

# LUTHER ELY SMITH:

FATHER OF THE  
GATEWAY

# ARCH

*“If somebody  
doesn’t agree  
with you,  
you didn’t  
explain yourself  
well enough.”*

Luther Ely Smith<sup>1</sup>

BY MARK TRANEL

When standing at the Arch grounds today, it’s hard to imagine that it was almost completely empty space like this for more than two decades after the old warehouses and businesses were razed during the New Deal. (Image: National Park Service/Jefferson National Expansion Museum)

As St. Louis pursues an initiative to frame the Gateway Arch with more active and esthetic grounds, and with a goal of completing the project by 2015, the legacy of Luther Ely Smith and his unique role in the creation of the Jefferson National Expansion Memorial (the national park surrounding the Arch) is a reminder of the tenacity such major civic projects require. What is today a national park was in the mid-nineteenth century the heart of commerce on the Missouri and Mississippi rivers; forty years later it was the first dilapidated urban development district in St. Louis. Smith was a man of many and varied interests, but one enduring passion. From the day in November 1933 when he met with Mayor Bernard Dickmann to propose a national memorial for the riverfront site to his death on his way to his law office in 1951, Smith was the central figure in the development of the Memorial, which was both interrupted by and took advantage of the tumultuous times of the 1930s and 1940s.

Born in Downers Grove, Illinois, in 1873, Smith spent his formative years in Massachusetts. He graduated from Williston Northampton School in East Hampton, Massachusetts, in 1890 and from Amherst College in 1894. From Amherst, he came to St. Louis to attend Washington University, from which he received his law degree in 1897. In 1898, he volunteered for military duty in the Spanish-American War, serving as a lieutenant in Cuba with the Third U.S. Volunteer Engineers. After completing his tour of duty, Smith returned to St. Louis and was admitted to the Missouri Bar in 1899.

Within a year, Smith had taken on his first civic project. One aspect of Smith's legacy is his wide-ranging commitment to civic services. He was one of the leaders who formed the Open-Air Playground Committee that developed the first public playgrounds in St. Louis.<sup>2</sup> He chaired the Citizens' City Plan Commission from 1916 to 1922. However, Smith's early years of civic service in St. Louis were interrupted only by his second tour of volunteer military service in World War I. He served as a captain of field artillery in 1917. Smith was chairman of the General Council on Civic Needs from 1929 to 1938, which led the development of the McKinley Bridge, among other infrastructure improvement projects important to the rapidly growing St. Louis economy. In 1944, then-Mayor Aloys P. Kauffman appointed Smith to the Citizens Committee for Post War Improvements and Employment which completed its work in less than a year.

Smith's interests were not limited to city capital improvement projects. When the City of St. Louis



Trained as a lawyer, Luther Ely Smith (1873-1951) was at the forefront of urban planning. As chairman of the City Plan Commission for St. Louis, he was the first in the United States to create the position of city planner. He hired noted urban planner Harland Bartholomew (for more on Bartholomew, see *The Confluence*, Fall-Winter 2009). In many ways, Smith dedicated his life to civic affairs as diverse as creating what became the Muny Theater and serving on a committee to reform the selection of judges in Missouri. Although the Jefferson National Expansion Museum consumed much of his time, he died before work began on the Arch. (Image: National Park Service-Jefferson National Expansion Museum)

established a Civil Service Commission in 1941, he was appointed to leadership roles, first as vice-chairman until 1945 and then as chairman until 1950. From 1939 to 1941, Smith was chairman of the organization committee for the Missouri non-partisan court plan, which successfully led an initiative petition to amend the Missouri Constitution to appoint appellate court judges by merit rather than political connections.<sup>3</sup> He was also president of the St. Louis City Club.<sup>4</sup> A national movement, city clubs created a forum for the discussion of progressive responses to civic challenges, an ideal social network for Smith.

Smith's civic service was not just local. In June 1928 Calvin Coolidge appointed Smith a charter member of the George Rogers Clark Sesquicentennial Committee. Coolidge was a year behind Smith at Amherst, where they became friends. Smith's service on this committee to develop a memorial to the Revolutionary War hero was crucial

Retaining rail service through the area being razed presented Smith with a particular problem—one that Saarinen had to address as well. (Image: National Park Service-Jefferson National Expansion Museum)





View of the future Gateway Arch site from the west. (Image: National Park Service/Jefferson National Expansion Museum)

to the Gateway Arch because it would serve as a model for his thinking about the St. Louis riverfront. The committee pursued a strategy of local-federal funding to redevelop an abandoned warehouse district on the banks of the Wabash River in Vincennes, Indiana, and build the classical style George Rogers Clark Memorial.

Although all these civic accomplishments are notable, they pale in comparison to Smith's labors on what became the Jefferson National Expansion Memorial. Two factors made it a laborious project: the site itself and the impact of the Great Depression and World War II.

## THE SITE

A limestone bluff rising above the Mississippi River drew fur trader Pierre Laclède Liguest to the site in 1763. He was looking for a flood-proof location adjacent to the river to establish a post near the confluence of the Missouri and Mississippi Rivers for his New Orleans-based company. After surveying the site, Laclède was moved to say, "I have found a situation where I intend to establish a settlement which in the future will become one of the most beautiful cities in America."<sup>6</sup> Laclède's stepson and clerk Auguste Chouteau laid out the site with a grid system of north-south and east-west streets. Although the fur trade prospered, the site was not expansively developed over the next half-century, as it required only a small settlement to

support it. The population of St. Louis was about 1,000 when Lewis and Clark embarked from the area in 1804 at the beginning of the Corps of Discovery expedition.<sup>7</sup>

The pace of development was dramatically different after the landing of the steamboat *Zebulon M. Pike* in 1817.<sup>8</sup> The City of St. Louis incorporated in 1823. The population exploded from just over 14,000 in 1830 to 105,000 in 1850 as St. Louis became the second largest port by tonnage in the country. Chouteau's grid streets were filled in with dense low-rise residential and commercial structures. The sandy beach that served the keelboats of the fur trade was replaced with wharves to handle the thousands of annual steamboat arrivals transporting both freight and passengers.

The present-day grounds of the national park surrounding the Gateway Arch is approximately the area that was destroyed in the Great St. Louis Fire of 1849. On May 17, crewmen of the New Orleans steamboat *White Cloud* failed to completely extinguish a mattress fire. The reignited fire spread from the *White Cloud* to the adjacent steamboat *Edward Bates*. The *Bates* eventually broke free of its mooring, igniting 21 other boats; that conflagration sparked fires in the docking area and finally the buildings of the forty-block commercial district.<sup>9</sup>

The area was rebuilt with over 400 three- and four-story iron and brick structures.<sup>10</sup> As devastating as it was, the

fire did not slow the pace of commerce in the port of St. Louis. From 1849 to 1852, St. Louis was the most active steamboat port in the United States, averaging 3,100 arrivals a year. The steamboat-era riverfront commercial district was not just an office and warehouse district. Some of the earliest manufacturing in St. Louis was producing machinery for steamboat engines and related mechanical parts. Among the cities that produced machinery for steamboats, St. Louis was the leader in 1860 with thirty machine shops employing 1,500 workers. That same year it was second in foundries, producing the metal for steamboat parts with 28 foundries employing an additional 1,500 to 1,800 workers.<sup>11</sup>

Then came the railroads. Although the first railroad in St. Louis, built in 1852, was the 4 ½-mile line from downtown to the village of Cheltenham (present-day Dogtown), it was not until completion of the transcontinental railroad in 1869 that steamboats were replaced as the primary system of freight transportation.<sup>12</sup> A precipitous decline in commercial riverboat traffic handled through the port of St. Louis began with the westward expansion of rail service after the Civil War. St. Louis, meanwhile, continued to prosper. Its population grew to over 450,000 by 1890, but the forty blocks of mid-nineteenth century development on the riverfront became little more than a historical artifact of the glory days of the steamboat and outdated construction techniques. The combination of growth and obsolescence created competing interests in downtown St. Louis. The owners of the newer high-rise retail and office buildings west of Broadway felt the riverfront district was a blight on their property values. The owners of the riverfront district properties wanted support to maximize the return on their investment.

As Luther Ely Smith gazed to the south while crossing the Eads Bridge on his return trip from the dedication of



When Bernard Dickmann (1888-1971) became mayor of St. Louis in 1933, he was the first Democrat to hold the office in a generation. In many ways, Dickmann transformed the city; during his tenure the city enacted the Smoke Ordinance that ended the "midnight at noon" days caused by air pollution and built a modern African-American hospital in addition to acquiring the land for the Gateway Arch. He transformed the city's political landscape as well; as African-Americans moved to the Democratic Party nationally, they did so locally as well in support of Dickmann. (Image: *St. Louis Public Library*)

the George Rogers Clark Memorial in November 1933, he was inspired to propose a national memorial to replace the dilapidated St. Louis riverfront district.<sup>13</sup>

Smith's contribution was not the originality of the idea. He was a member of the City Plan Commission, which in June 1928 released "A Plan for the Central River Front — St. Louis." The Plan included, among its nine independent projects, acquisition of all property between Third Street and the Mississippi River from Spruce Street to Franklin Avenue for a riverfront plaza.<sup>14</sup> The plan was updated in June 1933 with more details on the riverfront plaza. It proposed little more than open parkland—grading, paving, ornamentation, lighting, and planting. Smith added to that concept the critical element of a national monument to commemorate both Thomas Jefferson as the key national figure and St. Louis for its local role in settlement of the West.

## TURBULENT TIMES

On February 26, 1947, Luther Ely Smith, acting in his capacity as president of the Board of Trustees of the Jefferson National Expansion Memorial Association, wrote a letter to St. Louis civic leaders. In it, he detailed the status of the project, particularly the problems encountered in the process of pursuing the vision of a St. Louis riverfront memorial since the project's inception in 1933.<sup>15</sup> Some of the problems had been solved, but typical of Smith's modesty, the letter did not recount in overcoming them. There remained, Smith said, a long list of more problems yet to be addressed.

At first the project progressed quickly. Smith called St. Louis Mayor Bernard Dickmann, and proposed a meeting to discuss the idea born on the Eads Bridge for a riverfront national memorial. At the December 15, 1933 meeting in the mayor's office, Smith described to the assembled civic leaders his



Louis LaBeaume (1873-1961) presented a plan (pictured on p. 8) for the grounds as well. Originally part of the Louisiana Purchase Exposition design staff in 1904, LaBeaume was a prominent St. Louis architect from the 1910s. His firm designed Kiel Auditorium (now the Peabody), and nine buildings at Lindenwood University. (Image: *Missouri History Museum; National Park Service-Jefferson National Expansion Museum*)



LaBeaume's plan for the St. Louis waterfront. Originally part of the Louisiana Purchase Exposition design staff in 1904, LaBeaume was a prominent St. Louis architect from the 1910s. (Image: National Park Service-Jefferson National Expansion Museum)

proposal for a national memorial to Thomas Jefferson and his role in the settlement of the American West. The concept he presented was a Washington mall-type classical monument centered in the riverfront plaza in the City Plan Commission's design. They decided to appoint a working group to develop a strategy for pursuing the memorial project; Smith was to lead it.

Following the strategy he had seen successfully applied by the George Rogers Clark Memorial Committee, Smith led the working group in parallel local and federal initiatives. Through the work of five subcommittees (Legislative, Publicity, Finance, Historical Data, Plan and Scope) the working group was well prepared in presenting its case to both local and federal government officials. Smith's work with St. Louis architect Louis Labeaume produced a draft budget of \$20,000,000 for the envisioned memorial. With another \$10,000,000 estimated for land acquisition and demolition, the project started out with an estimated cost of \$30,000,000, a staggering amount in the throes of the Depression.

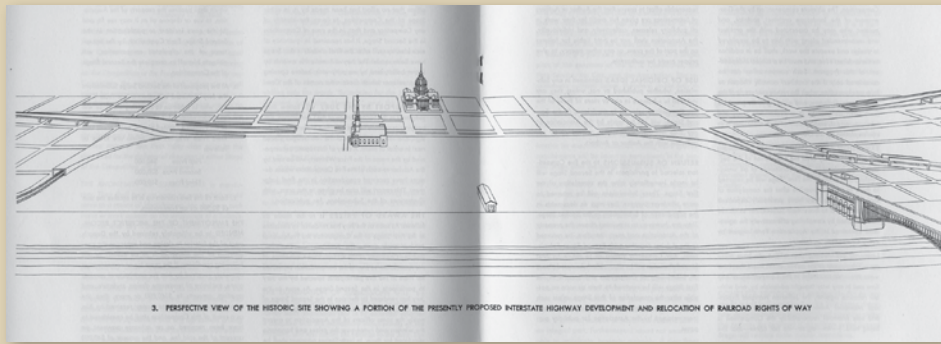
As the first formal step in the strategy, the working group incorporated the Jefferson National Expansion Memorial Association in April 1934. While the Association was forming, Smith and Mayor Dickmann appealed to the Missouri Congressional delegation for funding. When that approach failed, Smith suggested they redirect their approach to legislation that would establish a national commission. Smith personally wrote to a good number of congressmen in April and May 1934 urging them to approve the commission. Many in Congress opposed establishing the commission because they expected a request for substantial federal funds to follow. With the challenges the nation faced at this point in the Depression, building a memorial was not considered a high priority. But after continued reassurance that this was just to set up a study commission, in June the House and Senate approved, and on June 15, 1934, Franklin Delano Roosevelt signed the bill establishing the United States Territorial Expansion Memorial Commission.

Smith became one of the fifteen Commission members. It held its first meeting in December 1934, during which the Association briefed the Commission members on

the memorial plans. In the course of the Association's presentation, Smith was lauded for his contribution. "I have seen men do lots of hard work on important things, but I have never seen such devotion to a cause as Mr. Smith has given to this monument."<sup>16</sup> Smith sustained his level of effort on the project, and on April 13, 1935, the Commission's executive committee approved plans for the memorial—its boundaries, historical significance, an architectural competition for the memorial structure, and the cost estimate of \$30,000,000. The full Commission approved the plans on May 1, 1935.

One of the solved problems Smith cited in his 1947 letter was securing a \$9,000,000 property acquisition and demolition fund. Smith was actively seeking funding for the project even before the Commission approved the plans. In January 1935 he and Dickmann met with Secretary of the Interior Harold Ickes to pitch the memorial project as a way to create jobs. In the mid-1930s demolition was still a labor intensive process, and more than 400 buildings needed to be razed to redevelop the old riverfront commercial district into a national park. Ickes approved of their approach and arranged for a meeting the next day with Roosevelt, who agreed with the concept of a national memorial to the settlement of the West and suggested Works Relief Fund money as a potential source of funds for the project. This encouraging progress was short-lived. Two months later Smith learned from Missouri Senator Harry S. Truman that the agency to disburse Works Relief Fund money was not yet operating, and suddenly the project was again adrift for lack of funding.

In one respect, 1935 was an opportune time to be seeking federal funding for a public capital improvement project. New Deal programs were investing heavily in such projects. In another respect, it was a very challenging time to be seeking federal funds. The New Deal was administered through a large number of sometimes overlapping and sometimes competing programs. Smith became the pointman for negotiating the New Deal agency maze. What he learned in the process was that the personality of the agency head—as much as the law passed by Congress—would determine whether a project was funded and in what amount. Smith learned that the



Once Smith facilitated razing the buildings on the St. Louis riverfront, the area was almost completely a clean slate for designers; they had to work around only the Old Cathedral and the Old Rock House (pictured on p. 10), which was eventually dismantled. This perspective drawing shows both the relocation of the railroad and the proposed interstate. (Image: National Park Service-Jefferson National Expansion Museum)

Works Progress Administration (WPA) and the Public Works Administration (PWA) were both potential sources of funds for the project. Smith's role as the connecting link between the Association and the Commission was vital at this point. He organized a letter-writing campaign by Association and Commission members to the administrators of both New Deal programs. The end result was Executive Order 7253, signed by Roosevelt on December 21, 1935, which allocated \$3.3 million from the WPA and \$3.45 million from the PWA. The Executive

Order also required the City of St. Louis to provide \$2.25 million as a match to the federal funds.

Fortunately, the source of the matching funds had already been addressed. At the same time Smith was handling funding challenges in Washington, the local effort secured, on April 15, 1935, authorization from the Missouri legislature for the City of St. Louis to vote on \$7,500,000 in bonds for the riverfront memorial. The state authorizing legislation required that federal funds be matched at a 3-1 ratio. St. Louis voters approved the bonds

Saloons like this one on Market Street were not only razed, but documented by photographers hired by the National Park Service. The man holding the sign appears in every interior, documenting which building is which. (Image: National Park Service-Jefferson National Expansion Museum)





Thought to be the oldest building in the district, the Old Rock House was originally to remain as part of the plan. When it was razed, the stones were carefully numbered and stored, but have since been lost. (Image: National Park Service-Jefferson National Expansion Museum)

on September 10. Allegations of voter fraud surfaced a year after the election, made by local interests opposed to the memorial project who were small in number but very aggressive in tactics. It took until May 22, 1938, and no small amount of Smith's time, for a final court decision to not issue a subpoena in response to the allegations. Smith's 1947 letter did state that properties were acquired for the site. Although there were troubles enough securing the financing, Smith became enmeshed in legal challenges from property owners in the proposed memorial site. Within a month of approval of plans by the Commission, 36 property owners filed an injunction in Washington, D.C., to stop expenditure of federal funds for property acquisition. This resulted in one of Smith's many trips to Washington in support of the project. He spent three days in meetings with Department of Justice attorneys. As a result of these discussions, the Commission entered into the case filing an amicus curiae brief and affidavits supporting the federal program administrators. Smith's most active role, however, was back in St. Louis. He interviewed property owners to gauge their commitment to the lawsuit and found a number of them actually wanted out. While he considered having them petition for intervention as friends of the court, the process was likely to only delay resolving the case. The Court of Appeals did not rule until March 8, 1937, that federal money could be used to acquire the properties in the project area.

While lawsuits were being resolved, federal program administrators had negotiated acquisition agreements with many of the property owners. Technically, the acquisition and demolition funds were to have been spent within twelve months. The funds were, after all, supposed to help end the Depression by putting people back to work.

Construction—or destruction—engulfed the east end of downtown near the Old Courthouse, pictured here. (Image: National Park Service-Jefferson National Expansion Museum)









Luther Ely Smith, right, and Eero Saarinen reviewing a model of Saarinen's plan. It was the closest Smith ever came to seeing the Arch. (Image: National Park Service-Jefferson National Expansion Museum)

While over \$6 million had been committed to property acquisition, the negotiated acquisitions prices totaled \$400,000 less than the available federal funds. Smith did not want to lose those funds on a technicality. On July 1, 1939, he was again in Washington, this time meeting with Department of Justice officials to argue that the project's funds should not be taken away for failure to meet the spending deadline. An agreement was reached for all of the allocated funds to remain committed to the project.

Demolition began October 10, 1939, and continued to May 1942, overlapping the United States' entry into World War II.<sup>17</sup> While planning activities occurred in the 1940s, no progress was made on erecting the memorial. The World War II pause gave the Association the opportunity to focus on a critical funding issue. The Bureau of Internal Revenue determined in May 1937 that contributions to the Association by corporations were not tax deductible. This was one of Smith's most exasperating moments in the entire process. He had solicited contributions to the Association from many of his corporate friends. "We just HAVE to get the ruling reversed. I shall have to leave town and probably the entire country if we don't," he wrote.<sup>18</sup> Initially, Smith argued that contributions should be tax deductible because the purpose of the association was educational. Given the extensive lobbying activities of the Association, the Bureau did not accept that. As time passed, Smith thought to link contributions to support of the competition for the design of the memorial. Smith was a relentless letter writer, and in March 1945 the Internal Revenue commissioner accepted the rationale that the Association was acting on behalf of the federal government to fund the design competition, thus making corporate contributions appropriate.

The fact that the Association could raise tax deductible contributions did not make it easy to do so. While the memorial project now had a cleared site, it had no plans for the memorial. The Association announced in January 1945 that it would hold a design competition budgeted at \$225,000. Although 72 years old, Smith was once again the fulcrum on which the project turned.

He became responsible for raising the budget. Smith's fundraising efforts were both exhaustive and exhausting. His connections to the St. Louis business community were primarily among the bankers and retailers downtown. Although 60 businesses contributed in the first six months of 1945, Smith raised only \$75,000. An indication of the extent of his efforts is found in the letter he wrote to Charles Whitman, former governor of New York, asking Whitman to arrange a meeting for Smith with philanthropist Vincent Astor. Smith met Whitman at an alumni function at the 1942 Amherst commencement and, as he did to virtually everyone, talked about the Jefferson National Expansion Memorial. Smith was very direct in the letter that the purpose of the meeting would be to ask Astor to provide \$200,000 for the design competition. Whitman did not arrange the meeting.

Smith did receive assistance from Mayor Aloys Kaufmann, and the design competition fund balance was \$185,000 by May 1946. As the fund-raising campaign again stalled, Smith expressed his exhaustion to his son-in-law, downtown retailer Ingram Boyd, Jr. Boyd agreed to contact ten business associates and ask them to contribute \$4,000 each to close the gap. Boyd received more polite declines than checks, many citing the impact of the war on their businesses. In a telling act of his commitment to the project, Luther Ely Smith personally provided the \$40,000 needed to complete the competition fund.

By this time, the project was taking an obvious physical toll on Smith. His son-in-law wrote, "I think I can see him beginning to weaken."<sup>19</sup> James L. Ford, Jr., President of the First National Bank, wrote, "The poor fellow is sick again, and he does nothing but worry about the Jefferson Memorial and his thoughts as to his obligations to that great cause."<sup>20</sup>

Through continued efforts by Boyd on his father-in-law's behalf, the Association had just under \$239,000 in February 1947. This gave it sufficient funds to begin the design competition and make an immediate payment of \$6,000 to Luther Ely Smith and subsequent payments of \$1,000 until his contribution was completely refunded.

By this time, Smith had secured a commitment from George Howe, a fellow of the American Institute of Architects, to be the competition advisor. The competition opened May 30, 1947, for design concepts. Howe received 172 entries by the September 1, 1947, deadline. Five finalists were selected and given a deadline of February 10, 1948, to submit their project designs. Eero Saarinen's stainless steel arch was the unanimous selection. Smith was ill at the time but did attend the February 18 formal dinner where Saarinen's design was announced.

Luther Ely Smith resigned as president of the Jefferson National Expansion Memorial Association in June 1948 and became chairman of the board. He was intermittently involved in problems that arose regarding parking on the memorial site, relocation of existing railroad tracks, and other technical issues. His main concern was getting federal authorization to build Saarinen's Arch. Congress appeared on the verge of approval when in June 1950 the United States entered the Korean conflict. This delayed



Eero Saarinen won the design competition for the St. Louis Arch from this jury. (Image: National Park Service-Jefferson National Expansion Museum)

Congress' approval until May 11, 1954, three years after Smith's death. The *St. Louis Post-Dispatch* led Smith's obituary with the question, "Where in all St. Louis was there a better citizen than Luther Ely Smith?"<sup>21</sup>

## EPILOGUE

Others continued the work started by Luther Ely Smith, and the Arch was completed October 28, 1965. The

21<sup>st</sup> century initiative is in many ways a fulfillment of the vision of the competition advisor hired by Smith, George Howe. "Howe thought Jefferson and the western pioneers would have placed emphasis on living life rather than remembering it." Thus the Gateway Arch and its surrounding parkland are not only a reminder of the legacy of Luther Ely Smith and his civic service but also a living testament to his vision for the St. Louis riverfront.

## ENDNOTES

The complete story of the development of the Jefferson National has been told in exceptional detail by Sharon Brown's Administrative History.

- <sup>1</sup> Jefferson National Expansion Memorial Library, Adeline Smith Boyd Papers, 1934-1990.
- <sup>2</sup> National Park Service, *Museum Gazette* (2001).
- <sup>3</sup> A1529 Luther Ely Smith Papers, 1921-1958, Missouri History Museum.
- <sup>4</sup> David A. Lossos, *St. Louis Then & Now* (Charleston : Arcadia Publishing, 2005), 93.
- <sup>5</sup> George Rogers Clark Memorial Historic Structures Report, [http://www.nps.gov/history/history/online\\_books/gero/chap3.htm](http://www.nps.gov/history/history/online_books/gero/chap3.htm)
- <sup>6</sup> James Parton, *Captains Of Industry Or Men Of Business Who Did Something Besides Making Money*, <http://www.literaturecollection.com/a/james-parton/captains-of-industry>
- <sup>7</sup> <http://lewis-clark.org/content/content-article.asp?ArticleID=2951>
- <sup>8</sup> <http://www.nps.gov/jeff/planyourvisit/the-early-years.htm>
- <sup>9</sup> *St. Louis Post-Dispatch*, May 15, 2011.
- <sup>10</sup> St. Louis City Plan Commission (1969) Physical Growth of the City of St. Louis, <http://stlouis.missouri.org/heritage/History69/index.html>

- <sup>11</sup> Louis C. Hunter, *Steamboats on the Western Rivers: An Economic and Technological History* (New York: Dover Publications, Inc., 1993), 654.
- <sup>12</sup> <http://www.webster.edu/~corbetre/dogtown/pj-book/pj-1-27.html>
- <sup>13</sup> *St. Louis Beacon*, May 8, 2008.
- <sup>14</sup> Duffy, Riverfront Plans, <http://stlouis.missouri.org/government/duffy/riverfront.html#1913>
- <sup>15</sup> Missouri Historical Society Archives, Luther Ely Smith Papers 1921-1958, Box 17, Folder 5, Smith letter to Boyd-Richardson Company, February 26, 1947.
- <sup>16</sup> Gale Johnston, Chairman of the Jefferson National Memorial Association Legislative Committee, December 19, 1934.
- <sup>17</sup> [http://interestingamerica.com/2011-04-09\\_Gateway\\_Arch\\_Architecture\\_by\\_R\\_Grignonis\\_41.html](http://interestingamerica.com/2011-04-09_Gateway_Arch_Architecture_by_R_Grignonis_41.html)
- <sup>18</sup> Sharon Brown, Administrative History, Chapter II: 1936-1939.
- <sup>19</sup> I.F. Boyd, Jr. letter to Chester Davis, President of the Federal Reserve Bank of St. Louis, March 11, 1947. Missouri History Museum B23/F5.
- <sup>20</sup> James L. Ford, Jr. letter to Chester Davis, March 14, 1947. Missouri History Museum B23/F5.
- <sup>21</sup> *St. Louis Post-Dispatch*, April 3, 1951.



# AMERICAN BOTTOM:

## The Floodplain between the Bluffs and the Levee

BY QUINTA SCOTT



Top image—The Discharge: Modoc, April 1993  
Bottom image—Modoc Rock Shelter

It's some of the richest farmland in the country, but it wants to be a wetland and flood storage area. Therein lies the conflict that has bedeviled farmers on the American Bottom for a thousand years or more.

Once again: Cross the Jefferson Barracks Bridge from St. Louis County, Missouri, into Monroe County, Illinois. Exit onto Illinois Route 3. Turn right on Sand Bank Road and descend the hill to Bluff Road. Spread out before you is the American Bottom, that vast Mississippi River floodplain that extends from Alton to the Kaskaskia River, across which the river once meandered in several different channels, depositing rich alluvial soil and leaving behind wetlands before settling in its modern regime. This is the second of three articles on the interrelated elements of the American Bottom: the sinkhole plain and bluffs; the bottomland floodplain between the bluffs and the river levees; and the batture lands beyond the levees, the islands, and the river's edge.

The Mississippians at Cahokia and the satellite communities who farmed this floodplain over a thousand years ago grew several varieties of corn.<sup>1</sup> The French priests who settled Illinois Country—the Seminarians at Cahokia among the Tamora in 1699 and the Jesuits among the Kaskaskia on the narrow peninsula between the Mississippi and Kaskaskia rivers in 1703—grew wheat and “maize—otherwise ‘Turkish corn.’”<sup>2</sup> Modern farmers who till the American Bottom grow wheat, corn, soybeans, and vegetables. All faced the same problem: they farmed frequently flooded lands. All three—the Mississippians, the French, and the Euro-Americans beginning in the mid-nineteenth century—devised ways of farming wet, swampy fields, all of which worked except when they didn’t.

When the French arrived at the beginning of the eighteenth century, they found a landscape dotted with lakes and covered with prairie grasses along the ridges, wetland vegetation in the swales, and bottomland forests along the creeks and Mississippi. Carr Creek, Fountain Creek, Maeystown Creek, Fults Creek, Prairie du Rocher Creek, and Barbeau Creek streamed out of the uplands, deposited their alluvial fans at the edge of the bluff, and spread out—flowing parallel to the Mississippi to their confluences with the big river where floodwaters were returned to the Mississippi.<sup>3</sup>

Today, Barbeau Creek streams out of the uplands and flows to the Mississippi through The Discharge, one of the few places in the American Bottom where you can still see the ridges and swales that once defined the landscape. Archaeologists, sifting down through the layers of human habitation at the Modoc Rock Shelter, learned which critters inhabited this swampy place: mink, raccoon, muskrat, swamp rabbit, river otter, and beaver. The creek and The Discharge supported many species of fish, mussels, turtles, ducks, and geese. Migratory waterfowl rested and fed here during their spring and fall migrations. Archaeologists found evidence of birds seldom seen in Illinois today—Brown Pelicans, Mississippi Kites, Sandhill Cranes, and the extinct Passenger Pigeon. Fish spawned here in the spring. Water tolerant trees—cottonwood (*Populus deltoids*), sycamore (*Platanus occidentalis*), hackberry (*Celtis occidentalis*), sweet gum (*Liquidambar styraciflua*), swamp oak (*Quercus bicolor*), white walnut (*Juglans cinerea*), black walnut (*Jublans nigra*), pecan (*Carya illinoensis*), and sugar maple (*Acer saccharum*)—forested the bottomlands.<sup>4</sup>

Finally, when a river—unencumbered by levees—floods, it spreads across its floodplain and deposits layer upon layer of rich alluvial soil. While levees may prevent the river from nourishing the land with new deposits of alluvium, they protect valuable crops and the livelihoods of the farmers who grow them. And when a levee breaks, torrents of water can gouge scour holes in the landscape, crumple houses and carry them away, rip corn stalks out by their roots and wrap them around low-hanging utility lines, washing layer upon layer of sand across the fields.



Lunsford-Pulcher Mound at the edge of Fish Lake

On private land to the north of I-255 is the Lunsford-Pulcher site, a satellite village of the Mississippians at Cahokia, settled about 1,000 years ago. It is the largest mound community south of Cahokia, a center of thirteen mounds, seven of which remain. Decades of farming may have changed the shape of what may have been platform mounds and reduced their elevations.

Late Woodlands people (600-750 AD) on the American Bottom grew indigenous crops: tobacco (*Nicotiana sp.*), squash (*Cucurbita sp.*), oily seeds like sunflower (*Helianthus annuus*), starchy seeds like lambsquarter (*Chenopodium album*), erect knotweed (*Poluygonum erectum*), maygrass (*Phalaris caroliniana*), and a little barley (*Hordeum pusillum*), but no maize (*Zea mays*). Emergent Mississippian people (750-1000 AD) grew indigenous crops and maize. So did the Mississippians at Lunsford-Pulcher, but with a twist.

In 1963 archaeologists examined aerial photographs of the Lunsford-Pulcher site, found alternating rows of light and dark stripes, and speculated that these were evidence of gardens or cornfields, planted in ridges and furrows. Farmers used hoes—fashioned from flint, chert, animal bone, or stone—to break the soft, sandy silt and heap it into ridges. The furrows between the ridges may have been used to capture and hold rainwater, a primitive form of irrigation. Or, the ridged gardens may have allowed Mississippian farmers to cultivate the waterlogged fields of the Lunsford-Pulcher terrace by raising the platform for seeds and giving roots reasonably dry soil in which to grow.<sup>5</sup>



Model of Long Lots—Fort du Chartres Museum

The Mississippians disappeared from the American Bottom by 1500. The French arrived two centuries later. Wherever the French settled in Illinois, Missouri, or Louisiana, they laid out their fields in long lots, narrow parcels of land, along navigable streams. The Museum at Fort de Chartres exhibits this model of how the French at Prairie du Rocher settled it in 1722, laying out their long lots between the river and the bluffs and giving each landowner access to the river and variations in topography and soil conditions: fertile soil, sandy soil, timber, meadow, swamp, and bluff.

French farmers used oxen to pull their primitive plows and found turning the animals and the plow at the end of each row time-consuming and dangerous. Hence, they plowed long rows, moved to the other side of the field and plowed another again, working in a tighter and tighter circle. Finally, they left a ditch in the middle of the field to drain off excess water. Their measure was an arpent, the equivalent of 192 English feet. Each field was two to four arpents wide and forty to sixty arpents deep.<sup>6</sup>

In 1715, a Canadian official of the French government reported that the settlers at Cahokia “were living there at their ease; as grain thrives in the region, they have built a mill.” At Kaskaskia, Zebedee Le Jeune sowed the first bushel of wheat in March 1718; in July he harvested ninety. The Jesuits and the Kaskaskia sowed their wheat in the spring, harvested it in the summer, and turned their fields over to the cattle, which browsed on the stubble and manured the fields in the fall and winter. They used primitive tools—a wooden plow with a strip of metal tied to it with a piece of rawhide built by Zebedee for breaking the soil, a wooden harrow for tilling, and a scythe and sickle for harvesting the grain.<sup>7</sup>

Winter Wheat Field





American Bottom: Onemile Race Creek Ditch

Modern American farmers in the American Bottom grow wheat, corn, and soybeans for the national and international markets. A few grow vegetables for the local market. They plant wheat in September and harvest it the following June. Corn goes in the spring, after the soil has warmed and is moist. Once they harvest the wheat, they sometimes plant soybeans, which have a short growing season. Thanks to effective levees and drainage systems, they can be almost certain that they will harvest their crops season after season. Both the state and federal governments have assisted them in that certainty.

In 1849, Congress granted Louisiana “those swamp and overflowed lands, which may be or are found unfit for cultivation” in order that the state of Louisiana might sell the land, drain it, and construct levees. The following year Congress extended the act to states bordering the Mississippi, including the State of Illinois. The states sold the land to pay for levees. In 1852, Illinois granted the swamplands to the counties, which designated what was swamp and what was not, “generally taking all the unentered lands,—that is, land that had not been sold through United States Land Offices.”<sup>8</sup>

By the end of the nineteenth century farmers started digging drainage ditches to siphon excess water from their fields and building levees to control flooding.

Soon after the state handed swamplands over to the

counties, farmers in the American Bottom began the task of digging open ditches and using creeks to drain the network of swamps and sloughs that crisscrossed the floodplain to make it somewhat more reliable for farming. They dug down through the Cahokia Formation or recent alluvium; the loamy alluvial fans deposited by the streams, carrying loess out of the upland; the silt and clay deposits of abandoned channels of the Mississippi and its backswamps; and the sandy deposits, point bar and channel deposits, made by the river as it meandered downstream. Even today, the ditches that drain the American Bottom are open channels that siphon excess water through culverts in the levees and to the river. Early on the work was haphazard and created legal difficulties between landowners over what ditches could be located where.

In 1870, the new Illinois Constitution authorized the General Assembly to write laws allowing landowners to run drainage ditches across adjoining properties. The following year, the legislature passed a comprehensive law that set up procedures for landowners to petition county courts to build drainage works, to assess and collect costs from landowners who benefit, compensate those landowners whose land would be ditched, and appoint three commissioners for each district. The law was found unconstitutional in 1872.<sup>9</sup>



Lock at the mouth of the culvert in the levee at the Fountain Creek Pump Station during the 2011 flood

In 1859, the Illinois General Assembly approved the construction of a levee from Prairie du Pont in St. Clair County to Harrisonville in Monroe County and appointed four commissioners to “lay out and establish a levee or embankment of sufficient height and strength, in their opinion, to prevent the overflow of water from the Mississippi River, over the lands lying between said levee and the bluffs.” The law gave the commissioners the power to tax landowners protected by the levee.<sup>10</sup>

Not until 1879 did the General Assembly amend the Illinois Constitution to allow for both drainage and levee-building. They did so with two laws, the Levee Law and the Drainage District Law, which reinstated the provisions of the 1871 law but added legal appeals for landowners unhappy with assessments.<sup>11</sup>

Within a year farmers in Monroe County began forming levee and drainage districts: the Columbia Levee and Drainage District No.3 in 1880, followed by the Harrisonville and Ivy Landing Drainage District No.2, Stringtown and Fort Chartres Levee District No. 5, and the

Fort Chartres and Ivy Landing Levee and Drainage District No. 5.

By 1921, the Columbia District had dug sixteen miles of ditches, which emptied into Fountain Creek through four large tile drains. Embedded in the Harrisonville district was the Moredock and Ivy Landing Drainage District No. 1, which constructed twenty miles of ditches that connected to the Mississippi through a culvert and lock in a levee. The Harrisonville District constructed fifteen miles of ditches that emptied into the Moredock District’s main ditch.

Within the same period the Columbia District had built 22 miles of levee and the Harrisonville District 20 miles of levee between Fountain Creek and Ivy Landing. They installed culverts and locks where ditches and creeks met the levees. They closed these when the Mississippi flooded. They kept the locks open when the river flowed at normal levels so water in the ditches and creeks could drain.<sup>12</sup>



### Terry Springbrook and Mueller's Cypress Grove

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Between 1901 and 1903, the eastern division of the Iron Mountain Railroad, called the St. Louis Valley Railroad, laid a single track across the American Bottom and added a second track in 1909. By 1963, the tracks ran close to the bluffs and on a low embankment, a levee that restricted the movement of water from the bluffs to the river. All the creeks, save Fountain Creek, ran through culverts under the embankment. At Fountain Creek the tracks ran over a bridge, at Moredock Lake across a trestle.

The springbrook that heads at Terry Spring runs through a culvert under Bluff Road, across a narrow floodplain, through a culvert under the railroad embankment, across Herbert Mueller's farm, and through a culvert under Steppig Road to Little Carr Creek. The springbrook floodplain lies two feet lower in the landscape than the surrounding farmland, a place Mueller found impossible to dry out. In 1963, Mueller planted a cypress grove right up against a railroad embankment that made drainage from the small creek that headed at Terry Spring difficult.





Levee Road near Fountain Creek

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After massive floods in 1936, Congress authorized the Flood Control Act of 1936, which made it the mission of Corps of Engineers to built flood protection across the entire nation. It was also geared at providing Depression-era jobs and help to cash-strapped communities and states that needed flood control projects. Again Congress required the states and districts to provide rights-of-way

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Fountain Creek and Levee, April 1993



for construction of levees and agree to maintain them, but it relieved them of the necessity of paying their third of the cost. Between 1936 and 1952, Congress spent more than \$11 billion on flood control projects, including the levees that lined the Mississippi from the mouth of the Missouri to the mouth of the Ohio.<sup>13</sup>

In 1945, the Corps of Engineers surveyed the American Bottom for the placement of levees, designed them to hold flood levels of up to 47 feet, and began construction on them. The Flood of 1947 intervened and swamped parts of the floodplain. The Corps completed the levees over the next two years at a cost of \$8 per acre.<sup>14</sup>

At the same time the Corps constructed the levees along the Mississippi, the engineers also levied the creeks that flow out of the upland—Carr Creek, Fountain Creek, and Prairie du Rocher Creek—to keep them from flooding the bottoms. They built them to the same height, 47 feet, as the riverfront levees. In addition, the Corps straightened, shortened, and diverted Fountain Creek to the river, leaving old Fountain Creek to act as a drainage ditch as it meandered to a new pumping station at the levee. Here, water in the vestigial creek is pumped through a concrete culvert and lock and into the river. When the river is flooded the lock is closed to prevent the river from backing up into the ditch. Finally, the Corps funneled Carr Creek and Prairie du Rocher Creek through locks and directly to the river and built a pumping station, but no levee, along Maeystown Creek, which runs south out of Monroe County into Randolph County.



Moredock Lake from Salt Lick Point

The effect of all this ditch-digging, levee-building, and stream-diversion was to reduce the quantity and quality of wetlands on the American Bottom in the nineteenth and twentieth centuries.

In 1800, a few years after Americans arrived following the Revolutionary War, forests covered 45 percent of the landscape, prairies 29 percent, and water and lakes 14 percent. Of the prairie that existed in the bottoms in 1800, 94 percent has been turned over to agriculture. None has been restored. In 1800, the Americans who settled the bottoms found 34,440 acres of wetlands and marsh. By 1989, that had been reduced to 780 acres. Bottomland forests had shrunk by 95,746 acres by 1989. Of the forests, those in the batture lands on the riverfront survived the best, with 40 percent of the 53,755 acres found in 1800 remaining 200 years later.

In 1898, the Moredock Lake Fishing and Hunting Club relocated to the Castor River in southeastern Missouri, where the hunting and fishing would be better. The efforts of the drainage district that surround Moredock Lake had destroyed the lake as a prime fishing and hunting preserve. A new club leased the lake and sought permission from the surrounding farmers to dam the outlet of the lake and return it to its status as one of the best fishing resorts in the state.<sup>15</sup>

The first recorded account of flooding in the American Bottom had the citizens of Kaskaskia fleeing to the bluffs in 1724. The flood destroyed their cornfields and gardens and damaged their dwellings and farm buildings.<sup>16</sup>

In April 1785, "*l'année des grandes eaux*," the Mississippi flooded from valley wall to valley wall, reaching a level of 41.4 feet on the St. Louis gauge. The flood filled the lakes and sloughs. Auguste Chouteau took a boat from St. Louis and traveled through the forests in the American Bottom to Kaskaskia.

In 1844, once again the Mississippi inundated the American Bottom clear to the bluffs. At St. Louis the flood rose to 49.97 feet on the gauge. Fast forward to the 1940s and 1950s when the Corps of Engineers designed the levee at East St. Louis and the floodwalls at St. Louis to withstand a 500-year flood, the engineers using 49.97 feet plus two feet to determine its height—52 feet.<sup>17</sup>

In the years after the *Zebulon Pike* arrived in St. Louis in 1817, steamboats stripped the bank of the Mississippi of trees to feed to their boilers and stripped away the protection against erosion that the trees offered. By the winter of 1881, "The Narrows"—that shrinking strip of land between the Mississippi and Kaskaskia rivers—was no more than 400 feet wide north of the Village of Kaskaskia; the slope across "The Narrows" was a steep seven- or eight-foot drop.



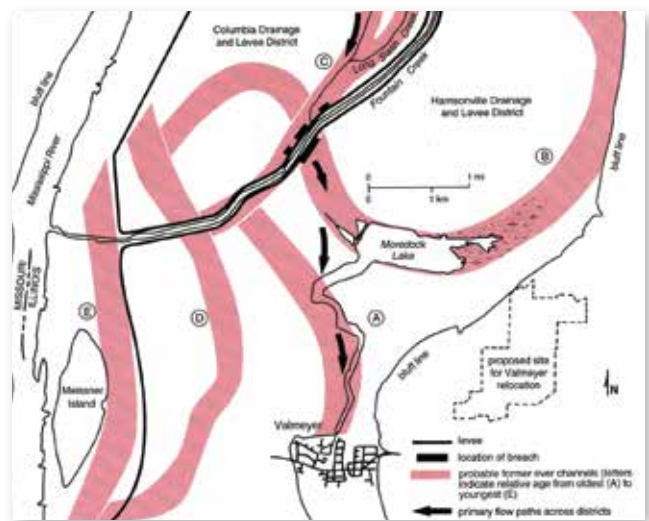
Kaskaskia Island, October 1993

That winter heavy snow blanketed the northern reaches of the Mississippi basin; ice clogged the river between St. Louis and Cairo and undermined the Corps of Engineers' efforts to protect "The Narrows" from erosion. On April 18 the Mississippi jumped its bank, picked up a shallow ditch in "The Narrows," flowed to the Kaskaskia, and took over its narrow channel.

It took several years for the Mississippi to completely capture the Kaskaskia and destroy the village, leaving the peninsula on which the village stood on the Missouri side of the river. In 1913, the farmers on Kaskaskia Island formed a drainage district and built levees. On July 22, 1993, the Mississippi breached the 52-foot levee on Kaskaskia Island, once again flooding the peninsula.<sup>18</sup>

The Mississippi has flowed in several distinct channels across the American Bottom south of Alton. At first, and for a very short time, the river followed channel A, a braided pattern as it spread loads of sediment from the upper valley across its floodplain. Then, starting 9,500 years ago and continuing for 6,000 years, the Mississippi looped across the American Bottom in large meanders, channel B. Then its regime changed to a smaller, straighter meander 3,500 years ago, channels C and D. Then, 1,100 years ago, the Mississippi took up its modern meander belt, channel E, a side channel of the river.

On the right is an Illinois Geological Survey map of the old channels in the American Bottom. Channel A, the



Old Mississippi channels<sup>19</sup>

extension of Moredock Lake that runs into old Valmeyer is the oldest; then B, Moredock Lake; then C, Long Slash Creek; then D, the old channel of Fountain Creek; then E, Lewis Slough in the Meissner Island Division of the Middle Mississippi NWR on the river side of the levee.

At least two were factors in the flood of 1993.



The Flood of 1993: Fountain Creek and its levees, August 9, 1993

To understand the 1993 flood on the American Bottom, first you must understand the low-water reference point. It's an arbitrary number used to set gauges at various stations along the Mississippi at zero. In St. Louis it is set at the foot of Market Street, river mile 179.6. Floods are measured from there. From the low reference point the river drops a half-foot per mile, the slope of the low water reference plane.<sup>20</sup>

Then you need to understand the levees: the St. Louis floodwalls and East St. Louis levees, upstream of the American bottom, are protected by 500-year floodwalls and levees. They are designed to accommodate a 52-foot flood on the St. Louis gauge—that is, 52 feet above the low water reference plane. The three sections of the levee that enclose the Columbia Drainage and Levee District are 100-year levees, ones that will accommodate a 47-foot flood on the St. Louis gauge. The Mississippi crested at 49.6 feet at St. Louis on August 1, 1993, and flowed south to the American Bottom.

For days everyone, Monroe County residents and personnel from the Corps of Engineers, watched the Columbia levee for signs that it was weakening. They watched for low spots in the levee, soft spots in the levee, and sand boils, erupting on the inside as the flood seeped under the levee. To raise the levees several feet, Monroe County residents set rock on the crown of the levee. To provide resistance to the fast rising river and overtopping, workers draped the rock with plastic sheets and ran it down the riverside of the levee.

On July 31 water flowed under rock and eroded bits of it away; the toe of the levee got very soft; finally, water spilled over the top. At 8:30 on the morning of August 1, the river breached the levee, scoured a hole 95 feet deep, crumpled and washed away Virgil Gummersheimer's house, spread a fan of sand a mile and a half long down the floodplain, and surged toward Fountain Creek.<sup>21</sup>

If you drive Bluff Road, it will carry you past Moredock Lake and onto the Fountain Creek Levee, part of the C-shaped levee that enclosed the Columbia Drainage and Levee District. The levee starts at the point where Carr Creek exits the bluffs, runs south along the Mississippi, and turns northwest to the point where Fountain Creek exits the bluffs. Think of the area inside the levee as a bowl, because that is what it became on August 1, 1993, when the Mississippi breached the northern section of the levee along the Mississippi and tore south toward Fountain Creek.

The floodplain slopes south. So does the levee. So does the river. All are measured against the low water reference plane. The Fountain Creek levee was the same height above the plane as the levee at the break to the north, but it sat lower on the floodplain. Floodwater filled the bowl to the level of the river at the break, higher than the Fountain Creek levee.



Moredock Lake—October 1993

The Fountain Creek levee was built over the channel of Long Slash Creek, a tributary to Fountain Creek, and over the ancient channel of Moredock Lake, the old channel of the river that once ran along the bluff. Months of rain saturated the sand in the ancient channels, compromising the foundation of the levee, which sagged even lower.

The Mississippi had long since backed up into Fountain Creek, leaving little room for the surge of water flowing through the break. Debris—hay bales, sides of barns, outhouses, uprooted trees—plugged Fountain Creek under the bridge south of Fountain, Illinois. Nevertheless, Fountain Creek did do its job and returned some the surge to the river. Not enough. The remainder breached the Harrisonville levee on the south side of the creek and scoured a triangular hole 800 feet wide and 25 feet deep, but tapering to nothing where the levee was still intact. The flood flowed south, picking up the ancient channel that runs through Moredock Lake, straight through the heart of the Village of Valmeyer. It continued south through Fults to Prairie du Rocher, where the Fort du Chartres levee along the river was tall enough to contain the flood on the outside, but the levee along Prairie du Rocher Creek was not tall enough to contain the flood on the inside.<sup>22</sup>



Fort de Chartres Lock at the end of Onemile Race Creek

Because the river slopes south, and because the flood at Fort de Chartres was higher in the bottoms than in the river itself, the Corps of Engineers hoped they could open the locks in the culverts that ran through the Fort de Chartres and Ivy Landing District's riverfront levee. Doing so would intentionally flood the southern end of the district to cushion the surge coming down from Fountain Creek. Such an idea had never been tried before. Only two of the three locks opened, which was not enough.

The levee commissioners asked the Corps to break through the riverfront levee. The Corps hired Luhr Brothers, a river engineering firm headquartered in Columbia, Illinois, to bring in a barge-mounted shovel to excavate a hole in the levee, five feet deep and 400 feet across. Then, the commissioners of the Fort Chartres District, acting against the advice of the Corps, blasted more holes in the levee to release more water from the bottoms. Luhr Brothers returned and enlarged the hole to 1000 feet across and ten feet deep, approximately equal to the size of the breach at Fountain Creek. The water flowed in from the river and provided the needed cushion to slow down the surge. As the flood level rose inside the district, it became deep enough to flow out through the intentional break in the levee.<sup>23</sup>

Prairie du Rocher translates into English as Prairie of the Rock. In 1722, the French built the village in the shadow of the bluffs on the terrace of colluvium, washed down from the loess-covered hills. Prairie du Rocher Creek flows out of the uplands and sweeps in a semicircle to the north and west of the village, which lies between the creek and the bluff.

As the 1993 flood cascaded south the villagers feared the same would happen to their creek as had happened at Fountain Creek. The northern levee would break, the southern levee would break, and the village would flood. The villagers put out a call on radio and television for sandbaggers, who came from as far away as St. Louis to form a human chain to add a foot and a half to the northern levee. The flood did overtop the levee in a few places, but the sandbags and the levee held. Acting together, the Corps of Engineers and its contractor, the villagers, and the sandbaggers saved the town.

Prairie du Rocher





A corn field covered in sand washed in by the flood, May 1994

When the 1993 flood breached the Columbia district levee just south of Carr Creek at the very northern edge of the district, it scoured a 95-foot deep hole at the breach, almost to bedrock. It spread out to the north and east, then flowed south and deposited a fan of coarse and fine sand that covered the fields for a mile and a half south of the break. Some of the sand came from the river, some came from the levee itself, but most of it came from the sand-rich deposits of the Cahokia and Henry Formations in the scour hole.

The sand fan covered 760 acres to a maximum thickness of eight feet in one small point and a minimum thickness of six inches. About three-quarters of a mile from the break, where the sand was about six inches deep, the force of the flood bent corn stalks and stripped them of their leaves and young ears.

In the wake of the flood, American Bottom farmers cleared the sand from their fields and returned it to the scour hole from which it came.<sup>24</sup>



Corn, Stringtown—January 1994

On September 3, a month after the Columbia Levee broke, the Monroe County Commissioners issued a press release detailing the impact of the flood on the residents of the floodplain: 47,000 acres inundated; 650 houses flooded—350 in Valmeyer, 50 in Fults, and 250 farm houses; 2,600 people were displaced. No one died.

The economic losses came to \$130 million: \$5 million in assessed value, \$93 million in land, \$15 million in residential buildings, \$5 million in farm buildings, \$2 million in commercial buildings, \$5 million in public buildings, and \$5 million in infrastructure.<sup>25</sup>



Mueller's Cypress—May 1994

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Flood waters spread sand across the landscape, cut gullies in the fields, filled the drainage ditches with sediment, bits and pieces of houses, corn stalks, and other debris. Before the end of August, farmers understood that clean up would not come in time to plant winter wheat in September. And they were concerned that the levees would not be repaired in time to plant the corn and soybeans in the spring.

In 1963, American Bottom farmer Herbert Mueller planted a cypress grove in a low place on his farm. The cypress thrived, possibly because Mueller planted them right up against a railroad embankment that made drainage

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Moredock Lake



to Long Slash Creek to the south difficult. The flood did not completely drain away from the bottoms until the river fell below flood stage several months later. The following May his fields were still very wet and moist soil plants were growing at the edges.<sup>26</sup>

At one hundred acres, reduced from five hundred, Moredock Lake, the remnant of an ancient channel of the Mississippi, is still beloved by duck hunters, birders, and anglers. The Flood of 1993 washed rough fish into the lake like Silver carp—that air-born fish that can knock an angler senseless. Gar, drum, buffalo, and suckerfish also replaced the bass, crappie, and bluegill that anglers prize.

The Village of Valmeyer hired professional anglers to cull rough fish from the lake. They put in large-mesh nets that capture the big fish and let the smaller valuable fish pass through. The work is done in the winter. Once the rough fish were culled from the lake, the village restocked the lake with valuable fish.

Birders have tracked Cattle Egrets from their roosts in Kidd Lake to Moredock Lake. Others have spotted flocks of Pelicans and Snow Geese stopping by on their fall migration. White Ibis, birds normally found along the Atlantic and Gulf coasts, have been seen at Moredock. Avocets, which normally stalk salt and brackish marshes, have stumbled upon Moredock. Forster's Terns and Black Terns have also been found at the lake.



The Stringtown-Fort de Chartres and Ivy Landing Levee and Drainage District—June 2011

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At one time the Mississippi looped across the Stringtown-Fort de Chartres and Ivy Landing Levee and Drainage District in large meanders, similar to the Moredock Lake meander. When the river changed its regime, it left behind large bottomland lakes. Kidd Lake is the remnant of one; the Chartres Waterfowl Club is another.

Drive north along the road at the crown of the riverfront levee. First you will see the big culvert and its three locks, the ones that opened so stubbornly during the Flood of 1993. It is connected to the big Onemile Race Creek Drain. Further up the road you will pass five small culverts, each with one lock, each connected to a smaller drain. In spite of the levee district's efforts to drain the floodplain for agriculture, internal flooding is a problem when the Mississippi is in full flood and the locks in the several culverts, where the drains meet the riverfront levee, are closed. Water in the drains and creeks spills over onto the fields because there is no pump at the main set of locks.

Before European settlement, Fults Creek, now channelized in two directions to speed floodwater off agricultural land, flowed out of the uplands and refreshed Kidd Lake Marsh. The Fort Chartres and Ivy Landing Drainage and Levee District diverted the creek to the Onemile Race Creek ditch and cut off the flow of water to the marsh. Farmers purchased bits and pieces of Kidd Lake, drained it, and converted it to cropland, which is why when you see it from Fults Hill Prairie, it is broken into squares.

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Fults Creek Diversion Ditch



At the end of the twentieth century, the state of Illinois and individual landowners had begun restoring wetlands and forests. By 2000, 7,715 acres of wetlands and 10,025 acres of forest had been restored, much of it in the hard-to-drain Fort Chartres and Ivy Landing Levee District.<sup>27</sup>



Kidd Lake Marsh State Natural Area

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Like Moredock Lake, Kidd Lake is an abandoned channel of the Mississippi that evolved into a bottomland lake. Before European settlement, it hosted a floodplain forest and a slope forest on colluvium between the lake and the bluffs.

In 1970, the State of Illinois purchased 226 acres of the original lake, added 218 acres to its holdings in 1988, and created the Kidd Lake Marsh Natural Area. In 1997, a private duck club purchased 200 acres to the west of the natural area. The state and the duck club began restoring 650 acres of the original lake, building low containment levees and pumping in well water to keep it wet. In May 2011, Southwestern Illinois Resource Conservation and Development donated 94.5 acres to the Illinois Department of Natural Resources to be added to Kidd Lake. The funding for the purchase of the land came from the Illinois





Kidd Lake Marsh State Natural Area

Clean Energy Community Foundation, the Vital Lands Illinois Program within the Grand Victoria Foundation, and The Nature Conservancy.

In April 2010, the Rock Island District of the Corps of Engineers made a list of high priority ecosystem restoration projects for the Middle Mississippi, which extends from the Missouri River to the Ohio. While the engineers' primary focus was on islands and side channels in the river, they also looked at the possibility of incorporating Kidd Lake into a diverse complex that would include Fort Chartres Island and Chute along the river.<sup>28</sup>

In the spring Kidd Lake is a cacophony of frog calls, males looking for mates: chorus frogs sing, southern leopard frogs cackle, northern spring peepers peep, American toads trill, and bullfrogs go “glu-ub, glu-ub.”

Kidd Lake marsh was once home to a variety of wetland birds, some now rare in Illinois. It is an important rest stop for migrating waterfowl and continues to provide critical habitat to amphibians, reptiles, and a diverse range of birds—so diverse that the American Waterfowl

Management Plan considers Kidd Lake one of the most important Illinois wetlands for breeding species.

In early spring a profusion of duckweed (*Lemnoideae species*), each no larger than a baby's pinky fingernail, starts to dot the surface of the lake. Startled American Coots run across the water before taking off. By summer wading birds—Great Blue Herons, Little Blue Herons, Great Egrets, and shy Sora—pick through the young cattails (*Typha species*), lotus (*Nelumbo nucifera*), smartweeds (*Polygonum pensylvanicum*), cordgrass (*Spartina pectinata*), river bulrush (*Scirpus fluviatilis*), false aster (*Boltonia asteroides recognita*), and arrowleaf (*Polygonum sagittatum*).

They all hang around through the fall, when Canada Geese, Snow Geese, Blue-Winged Teals, Mallards, Wood Ducks, and Gadwalls descend on their fall migrations. The Great Blues and the Coots can be found during a mild winter, when the Bald Eagles arrive and muskrats build their dome-shaped houses from summer's cattails, lotus, and bulrush.

The Chartres Waterfowl Club is a private duck hunting



Fort Chartres Duck Club

area, one of several on the American Bottom. Charlie Frederick, a one-man conservation organization, swears ducks would fly over looking for the natural wetlands that once dotted the landscape before he created duck ponds out of farmland.

Like at Kidd Lake Natural Area, Great and Snowy Egrets wade his ponds. So do Great Blue Herons. Pelicans drop by on their spring and fall migrations.

The club is reserved for ducks and duck hunters between Thanksgiving and January 20. Frederick welcomes others to the club anytime between January 20 and Thanksgiving.

Frederick practices moist soil management at Chartres Waterfowl. He built levees to create duck ponds out of cornfields, where he manipulates the water levels, drawing down the levels in the summer and allowing moist soil plants to grow, food for migrating ducks, recreation for duck hunters. Finally, he is restoring a bottomland forest,

where he has planted pin oak and other hardwoods in fields adjacent to the duck ponds.

In the late eighteenth century, Jean Baptiste Barbeau built his house on the bank of Barbeau Creek and under the shadow of the Modoc Rock Shelter. Barbeau Creek flowed out of the uplands, emptied into Marais Geauteau—a lake—and then through The Discharge, which spread out into the swales in the floodplain. Before the Corps of Engineers channelized Prairie du Rocher Creek between levees, it, too, flowed to the river through The Discharge.

Even after more than a century of drainage projects on the American Bottom, Barbeau Creek flows to The Discharge, which carries the creek through a culvert in the levee. No lock in the culvert under the levee prevents the Mississippi from backing up and filling The Discharge with water come floodtime.

Once through the levee, Barbeau Creek waters a bottomland forest in the batture lands before emptying into the Mississippi. Most of the forests on the American Bottom are limited to the batture lands between the levee and the river. They are treed in cottonwood (*Populus deltoids*), sycamore (*Platanus occidentalis*), hackberry (*Celtis occidentalis*), sweet gum (*Liquidambar styraciflua*), swamp oak (*Quercus bicolor*), white walnut (*Juglans cinerea*), black walnut (*Juglans nigra*), pecan (*Carya illinoensis*), and sugar maple (*Acer saccharum*). There are, however, patches of forest scattered throughout the bottoms inside the levees, mostly in places, like Herbert Mueller's cypress grove, that are hard to drain and along the ridges that define the edges of the swales in The Discharge.<sup>29</sup>

Barbeau Creek Runs through The Discharge Coulee



## NOTES

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