

# Floods devastate an already inadequate infrastructure base

by Anthony K. Wikrent

Flooding and high ponding have wreaked havoc on the infrastructure base in the nine-state area — transport, power, water treatment and sewage, and the levees on the flood control system itself. A survey of the damage to the transportation grid dramatizes the devastation to all types of infrastructure.

About one-quarter of all freight hauled in the United States moves through the region that is waterlogged. Once the rains and floods first hit in certain areas, the impact was magnified many-fold by the fact that for the past 30 years, vital rail lines have been *ripped out*, in the frenzy of deregulation policy in which a few rail companies, commodities shippers (Cargill, Continental, Louis Dreyfus, Bunge, ConAgra, Archer Daniels Midland, etc.), and trucking concerns have come to dominate freight hauling, based on an ever-smaller, more vulnerable transport grid — which in turn is costlier to the real, physical U.S. economy.

The following is a summary of the devastation.

## Roads

State transportation officials are warning that the extent of the damage wreaked on roads, bridges, and other infrastructure will not be known until next spring. Kent Starwalt, director of the contractors division of the American Road and Transportation Builders Association (ARTBA), explained on July 22, “Basically the real concern is not the top of the road, but the bed underneath: How saturated with water it is; is there any washout from underneath? It’s the same for bridges, where you have to worry about the water having scoured the earth from around piers, footings, and caissons. There’s nothing, unless you are a sponge, that is good to be wet for that long.”

One of the major problems with water-saturated soil, is that the shearing strength of the soil is greatly weakened, rendering it less able to support a load. Another problem, particularly in the case of paved roads, is that the weight of passing vehicles creates a subgrade pumping action beneath the pavement. This causes water to emulsify with the subgrade soil. The resulting water-soil emulsion is pumped through cracks and joints in the pavement by the pumping action created by passing vehicles. Voids are created in the road subgrade, in a progressively worsening process that

leads inevitably to the destruction of the pavement.

Kansas Department of Transportation (KDOT) officials gave an initial estimate of road damage on Aug. 5 of \$11 million. But Assistant Secretary and State Transportation Engineer Mike Lackey cautioned, “We want to stress that this is only an initial estimate that has been turned into the federal government in order to qualify for emergency repair funds. It’s too early to have detailed estimates, because the water has not completely receded, and in many instances is bank-full in our rivers. Until the water goes down, we won’t be able to see all the flood damage.” He said that the preliminary estimate covers damage to Kansas routes, U.S. routes, and interstate routes that are on the 10,000-mile state system.

## Local roads

While state officials worry most about major highways, the local roads are also a disaster, and county governments are strapped for means to repair them. These local roads typically are not as well-built as the major highways and interstates, and many are unpaved. The sub-bases of these roads are not as deep, and are therefore much more prone to being washed out by the scouring action of flowing water. As ARTBA’s Starwalt noted in July, “Some roads, especially country roads, simply won’t even be there.”

Martha Schaebel of the Illinois Department of Transportation reported that over 900 miles of local roads in Illinois had been inundated at some time during the past six weeks. Some rural counties in Iowa have up to 30 miles of rural, gravel roads washed out. In southeastern South Dakota, road damage is estimated to stand at \$1 billion. These washed-out local roads are in those counties least able to pay the costs of rebuilding them.

The worst damage was apparently done not by the Mississippi, but by the Missouri River. Jim Jackson, head of the maintenance and traffic division of the Missouri Department of Transportation, reported that highways U.S. 63 and U.S. 54, which join at Jefferson City, the state capital, “look like child’s building blocks: The pavement is just a jumble. The subgrade, the base, everything has been washed away.” To travel from Columbia to Jefferson City, Jackson said, “which is usually only a 30-mile drive, has turned into a 200-mile

drive now." Columbia is 30 miles due north of Jefferson City, along U.S. 63.

Jackson said, "The longest section of damage on these routes was 1½ to 2 miles, on both lanes. We're talking about a lot of time and a lot of money to rebuild these." He noted that on major routes between St. Louis and the Iowa state line, "bridges have been closed going on a month now. The bridges themselves are apparently okay, but the approach roads have water on them. Between Kansas City and St. Louis, there are 8 to 10 crossings. At one time, all but one were closed."

As of Aug. 5, the Missouri Department of Transportation had not issued a dollar estimate of damages, because much of the road network was still under water.

## Rail

Flooding in the Kansas City area has tied the nation's rail transportation system up in knots, because that city is the second-largest rail hub in North America, after Chicago, and the main lines of all the major railroads except Conrail converge within a few miles of each other on river bottom land between two cities that make up the Kansas City metropolitan area.

The *Journal of Commerce* reported on Aug. 9 that total railcar loadings declined by 4.4% in July, compared to July of last year. Burlington Northern lost the most traffic, showing a 9.7% plunge in car loadings, and an 8.8% drop in intermodal traffic. Burlington Northern's main line between Lincoln, Nebraska and Chicago was out of service for 17 days. The company's Lincoln-Kansas City, Mo. mainline is still under water. The line between Denver and Chicago has been reopened, but there are delays of 18 to 36 hours — more time than it takes to drive a truck. Hardly any of the less-than-load traffic that jumped back to trucks during the flood has returned to Burlington Northern.

The massive Burlington Northern general freight yard at Murray Road in Kansas City was completely inundated, forcing the railroad to hold back trains as far away as Chicago and Denver.

Burlington Northern has refused to accept orders for empty railcars in September from grain elevators, and has instituted a lottery system. Even if shippers could receive enough railcars, there would be delays. In October, when the spring wheat harvest begins in the Dakotas, the situation is expected get even worse.

Eight utility coal-fed power plants — which tend to keep a 90-day emergency supply — are still cut off from service by Burlington Northern coal trains. Burlington Northern (BN) reported on Aug. 5, "When the flooding was at its worst, Burlington Northern had more than 400 miles of track under water. The situation has improved this week to about 200 miles of track still under water. The extent of repair work needed will depend on how fast the waters recede in those areas. As a note of interest, BN has so far dumped

400,000 tons of rock on the Nebraska division to make repairs."

On the Atchison, Topeka and Sante Fe railroad, on July 10, a 252-foot bridge near Bosworth, Mo., about 90 miles east of Kansas City, was washed away by the Missouri River, severing Sante Fe's main line between Chicago and Kansas City. It took work crews over two weeks, working around the clock, to rebuild the bridge. Intermodal freight moved by Sante Fe declined by 13.1%.

Union Pacific Railroad spokesman John Bromley reported on Aug. 5, "At one time or another we have had 1,700 miles of . . . both mainline and branch line [out of service], out of a total of 17,000 miles. Right now, there is still 350 miles of line out of service, virtually all of it mainline."

On Aug. 3, the American Association of Railroads (AAR) issued a detailed cost estimate of physical damage to the major railroads resulting from the flooding:

- Fifty to 100 miles of track were washed away; at \$1 million per mile to rebuild, that's \$50-100 million.
- Some 300 to 500 miles have been damaged from being under water; it will cost \$100,000 per mile to clear and repair that track, for a total cost of \$30-50 million.
- Two to four bridges were destroyed, and numerous others damaged; the AAR estimates rebuilding and repairing them will cost \$15-25 million.
- Some 300 to 500 signals were damaged or destroyed; the cost of replacing and repairing them is \$10,000 to \$80,000 per signal, for a total of \$10-20 million.
- Another 300 to 500 switches were damaged or destroyed; an average cost of \$10,000 per switch is expected for repair and replacement to \$80,000 per signal, for a total of \$3-5 million.
- Some 750 to 1,000 railcars sustained water damage; the average repair cost is estimated to be \$2,000 per freight car, for a total of \$1.5-2 million.

These figures may be severe underestimates, judging from individual companies' reports of how much track has been under water.

The disruption of rail service forced many shippers to employ the service of truckers, igniting an explosive increase in truck freight rates. The rate for a refrigerated truck from the West Coast to the East Coast was reported to have jumped from somewhat over \$4,000 to almost \$5,500.

## Barges

Seven million tons of freight were scheduled to be moved on the Mississippi-Missouri river system in June and July, but did not. That is the equivalent of 70,000 fully loaded railcars. In the middle of July, more than 500 barges were stranded on the upper Mississippi; more than 1,000 other barges were sitting around St. Louis; about 2,200 were waiting at the confluence of the Ohio and Mississippi rivers; and even more barges were sitting on the Illinois and Missouri rivers.