than tripled, experiencing an increase of 245 percent. This is an annual growth rate of 31 percent. Concurrent with the tremendous growth in sales has been an 11 percent drop in the number of filers so that sales per filer have grown more rapidly than gross sales.

Gilbert's lone bank, the First National Bank at Gilbert, presented the following figures in its March 31, 1976, call report (Table 11).

Bank debits for the previous 12 months represent a 14 percent decrease from the year before. The ratio of total loans to assets indicates the bank's propensity to extend credit to its patrons. The Gilbert Bank's ratio in March was 35.4 percent, considerably lower than other banks in the area. Gilbert has no credit unions or savings and loan institutions.

Table 11. Gilbert bank data; 1976.

Deposits	$ 4,841,000
Assets	5,413,000
Liabilities	4,867,000
Total Loans	1,968,000
Total Debits[a] (previous 12 mos.)	17,271,000

SOURCE: Regional Administrator of National Banks, 1976.

[a]Federal Reserve Bank, 1976.

MUNICIPAL GOVERNMENT FINANCE

Revenues

The source of government receipts for Gilbert has followed a trend of decreasing burden on the local taxpayers and a growth of state-shared and federal revenues. In spite of steadily increasing total receipts, local taxes paid have diminished, both absolutely and as a percentage of total receipts.

In 1965 local taxes collected made up 94 percent of total receipts for that year ($289,090 of $308,422). During that year $8118 was received from state and federal-shared taxes accounting for 3 percent of total receipts. By 1974 state and federal-shared taxes were contributing 59 percent ($252,937) of total receipts, and local taxes were adding only 29 percent ($124,789).

In absolute terms, the increase in total receipts was 39 percent from $308,422 in 1965 to $429,904 in 1974. During the same period local taxes to municipal government went from $289,090 to $124,789, a drop of 57 percent. State and federal-shared taxes increased by a factor of more than 31, from $8118 to $252,937.

Disbursements

In six of the years between 1965 and 1974 total disbursements were less than total receipts. In 1974 disbursements of $426,937 represent an increase of 55 percent from the $275,317 disbursed in 1965.

Taxable Valuation

Gilbert has suffered an overall 20 percent decline in taxable valuation over the past 10 years, 1967 to 1976. From 1967 to 1972 valuation steadily decreased, bottoming out at $1.9 million in 1972, a big drop occurring between 1970 and 1971 when valuation plunged 33 percent. From 1972 it has steadily increased to its present $2.4 million (Table 12).

Table 12. Gilbert taxable valuation, mill rates, 1967 to 1976.

YEAR	TAXABLE VALUATION	% CHANGE	CITY MILL RATE	% CHANGE
1967	$2,995,386	- 6	88.46	
1968	2,829,435	- 6	85.25	- 4
1969	2,777,205	- 2	97.23	+14
1970	2,901,618	+ 4	82.03	-16
1971	1,945,695	-33	100.59	+23
1972	1,935,069	- 1	85.10	-15
1973	2,009,218	+ 4	78.85	- 7
1974	2,049,941	+ 2	79.19	0
1975	2,082,660	+ 2	74.22	- 6
1976	2,407,935	+16	61.61	-17
1967-1976		-20		-30

SOURCE: Minnesota State Auditor, 1967-1976.

SCHOOL DISTRICT FINANCE

Gilbert's per pupil costs have gone up enormously in the past few years. As a result school district mill rates have had to increase to cover the extended costs. The mill rate has increased 36 percent in two years from the 1972-1973 level of 61.78 to 84.32 in 1974-1975.

One element of rising costs has been teachers' salaries. Total payroll (derived by multiplying average teachers' salaries by full-time teaching equivalents) has increased from $537,295 in 1972-1973 to $620,600 in 1974-1975, a 16 percent increase.

During the period for which data is available, the percentage of school district receipts received from state and federal sources has remained relatively constant. It was 71 percent in 1972-1973 and 70 percent in 1974-1975 (Table 13).

Table 13. Gilbert school district disbursements 1972 to 1975.

YEAR	PER PUPIL UNIT TOTAL EXPENDITURE	% CHANGE	PER PUPIL UNIT OPERATING COST	% CHANGE
1974-75	$1378	+16	$1119	+19
1973-74	1183	+37	943	+43
1972-73	862		659	
1972-1975		+60		+70

SOURCE: Minnesota Department of Education, 1972-1975.

EDUCATION—SCHOOL DISTRICT 699

Facilities

Gilbert has two schools—Neil Shean Elementary and Gilbert Junior-Senior High School. Both structures are over fifty years old. Sigurd Moe Elementary School has been closed.

Enrollment

The kindergarten enrollment figures for the school district show a three percent decrease from 1970 to 1975. The elementary and secondary enrollment trends show a five-year decrease of twelve percent (Table 14). The district could absorb an additional 300 students based upon current enrollment and capacity data (Table 15).

Table 14. Gilbert school district enrollment, 1970 to 1976.

SCHOOL DISTRICT 699	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	% Δ 5 YEARS
Kindergarten	73	57	41	49	65	71	-2.7
Elementary & Secondary	901	927	886	827	868	793	-12.0

SOURCE: Personal communication with Gilbert school district superintendent, June, 1976.

Table 15. Gilbert school district capacity, student-teacher ratios, 1976.

SCHOOL DISTRICT 699	ENROLLMENT	CAPACITY	% UTILIZED	TEACHERS	S/T RATIO
Kindergarten	71	120	59	2	36:1
Elementary	344	600	57	21	16:1
Secondary	449	650	69	26	17:1

SOURCE: Personal communication with Gilbert school district superintendent, June, 1976.

GOVERNMENTAL STRUCTURE AND SERVICES

Form

Gilbert's municipal government is a mayor-council arrangement. The mayor is elected for a two-year term, while the three-member council is elected for a three-year term (Table 16). The biennially-elected city clerk is the chief administrator. Council meetings are scheduled for every first and third Tuesday. The number of full-time city employees is 35 and the city attorney from Virginia renders legal counsel to the city. The city has a seven-member planning commission, but at present is without a zoning ordinance. The State Building Code is enforced.

Table 16. Gilbert governmental structure.

FORM	CITY COUNCIL MEMBERS	COUNCIL MEETING SCHEDULE	CITY ATTORNEY	# OF CITY EMPLOYEES (FULL-TIME)	PLANNING COMMISSION MEMBERS	PLANNING COMMISSION STAFF (FULL-TIME)	ZONING ORDINANCE	STATE BUILDING CODE ENFORCED
Mayor-Council	3	1st & 3rd Tuesday	Yes[a]	35	7	0	No	Yes

SOURCE: Personal communication with mayor of Gilbert, June, 1976.

[a]Also acts as Virginia's city attorney.

Public Safety Services

Gilbert's fire protection services are summarized in Table 17. As of October 5, 1976, the Gilbert City Council voted to place a $200,000 bond issue for a new fire hall on the November 2 ballot. The biggest single factor keeping Gilbert from having a better ISO rating is the present fire hall, which has wooden floors, poor heating, and space for only one truck. Gilbert's police services are summarized in Table 18.

Table 17. Gilbert fire protection.

ORGANIZATION TYPE	PERSONNEL	CITY ISO CLASS[a]	PUMPERS GPM[b]	PUMPERS TANK	TANKERS	LADDER TRUCKS	INSPECTIONS PERFORMED	RUNS/YEAR INSIDE CITY	RUNS/YEAR OUTSIDE CITY
Volunteer	20	7	1-750	500	0	0	Yes	12	7

SOURCE: Fire Service Information, Research and Education Center, University of Minnesota, 1976.

[a]Insurance Services Office Code; scale of 1(best) to 10(lowest).
[b]gallons per minute.

Table 18. Gilbert law enforcement.

TOTAL PERSONNEL			VEHICULAR RESOURCES		
FULL-TIME	PART-TIME	PERSONS PER PATROLMAN	PATROL VEHICLES	SPECIAL PURPOSE VEHICLES[a]	JAIL
5	0	457	1	1	No

SOURCE: Arrowhead Regional Criminal Justice Plan, Data Section, 1976, ARDC.

[a]Snowmobiles, boats, motorcycles, etc.

PUBLIC AND COMMERCIAL UTILITIES

Gilbert's utility services are summarized in Tables 19 through 23.

Table 19. Gilbert water supply, 1975 data.

OWNERSHIP	PLANT CLASS.	SERVICE CONNECTIONS	SOURCE	WELLS NUMBER	WELLS DEPTH	TREATMENT[a]
Municipal	B	1000	Drilled Well	1 2	55' 55'	D,A,F,C, S,Se,Fl, Cc

STORAGE CAPACITY ELEVATED 1000 gal	STORAGE CAPACITY GROUND 1000 gal	DAILY CONSUMPTION (1000 gal) MAXIMUM	DAILY CONSUMPTION (1000 gal) AVERAGE	STATE PLUMBING CODE
500	75	500	350	Not Adopted

SOURCE: Minnesota Department of Health, Division of Environmental Health.

[a]A-Aeration, C-Coagulation, Cc-Corrosion Control and Stabilization, D-Disinfection, F-Filtration, Fl-Fluoridation, S-Softening, Se-Sedimentation.

Table 20. Gilbert sewage treatment.

PEAK CAPACITY	TYPE OF TREATMENT[a]	AVERAGE FLOW	% OF CAPACITY
423,000 gals/day	2	503,000 gals/day	119

SOURCE: Minnesota Pollution Control Agency, August, 1976.

[a]1. Primary (Physical)
2. Secondary (Biological)
3. Tertiary (Chemical)

Table 21. Gilbert landfill information.

NAME	SIZE (ACRES)	CAPACITY (CU YDS)	LIFE EXPECTANCY	OPERATOR	POPULATION SERVED
East Mesabi Sanitary Landfill	128	6,000,000	200 yrs 2172	East Mesabi Sanitary Disposal Authority	30,000

SOURCE: Minnesota Pollution Control Agency, Duluth Regional Office, June, 1976.

Table 22. Gilbert[a] electrical usage.

ELECTRICITY SOLD (GWH)[b]	SUMMER PEAK (MW)	WINTER PEAK (MW)	SUPPLIER	CUSTOMERS RESIDENTIAL	CUSTOMERS NON-RESIDENTIAL
8.701	1.39	1.909	MP&L[c]	868	67

SOURCE: Minnesota Energy Agency, June, 1976.

[a] Community use only, no mining.
[b] One million kilowatts.
[c] Minnesota Power and Light.

Table 23. Gilbert[a] natural gas usage.

SUPPLIER	MINIMUM LOAD (MCF/DAY)	PEAK CAPACITY (MCF/DAY)	NUMBER OF INTERRUPTIBLE USERS
Inter-City Gas Ltd., Inc.	27	713	2

TOTAL 1975 USAGE (MCF)	CUSTOMERS	
	RESIDENTIAL	NON-RESIDENTIAL
90,219	420	38

SOURCE: Inter-City Gas Ltd., Inc., July, 1976.

[a]Residential and commercial only, no mining.

OTHER COMMUNITY SERVICES

Transportation

Inter-city bus passenger service is available, but no rail, air, or taxi passenger services are provided in Gilbert. State Highway 135 and 37 intersect in the community.

Communication

All major network-affiliated television and radio signals are received in Gilbert and, in addition, cable TV will be available in late 1976. The Gilbert Herald provides weekly newspaper coverage for the community.

Health

Facilities--There are no hospitals or medical clinics in the community.

Professionals--There are no physicians serving the community, but one dentist is providing dental health care services.

HOYT LAKES

DEMOGRAPHY

Population Trends and Prospects

For the period included in this analysis Hoyt Lakes has displayed the most phenomenal growth rate of all the communities, rising, as it were, from an uninhabited field in 1950 to a village of over 3000 people in less than 10 years (Table 1). Its growth continued at a more reasonable rate during the 1960s, which was a period of decline or stagnation for all of the other communities in the area except Babbitt and Aurora.

Table 1. Hoyt Lakes population.

YEAR	POPULATION	% CHANGE
1950	20	---
1960	3186	+16,000
1970	3634	+14

SOURCE: U. S. Bureau of Census, 1950-1970.

Future population prospects of Hoyt Lakes are bright according to the ARDC schedule, which estimates a population increase of over 80 percenty by 1990.

Age structure of Hoyt Lakes is typical of "new" industrial or boom towns, although by 1970 the disparities between the various age groups had narrowed somewhat (Table 2). Of note is the beginning of a narrowing of

the base (a decrease in the youngest age group) and the general trend toward an equal distribution of the adult population among all the working-age cohorts. The sex distribution by 1970 is becoming less balanced, however, moving toward a more definite preponderance of males.

Table 2. Hoyt Lakes population breakdown.

YEAR	TOTAL POPULATION	FEMALE	MALE	M/F RATIO	% 65+	% >20	DEPENDENCY RATIO
1950	20	NA	NA	NA	NA	NA	NA
1960	3186	1561	1625	104	1	54	123
1970	3634	1730	1904	110	1	53	117

SOURCE: U. S. Bureau of Census, 1950-1970.

Dependency ratios comparing the number of youth and aged persons to the economically productive segment of the community underscore the disparity at the top and bottom of the age pyramids. Hoyt Lakes has the highest percentage of minors of all the study towns and even though its percentage of elderly is low, the result is still an extremely high dependency ratio. Like Babbitt, Hoyt Lakes has the aura of a misplaced suburb—characterized by a highly homogeneous population both in terms of age composition, family structure, and economic circumstances. However, since its prospects appear bright for a continued infusion of newcomers during the next two decades, this homogeneity may subside somewhat.

Educational Characteristics

Only two points of reference for the educational levels of Hoyt Lakes are available at this juncture, 1960 and 1970 (Table 3). During the intervening ten years it can be seen that all the indicators increased in a healthy fashion. The data suggests both the influence of the relatively large number of school-age teenagers in Hoyt Lakes who would have graduated by 1970 and also the possibility of a pool of in-migrants during the decade which had an overall level of education higher than the existing population. Since Hoyt Lakes experienced a substantial increase in its population of young adults (a 42 percent increase of the 25 to 29 year old cohort) during this period, the latter factor is indeed a possibility.

Table 3. Hoyt Lakes level of education.

	1950		1960		1970	
Median School Years Completed	NA		12.3		12.6	
Number and % High School Graduates	NA	NA	789	62.0%	1222	78.5%
Number and % College Graduates	NA	NA	115	9.0%	448	14.6%

SOURCE: U. S. Bureau of Census, 1950-1970.

Table 4 shows the educational background of selected persons in the working age population. Of note is the level of high school graduates in Hoyt Lakes in the described category, which is the highest percentage of all the towns, indicative of the youth of both the town itself and the overall working age population.

Table 4. Hoyt Lakes educational characteristics of the labor force pool, 1970.

	MALE[a]		FEMALE[b]	
	NUMBER	PERCENT	NUMBER	PERCENT
Years of School Completed				
Less than high school	45	6.2	31	4.1
1-3 years high school	78	10.8	179	23.5
4 years high school	385	53.4	385	50.5
1 or more years college	213	29.5	168	22.0
Persons with less than 3 years of college completed[c]				
With vocational training	130	14.6	177	20.7
Without vocational training	758	85.4	680	79.3

SOURCE: U. S. Bureau of Census, 1970.

[a]Males aged 20-29.
[b]Females aged 15-44.
[c]Persons aged 16-64.

Residency

Figure 1 gives some idea of the residential stability in Hoyt Lakes as it was measured in 1970. The map shows: 1) the proportion of people over five years old who in 1970 still occupied the same residence where they had lived in 1965; and 2) the percentage of the 1970 Hoyt Lakes population which in 1965 had resided in one of the other designated places.

Hoyt Lakes, like Babbitt, was still attracting significant numbers of non-resident newcomers in 1970, the bulk of whom came from other parts of St. Louis County, with a smaller percentage coming from elsewhere in Minnesota or the North Central region.

Income

Data for average family income shows that Hoyt Lakes ranks well above the state average. Also, gross income per filer in Hoyt Lakes is substantially above that for the state as a whole (Table 5). This data, along with unemployment figures and male labor force participation rates, underscores the prosperity and financial security which seems to have characterized this town from its beginning.

Table 5. Hoyt Lakes income.

	MEDIAN FAMILY INCOME			MINN. GROSS INCOME/FILER		
	1960	1970	% Δ	1970	1974	% Δ
$ Amount	6132	9843	+61	7679	9323	+25
% of State Median	110.0	99.1		122.1	115.6	

SOURCES: U. S. Bureau of Census, 1960-1970; Minnesota Department of Revenue, 1970-1974.

Poverty data show Hoyt Lakes to be well below the state's percentage of families that are under the poverty threshold (Table 6).

Table 6. Hoyt Lakes poverty.

	% FAMILIES BELOW POVERTY THRESHOLD	
	1960[a]	1970[b]
Hoyt Lakes	5.7	4.0
Minnesota	21.4	8.2

SOURCE: U. S. Bureau of Census, 1960-1970.

[a] Families with income less than $3000.

[b] An index based on a total of family money income which is less than 3 times the cost of an adequate diet ("economy food plan"). In 1970 the average threshold for a nonfarm family of four headed by a male was $3745.

LABOR FORCE

Hoyt Lakes' total population increase of 14 percent between 1960 and 1970 was accompanied by a larger-than-proportionate increase (39 percent) in its labor force, which grew from 881 to 1228 persons (Table 7). This growth resulted from increases in total numbers of both men and women in the labor force. There was a dramatic leap in the labor force participation rate for women; however, the rate for males declined.

Table 7. Hoyt Lakes labor force characteristics.

	1960	1970	% Δ
Population	3186	3634	+14
Labor Force			
Male	747	937	+25
Female	134	291	+117
TOTAL	881	1228	+39
Employed Labor Force			
Male	736	932	+27
Female	127	254	+105
TOTAL	860	1186	+38
Percent Unemployed	2.4	3.4	+42
Percent Aged 16 and Over in Labor Force			
Male	90.0	86.3	-40
Female	16.3	29.6	+82

SOURCE: U. S. Bureau of Census, 1960-1970.

Labor Force = persons 14+ (16+ in 1970) employed, unemployed, or members of the Armed Forces.

EMPLOYMENT

Although total employment in mining increased between 1960 and 1970 (688 to 742 workers), the mining sector declined in importance as an employer (Figure 2). Significant gains were scored both numerically and proportionately by manufacturing, wholesale-retail, transportation, communication-utilities, and professional services (Table 8).

Table 8. Hoyt Lakes employment for selected industries.

INDUSTRY	1960 #	1960 %	1970 #	1970 %	% Δ 1960-70
Mining	675	78.5	744	62.7	+ 10
Professional Services	33	3.8	127	10.7	+285
Retail	45	5.2	123	10.4	+173

SOURCE: U. S. Bureau of Census, 1960-1970.

In 1970 employment by occupation indicates a concentration in those occupations found in the mining sector, and little else (Table 9).

Table 9. Hoyt Lakes employment for selected occupations.

OCCUPATION	1970 #	1970 %
Craftsmen, Foremen, & Kindred	341	28.8
Operatives	245	20.7
Professional, Technical & Kindred	206	17.4
Service Workers	128	10.8

SOURCE: U. S. Bureau of Census, 1970.

BUSINESS ACTIVITY

The Department of Revenue provides information from its sales and use tax reports. These reports reveal gross sales for each community, an excellent indicator of business activity, even though the figures are subject to some variation due to misinterpretation of Department of Revenue definitions.

Table 10. Hoyt Lakes business activity, 1969 to 1975.

	GROSS SALES	FILERS	SALES/FILER
1969	$2,270,181	33	$ 68,793
1971	2,676,842	44	60,837
% Δ 69-71	+18		-12
1973	4,251,258	40	71,207
% Δ 71-73	+ 6		+17
1975	4,280,859	42	101,925
% Δ 73-75	+50		+43
% Δ 69-75	+89	+27	+48

SOURCE: Minnesota Department of Revenue.

Gross sales from 1969 to 1975 increased by 89 percent. The largest part of the increase was registered between 1973 and 1975 when sales jumped 50 percent. Between 1960 and 1971 sales per filer actually declined 12 percent.

Over the 6 years of data, sales per filer increased 48 percent and the number of filers rose 27 percent.

Hoyt Lakes has one bank, the First National Bank of Hoyt Lakes, whose call report of March 31, 1976, revealed the following figures (Table 11).

Table 11. Hoyt Lakes bank data, 1976.

Deposits	$ 8,797,000
Assets	10,181,000
Liabilities	9,440,000
Total Loans	4,912,000
Total Debits[a] (previous 12 mos.	89,944,000

SOURCE: Regional Administrator of National Banks, 1976.

[a]Federal Reserve Bank, 1976.

The percentage of loans to assets, which indicates a bank's propensity to grant loans, may become important as pressure for development capital increases. For the Hoyt Lakes bank this ratio is 48 percent. Total bank debits for the previous 12 months represent an increase of 16 percent from the year before.

In the city there is also the Hoyt Lakes Mining Employees Credit Union which, as of December, 1975, had assets of $2,317,000.

MUNICIPAL GOVERNMENT FINANCE

Revenues

Municipal revenues in Hoyt Lakes have increased 165 percent between 1965 and 1974, from $357,992 to $949,240. During the same period taxes paid by local residents have increased from $131,642 in 1965 to $174,553 in 1974. While this represents an increase in actual dollars paid in taxes of 33

percent, the percentage of total receipts contributed by local taxes has gone down. Local taxes of $131,642 made up 37 percent of total receipts in 1965. In 1974 taxes of $174,553 were only 18 percent of the $949,240 in total receipts.

State-shared taxes (derived mostly from taconite operations) have increased from $193,552 in 1965 to $572,943 in 1974. This is an absolute increase of 196 percent, but represents only a small change in the percentage contribution of state-shared taxes to total municipal receipts. The 1965 portion was 54 percent of the total; 1974's was 60 percent.

Part of the slack created by the percentage decline in local taxes has been picked up by federal revenue sharing. This has gone from zero prior to 1972 to $68,306 in 1974 (7 percent of total receipts).

Disbursements

In seven of the last ten years total disbursements made by Hoyt Lakes have been less than total receipts, indicating sound fiscal responsibility. In fact, two of the years in which disbursements exceeded receipts followed a year (1968) when the city had a better than $500,000 surplus. The two years of deficits managed to expend most of this reserve.

Perhaps the most interesting aspect of the Hoyt Lakes expenditure pattern is its evident commitment to the recreation program of the city. Except for highways, recreation is annually the biggest expenditure sector. In fact, on several occasions annual recreation expenditures were larger than those for highways.

Taxable Valuation

Hoyt La[illegible] taxable valuation has maintained a steady, albeit small, increase over the past ten years. The increase from $7,705,236 in 1967 to $9,604,447 in 1976 represents a 25 percent gain over 10 years. The increase in mill rates, 14 percent over 10 years, is smaller than that of valuation because of the diminished tax burden on local tax payers (Table 12).

Table 12. Hoyt Lakes taxable valuation, mill rates, 1967 to 1976.

YEAR	TAXABLE VALUATION	% CHANGE	CITY MILL RATE	% CHANGE
1967	$ 7,705,236		21.16	
1968	7,939,176	+ 3	22.87	+ 8
1969	7,996,125	+ 1	29.58	+29
1970	8,586,720	+ 7	27.47	- 7
1971	8,468,217	- 1	28.88	+ 5
1972	8,952,252	+ 6	21.64	-25
1973	10,293,241	+15	17.33	-20
1974	9,254,764	-10	20.50	+18
1975	9,497,350	+ 3	17.83	-13
1976	9,604,447	+ 1	24.04	+35
1967-1976		+25		+14

SOURCE: Minnesota State Auditor, 1967-1976.

A useful analysis figure is local taxes paid per thousand dollars in taxable valuation. In 1965 this figure was $17.25 per thousand dollars of valuation; in 1974 it was $18.86, an increase of 9 percent.

SCHOOL DISTRICT FINANCE AND ENROLLMENT

The city of Hoyt Lakes is within the consolidated Aurora-Hoyt Lakes school district—number 691. Financial and enrollment analysis is found in the Aurora community profile.

GOVERNMENTAL STRUCTURE AND SERVICES

Form

Hoyt Lakes' municipal government is a mayor-council arrangement. The mayor is elected for a two-year term, while the four-member council is elected to a four-year term (Table 13). The annually-appointed city clerk is the chief administrator. The zoning ordinance includes, but is not limited to, the sections designated in Table 14.

Table 13. Hoyt Lakes governmental structure.

FORM	CITY COUNCIL MEMBERS	COUNCIL MEETING SCHEDULE	CITY ATTORNEY	# OF CITY EMPLOYEES (FULL-TIME)	PLANNING COMMISSION MEMBERS	PLANNING COMMISSION STAFF (FULL-TIME)	ZONING ORDINANCE	STATE BUILDING CODE ENFORCED
Mayor-Council	4	2nd & 4th Tuesday	Yes[a]	21	5	0	Yes	Yes

SOURCE: Personal communication with mayor of Hoyt Lakes, June, 1976.

[a]Also acts as Aurora's city attorney.

Table 14. Hoyt Lakes zoning ordinance sections.

ZONING DISTRICTS	MOBILE HOMES	MINIMUM LOT SIZE	SUBDIVISION REGULATIONS	SEPTIC TANKS	BUILDING PERMITS	AMENDMENT PROVISION
X	X	X	X	X	X	X

SOURCE: Hoyt Lakes zoning ordinance.

Public Safety Services

Hoyt Lakes fire and police services are summarized in Tables 15 and 16.

Table 15. Hoyt Lakes fire protection.

ORGANIZATION TYPE	PERSONNEL	CITY ISO CLASS[a]	PUMPERS GPM[b]	PUMPERS TANK	TANKERS	LADDER TRUCKS	INSPECTIONS PERFORMED	RUNS/YEAR INSIDE CITY	RUNS/YEAR OUTSIDE CITY
Volunteer	25	6	1-750 1-750	500 500	0	0	Yes	14	0

SOURCE: Fire Service Information, Research and Education Center, University of Minnesota, 1976.

[a]Insurance Services Office Code; scale of 1(best) to 10(lowest).
[b]gallons per minute.

Table 16. Hoyt Lakes law enforcement.

TOTAL PERSONNEL			VEHICULAR RESOURCES		
FULL-TIME	PART-TIME	PERSONS PER PATROLMAN[a]	PATROL VEHICLES	SPECIAL PURPOSE VEHICLES[b]	JAIL
5	3	726	2	1	Yes

SOURCE: Arrowhead Regional Criminal Justice Plan, Data Section, 1976, ARDC.

[a]Full-time only.
[b]Snowmobiles, boats, motorcycles, etc.

PUBLIC AND COMMERCIAL UTILITIES

Hoyt Lakes' utility services are summarized in Tables 17 through 21.

Table 17. Hoyt Lakes water supply.

OWNERSHIP	PLANT CLASS.	SERVICE CONNECTIONS	SOURCE	WELLS NUMBER	WELLS DEPTH	TREATMENT[a]
Municipal	B	680	Colby Lake	NA	NA	C,S,Fl,D, Cc,Se

STORAGE CAPACITY ELEVATED 1000 gal	STORAGE CAPACITY GROUND 1000 gal	DAILY CONSUMPTION (1000 gal) MAXIMUM	DAILY CONSUMPTION (1000 gal) AVERAGE	STATE PLUMBING CODE
1500	0	1500	434	Not Adopted

SOURCE: Minnesota Department of Health, Division of Environmental Health.

[a]C-Coagulation, Cc-Corrosion Control and Stabilization, Fl-Fluoridation, S-Softening, Se-Sedimentation.

Table 18. Hoyt Lakes sewage treatment.

PEAK CAPACITY	TYPE OF TREATMENT[a]	AVERAGE FLOW	% OF CAPACITY
1,200,000 gals/day	2	296,000 gals/day	25

SOURCE: Minnesota Pollution Control Agency, August, 1976.

[a]1. Primary (Physical)
2. Secondary (Biological)
3. Tertiary (Chemical)

Table 19. Hoyt Lakes landfill information.

NAME	SIZE (ACRES)	CAPACITY (CU YDS)	LIFE EXPECTANCY	OPERATOR	POPULATION SERVED
Hoyt Lakes Sanitary Landfill	40	133,000	18 yrs. 1969	Hoyt Lakes	5000

SOURCE: Minnesota Pollution Control Agency, Duluth Regional Office, June, 1976.

Table 20. Hoyt Lakes[a] electrical usage.

ELECTRICITY SOLD (GWH)[b]	SUMMER PEAK (MW)	WINTER PEAK (MW)	SUPPLIER	CUSTOMERS	
				RESIDENTIAL	NON-RESIDENTIAL
10.04	3.0	4.0	MP&L[c]	921	64

SOURCE: Minnesota Energy Agency, June, 1976.

[a]Community use only, no mining.
[b]One million kilowatts.
[c]Minnesota Power and Light.

Table 21. Hoyt Lakes[a] natural gas usage.

SUPPLIER	MINIMUM LOAD (MCF/DAY)	PEAK CAPACITY (MCF/DAY)	NUMBER OF INTERRUPTIBLE USERS
People's Natural Gas	75	950	2

TOTAL 1975 USAGE (MCF)	CUSTOMERS	
	RESIDENTIAL	NON-RESIDENTIAL
124,932	541	34

SOURCE: People's Natural Gas, July, 1976.

[a]Residential and commercial only, no mining.

OTHER COMMUNITY SERVICES

Transportation

Inter-city bus passenger service is available, but only if one travels to Aurora for arrival or departure. No air, rail, or taxi passenger services are provided in Hoyt Lakes. Hoyt Lakes has the dubious distinction of being a "dead-ended" city for vehicular traffic. A proposal has been submitted to extend National Forest Highway (NFH) 11 to Minnesota State Highway 61 along the North Shore of Lake Superior, but this proposal has received only minimal acceptance by the Highway Departments of St. Louis and Lake counties.

Communication

All major network-affiliated television and radio signals are received in Hoyt Lakes. No local newspaper is provided in the community.

Health

Facilities--There are no hospitals or medical clinics in the community.

Professionals--There are no physicians serving in the community, but one dentist is located in the city shopping center.

VIRGINIA

DEMOGRAPHY

Population Trends and Prospects

Virginia, lying on the western edge of the socio-economic study area and approximately thirty miles from anticipated activities related to copper-nickel extraction, nevertheless, has a special significance which warrants its inclusion in the study. Called the "Queen City of the Range" in the past, it retains a dominance as a commercial distributive and support industry center for all of the communities east of it and some areas to the west. As such, its population, past and future, is inextricably tied to the welfare of those communities.

Virginia's population changes in the past reflect both its role as a mining town and its position as a retail center. While it has suffered most of the population fluctuations that have occurred in the other towns, often the changes have been blunted somewhat by its broader economic base. Actual population changes and the rate of change between 1950 and 1970 are shown in Table 1. When comparing these rates with those of other towns in the study area (see Chapter 4), it can be seen that the fluctuations often have not been as dramatic.

For most purposes in planning changes in the age composition of a population are at least as important as total population changes. The age and sex composition of Virginia, as depicted in Table 2 for the census years of 1950, 1960, and 1970, indicate that several changes are occurring. The broad "base" in the 1950 and 1960 pyramids formed by the population less

Table 1. Virginia population.

YEAR	POPULATION	% CHANGE
1950	12,486	+ 2 (from 1940)
1960	14,034	+12
1970	12,450	-11

SOURCE: U. S. Bureau of Census, 1960-1970.

than 20 seems to be decreasing, reflecting the generalized lower birth rates of recent decades. At the same time the population formed by those over 65 is growing, indicating both the increase in longevity enjoyed by the elderly (a national trend), and a growing percentage of the aged in the community. These trends are reflected in the high dependency ratio in 1970 (population younger than 20 and older than 65 compared to those between 20 and 64 years of age) relative to that of 1950.

Another change is the growing dominance of females in the Virginia population. The male/female ratio has swung dramatically toward the female side since 1950.

Table 2. Virginia population breakdown.

YEAR	TOTAL POPULATION	FEMALE	MALE	M/F RATIO	% 65+	% <20	DEPENDENCY RATIO
1950	12,486	6282	6204	99	11	31	67
1960	14,034	7194	6840	95	13	36	99
1970	12,450	6462	5888	90	15	34	97

SOURCE: U. S. Bureau of Census, 1950-1970.

Educational Characteristics

The twenty year trend of educational levels in Virginia seems definitely upward, with significant gains both in absolute numbers and percents of the total population for both categories of graduates (Table 3). The increase of college graduates (a total of over 22 percentage points) is perhaps most remarkable.

Table 3. Virginia level of education.

	1950		1960		1970	
Median School Years Completed	10.5		11.8		12.3	
Number and % High School Graduates	3320	41.6%	4138	50.3%	4509	60.2%
Number and % College Graduates	555	6.9%	771	9.4%	2192	29.3%

SOURCE: U. S. Bureau of Census, 1950-1970.

Levels of high school graduates and persons with vocational training in Virginia are not extraordinary, but again, the percentage of college graduates makes Virginia somewhat unique among the study communities (Table 4).

Residency

Figure 1 gives some idea of the residential stability in Virginia as it was measured in 1970. The map shows: 1) the proportion of people over five years old who in 1970 still occupied the same residence where they had lived in 1965; and 2) the percentage of the 1970 Virginia population which in 1965 had resided in one of the other designated places.

Table 4. Virginia educational characteristics of the labor force pool, 1970.

	MALE[a]		FEMALE[b]	
	NUMBER	PERCENT	NUMBER	PERCENT
Years of School Completed				
Less than high school	88	5.0	124	5.6
1-3 years high school	212	12.0	593	26.8
4 years high school	671	38.1	882	39.9
1 or more years college	792	44.9	612	27.7
Persons with less than 3 years of college completed[c]				
With vocational training	511	17.4	768	20.7
Without vocational training	2429	82.6	2944	79.3

SOURCE: U. S. Bureau of Census, 1970.

[a]Males aged 20-29.
[b]Females aged 15-44.
[c]Persons aged 16-64.

Virginia had the lowest percentage of same-house five-year residents of all the study communities, with only 60.4 percent having lived in the same house during the whole five-year period. An extraordinarily high number of newcomers moved there from other parts of St. Louis County, with lesser numbers from Minnesota and the North Central region.

Income

Average family income in Virginia shows a gradually declining trend between 1950 and 1970, moving from 109 percent to 98 percent of the state level.

However, gross Minnesota income per filer increased a little, relative to the state average, and remained above the state average (Table 5).

Table 5. Virginia income.

	MEDIAN FAMILY INCOME					MINN. GROSS INCOME/FILER		
	1950	1960	% Δ	1970	% Δ	1970	1974	% Δ
$ Amount	2925	5744	+96	9120	+59	6379	8222	+29
% of State Median	109.0	103.1		91.8		101.4	101.9	

SOURCES: U. S. Bureau of Census, Department of Commerce Series P-25, No. 568, 1975; Minnesota Department of Revenue, 1970-1974.

Between 1960 and 1970 the percentage of families below the poverty threshold in Virginia went from substantially less than the state percentage to slightly greater than the state number (Table 6).

Table 6. Virginia poverty.

	% FAMILIES BELOW POVERTY THRESHOLD		
	1950[a]	1960[b]	1970[c]
Virginia	27.5	14.8	9.5
Minnesota	36.6	21.4	8.2

SOURCE: U. S. Bureau of Census, 1950-1970.

[a]Families with income less than $2000.
[b]Families with income less than $3000.
[c]An index based on a total of family money income which is less than 3 times the cost of an adequate diet ("economy food plan"). In 1970 the average threshold for a nonfarm family of four headed by a male was $3745.

LABOR FORCE

The decline of Virginia's population between 1960 and 1970 (-11 percent) is mirrored almost perfectly by the decline of the total labor force, as is the 12 percent gain in population the previous decade (Table 7). However, over these three periods the labor force participation rate for men dropped steadily, from over 80 percent to slightly more than 70 percent. The rate for women increased the first decade and then remained constant between 1960 and 1970.

Table 7. Virginia labor force characteristics.

	1950	1960	% Δ	1970	% Δ
Population	12486	14034	+12	12450	-11
Labor Force					
Male	3808	3637	- 4	3005	-17
Female	1545	1897	+23	1817	- 4
TOTAL	5343	5534	+ 4	4822	-13
Employed Labor Force					
Male	3644	3367	- 8	2881	-14
Female	1502	1784	+19	1689	- 5
TOTAL	5146	5151	---	4570	-11
Percent Unemployed	3.7	6.9	+86	5.2	-25
Percent Aged 16 and Over in Labor Force					
Male	80.9	75.4	- 7	70.2	- 7
Female	31.6	36.1	+14	36.2	---

SOURCE: U. S. Bureau of Census, 1960-1970.

Labor Force = persons 14+ (16+ in 1970) employed, unemployed, or members of the Armed Forces.

EMPLOYMENT

Through the period between 1950 and 1970 Virginia remained the least dependent of all the towns on mining employment (Table 8). Also during this period the mining sector was challenged and then passed by the wholesale-retail category, and by 1970, by professional services as well.

Although total employment in Virginia increased between 1950 and 1960, total workers in mining declined by about 5 percent (although the sector held nearly steady in terms of percentages). By 1970, although total employment had fallen over the ten years from 1960, workers in manufacturing and professional services rose in actual numbers and percent of total. This data, as well as the generally diversified pattern displayed in Figure 2, underscores the increasing importance of Virginia as a regional commercial, service, and manufacturing center, a role not duplicated to any great degree by any of the other communities.

Table 8. Virginia employment for selected industries.

INDUSTRY	1950 #	1950 %	1960 #	1960 %	% Δ 1950-60	1970 #	1970 %	% Δ 1960-70
Professional Services	558	10.8	851	16.5	+54	1106	24.2	+28
Wholesale-Retail	1037	20.2	1155	22.4	+12	1010	22.1	-14
Mining	1202	23.4	1139	22.1	- 5	759	16.6	-35
Manufacturing	518	10.1	404	7.8	-22	457	10.0	+11

SOURCE: U. S. Bureau of Census, 1950-1970.

Table 9 shows a very even distribution of occupational divisions. This follows from Virginia's position as a regional business center, offering a full range of wholesale, retail, professional, and service employment opportunities as well as contributing employment to the major industry of the region, mining. (The mining industry cuts across all of the occupational divisions, but the bulk of jobs are in the two two categories.)

Table 9. Virginia employment for selected occupations.

OCCUPATION	1970 #	1970 %
Craftsmen, Foremen, & Kindred	854	18.7
Professional, Technical, & Kindred	819	17.9
Service, except Private Household	637	13.9
Operatives, except Transport	552	12.1
Clerical and Kindred	508	11.1

SOURCE: U. S. Bureau of Census, 1970.

BUSINESS ACTIVITY

It is difficult to find any one indicator which will give an accurate picture of the total business activity of a community. For our purposes, data from the sales and use tax reports published annually by the Department of Revenue is perhaps best. It gives us the total gross sales from sales tax records. Because the definitions used by the Department of Revenue have not changed within the time frame of the data presented here, the information is useful for showing change over time (Table 10).

Table 10. Virginia business activity, 1969 to 1975.

	GROSS SALES	FILERS	SALES/FILER
1969	$ 45,494,967	357	$127,437
1970	81,388,774	428	190,161
% 69-71	+79		+49
1973	110,004,708	427	257,622
% 71-73	+35		+35
1975	115,761,609	437	356,434
% 73-75	+42		+38
% 69-75	+242	+22	+180

SOURCE: Minnesota Department of Revenue.

From 1969 to 1975 the data shows a growth of 242 percent in reported gross sales, an increase of 22 percent in the number of filers, and an increase of 180 percent in the average gross sales per filer.

Information taken from the call reports of the banks of Virginia is another way to examine the business climate of the community. The call reports, which reveal such items as assets, liabilities, deposits, and loans, will indicate the resources a community may have available to it. The call report's best use may be in a relative manner, comparing one bank to another or one community to another. Change over time could also be done, but at present data is only presented for one point in time.

In Virginia there are three banks: Northern State Bank, Northwestern State Bank, and First National Bank of Virginia. With the exception of the Northwestern State Bank, whose call report is for December 31, 1975, all call reports are dated March 31, 1976. For the banks of Virginia, then, the totals for each item are listed in Table 11.

Table 11. Virginia bank data, 1976.

	NORTHERN STATE BANK	NORTHWESTERN STATE BANK	FIRST NATIONAL	TOTAL
Deposits	$14,959,000	$53,539,119	$52,461,000	$120,959,119
Assets	16,079,000	59,286,419	58,302,000	133,667,419
Liabilities	15,056,000	55,474,675	53,899,000	124,429,675
Total Loans	8,598,000	27,238,406	36,115,000	71,951,406
Total Debits[a] (previous 12 mos.)				865,641,000

SOURCE: Regional Administrator of National Banks, 1976.

[a]Federal Reserve Bank, 1976.

Perhaps the most interesting feature which these figures show is the ratio of loans to assets. This ratio could become important should increased development occur with increasing demand for housing mortgages and other front-end development capital. By themselves the figures probably do not indicate a clear trend. Certainly, individual bankers have different opinions as to what is or is not a good ratio. Those judgments will not be made here.

The loan-to-asset percentage ranges from 46 percent for Northwestern State Bank to 62 percent for First National, with Northern State at 53 percent very near the aggregate ratio of 54 percent.

Total bank debits in Virginia for the 12 months previous to March 31, 1976 show a phenomenal 41 percent increase over the year before.

Also worth documenting is the status of the savings and loan institutions and credit unions. Again, time series data would be most appropriate, but at present only one set of figures is presented. This information came from the Savings League of Minnesota and is dated December, 1975. In Virginia the Queen City Federal Savings and Loan with assets of $49,719,843 and the Virginia Co-op Credit Union with $4,885,000 represent the credit opportunities in Virginia in addition to the banks.

MUNICIPAL GOVERNMENT FINANCE

Revenues

The percentage contribution of local taxes paid by the residents of Virginia has decreased steadily from 77 percent in 1966 ($1.6 million local contribution against $2.1 million total receipts) to 21 percent in 1974 ($1 million against $4.8 million). Through the period 1965 to 1974 total receipts have increased 150 percent from $1,937,579 to $4,846,692.

The gap between local taxes and total receipts has been bridged in large part by increases from two sources. One is the state-shared taxes brought about largely by new taconite laws and increased mining activity. The other is the advent of federal revenue sharing. The percentage of state-shared taxes of total receipts increased from 2 percent ($46,191 to $1,937,579) in 1965 to 28 percent ($1,341,158 of $4,846,692) in 1974. Federal revenue sharing, meanwhile, went from zero in 1971 to 6 percent ($209,249) in 1974. Together, these extra-local contributions made up more than one-third of total receipts in 1974.

Disbursements

In six of the ten years prior to 1975 Virginia's total disbursements have been greater than total receipts, indicating that the city is either deficit spending and going in debt or drawing upon reserves it has built up in the past. While receipts increased 150 percent from 1965, total disbursements rose 163 percent.

One reason for this pattern may be seen in the city's increased spending for capital improvements. From 1965 when its capital outlay amounted to $240,161 or 12 percent of total disbursements, to 1974 when $2,255,589 or 43 percent was capital outlay, this element of the budget has increased 839 percent. It must be noted, however, that 1974 may be a bad year for comparative purposes. Virginia made extraordinarily large capital outlays in 1974 for highways ($818,012) and sanitation and waste removal ($1,104,724). Using 1973 when capital improvements cost $774,846 (23 percent of total disbursements) gives us perhaps a better perspective. The increase in capital outlay from 1966 to 1973 was 221 percent, a percentage substantially larger than the growth rate of total disbursements, but more realistic than an increase of 839 percent.

Taxable Valuation

Since 1967 the trend of taxable valuation in Virginia has been markedly downward. Since taxable valuation is the key determinate of mill rate, which in turn determines the taxes to be paid by any individual taxpayer, a downward trend in valuation coupled with a constant tax levy would mean an increasing burden on taxpayers. A note of explanation must accompany the data. Prior to 1973 taxable valuation was set equal to one-third of

full market value. This means that taxable valuation prior to 1973 must be increased by a factor of three to make it compatible with figures since 1973. Mill rates, then, must be divided by three. This has been done for all figures presented for each community (Table 12).

Table 12. Virginia taxable valuation, mill rates, 1967 to 1976.

YEAR	TAXABLE VALUATION	% CHANGE	CITY MILL RATE	% CHANGE
1967	$40,895,895		45.26	
1968	36,353,151	-11	47.14	+ 4
1969	36,563,973	+ 1	46.86	- 1
1970	35,844,591	- 2	46.15	- 2
1971	37,319,844	+ 4	45.24	- 2
1972	33,658,200	-10	37.07	-18
1973	32,875,480	- 2	37.86	+ 2
1974	30,432,435	- 7	42.76	+13
1975	27,452,004	-10	47.12	+10
1976	28,433,202	+ 4	56.09	+19
1967-1976		-30		+24

SOURCE: Minnesota State Auditor, 1967-1976.

From 1967 to 1976 taxable valuation has decreased 30 percent, while the mill rate has increased by 24 percent. This reflects that the local tax levy, though decreasing over this time span, has decreased at a slower rate than has taxable valuation. The effective tax rate (local tax receipts per thousand dollars of taxable valuation) has decreased 30 percent from $47.27 in 1965 to $32.99 in 1974, primarily because of increased state and federal aids to local government.

SCHOOL DISTRICT FINANCE

Trends in the Virginia school district (706) in the past few years have been upward in nearly everything except enrollment and staff. Data on school district finance was obtained from two state agencies, the Departments of Education and Revenue. Information for three years, 1972-1973, 1973-1974, and 1974-1975 is available from the Department of Education. Mill rates and school district tax levies for the last four years is from the Department of Revenue.

In most financial matters the trends have been upward. One notable exception has been the percentage of receipts from state and federal government. In 1972-1973, 68 percent of total receipts came from nonlocal sources. By 1974-1975 this had decreased to 62 percent, thus putting more of a burden on local residents and forcing higher tax levies in spite of a decreasing taxable valuation. As a result levies were up 15 percent from 1972 to 1976 ($1,497,807 to $1,718,186), and mill rates were up 33 percent (45.56 to 60.71) over the same time.

As was indicated in the employment discussion, education makes up a significant portion of total employment—11.6 percent in 1970. Average salaries for teachers (from 1972-1973 to 1974-1975) have risen from $10,745 to $13,230, an increase of 23 percent. Total payroll (average salary times full-time equivalent staff) in 1974-1975 was nearly $2.2 million. In spite of a decrease in full-time staff (193 to 166) from 1972-1973 to 1974-1975, total payroll increased 6 percent from the $2.07 million in 1972-1973.

Table 13. Virginia school district disbursements, 1972 to 1975.

YEAR	PER PUPIL UNIT TOTAL EXPENDITURE	% CHANGE	PER PUPIL UNIT OPERATING COST	% CHANGE
1974-75	$1489	+24	$1139	+17
1973-74	1201	+ 3	976	+ 6
1972-73	1162		918	

SOURCE: Minnesota Department of Education, 1972-1975.

For the years data is available total expenditures have increased 28 percent and operating costs have risen 24 percent. When multiplied by pupil units to give a gross value to these terms, a realistic view of the school district as an economic unit is available. In 1974-1975 total expenditure reached $5,086,424, while operating costs were $3,890,824.

When the school district is considered as an economic enterprise similar to any other industrial concern, the magnitude of the operation becomes much more apparent. The school district injects dollars into the community, which in turn flow through the economic system creating indirect effects such as more jobs and increased spending.

EDUCATION--SCHOOL DISTRICT 706

Facilities

Virginia has a total of seven schools--Horace Mann, Washington and James Madison Elementary schools, Virginia Junior High School, Roosevelt Senior High School, and Mesabi Community College. The Midway Elementary School

has been temporarily closed due to declining enrollment. Except for the community college, all structures are over forty years old. Mesabi Community College, opened in 1921, came under state control in 1964 and opened at its present location in 1968.

Enrollment

Kindergarten enrollment has fluctuated widely over recent years from a high of 211 in 1970-1971 to a low of 152 in 1972-1973. During the same five-year period (1970-1971 to 1975-1976) a steady decline in elementary and secondary enrollment has occurred. The total change for the period was nearly 19 percent (Table 14). The school district could absorb an additional 950 students based upon current enrollment and capacity data (Table 15).

Table 14. Virginia school district enrollment, 1970 to 1976.

SCHOOL DISTRICT 696	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	% Δ 5 YEARS
Kindergarten	211	204	152	189	161	162	-23.2
Elementary & Secondary	3160	3252	2979	2815	2895	2576	-18.5

SOURCE: Personal communication with Virginia school district superintendent, June, 1976.

Table 15. Virginia school district capacity, student-teacher ratios, 1976.

SCHOOL DISTRICT 696	ENROLLMENT	CAPACITY	% UTILIZED	TEACHERS	S/T RATIO
Kindergarten	162	280	58	4	41:1
Elementary	1046	1600	65	42	25:1
Secondary	1530	1800	85	42	17:1

SOURCE: Personal communication with Virginia school district superintendent, June, 1976.

Virginia is the location of Marquette Catholic Elementary School. This is the only private school within the study area. Enrollment data for the years 1970 to 1975 is shown below. Presently, the student-teacher ratio is 18 to 1, and utilized enrollment capacity is 73 percent. A kindergarten program was begun in 1974.

Table 16. Marquette Elementary School enrollment.

1970	1971	1972	1973	1974	1975
158	127	112	88	128	150

SOURCE: Personal communication with Marquette Elementary School, September, 1976.

GOVERNMENTAL STRUCTURE AND SERVICES

Form

Virginia's municipal government is a mayor-council arrangement. The mayor is elected for a two-year term, while the eight-member council is elected

to a four-year term (Table 17). The biennially-appointed city clerk is the chief administrator. Including the hospital, public utilities, library, police, park and recreation, fire departments, and city attorney, there are 499 city employees. Virginia's zoning ordinance includes, but is not limited to, the sections shown in Table 18.

Table 17. Virginia governmental structure

FORM	CITY COUNCIL MEMBERS	COUNCIL MEETING SCHEDULE	CITY ATTORNEY	# OF CITY EMPLOYEES (FULL-TIME)	PLANNING COMMISSION MEMBERS	PLANNING COMMISSION STAFF (FULL-TIME)	ZONING ORDINANCE	STATE BUILDING CODE ENFORCED
Mayor-Council	8	2nd & 4th Tuesday	Yes	499	5	0	Yes	Yes

SOURCE: Personal communication with mayor of Virginia, June, 1976.

Table 18. Virginia zoning ordinance sections.

ZONING DISTRICTS	MOBILE HOMES	MINIMUM LOT SIZE	SUBDIVISION REGULATIONS	SEPTIC TANKS	BUILDING PERMITS	AMENDMENT PROVISION
X	X	X			X	X

SOURCE: Virginia zoning ordinance.

Public Safety Services

Virginia's fire and law enforcement services are summarized in Tables 19 and 20.

Table 19. Virginia fire protection.

ORGANIZATION TYPE	PERSONNEL	CITY ISO CLASS[a]	PUMPERS GPM[b]	PUMPERS TANK	TANKERS	LADDER TRUCKS	INSPECTIONS PERFORMED	RUNS/YEAR INSIDE CITY	RUNS/YEAR OUTSIDE CITY
Paid	26	5	1-1250 1-1000 1-750	750 500 175	0	1	Yes	142	7

SOURCE: Fire Service Information, Research and Education Center, University of Minnesota, 1976.

[a] Insurance Services Office Code; scale of 1(best) to 10(lowest).
[b] gallons per minute.

Table 20. Virginia law enforcement.

TOTAL PERSONNEL			VEHICULAR RESOURCES		
FULL-TIME	PART-TIME	PERSONS PER PATROLMAN	PATROL VEHICLES	SPECIAL PURPOSE VEHICLES[a]	JAIL
24	0	518	4	1	Yes

SOURCE: Arrowhead Regional Criminal Justice Plan, Data Section, 1976, ARDC.

[a] Snowmobiles, boats, motorcycles, etc.

PUBLIC AND COMMERCIAL UTILITIES

Virginia's utility services are summarized in Tables 21 through 25.

Table 21. Virginia water supply.

OWNERSHIP	PLANT CLASS.	SERVICE CONNECTIONS	SOURCE	WELLS NUMBER	WELLS DEPTH	TREATMENT[a]
Municipal	B	4250	Mine Shaft & Drilled Well	M.S. D.W.	157' 96'	D,F,C,Se, Fl,Cc

STORAGE CAPACITY ELEVATED 1000 gal	STORAGE CAPACITY GROUND 1000 gal	DAILY CONSUMPTION (1000 gal) MAXIMUM	DAILY CONSUMPTION (1000 gal) AVERAGE	STATE PLUMBING CODE
3050	100	4700	2500	Adopted

SOURCE: Minnesota Department of Health, Division of Environmental Health, June, 1976.

[a]C-Coagulation, Cc-Corrosion Control and Stabilization, D-Disinfection, F-Filtration, Fl-Fluoridation, Se-Sedimentation.

Table 22. Virginia sewage treatment.

PEAK CAPACITY	TYPE OF TREATMENT[a]	AVERAGE FLOW	% OF CAPACITY
2,000,000 gals/day	3	2,300,000 gals/day	115

SOURCE: Minnesota Pollution Control Agency, August, 1976.

[a]1. Primary (Physical)
2. Secondary (Biological)
3. Tertiary (Chemical)

Table 23. Virginia landfill information.

NAME	SIZE (ACRES)	CAPACITY (CU YDS)	LIFE EXPECTANCY	OPERATOR	POPULATION SERVED
East Mesabi Sanitary Landfill	128	6,000,000	200 yrs 2172	East Mesabi Sanitary Disposal Authority	30,000

SOURCE: Minnesota Pollution Control Agency, Duluth Regional Office, June, 1976.

Table 24. Virginia[a] electrical usage.

ELECTRICITY SOLD (GWH)[b]	SUMMER PEAK (MW)	WINTER PEAK (MW)	SUPPLIER	CUSTOMERS	
				RESIDENTIAL	NON-RESIDENTIAL
70.0	14.68	16.22	Municipal	4863	1960

SOURCE: Minnesota Energy Agency, June, 1976.

[a] Community use only, no mining.
[b] One million kilowatts.
[c] Minnesota Power and Light.

Table 25. Virginia[a] natural gas usage.

SUPPLIER	MINIMUM LOAD (MCF/DAY)	PEAK CAPACITY (MCF/DAY)	NUMBER OF INTERRUPTIBLE USERS
Virginia Department of Public Utilities[b]	800	1335	14

TOTAL 1975 USAGE (MCF)	CUSTOMERS	
	RESIDENTIAL	NON-RESIDENTIAL

SOURCE: Virginia Department of Public Utilities, July, 1976.

[a]Residential and commercial only, no mining.
[b]Includes municipal plant.

OTHER COMMUNITY SERVICES

Transportation

Inter- and intra-city bus passenger service and taxi service is provided, but no rail passenger service is available. Air passenger service is available at the Eveleth-Virginia Municipal Airport. Mesaba Airlines provides scheduled passenger service to Minneapolis-St. Paul International Airport. State Highway 169 and U. S. Highway 53 provide easy access to the community.

Communication

All major network-affiliated television and radio signals are received in Virginia. The Mesabi Daily News provides daily (except Saturday) newspaper coverage for the community.

Health

Facilities--The Virginia Municipal Hospital, which also offers convalescent and nursing care, is currently being expanded from a 173-bed to a 200-bed facility. The average yearly occupancy rate is 67 percent. In addition, there are four clinics offering medical services to the community: East Range Clinics, Ltd., Lenont-Peterson Clinic Ltd., Morseman Clinic, and the Siegal McBride Clinic. A branch of the Arrowhead Nursing Home is located in Virginia. The Range Mental Health Center, Inc. provides mental health treatment services.

Table 26. Virginia hospital information.

STAFF			OCCUPANCY		CONVALESCENT AND NURSING CARE			
					STAFF		OCCUPANCY	
PHYSICIANS	NURSES[a]	OTHER	BED CAPACITY	OCCUPANCY RATE	NURSES[a]	OTHER	CAPACITY	RATE
44	105	184	173	67%	NA	NA	122	98%

SOURCE: Minnesota Department of Health, Division of Health Facilities, June, 1976.

[a]RNs and LPNs

NA-not applicable.

Professionals--The hospital has a staff complement of 44 physicians and 105 nurses. There is a total of 19 dentists providing dental health care to the community. Two veterinarians serve the community.

REFERENCES CITED

Arneman, H.F. 1963. Soils of Minnesota. Extension Bulletin 278. Agricultural Extension Service, University of Minnesota, St. Paul, Minn.

Arrowhead Regional Development Commission. 1972. Areawide comprehensive plan for water and sewer. Duluth, Minn. p. 1-1.

Arrowhead Regional Development Commission. 1973. Organizational alternatives for implementing regional housing goals. Duluth, Minn.

Arrowhead Regional Development Commission. 1974a. Arrowhead regional land use. Duluth, Minn. pp. 2-4, 16, 28.

Arrowhead Regional Development Commission. 1974b. Population-economy-land use, Lake Superior Basin, water quality management plan, nonmetro Minnesota portion. Duluth, Minn. p. 25.

Arrowhead Regional Development Commission. 1975a. Assessment of growth impacts on the Iron Range. Duluth, Minn. p. 7.

Arrowhead Regional Development Commission. 1975c. Overall economic development guide for the Arrowhead region, u.a. Draft. Duluth, Minn. pp. IV-C-Z, IV-D-1 to IV-D-1Z.

Arrowhead Regional Development Commission. 1975d. Proposed housing guide plan for Iron Range communities. Duluth, Minn. p. 4.

Arrowhead Regional Development Commission. 1975e. We the people . . . 1776-1976, Arrowhead Regional Development Commission annual report. Duluth, Minn.

Arrowhead Regional Development Commission. 1976a. Projected number of households by age distribution and persons per household. Duluth, Minn.

Arrowhead Regional Development Commission. 1976b. Arrowhead regional criminal justice plan. Duluth, Minn.

Arrowhead Regional Development Commission. 1976c. Briefing session--Iron Range growth impacts. Duluth, Minn.

Aurora, City of. 1976. Zoning ordinance.

Babbitt, City of. 1977. Zoning ordinance.

Barton-Aschman Associates. 1975. Draft environmental impact statement, Reserve Mining Company, proposed on land tailings disposal plan. Minnesota Department of Natural Resources and Minnesota Pollution Control Agency, St. Paul, Minn.

REFERENCES CITED (contd.)

Biwabik, City of. 1970. Zoning ordinance.

Bonnichsen, Bill. 1974. Copper and nickel resources in the Duluth Complex, northeastern Minnesota. Information Circular 10. University of Minnesota, Minnesota Geological Survey, St. Paul, Minn.

Cedarholm, Newell. City of Babbitt. 1977. Communication with Barbara Nelson, Minnesota Environmental Quality Board, Regional Copper-Nickel Study. November 21, 1977.

Continental Telephone Company of Minnesota, Inc. 1976. Ely, Minnesota telephone directory. St. Paul, Minn.

Cossalter, C.A. Mayor, City of Eveleth. 1976. Communication with Michael O'Brien, Minnesota Environmantal Quality Board, Regional Copper-Nickel Study.

Dangelo, E. Mayor, City of Aurora. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

Duluth News Tribune. 1976a. "Biwabik 'yes,' mining 'no.'" Duluth, Minn. August 27, 1976.

Duluth News Tribune. 1976b. "Well, just move the city." Duluth, Minn. September 4, 1976.

Ely, City of. 1968. Zoning ordinance.

Fahey, Myron. Superintendent, Independent School District 699. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study, June 29, 1976.

Federal Deposit Insurance Corporation. 1976. Communication with Mark Donaldson, Minnesota Environmental Quality Board, Regional Copper-Nickel Study. June 23, 1976.

Federal Deposit Insurance Corporation, Data Requests and Survey Unit. 1975. Consolidated report of conditions of bank and domestic subsidiaries-State Bank of Aurora, December 31, 1975. F.D.I.C., Washington, D.C.

------. 1976. Consolidated report of condition of bank and domestic subsidiaries-Biwabik State Bank, December 31, 1975. F.D.I.C., Washington, D.C.

-------. 1976. Consolidated report of conditions-Biwabik State Bank, March 31, 1976. F.D.I.C., Washington, D.C.

REFERENCES CITED (contd.)

Federal Deposit Insurance Corporation, Data Requests and Survey Unit. 1976. Consolidated report of conditions of bank and domestic subsidiaries-First State Bank of Babbitt, December 31, 1975. F.D.I.C., Washington, D.C.

------. 1976. Consolidated report of conditions of bank and domestic subsidiaries-Northern State Bank of Virginia, December 31, 1975. F.D.I.C., Washington, D.C.

------. 1976. Consolidated report of conditions-Northern State Bank of Virginia, March 31, 1976. F.D.I.C., Washington, D.C.

------. 1976. Consolidated report of conditions-State Bank of Aurora, March 31, 1976. F.D.I.C., Washington, D.C.

------. 1976. Consolidated report of income for calendar year 1975-Biwabik State Bank, December 31, 1975. F.D.I.C., Washington, D.C.

------. 1976. Consolidated report of income for calendar year 1975-First State Bank of Babbitt, December 31, 1975. F.D.I.C., Washington, D.C.

------. 1976. Consolidated report of income for calendar year 1975-Northern State Bank of Virginia, December 31, 1975. F.D.I.C., Washington, D.C.

------. 1976. Consolidated report of income for calendar year 1975-State Bank of Aurora, December 31, 1975. F.D.I.C., Washington, D.C.

Federal Reserve Board, Federal Reserve Bank of Minneapolis. 1976. Communication with Mark Donaldson, Minnesota Environmental Quality Board, Regional Copper-Nickel Study, June 29, 1976.

Federal Reserve Board, Federal Reserve Bank of Minneapolis. 1977. Ninth district bank debits. Minneapolis, Minn.

Gerzina, M. Police Chief, City of Biwabik. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

Gilbert, City of. 1976. Zoning ordinance.

Ginther, R.E. Superintendent, Independent School District 692. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study, June 21, 1976.

Grahek, J.P. Mayor, City of Ely. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

REFERENCES CITED (contd.)

Gustafson, N.C. 1973. Recent trends/future prospects—A look at upper midwest population changes. Upper Midwest Council, Minneapolis, Minn.

Helmer, H. Mayor, City of Hoyt Lakes. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

Hermann, R.P. Division Manager, People's Natural Gas. 1976. Letter to Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

Hoyt Lakes, City of. 1975. Zoning ordinance.

Insurance Services Office. 1974. Grading schedule for municipal fire protection. New York, New York.

Inter-City Gas Limited, Inc. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

Johnson, J.T. Mayor, City of Virginia. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

Knudson, N. Arrowhead Regional Development Commission. 1976. Telephone conversation with Eric H. Bauman, Minnesota Environmental Quality Board, Regional Copper-Nickel Study, August 26, 1976.

Krebsbach, R. Superintendent, Independent School District 706. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

Lamppa, F.L. Superintendent, Independent School District 693. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

Lanari, A.P. Supervisor, Independent School District 710. 1976. Letter to Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study, August 18, 1976.

Larson, R. and T. Stern. 1976. Peat: An important resource in Minnesota. Prepared for presentation at the 23rd annual conference of the Mid-continent Research and Development Council, Duluth, Minn. Midwest Research Institute, North Star Division, Minneapolis, Minn.

Lohmann, A.J. City of Hoyt Lakes. 1977. Communication with Barbara Nelson, Minnesota Environmental Quality Board, Regional Copper-Nickel Study, November 21, 1977.

Mahal, R. Mayor, City of Babbitt. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

REFERENCES CITED (contd.)

Manion, Maggie. Principal, Marquette Elementary School. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study, September 13, 1976.

Matejka, G. Superintendent, Independent School District 697. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study, July 30, 1976.

Mesabi Daily News. 1976. "Moving Biwabik to be studied soon." Virginia, Minn., September 3, 1976.

Mesabi Daily News. 1977. "Babbitt council studies well permit proposal." Virginia, Minn., May 13, 1977.

Mesabi Sunday News. 1976. "The missionary: Reverend Bert Stanway." Virginia, Minn., October 3, 1976.

Milbridge, E. City of Eveleth. 1977. Communication with Barbara Nelson, Minnesota Environmental Quality Board, Regional Copper-Nickel Study, November 21, 1977.

Minnesota Department of Economic Development Research Division. 1976. An overview of the Minnesota economy. Research Bulletin #11. pp. 35, 38-39, 115.

Minnesota Department of Education. 1974. Special report 8(6). St. Paul, Minn.

Minnesota Department of Education. 1975. Special report 9(3). St. Paul, Minn.

Minnesota Department of Education. 1976. Special report 10(2). St. Paul, Minn.

Minnesota Department of Education. 1977. Special report 11(2). St. Paul, Minn.

Minnesota Department of Health. 1974. Vital statistics. p. 94.

Minnesota Department of Health, Division of Environmental Health. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study, June, 1976.

Minnesota Department of Health, Division of Health Facilities. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

Minnesota Department of Health, Water and Wastewater Operator Board of Certification. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

REFERENCES CITED (contd.)

Minnesota Department of Highways. 1976. Official highway map. St. Paul, Minn.

Minnesota Department of Iron Range Resources and Rehabilitation. 1975. Biennial report, 1972-1974. St. Paul, Minn.

Minnesota Department of Natural Resources. 1974. Minnesota state comprehensive outdoor recreation plan. St. Paul, Minn.

Minnesota Department of Natural Resources and Minnesota Pollution Control Agency. 1975. Draft environmental impact statement, Reserve Mining Company proposed on land tailings disposal plan. St. Paul, Minn.

Minnesota Department of Revenue. 1969. Minnesota sales and use tax reports. St. Paul, Minn.

------. 1970. Minnesota sales and use tax reports. St. Paul, Minn.

------. 1971. Minnesota sales and use tax reports. St. Paul, Minn.

------. 1972. Minnesota sales and use tax reports. St. Paul, Minn.

------. 1973a. Minnesota sales and use tax reports. St. Paul, Minn.

------. 1973b. Minnesota sales and use tax reports. St. Paul, Minn.

------. 1974. Minnesota sales and use tax reports. St. Paul, Minn.

------. 1975. Minnesota sales and use tax reports. St. Paul, Minn.

------. 1976. State individual income tax-1974. Minnesota Department of Revenue Income Tax Bulletin No. 43, St. Paul, Minn.

Minnesota Pollution Control Agency. 1976. Communications with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

Minnesota State Auditor. 1976. Cities per capita receipts, disbursements, and indebtedness for the fiscal years ended during the period July 1, 1974 to June 30, 1975. St. Paul, Minn.

------. 1967. Report of the state auditor of Minnesota on the revenues, expenditures, and debt of the cities in Minnesota for the fiscal years ended during the period July 1, 1965 to June 30, 1966. St. Paul, Minn.

------. 1968. Report of the state auditor of Minnesota on the revenues, expenditures, and debt of the cities in Minnesota for the fiscal years ended during the period July 1, 1966 to June 30, 1967. St. Paul, Minn.

REFERENCES CITED (contd.)

Minnesota State Auditor. 1969. Report of the state auditor of Minnesota on the revenues, expenditures, and debt of the cities in Minnesota for the fiscal years ended during the period July 1, 1967 to June 30, 1968. St. Paul, Minn.

------. 1970. Report of the state auditor of Minnesota on the revenues, expenditures, and debt of the cities in Minnesota for the fiscal years ended during the period July 1, 1968 to June 30, 1969. St. Paul, Minn.

------. 1971. Report of the state auditor of Minnesota on the revenues, expenditures, and debt of the cities in Minnesota for the fiscal years ended during the period July 1, 1969 to June 30, 1970. St. Paul, Minn.

------. 1972. Report of the state auditor of Minnesota on the revenues, expenditures, and debt of the cities in Minnesota for the fiscal years ended during the period July 1, 1970 to June 30, 1971. St. Paul, Minn.

------. 1973. Report of the state auditor of Minnesota on the revenues, expenditures, and debt of the cities in Minnesota for the fiscal years ended during the period July 1, 1971 to June 30, 1972. St. Paul, Minn.

------. 1974. Report of the state auditor of Minnesota on the revenues, expenditures, and debt of the cities in Minnesota for the fiscal years ended during the period July 1, 1972 to June 30, 1973. St. Paul, Minn.

------. 1975. Report of the state auditor of Minnesota on the revenues, expenditures, and debt of the cities in Minnesota for the fiscal years ended during the period July 1, 1973 to June 30, 1974. St. Paul, Minn.

------. 1976. Report of the state auditor of Minnesota on the revenues, expenditures, and debt of the cities in Minnesota for the fiscal years ended during the period July 1, 1974 to June 30, 1975. St. Paul, Minn.

Minnesota State Board of Dentistry. 1976. Communications with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

Minnesota State Planning Agency, Development Planning Division. 1975a. Minnesota pocket data book. St. Paul, Minn.

Minnesota State Planning Agency, Office of the State Demographer. 1975b. Minnesota population projections: 1970-2000. St. Paul, Minn.

Minnesota State Planning Agency, Office of Local and Urban Affairs. 1976. Minnesota housing needs, housing resources, and housing resource distribution plans, draft. Minnesota Housing and Finance Agency, State Planning Agency, St. Paul, Minn. pp. 9, 10, 12, 13.

Moeglien, Leo. City of Gilbert. 1977. Communication with Barbara Nelson, Minnesota Environmental Quality Board, Regional Copper-Nickel Study, November 21, 1977.

REFERENCES CITED (contd.)

Northwestern Bell Telephone Company. 1975. Virginia area regional telephone directory, August, 1975. Minneapolis, Minn.

Sandstrom, J. Mayor, City of Gilbert. 1976. Communications with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

Schoen, J.A. Superintendent, Independent School District 691. 1976. Letter to Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study, June 25, 1976.

Tschida, P.J. Minnesota Department of Public Safety, Bureau of Criminal Apprehension. 1976. Letter to Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

U. S. Department of Commerce, Bureau of the Census. 1940. Characteristics of the population. U. S. Government Printing Office, Washington, D.C.

------. 1950. Characteristics of the population. U. S. Government Printing Office, Washington, D.C.

------. 1960. Characteristics of the population. U. S. Government Printing Office, Washington, D.C.

------. 1970. Characteristics of the population. U. S. Government Printing Office, Washington, D.C.

U. S. Department of the Interior, Geological Survey. 1951, revised 1969. Eveleth quadrangle. Washington, D.C.

U. S. Department of the Interior, Geological Survey. 1962, revised 1969. Aurora quadrangle. Washington, D.C.

U. S. Department of the Treasury. Comptroller of the Currency-Administrator of National Banks. 1976. Consolidated report of condition-First National Bank of Ely, March 31, 1976. Washington, D.C.

------. 1976. Consolidated report of condition-First National Bank at Eveleth, March 31, 1976. Washington, D.C.

------. 1976. Consolidated report of condition-First National Bank of Gilbert, March 31, 1976. Washington, D.C.

------. 1976. Consolidated report of condition-First National Bank of Hoyt Lakes, March 31, 1976. Washington, D.C.

------. 1976. Consolidated report of condition-First National Bank of Virginia, March 31, 1976. Washington, D.C.

REFERENCES CITED (contd.)

U. S. Department of the Treasury. Comptroller of the Currency-Administrator of National Banks. 1976. Consolidated report of condition-The Miners National Bank, March 31, 1976. Washington, D.C.

------. 1976. Consolidated report of income-First National Bank of Ely, December 31, 1975. Washington, D.C.

------. 1976. Consolidated report of income-First National Bank of Eveleth, December 31, 1975. Washington, D.C.

------. 1976. Consolidated report of income-First National Bank of Gilbert, December 31, 1975. Washington, D.C.

------. 1976. Consolidated report of income-First National Bank of Hoyt Lakes, December 31, 1975. Washington, D.C.

------. 1976. Consolidated report of income-First National Bank of Virginia, December 31, 1975. Washington, D.C.

------. 1976. Consolidated report of income-The Miners National Bank, December 31, 1975. Washington, D.C.

------. 1976. Communication with Mark Donaldson, Minnesota Environmental Quality Board, Regional Copper-Nickel Study, November 18, 1976.

University of Minnesota, Center for Urban and Regional Affairs, Minnesota Land Management Information System. 1969. "Township land use tabulations," unpublished. Minneapolis, Minn.

University of Minnesota, Fire Service Information, Research and Education Center. 1976. Communications with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

University of Minnesota, Minnesota Analysis and Planning System. 1976. U. S. Bureau of the Census fourth count summary tapes, 1970. St. Paul, Minn.

Vejtasa, S. Superintendent, Independent School District 696. 1976. Communication with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study, June 23, 1976.

Virginia, City of, Department of Public Utilities. 1976. Communications with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

Virginia, City of. 1970. Zoning ordinance.

Wallen, R. Minnesota Energy Agency. 1976. Communications with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.

REFERENCES CITED (contd.)

Watson, B. 1976. The climate of the copper-nickel region, unpublished paper. Roseville, Minn.

Woods, R. Mayor, City of Biwabik. 1976. Communications with Michael O'Brien, Minnesota Environmental Quality Board, Regional Copper-Nickel Study.