

# Little River - A Drainage Problem

L. L. BUZZARD

Huntington County Surveyor

In discussing "Solutions for Drainage Problems," I should like to give you a brief history of the problems that we have encountered on a petitioned ditch in our area. This ditch or river is unusual in that it is much larger than a normal county ditch and almost half of the length of the main ditch is in solid stone. We shall not attempt to give you any unusual solutions to this drainage project, but will give you a few points on the past work done, the present condition of the river, and the need and plans for work to be done in the future.

Little River, a tributary of the Wabash River, is in Huntington and Allen counties. The source of the river is west of Fort Wayne, from which it flows southwest to Huntington, thence west through the city to the confluence of the two rivers, approximately one mile west of the city limits.

From the east city limits of Huntington eastward toward Fort Wayne, Little River and its tributary ditches have a drainage area of approximately 175,000 acres. This watershed is in Huntington, Whitley, Allen, and Wells counties. The land near the river is rich farm land which was opened for agricultural use by the construction of a larger channel and changes in alignment of some of the winding sections of the old channel. This construction consisted of the removal of approximately 852,000 cubic yards of earth and stone and 200,000 cubic yards of solid stone excavation.

The first petition for this work was started in 1903 but was soon dropped because of the cost of the necessary construction. Another petition was started in 1910 and filed in 1912. After many delays and court actions the work was finally started in July, 1921.

The contractor had difficulty in the heavy stone removal and other heavy construction and finally quit the job. Another contractor finished the job in 1923.

Today the ditch has heavy growth, numerous islands in the lower end, and several obstructions in the channel. New ditches have been constructed in the watershed and an old one reconstructed, causing an increase in the run-off factor. Because of these conditions the river does not have sufficient capacity to carry the water, and again the lowlands are being flooded during heavy rains, causing many crop damages to

the best farmland of the watershed. During periods of heavy rain, flood waters will cover the lowlands for weeks. This river has now been petitioned for a clean-out and reconstruction.

Because of the increased water supply from new ditches and improvements of old ditches, the removal of growth and islands in the channel is not sufficient to meet the needs of the ditch. The gradient for the greater length of the ditch as designed is 0.02%; however, the lower end of the ditch is solid stone, and it would be costly to increase this gradient for the purpose of increasing the flow of water. After taking cross sections of the stream and sounding the stone, we believe the needed capacity can be secured by cleaning the river to its designed bottom width, sloping the banks in the rock sections, and removing the earth islands and rock obstructions now in the channel. To do this work it will be necessary to remove approximately 23,000 cubic yards of solid rock and 343,000 cubic yards of earth excavation and to do approximately 15 miles of clearing and grubbing in Little River and the Aboite Branch.

In the rock sections the question arises as to disposal of the rock. The waste piles on each side are now so big that it will be difficult to place additional material upon them and, furthermore, the distance between spoil banks and top of river bank will be reduced because of the necessity of reducing the river bank slopes. Also, the clearing in these sections will be more difficult, not because of a greater amount of growth but because of the inaccessibility. These problems will increase the cost of the project in this area.

A study of the flooded areas during high water has helped to determine the location of bottlenecks and obstructions. This study has also helped to determine which lands will benefit the most by reconstruction, and we have used the results of the study in preparing our assessments.

While this project is only a clean-out or reconstruction of an old project, much new data and information were needed to place the work under a contract. During the years since the original construction, the old boundary line has changed because of the addition of new ditches. New ditches within the watershed have changed the runoff, with resultant changes in the zones or assessment rates. The width of the watershed and consideration of benefits received necessitated determination of several rate zones. The area in the immediate vicinity of the river varies greatly because some of the land is low and some high and above the flood stage. The lowlands will greatly benefit by an improvement of the drainage channel for reclaiming the land for farm use. Under present conditions these rich farm-

lands are becoming practically useless because of the heavy crop damage each year. Therefore, these lowlands will receive the greatest benefits and should pay the highest assessments. The location of these valley lands is necessary in any consideration of assessment rates. Several thousand acres of land are many miles from the river. These properties are not affected by high water, nor did many of the new owners realize their land was a portion of the Little River watershed. They are not interested in Little River, and many of them object to any assessment, regardless of rate; however, their land is in the shed and they will be assessed, even though the assessment rate will be very small.

The assessment rates on the original construction were divided into eleven major zones, with the zone near the river being variable. This variable zone had many rates according to the benefit received, varying from \$1.00 per acre to \$50.00 per acre. Because of the many changes throughout the watershed, we now have in our new proposal seven major zones with a variable rate in the immediate vicinity of the river. In the variable zone the rates for the new construction will not exceed \$15.00 per acre, with a few exceptions in the extremely low land.

In view of the delays, complaints, court actions, and other objections to the original construction, one wonders as to the opinions of the landowners about a reconstruction. Some of the owners of damaged land are very urgent, some of the distant owners are indifferent, and some of the highly benefited owners seem to think the original ditch was not properly constructed and express doubt that a second construction will be done properly. In view of these opinions and in consideration of the low gradient of a great portion of the ditch, inspection of the construction and records of the work should be made throughout the life of the contract. Small amounts of material left above grade will tend to cause trouble in some sections where the banks are low.

Comparison of the unit costs of the original proposal and the costs of similar work today shows that work can not be done today for the same unit price. This will tend to increase the costs of the improvement and magnitude of the work, especially in the minds of some of the old landowners who still remember the amounts of their first assessment.

All field work on the project has been completed, including cross sections of the entire project and soundings of the rock sections. The boundary lines have been determined, the names of all property owners have been secured, and the zones for assessment rates have been determined. The quantities of earth excavation and rock removal have been computed and the costs of the ditch have been estimated.

In other words, all engineering work has now been completed. The assessments for the various zones and for the variable rates in the immediate vicinity of the river are now being worked out for the various properties. Provided the objections or delays are not too numerous, as they were in the original construction, this ditch will be ready for construction in the near future. If there are many court actions, the actual work may be delayed for some time.