

## HISTORY OF THE LOWER ST. LOUIS RIVER

### Geologic History of the Lower St. Louis River

The geologic history of the Lower St. Louis River can be reconstructed from the rocks and sediments exposed in the river bed and along the shoreline.

The present St. Louis River channel was shaped primarily by the glaciers of the Pleistocene epoch, which began approximately 2 million years ago. As glaciers advanced and retreated across the land, receding for the last time around 10,000 years ago, the melting ice and flowing meltwater left behind complex patterns of sediment, including moraines, drumlins, beach sands, and lake-bottom clays. These glacial deposits, which form many of the surface features we see today, greatly influence the flow and habitat conditions of the river.

The bedrock over which the St. Louis River flows is part of the Canadian Shield, the stable ancient core of the North American continent. From below Jay Cooke State Park to the Fond du Lac neighborhood, the river crosses the Fond du Lac Formation, which is made up of brown to red sandstone, siltstone, and shale approximately 950-1,040 million years old. Below Fond du Lac, coarse-grained, dark gray gabbro forms the high ridgeline on the Minnesota side of the river. This gabbro, along with the fine-grained volcanic basalts that are visible along the Lake Superior shoreline in Duluth, formed as the result of continental rifting about 1,100 million years ago (Ojakangas and Matsch 1982).

On the Wisconsin side of the river, bedrock is buried beneath thick layers of red clay, silt, and sand—remnants of a time over 11,000 years ago when the area was covered by Glacial Lake Duluth, which formed as meltwater was trapped in front of the ice of the retreating Superior Lobe of the Laurentide Ice Sheet. The red clay that is so characteristic of the Wisconsin side of the river was deposited in the deep water of this glacial lake (Farrand and Drexler 1985).

As the glacial ice retreated to the northeast, outlets of progressively lower elevation were exposed in the eastern part of the basin. The lake level dropped in stages as water drained away through these lower outlets (Landmesser and Johnson 1982). As the lake level fell, water began flowing into the western end of the lake, cutting a deep channel—the ancestral St. Louis River—into the easily eroded red clay sediments.

As the heavy weight of the ice was removed, the land began to rise, a process known as “isostatic rebound.” Since the land to the north and east was the last to lose its covering of ice, it was the last to rebound. As the land rose faster in the northeast, the water in Lake Superior shifted toward the western end of the lake, flooding the lower portion of the St. Louis River and its tributaries, and forming the freshwater estuary that we see today.

A baymouth sand bar formed across the western end of the lake, separating the estuary from the open water of the lake and creating a sheltered harbor. Historically, there was only one break in the baymouth bar—near what is now the Superior Entry—where water from both the St. Louis River and the Nemadji River flowed out into Lake Superior (Ojakangas and Matsch 1982).

## Pre-Industrial History of the Lower St. Louis River

In the area surrounding the Lower St. Louis River, the name “Fond du Lac” now refers to a Band of Lake Superior Chippewa whose reservation is located near Cloquet, Minnesota, or to a neighborhood of Duluth, Minnesota, which is located on the northern bank of the St. Louis River approximately 20 miles upstream from Lake Superior. But in the early days of European exploration, the entire Lower St. Louis River area was referred to as Fond du Lac, a name that is now translated in various ways—as “Head of the Lake,” “Foot of the Lake,” or “where the water stops.”

Although Native Americans have lived in northeastern Minnesota for thousands of years, they left few descriptions of life along the St. Louis River. Written records arrived with the Europeans who came to the area in the 1600s to explore, trade, and introduce Christianity to the Indians. Prior to the early 1800s, reports indicate that the Fond du Lac Band of Lake Superior Chippewa consisted of villages scattered along the shores of the St. Louis River. Villages were located at what are now the cities of Superior and Cloquet as well as the Duluth neighborhoods of Fond du Lac and Minnesota Point. The Fond du Lac Band also had seasonal camps at Spirit Lake and Indian Point, living primarily on game, fish, wild rice, and other wild plants (Fritzen 1978).

During the days of canoe travel, the St. Louis River was a major transportation route. Travelers from the east crossed Lake Superior, traveled up the St. Louis River, and then headed south toward the Upper Mississippi River or north toward Lake Vermilion. From the mouth of the river to the rapids above what is now the Fond du Lac neighborhood, most early travelers described a wide shallow river with extensive emergent wetland vegetation, including floating bog and beds of wild rice. The vegetation was so thick that it was often difficult to follow the main channel.

Canoes could be paddled upstream as far as the Grand Portage, which was located about 1.5 miles above the Fond du Lac settlement. There the current became strong and paddling more difficult. Canoes could not travel this section of the river, so they were carried across the Grand Portage, a distance of approximately 17 miles to the lower end of Maple Island, about a mile below what is now Scanlon. The portage was difficult, requiring three to seven days to cover the distance (Fritzen 1978).

Although Daniel Greysolon Sieur du Lhut, in the summer of 1679, was one of the first European explorers to arrive in the area, his reports do not contain much detail. Over 100 years later, in the summer of 1793, the North West Company constructed Fort St. Louis on the Superior bayfront several miles west of the mouth of the Nemadji River. While the North West Company controlled the territory from the 1780s until 1816, Fort St. Louis was the headquarters of the Department of Fond du Lac, which included the entire Upper Mississippi region. Trade goods and supplies were brought to the fort from Sault Ste. Marie and taken inland to various trading posts. Fort St. Louis was the scene of one of the first attempts at agriculture at the Head of the Lake. George Henry Monk, a clerk of the North West Company, described it this way: “Here are two horses, a cow, a bull and a few pigs; with the manure of these animals a garden of 3 acres of pure sand is cultivated, which produces about 220 bushels of potatoes” (Fritzen 1978).

In about 1816 Fort St. Louis was closed down, and the company built a new post some 18 miles up the river at the town of Fond du Lac. The new post included large gardens planted with potatoes and other crops; Indian lodges and gardens were located on an island in the river.

In 1820, an expedition led by Lewis Cass, territorial governor of Michigan, passed through the area enroute to locate the source of the Mississippi River. It is from this expedition that more detailed descriptions of the St. Louis River began to emerge. Henry R. Schoolcraft, expedition geologist, wrote the following (Schoolcraft 1855).

“On reaching the mouth of the St. Louis River or Fond du Lac River, the Cabotian mountains present a lofty barrier towards the north. We here saw in plenty the folle avoine, or wild rice... Three miles above the mouth of the St. Louis River there is a village of Chippewa Indians...The river is ascended two miles further, to the foot of the Grand Portage... The difficulties of the portage are much increased by the rain, which has filled the carrying path with mud and water. We are advancing into a dreary region – everything around us wears a wild and sterile aspect, and the extreme ruggedness of the country – the succession of swampy grounds and rocky precipices – the dark forest of hemlock and pines which overshadow the soil and the distant roar of the river, would render it a gloomy and dismal scene...”

Twelve years later, in 1832, Schoolcraft returned as leader of an expedition whose purpose was to curb hostilities between the Sioux and Chippewa and to investigate the condition of the fur trade. Lieutenant James Allen was the man chosen to command the military escort for the expedition and to keep a daily journal. Allen’s detailed journal includes the following descriptions of entering the St. Louis River from Lake Superior and traveling upstream to the settlement of Fond du Lac (Allen 1832).

“The mouth of Fond du Lac River, or “The Entrance,” as it is called by the traders and voyageurs, is about eighty yards broad, but is shallow, and would not admit a vessel of three or four feet draught. It expands immediately into two bays, to the right and left, separated from each other by a small island near and directly in front of the entrance. The mouth seems to be in the very end of the lake, and hence it is properly called *Fond du Lac River*. A river that enters the left bay of The Entrance is also as aptly called *La Rivière à Gauche* [Left Hand River, now called Nemadji River]. The bays to the right [Superior Bay] and left [Allouez Bay] lie in their length parallel to the shores of the lake, from which they are only separated by low sandy tongues of land, very much attenuated, and sustaining a few little scattering pines. The point to the right, entering, is near fifty yards broad near the end, but it afterwards narrows, and runs back for about two miles, with a breadth of from twenty to forty yards.

“Our course was through the right hand bay, N. 60° W. for four miles, to a strait one hundred yards broad, by which, in a distance of two hundred yards, we entered another bay [St. Louis Bay], long and narrow, and which contracted gradually to the very narrow, crooked channel of the river. ... The river for this distance is very crooked and winding, but its general course up is southwest; the channel is of variable breadth, and generally deep; the shore is irregular, and presents alternately, on either hand, marshes, bluff sand banks and hills, and is cut up by numerous channels, or “pockets,” from ten to one hundred yards broad, which run out straight and generally perpendicular to the river, frequently extending as far inland as we could see. These are separated by long tongues or promontories, of semi-cylindrical shape, rounded on either side up to the summit, fifty or sixty feet, and covered with a thick growth of small trees, aspen, birch, tamarack, *Pinus pendulus*, and other species of pine.

Several of these singular promontories occur in many places in succession, parallel to each other, with channels between, and present a formation and appearance altogether peculiar.

“We arrived at the trading house at 4 o’clock p.m. The river is here penetrating a chain of mountains, is more regular in its course, and has its channel more confined. The trading house is situated at the base of the mountain, on a narrow piece of bottom, three or four hundred yards broad, which is rich, and excepting the gardens where the trader raises abundance of potatoes, is covered with a very tall, green luxuriant grass, principally *Poa compressa*. ... This is called the Fond du Lac Post. The buildings...are handsomely situated on the bank of the river, and directly in front is an island, of about two miles circuit, of very rich soil and a forest of large elm.

“The population of the Fond du Lac band is 193, of whom about 45 are warriors. ... their country is very poor in all animals for food, and their particular trader furnishes most of their living; the rest they get from the fish of the lake; whitefish and trout, which they take in gill nets, and from the few furred animals they kill.”

Lieutenant Allen also recorded the difficulties encountered as the expedition headed upstream from Fond du Lac and carried their supplies across the Grand Portage (Allen 1832).

“...The portage was commenced by ascending a hill 100 feet high, with an acclivity of about 45°. No pains have ever been bestowed to make a road up it, and the ascent is by means of little imperfect steps, just large enough for the toes, that wind up the hill without any regularity as to direction or relative position. ... The portage road, after the hill, was rough, narrow, and crooked, a mere uncut path through bad woods. ... The portage road continued a little, narrow, crooked path, with bushes crowding it on either side, winding around trees, through marshes, over ridges, and across ravines, and presenting all the irregularities and inconveniences of a rude trail through difficult woods. ... No idea can be formed of the difficulty of this portage without witnessing it. The men with heavy loads are sometimes forced to wade through a swamp of half a mile, full of roots and bushes, and over their knees in mire at every step, and where the road is dry, it is generally over a hill, or across a gully, the steep banks of which are worse to pass than the swamps. ... The general direction of this portage has been a little west of northwest. ... It is on the north side of the river, and the land about it is rich, excepting the swamps. In some places we passed groves of sugar maple, but the general growth is birch and pine; some of the latter being very large and beautiful, measuring eighteen feet in circumference at the base.”

Edmund F. Ely, a missionary of the American Board, was stationed at Fond du Lac (Nute 1944). His diary includes a map of the settlement, which shows “Indian gardens” and an Indian village on islands in the St. Louis River. Ely wrote the following description of paddling upstream toward Fond du Lac in August 1833.

“The bed water of the river still remains about a mile in width to the land, but much of this width as we proceed up was Savannas; sometimes there were two or three channels, and the main channel so serpentine that we lost it and fell into another which brought us into a savanna through which we found a little ditch just large enough to crowd our canoe through; we happened then to come into the main channel.”

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As the fur trade declined, fur companies had to find other lines of business. In 1834 the American Fur Company established commercial fisheries to exploit Lake Superior trout and whitefish. One of their packing stations, which operated until the late 1840s, was located at the Fond du Lac trading post.

## **Post-Industrial History of the Lower St. Louis River**

In 1854, the U.S. government signed the LaPointe Treaty with the Chippewa Indians, opening the area to settlement. Towns were quickly platted on both sides of the St. Louis River. Duluth grew slowly at first, while the city of Superior boomed. By 1857 Superior had a population of over 2,000 people, but the nationwide financial panic of 1857 saw the population drop to less than 500 (Lusignan 1983).

The first road in the region was built in 1854 with the goal of linking Superior and Duluth with Fort Snelling on the Mississippi River. Known as the “Military Road,” it originated in Superior and covered 50-60 miles to the junction of the St. Croix and Mississippi rivers. For the next twelve years the Military Road remained the only road in the area.

In 1855, construction of locks at Sault Ste. Marie made it possible for ships to bypass the rapids of the St. Mary’s River at the outlet of Lake Superior. This event marked the opening of unobstructed shipping between Lake Superior and Lake Huron, making it possible for larger ships to sail to the Duluth-Superior Harbor. The locks expedited shipment of the area’s natural resources, including iron ore, lumber, and grain. The natural harbor made ship-building an obvious industry for the area; the ship-building industry was most active in the Duluth-Superior Harbor during World War II. Ship renovation still continues in Howards Bay. The opening of the St. Lawrence Seaway in 1959 brought international trade to the Duluth-Superior Harbor.

The first railroad was begun in 1861, but due to financial problems and the Civil War, it was not completed until 1870. From Thomson, the railroad followed the north bank of the St. Louis River to Fond du Lac and then to Third Avenue East in Duluth. The section between Thomson and Fond du Lac, being close to the river, presented many spectacular views of the wild river with its numerous waterfalls and rapids. It also presented many dangers. High wooden trestles were built to cross the deep ravines along the riverbank, but the wooden structures were constantly threatened by fires started by the wood-burning locomotives. The grade was long and steep, and mud slides in the spring often caused delays. At least one train slid down the bank into the river.

With the introduction of the railroad, Duluth and Superior underwent a rapid period of growth. In 1869 Duluth grew from a population of fourteen families to 3,500 people. In 1870 Duluth was incorporated as a city, and by 1892 the population was over 50,000. Superior began to boom around 1886 with the establishment of the Lehigh Coal and Iron Company, grain elevators, flour mills, and shipyards. The City of Superior was officially recognized in 1887, and by 1893 Connors Point boasted 235 residential buildings, more than fifteen storefronts, and two schools. By 1893 the population of Superior reached 35,000, and shipments through the port totaled over \$20,000,000 per year (Lusignan 1983). A financial crisis in 1893 slowed down growth, but by 1910, the population of the Duluth-Superior area was near 120,000.

The development of the river shoreline and reconfiguration of the harbor began in earnest in 1872 when the Minnesota Harbor Improvement Company cut through the baymouth sand bar to construct a ship canal for Duluth. This also created a second outlet for the St. Louis River. In 1873, the River and Harbor Act passed by the federal government included the first appropriations to dredge the harbor channels to a depth of 13 feet. In 1881, amendments to the Act allowed the channels to be dredged to 16 feet.

An Act of Congress in 1896 joined the Duluth and Superior harbors under one administration and authorized \$3 million to enlarge the harbor and rebuild the Duluth Ship Canal. By 1902, the harbor had 17 miles of shipping channels excavated to a standard depth of 20 feet.

Because of the availability of transportation—either on the river itself or by railroad located adjacent to the river—the shoreline of the river was the logical location for commerce and industry, and the various businesses that sprang up along the river had a major impact on the habitats.

The abundance of bedrock along the river led to the establishment of several rock quarries. The St. Louis Slate & Brick Company in Thomson manufactured brick from ground slate. Three sandstone quarries operated near Fond du Lac, one along Mission Creek, and another on the south side of the river about a mile above Fond du Lac. The third was on the north side of the river. When these quarries were active, the shipping channel was dredged all the way to Fond du Lac to facilitate transport of the rock.

Logging was one of the first major industries in the area. The first wave of logging removed white pine from the extensive forests of Minnesota and Wisconsin. Once facilities became available for shipping, lumber sawmills were started in Carlton and Thomson. Logging operations were carried on over much of what is now Jay Cooke State Park. The large cleared areas where the park headquarters is now located was once the ox pasture of the Thomson sawmill. The clearing on the south side of the river, known as the “high landing” was the site of early logging operations dating from 1870. The logs were floated down the river to Fond du Lac, then boomed and rafted to sawmills in Duluth and Superior.

In 1888, serious flood conditions developed in the St. Louis River watershed, and the log booms at Cloquet broke. A year’s supply of sawlogs, amounting to almost 90 million board feet, went roaring down the St. Louis River. Bridges were torn out, roads were washed away, and log booms at Fond du Lac were washed out. Some of the logs ended up stranded along the river bank, and some ended up floating in the bays of the estuary. Some were even swept out into Lake Superior. Many, but not all, of the logs were salvaged (Fritzen 1978).

The lumber industry dominated Wisconsin’s Connors Point between 1860 and 1909. By 1894 at least fifteen sawmills were located along both sides of the St. Louis River, but the logging boom ended quickly. By 1925 only one mill remained in operation in Duluth. The white pine forests, which in 1895 had been estimated to hold a virtually inexhaustible 40 billion feet of lumber, had disappeared.

In addition to lumber, the Duluth-Superior Harbor quickly became a major shipping point for Midwestern grain. As early as 1885 there were eleven grain elevators on Rice’s Point in the area that became known as elevator row. By 1886, Duluth-Superior was the largest wheat shipping port on the Great Lakes, and between 1919 and 1935 Duluth-Superior handled nearly 20% of all grain trans-

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shipped on the Great Lakes. By 1918, the harbor included 25 grain elevators (Kellner et al. 1999). Today, bulk grain shipments are the port's third leading commodity (Duluth Seaway Port Authority 2002).

The first shipment of iron ore from Mountain Iron, Minnesota, arrived at the newly constructed ore dock at Superior's Allouez Bay in 1892 (Kellner et al. 1999). The West Superior Iron and Steel Company was started in 1888 by James Roosevelt, New York financier and father of Franklin Roosevelt. Constructed in Superior on a site directly north of Belknap Street along St. Louis Bay, the steel plant became one of the largest employers in the community, employing over 300 workers at its peak in 1892 (Lusignan 1983).

On the Minnesota shore, the Zenith Furnace Company opened in 1902 on the site of the earlier West Duluth Blast Furnace. Zenith Furnace included three units - a wholesale coal trade, a pig iron operation, and a coking operation that included the capture and sale of coking byproducts. Heavy oils were sold to Duluth Tar and Chemical, and manufactured coal gas (called "town gas") was sold to the City of Duluth. The site later became Interlake Iron (Kellner et al. 1999).

In 1915 U.S. Steel completed construction of its fully integrated steel mill on 1,500 acres of land on the Minnesota shore of the St. Louis River, a spot where small scale smelting operations had been attempted as early as 1890. In 1911 the Universal Portland Cement Plant was built on land adjacent to the steel plant. The nearby community of Morgan Park was built to house the steel plant and cement plant workers.

Standard Oil Co. built the first dock for the receipt of petroleum products on the Superior side of the harbor in 1891. Around 1910 an abrupt increase was recorded in shipments of petroleum, perhaps due to the introduction of the automobile in the Twin Ports. The years between 1932 and 1946 were the banner years for this industry. After World War II, petroleum receipts abruptly declined (Kellner et al. 1999).

The construction of hydroelectric dams also brought changes to the habitats of the Lower St. Louis River. In 1904 the St. Louis River Power Company was organized and construction of the dam and power station at Thomson was begun. The dam was completed in 1907. In 1915 the St. Louis River Power Company deeded the lands not needed for water power purposes to the State of Minnesota for a park, forming the nucleus of Jay Cooke State Park.

Shipping remains one of the key segments of the economy for the "Twin Ports" of Duluth and Superior. Approximately 1,100 ships enter the Duluth-Superior Harbor each year, transporting 40 million metric tons of material. Principal cargoes include iron ore (40%), coal (40%), and grain (10%). Based on cargo volume, the Duluth-Superior Harbor ranks as the number one Great Lakes port (Duluth Seaway Port Authority 2002).

## **Summary**

Prior to the 1850s, the Lower St. Louis River was home to a small population of Lake Superior Chippewa as well as an important center for the European fur trade. Once the LaPointe Treaty with the Chippewa Indians was signed in 1854, the area began to change rapidly as thousands of European immigrants arrived. Development of the river shoreline and reconfiguration of the Duluth-Superior

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Harbor began in earnest in 1872 when a ship canal for Duluth was cut through the baymouth bar that had separated the river and Lake Superior. The next quarter of a century saw both the Duluth and the Superior entries entirely reconstructed, and the basins and channels in both Superior Bay and St. Louis Bay dredged into the basic contours they possess today. Dredging had significant effects on both the shoreline and the riverbed. Since dredging began in the late 1800s, over 69,500,000 cubic yards of clay and mud mixed with sand have been dredged from the river bottom and used as fill to create docks, to replenish eroded areas on Minnesota and Wisconsin Points, and to form new islands (U.S. ACOE, personal communication, 2002).

Although ongoing maintenance dredging and industrial and commercial activities still result in changes to the river, the major dredging and shoreline reconstruction activities took place within a relatively short period of time, between 1870 and 1920. By 1902, the harbor had 17 miles of shipping channels excavated to a standard depth of 20 feet, and by 1960, most channels had been dredged to a depth of 27 feet—a very significant change to this once-shallow freshwater estuary.

