



A Sewer Runs Through It A History of the River Des Peres

This curriculum was designed to expand on concepts in the documentary [A Sewer Runs Through It](#).

Overview:

Grade Level: 5 though 12

Time Allotment: Activities may be used as a complete unit or select and utilize individual lessons.

Learning Objectives:

Students will develop mapping skills and will observe how rain water flows

Students will calculate the amount of runoff caused by impervious surfaces

Students will observe how non pollutants are washed out of the ground

Students will observe the health of a river or stream

Students will develop and present a community storm water education plan

Students will consider why people settled and traveled where they did

Students will think about how streets and areas were named

Show Me Performance Standards:

Goal 1: 1, 2, 3, 4, 5, 6, 7, 8

Goal 2: 1, 2, 3, 7

Goal 3: 1, 5, 6, 7

Goal 4: 1, 5, 6

Social Studies Knowledge Standards – 2, 3, 5, 6, 7

Communication Knowledge Standards – 1, 3, 4, 5, 6

Fine Arts Knowledge Standards – 5

Mathematics Knowledge Standards – 1, 2, 3, 5

Science Knowledge Standards – 1, 2, 3, 4, 5, 6, 7

Prep for Teachers:

- Study and select activities for your students
- Copy necessary materials from this curriculum. If necessary, print website information cited for research

Lesson Taught

History of the River Des Peres.

French claims to the Mississippi River valley, which has the largest drainage area of any stream on the continent, began following the expedition of Father Jacques Marquette and Louis Jolliet in 1673. Father Marquette was a Jesuit priest, who had long wanted to minister to the natives, while Jolliet was a Canadian fur trader.

Marquette and Jolliet left from the Mackinac Straits in May of that year, paddled down Lake Michigan into Green Bay, portaged between the Fox and Wisconsin rivers and then floated into the Mississippi River. They followed the Mississippi southward past the mouth of the Arkansas

River, then reversed course for the return trip via the Illinois River. During the first days of the journey down the Mississippi, they saw fish, fowl and animals but no people. Then, in late June, they followed human footprints to several villages in what is now northeast Missouri. These were members of the Kaskaskias, one of the tribes of the Illiniwek confederation, which consisted as well of the Peoria, Cahokia, Tamaroa, Metchigamea and Moingwena.



The explorers visited several villages during their expedition, with Father Marquette promising to return to provide religious instruction to the natives. Though in failing health, Father Marquette did return in the spring of 1675, but died soon after his mission at the Kaskaskia village. Other Black Robes, the Indian term for Jesuit priests, and fur traders continued to explore and settle the Mississippi River valley. Marquette's mission was soon

administered by Father Claude Allouez, and then followed by a string of successors, Father Gravier, Father Pinet, Father Marest, Father LeBoullanger and Father Mermet. In 1679, René-Robert Cavelier, Sieur de La Salle and Henry de Tonty, began exploration for the purpose of commerce in the region.

In 1682, La Salle and de Tonty explored the Mississippi River to its mouth near what is now New Orleans. They claimed title to what is now Louisiana in the name of King Louis XIV. LaSalle established villages on the Illinois River near what are now Peoria and Starved Rock. The French influence in the area remained strong, with many towns being founded. Cahokia, established in 1699, is the earliest French settlement still in existence. Kaskaskia, Prairie du Pont and Fort Chartres were soon built on the east side of the river. The French also settled on the west side of the Mississippi River at Ste. Genevieve, New Madrid, St. Louis, St. Charles, Carondelet and St. Ferdinand which is now Florissant and Portage des Sioux.

We know a great deal about both the Native Americans of the area and the French settlements from primary source material. Many of the priests, soldiers, explorers and other settlers were

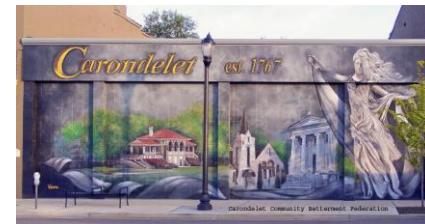
literate, keeping detailed journals of their experiences. Artists who visited the Indian villages painted vivid insights into daily living.

The area now known as St. Louis City and County was claimed by several tribes. The Illini lived closest to the area but generally established most of their villages on the east side of the river. The Osage used the west side as their hunting grounds. In 1700, the Kaskaskia moved their village across the river to a stream that became known as the River Des Peres. This translates into the River of the Fathers, being named for the Jesuit priests who accompanied them, Father Gabriel Marest and Father Francois Pinet. This village and mission were founded sixty four years before Pierre Laclede and Auguste Chouteau chose their site for St. Louis.

The French presence in the St. Louis area was strong, but the French and Indian War was to put an end to it. Although skirmishing had been happening for several years, it wasn't until 1756 that war was officially declared between the French, along with their Indian allies and the British. By 1759, British forces had captured the forts at Fort Ticonderoga, Fort Crown Point and Fort Niagara. By the end of that year, the British had control of almost all of North America, and the rest fell in 1760. The Treaty of Paris, signed February 10, 1763, ceded all of North America east of the Mississippi, except New Orleans, to the British. The French assigned the Louisiana Territory, the lands west of the Mississippi and New Orleans, to Spain.

This decision opened up the area for Americans, who were hungry for land. At the end of the Revolutionary War, the early 1780's, waves of American settlers moved into the area. Carondelet became a focal point for many new settlers. St. Louis was already becoming overcrowded and many sought areas that could provide better living. A primary reason settlers moved to the Carondelet area was the presence of the River des Peres, a source of clean water offering life to its new inhabitants.

Carondelet was founded in 1767 by Clement DeLore de Treget, near the River Des Peres but well above its flood stages. The Spanish governor had apparently granted DeLore the right to allot land to other settlers. The village was laid out south from Bellrive Park towards the River des Peres, and east from present day Broadway to the edge of the bluffs. There were common fields for agriculture and grazing. The village was named in honor of Baron Francois Louis Hector de Carondelet, the Spanish governor of Louisiana.

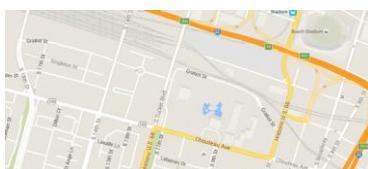


On July 8, 1826, over seventeen hundred acres of the Commons were sold to the United States government for five dollars. This area was to become Jefferson Barracks, which replaced the decaying Fort Belle Fontaine. Jefferson Barracks, which served as a major military installation until 1946, was named in honor of former President Thomas Jefferson. The post played an important role in westward expansion, as well as the Civil War. Generals U.S. Grant, William T. Sherman and Philip Sheridan, for the Union, and Generals Jefferson Davis and Robert E. Lee for the Confederacy served at Jefferson Barracks.

Carondelet also played a role in the Civil War. James Eads, builder of the Eads Bridge, leased the Carondelet Marine Railway Company to build ironclads for the Union. These ships played an important part of ensuring the Mississippi River for the Union.

All stretches of the River Des Peres were attractive to settlers. Charles Gratiot was an early settler to the river's banks although much farther upstream from the Mississippi than Carondelet. Abundant game and a little sulphur spring that bubbled up from the ground, near the present day Hampton Road Overpass on Interstate 44, caught his eye. He received a land grant, for a square league of land, from the Spanish Governor in 1798. He may have already lived in the area though, as a newspaper report from the 1800s made mention of his mansion on a hill above the sulphur springs being present as early as 1777. The Gratiot's offered travelers the opportunity to partake of what was thought to be medicinal waters.

William Sublette was one of the 100 enterprising young men to answer Gen. William



Ashley's famous ad asking for explorers to ascend the Missouri River. From that early call to the mountains, Sublette became an important man in the St. Louis fur trade. In 1831, he purchased about a thousand acres from Gratiot's heirs, including the area around the

sulphur springs. Sublette built a mansion and four large log cabins near the springs in 1834. Gratiot, Sublette and the little sulphur spring have left their mark on the area, as there are streets and a park named after them now.

But continual population growth, especially during the 1800's, was too much for the river. In 1842, Henry Kayser, the city engineer for St. Louis, decided to use the natural limestone caves in the city to store excess sewage created by the exploding population. The plan worked brilliantly until 1848 when 17 inches of rain flooded the area, exposing the sewage that had been hidden in the caves. It coagulated in a single location that the citizens of St. Louis not so fondly referred to as "Kayser Lake."

The majority of new inhabitants were settling near the mouth of the River des Peres, which caused several problems. In warmer months, malaria was an issue that affected everyone in the vicinity. Spread by mosquitoes, standing water provided an ideal habitat for the insects, but fortunately the infection rate never reached epidemic levels. This, however, was not the case when it came to cholera. In 1849, thanks in part to Kayser Lake, a cholera epidemic hit the St. Louis region, killing thousands of St. Louisans. St. Louis City itself was hit the hardest. The River Des Peres valley, despite its standing water, managed to avoid much of the carnage left by the disease.

In 1876, St. Louis City and County split and the city gained over 400 square miles, including what had once been Gratiot's and Sublette's land. Almost all of the River Des Peres now fell within the city's boundaries. Only a small portion in the north was outside the city limits.

As development moved further and further from the city center, St. Louis City gradually began to use the River Des Peres as an open sewer. St. Louis' Mill Creek sewer line, which used a natural drainage system as well as pipe, was overtaxed by the city's growth. As city leaders worked to develop a plan that wouldn't completely

pollute the river, developers in the fashionable west end saw the river as an answer to their sewage needs. As the 19th century neared its end, the River Des Peres was described as a foul smelling health hazard.

In preparation for the 1904 World's Fair, the city needed to deal with the polluted portion of the river that passed within Forest Park. The solution was to encase the river within a wooden box and bury it under the ground. Various plans to deal with the rest of the river were devised, reviewed, rejected and altered, with some portions actually being implemented.

This indecision was lamented in August 1915, when the remains of a tropical storm soaked the area. The floodwaters reached as far away as DeBaliviere Avenue and the northern part of Forest Park. The streets in Washington Heights took on the appearance of Venetian Canals. Eleven people died, homes were flooded up to the second floor, bridges were swept away and phone lines cut. City leaders now all agreed something must be done.

Chief engineer for the Board of Public Service, W.W. Horner, studied rainfall and runoff data and developed a plan to reroute eighteen miles of the river within city limits. This plan, which put the river in the shape it is in today, was put to voters in February 1923. The river was divided into sections, lettered from A to J. Work began on Section A in 1924, and continued steadily until Section J was completed in 1933. Storm water runoff was separated from the sewer pipes along its length, and the river was rerouted with nine miles placed underground in a tunnel and another nine miles above ground in a channel. The path of the river was changed forever. Its winding course was now unnaturally straight, vegetation was stripped, and the channel was deepened.



Stripped of vegetation, the banks along the open stretch were unstable and collapsed in rainy weather. The city again turned to engineering to solve that problem. From 1933 to 1940, the Works Progress Administration, one of Franklin D. Roosevelt's New Deal projects, employed people to pave the banks. The completed project gave the river its present upside down trapezoid shape, with concrete sides and in places, a natural bottom.

This complete redesign of the river, brought about in part from the disastrous flood of 1915, has not prevented all flooding, however. The flood of 1973 overtopped the banks, but it was nothing compared to the Great Flood of 1993. Heavy rainstorms had been drenching the entire upper Mississippi River basin for some time, and the city of St. Louis was apprehensive about the amount of water heading right its way. Carondelet land owners did their best to shore up levies in hopes of halting the floodwaters from damaging their homes. The River Des Peres was in danger of flooding only if the Mississippi River overflowed its banks, causing the excess water to back up into the River Des Peres. When the levy at Kaiser Creek gave way, the people lost their battle against the Mississippi. Within 24 hours the entire area was inundated with floodwater, and numerous homes were lost.

Since the River Des Peres is now essentially not a river but a storm water drainage system, it is administered by the Metropolitan Sewer District. MSD was formed in 1954 and took over responsibility for all of the sewers within St. Louis City and most of the

County. MSD had to combine the existing seventy nine sewer districts or sewer systems into one. Their challenge was to pull all of those under one organization and to plan for waste water treatment as a whole.

MSD has grown to provide wastewater treatment for the entire region through seven wastewater treatment plants that treat over 330 million gallons of wastewater per day. However, from the beginning, St. Louis had been growing in spurts and bounds, and so had the sewer system. The entire area was made up of interconnecting antiquated sewer systems comprised of brick, concrete, clay, and various other structures. Some systems maintained a natural flow from one to another. Others formed dead ends as jurisdictions overlapped. One of the simplest ways in which to provide for the sewage needs of the community was to once again use the River Des Peres as an outlet. MSD began connecting and rerouting sewage lines all over St. Louis. Some of the construction became integrated into the sewage tunnels beneath the river. This system is called a combined sewer system because it handles both wastewater and storm water within the same pipe. Combined systems were considered state of the art when they were designed and constructed, which was long before MSD was formed. The combined sewage system enabled the citizens of St. Louis to get rid of the waste by using the natural flow of the River Des Peres to carry off whatever went down the drain.



Alterations to a river greatly affect its ecosystem. Freshwater ecosystems are divided into two groups, lentic or standing water habitats, and lotic or running water habitats. Inherently, a stream and its channel are a reflection of its watershed, which is an area of land that drains into a lake, a stream or river system. As forested land is converted to impervious surfaces, such as roads, rooftops or parking lots and vegetation is removed, nature needs to adjust for the extra water that runs into a stream. As a result the streambed erodes down, stream banks get steeper, and the stream channel becomes wider. To save homes, roadways and bridges, people try to control the stream by straightening the channel and re-enforcing the banks with large rocks and concrete. This conduit now carries water, trash and pollutants more quickly from tributaries into primary water sources degrading the water quality of both environments. Pollutants can come from specific locations such as factory outfall or pipe, called point sources. However, the greatest source of contamination comes from non point sources, or NPS.

NPS pollution is pollution that comes from all of us through diverse sources within the community such as yard waste, pet waste and trash. When storm water hits an impervious surface, it carries pollution into the stream of the receiving water body. In an urban setting, the impact of higher population causes these pollutants to be conveyed directly into our streams in a very unnatural way. Pet wastes, grass clippings, leaves and soaps are all examples of organic non point source pollution that are washed or dumped into the stream. Inorganic non-point source pollution is the other class of pollution. Toxic metals from automobiles and salt from roads are all examples that can kill stream flora and fauna.

The pastoral scenery that drew Indians and settlers to the River Des Peres is now nothing more than a storm water channel. Various plans have been floated to return the river to a more natural state, but there are many factors that prevent this from happening. It does drain a one hundred fourteen mile square mile watershed that includes the city

and forty two county cities and towns. It provides an outlet for the millions of gallons of rainwater that fall within its vicinity each year. That would be nearly impossible to change now. That being said, there are steps that could be taken to make it more beautiful, accessible and ecologically sound.

In 1998 the River Des Peres Beautification Plan was created, and in 2002 it was adopted and funded. Since that time several groups have come forward to promote the growth, protection, and improvement of the river. In 2004 funding was provided to restore Forest Park to its original beauty by re-routing the river, this time on the surface. The river was altered to link lakes, provide wetlands, and improve the ecosystem for wildlife and humans alike. It is without a doubt the most attractive part of the river. It has become a focal point for the park itself. It provides scenic and recreational opportunities to visitors, and connects the land to its history.

Over the past three centuries the River Des Peres valley has been influenced by those inhabiting its vicinity. Things have not changed much in that respect. It is up to those who live within its watershed to decide its future, just as they have decided its past and current course. Stories of the past provide perspective, and history offers an opportunity to avoid previous mistakes by considering the future rather than simply the present. River Des Peres is in a stage of transition. For the first time in seventy-five years, there is hope for the inhabitants who call the River Des Peres valley home.

Let us hope that civic leaders and the public continue to work together to fulfill this opportunity.

Learning Activity: Non Point Source Pollution

Learning Objective: Students will develop mapping skills and will observe how rain water flows

Activity Set One: Run Off Investigation

Materials Needed: Boots, raincoats, paper, pencils, topographical sheets, foam board, clay, eye droppers

Prior to this activity, have your students map the school's property, showing higher and lower areas, as well as manmade objects. Then, during a light rain, take your students outside to investigate your school's drainage patterns. Have your students look for impervious surfaces and mark the locations on the map. They should use arrows and other map symbols to chart the path of rainwater runoff. Have them follow the runoff as far as possible to determine whether it enters a stream or storm water drain. Once they return to the classroom, have them use the topographical sheets to follow any streams to see how far any pollutants might travel.

Once you've returned to the classroom, compare the maps they created to topographical sheets of your school's area and have the students follow any streams to see how far any pollutants might travel. Using foam board or clay, have your students create a three dimensional representation of the topographical sheet. Use eye droppers to "rain" on the

project and have the students chart the direction the water flows.

Have your students consider these questions:

Would the rain soak into the ground from the impervious surfaces or if on grass, gravel or dirt? If the water does soak into the ground, where does it end up?

Where does the water that falls on the school's roof go?

How do impervious surfaces affect a stream in both the short term and long term?

(Answers to this question should include the following: Water and non point source pollutants are carried directly into streams in the form of runoff, raising water levels quickly. Banks may fail, the bottom may be scoured out and the non point source pollutants are carried downstream to eventually settle there. The impervious surfaces prevent water from soaking into the ground, which may affect stream flow later, as there is not enough ground water to replenish flow.)

Have your students brainstorm methods to minimize problems caused by impervious surfaces. They may suggest retention ponds, directing storm water to vegetated areas, or "green" parking lots and roofs.

Non Point Source Pollution

Learning Objective: Students will calculate the amount of runoff caused by impervious surfaces

Activity Set Two: School Surfaces Runoff

Materials Needed: tape measures, yardsticks, calculators, pencils, paper

Have your students research the typical rainfall for your area.

Next have the students measure various impervious surfaces at your school, like the parking lot, playground, track or roof. The formula for this calculation is: Length x Width = Area, in square feet.

Next they need to calculate cubic feet, which will equate to the volume of rainfall falling on the impervious surfaces area. To do this they must multiply their square foot area by the average amount of rainfall typical for your area. In St. Louis, this is 39 inches per year so $39 / 12 = 3.25$. The formula to calculate cubic feet is Area (in square feet) x 3.25 feet of rain per year = cubic feet of rain. This is the total volume of rain that falls onto the impervious surfaces annually.

To help your students visualize the amount of water that this represents, have them continue their calculations by converting their answers from cubic feet to gallons. A cubic foot of water equates to about 7.5 gallons of water, so have the students use this formula; cubic feet of rain x

7.5 gallons per cubic foot = total number of gallons. This represents the number of gallons of rain that would fall on your impervious surfaces in one year. Remind your students that much of this water will runoff into storm drains and not be absorbed into the ground.

Non Point Source Pollution

Learning Objective: Students will observe how non point source pollutants are washed out of the ground

Activity Set Three: Classroom Non Point Source Pollution

Materials Needed: topsoil, sand, water source, cooking pans or guttering, rubber tubs to act as catch basins, Kool Aid, dish washer detergent, ketchup, or other “non point source pollutants,” corrugated cardboard, artificial turf, bricks or two by four boards cut to the same length as the cooking pans, paper and pencils, stopwatches

Divide your students into groups and have each group sprinkle Kool Aid, dish washer detergent, ketchup or other “non point source pollutants” on the bottom of the cooking pan or guttering and then fill the pans with either topsoil or sand and place at an angle on the bricks or boards. Place the catch basins at the bottom. Have several of the groups pour water gently over the dirt or soil, while the rest of the groups quickly drench their pans. Students should observe and record how quickly the color from the “pollutant” drains from their pan. Now each group should refill their “pollutant” and place either corrugated cardboard or artificial turf on top of the soil and sand.

Repeat the watering step. Have the students share their results and develop a spreadsheet showing all results. Have them brainstorm ideas and reasons for the varying results.

River Health

Learning Objective: Students will observe the health of a river or stream

Activity Set Four: Is This River Healthy?

Materials Needed: paper and pencils

Arrange a field trip to the River Des Peres or another stream in your school’s area. Challenge your students to determine the stream’s health by observing and recording the following questions.

What is the color of the river: muddy, green, oily or clear? Is there an unpleasant or natural smell?

Are there algae blooms or dead fish? Is there trash floating in the river?

What is the composition of the bottom of the river?

Are there aquatic plants and if so are the aquatic plants plentiful, attached to rocks, suspended or growing from the stream substrate?

Are the edges of the river vegetated, barren, or made of manmade materials? Are there pools and riffles?

Are there creatures such as water bugs, fish, turtles and frogs? Are birds feeding from the river?

Are there any invertebrates such as mayfly nymphs, clams, dragonfly nymphs, crayfish?

Are there obvious industrial or residential drainage systems feeding into the stream?

If your school has a lab for chemical testing, collect water samples to test for non point source pollution such as nitrogen, phosphorous, oxygen, pesticides, heavy metals and PCBs.

Have your students record and share their observations and make a determination as to the stream's health. To do so, they will need to compare their results to tests from a stream known to be healthy.

Non Point Source Pollution

Learning Objective: Students will develop and present a community storm water education plan

Activity Set Five: River Advocates

Materials Needed: depends on type of project each student selects

Remind your students about what they have learned about non point source pollution, lotic systems and storm water systems. Have them list reasons why people need to be concerned about what enters a storm drain. Answers should include: Because anything that flows down a storm drain does not go to the local water treatment facility for treatment before entering a stream or river; source pollutants such as oil, antifreeze, paint, grass clippings, oil, household waste, pet wastes, detergent or salt goes directly into the stream.

Have your students take a walk through their neighborhood, observing sources of non point source pollution. They should look for cars being washed, lawns being fertilized, grass clippings on sidewalks, waste oil being improperly dumped, pet waste not being picked up, or cars dripping oil or other fluids.

Now challenge your students to develop an ad campaign to educate the public about storm water issues and pollution prevention. They might create posters, flyers, door hangers, web pages, plays, songs, public service, public service announcements on TV or radio, storm drain stenciling, newsletters, or community presentations. Schedule a school assembly or community meeting for the students to present their information. As an alternate plan, the students may place their posters and other creations throughout the school and community.

Learning Activity: The Five Themes of Geography – Location, Place, Human Environment Interactions, Movement, Regions

Learning Objective: Students will consider why people settled and traveled where they did

Activity Set Six: Location, Movement, Regions

Materials Needed: Road, topological, flood, recent and old maps, and aerial photographs of St. Louis City and County; maps of the various trails, explorers and

expeditions that started in St. Louis, i.e. routes taken by fur traders, the Lewis and Clark, Santa Fe and Oregon Trails. Many of these can be found on line and from libraries; computer, internet access.

Have your students review these map sources and answer the following questions:

What made St. Louis' location attractive? Possible answers include the height above the flood plain and several rivers in the area.

Why were the Mississippi River and the River Des Peres so important to our area's development? Possible answers include access to fur trade upriver, rich farmland, game and markets downriver.

What made Carondelet's location attractive? Student answers should include abundant game, good farmland, as well as proximity to the Mississippi river, in their answers.

How have floods altered the landscape? Have your students study the maps for changes in the rivers and streams through the years. See if your class can find other areas that have significant changes.

How did geographical features drive the routes taken by trails, explorers and expeditions? Possible answers include rivers, low mountain passes, and availability of grass and water.

Through what regions did routes taken by trails, explorers and expeditions go? Possible answers include plains, deserts, forests, mountains, etc.

Learning Activity: The Five Themes of Geography – Location, Place, Human Environment Interactions, Movement, Regions

Learning Objective: Students will think about how streets and areas were named

Activity Set Seven: Place, Human Environment Interactions and Regions

Materials Needed: Road, topological, flood, recent and old maps, and aerial photographs of St. Louis City and County, Census Reports, computer, internet access, books about St. Louis history

Divide your class into thirds, with one third responsible for each section of this activity.

Sulphur Avenue was named for the sulphur spring, while Sublette Avenue was named after the famous fur trader. Have your students find other streets, areas or neighborhoods that are named after natural formations or famous St. Louisans. Have your class create reports on these people and places. They may use plays, PowerPoint, posters or any other media to present the information to their classmates.

Using old maps and Census data have your students track the development of St. Louis City and County. Using this information, they should be able to discern patterns of immigration, flight from the inner city, and post World War II development. They should also note that as the population grew and moved, the landscape was altered; creeks channelized, mounds destroyed, hills flattened, etc. Have them talk to parents, grandparents, older relatives and neighbors about memories of older places and times. As above, have your class create reports using a variety of media to present the information.

Since regions can be defined by any number of characteristics including area, language, political divisions, religions, or vegetation, ask your students to look at the neighborhoods in St. Louis City and County and in your school district. Have the students consider why those neighborhoods developed where they did; was there a church, business or lake? Now have your class list all of the different regions in which they might place their community. As above, have your class create reports using a variety of media to present the information.

Sources and Web Links

St. Louis Post-Dispatch, [A Look Back • River Des Peres floods after record downpour in 1915](#)

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HEC-TV, The Science Behind Sewer Systems, <http://www.hectv.org/watch/hec-tv-live/the-science-behind-sewer-systems-november-2014/15416/>

HEC-TV, Going Green Back to Nature, <http://www.hectv.org/watch/hec-tv-live/going-green-back-to-nature/3148/>

River des Peres Watershed Coalition, <http://www.riverdesperes.org/>

Missouri Department of Natural Resources,
<http://www.dnr.mo.gov>

Metropolitan Sewer District,
<http://mkasmtsp1.stlmsd.com/MSD>

Missouri Stream Team, <http://www.mostreamteam.org/>

Army Corps of Engineers, St. Louis Division,
<http://www.mvs.usace.army.mil>

The Geological Society of America, Education and Outreach,
<http://www.geosociety.org/educate/resources.htm>

Virginia Department of Health,
<http://www.vdh.state.va.us/EnvironmentalHealth/Onsite/GMP/Attachments/GMP072- Attach4.pdf>

Pierce County, Washington, Public Works and Utilities,
<http://www.piercecountywa.org/pc/services/home/environ/ed/waterplans.htm>

Pollution Plume, <http://www.learnnc.org/lessons/Jennifersmith2112003006>
Stormwater Coalition,
<http://www.stormwatercoalition.org/html/et/lessonPlans.html>

Environmental Protection Agency,
<http://www.epa.gov/reg3wapd/nps/pdf/education/lesson4.pdf>

National Geographic Xpeditions,
<http://www.nationalgeographic.com/xpeditions/lessons/07/gk2/water.html>

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http://www.museum.state.il.us/muslink/nat_amer/post/htmls/ic.html

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USGen Net,
<http://www.usgennet.org/usa/mo/county/stlouis/colonial.htm>

History of St. Louis Neighborhoods,

<http://stlouis.missouri.org/neighborhoods/history/carondelet/locale6.htm>

The Unofficial City of Carondelet,

<http://carondeletcity.tripod.com/history.html>

The Harnessed Channel: How the River Des Peres Became a Sewer,

<http://www.eco-absence.org/text/desperes.htm>

A Sewer Runs Through It, <http://www.rftstl.com/2000-12-06/news/a-sewer-runs-through-it/>

City of St. Louis, Community Information Network,

<http://stlouis.missouri.org/>

A Forgotten Landscape of St. Louis,

<http://www.webster.edu/~corbetre/dogtown/articles/creighton-landscape.html>

Philadelphia Print Shop, A Brief History of the French

and Indian War, <http://www.philaprintshop.com/frchintx.html>

East-West Gateway Coordinating Council, Watersheds in St. Louis Information,

<http://www.ewgateway.org/waterresources/ToolBox/TB-Watersheds/tb-watersheds.htm>

USGen Net, Cholera Epidemic in St. Louis,

<http://www.usgennet.org/usa/mo/county/stlouis/events/epidemics.htm>