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USE OF THE WATERS OF THE COLORADO RIVER IN MEXICO: PERTINENT TECHNICAL COMMENTARIES*

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I.

As you know, the Colorado River Basin spreads over two countries, Mexico and the United States, and the river flows through them. At times, this fact does not appear to be taken into account, perhaps because the part of the Colorado River Basin in Mexico is relatively small and is not a factor in modifying the river's flow, either in volume, or in quality. In any case, there are two users of the Colorado River, the United States and Mexico.

Through the years, in the confluence of the Colorado and Gila Rivers, a valley was formed whose lands are well suited for agriculture. It is the last of the valleys crossed by the course of the Colorado River. By the Treaties of 1848¹ and 1853², the lands in this valley happened to be divided between Mexico and the United States. The lands which were first put under irrigation were those of the Mexicali Valley, which are riparian to the Colorado River, and those of the Imperial Valley, which are not riparian to the Colorado River.

It was more or less towards the end of the last century when Mexico and the United States jointly began to use the waters of the Colorado to irrigate the lands of the Mexicali Valley and the Imperial Valley. In order for Colorado River water to arrive at the Imperial Valley, it was forced by the topography to drain by gravity through the Mexicali Valley. In order to conform this use of the Colorado River water with the laws of Mexico, a company was created in 1904 which was given the concession to divert Colorado River water through Mexican territory to the Imperial Valley and to use half of

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1. Treaty of Peace, Friendship, Limits, and Settlement with the Republic of Mexico [Treaty of Guadalupe Hidalgo], Feb. 2, 1848, 9 Stat. 922 (1851), T.S. No. 207; 1 N.M. Stat. Ann. 127 (1969).

2. [Gadsden] Treaty with Mexico, Dec. 30, 1853, 10 Stat. 1031 (1855), T.S. No. 208; 1 N.M. Stat. Ann. 146 (1969).

the water for irrigating lands in the Mexicali Valley.³ The company was authorized to divert up to 284.00 cubic meters per second from a point immediately north of the border. This clearly refutes the argument of the United States that the lands situated in Mexico are a separate valley and that Mexico is a downstream user of the Colorado River water. The United States' argument ignores the historical, geographical, and topographical conditions.

Thus, for many years the two valleys—which are physically one—used water of the same quality from the same diversion point and faced together the same vicissitudes, in a total equality of rights.

After calculating the annual drainage of the Colorado River, the seven United States Basin States (Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming) signed the Colorado River Compact in November 1922.⁴ The main object of this action was to divide among themselves the waters of the Colorado River, considering the division to be an internal matter. Nevertheless, in the Compact the U.S. Basin States provided that the waters of the Colorado River which in the future would have to be turned over to Mexico would be taken from the excess flow of the river above the amount apportioned by the Compact and if that remainder were not sufficient, whatever was lacking would be provided equally by the Upper and Lower Basins.⁵ It is important to note that the Compact still continues in force and that it promises the same waters to Mexico that the United States uses. Above all, the Compact recognizes the priority of any treaty obligation in the event that there is not sufficient water to comply with both the Treaty and the Compact.

After the signing of the Colorado River Compact, the United States began extensive works to control and use the river water. Among them were Imperial Dam and the All American Canal which gave the Imperial Valley an independent diversion point above that of the Mexicali Valley, allowing the Imperial and Coachella Districts to derive their water entirely through United States territory. Despite this change, the Mexicali Valley continued using water of the same quality as the Imperial Valley.

As the United States continued achieving a greater control of the river, the need was increasingly apparent for an agreement between the United States and Mexico to clearly fix Mexico's rights in the waters of the river. This agreement was achieved with the signature

3. See also Furnish & Ladmann, *The Colorado River Salinity Agreement of 1973 and the Mexicali Valley*, printed in this issue; F. Robles, *Mexicali-Calexico* 57 (1971).

4. 70 Cong. Rec. 324 (1928).

5. Colorado River Compact, art. III(c), 70 Cong. Rec. at 324 (1928), N.M. Stat. Ann. § 75-34-3 (Repl. 1968).

of the Treaty of 1944.⁶ The Treaty establishes that a guaranteed volume of 1.5 maf (1,850 million cubic meters) of the river's flow is assigned to Mexico each year.

It is obvious that these international and internal agreements did not mention quality because, among other reasons, in those days the utility of water was judged to be proportional to the volume, and because the Colorado River water was a common beneficial resource and there could not be any difference between the water assigned on either side of the border.

II.

Simply, it can be said that the quality of water is determined by the proportion of dissolved solids (salt) in the water; the higher the proportion, the higher the salinity, and the lower the quality.

All water employed in irrigation contains salt in some degree. Plants do not use salt but discard it while using only the water it is dissolved in. If the degree of salinity is too high, the plants do not have the capacity for extracting the water and rejecting the salt. They die. If the degree of salinity is within acceptable limits, the plants use as much water as they need and reject the salt.

This rejection causes an accumulation of salt in the soil. If the soil becomes too saline, the plants again have difficulty in separating the water from the salt. Modern irrigation techniques solve this problem by overirrigation; the excess irrigation water dissolves the salt and carries it off as drainage water. Since there is no increase in the salinity of the soil in a properly managed irrigation project, the salinity of the drainage water is much higher than that of the irrigation water. It also follows that the more saline the irrigation water, the greater the volume of drainage water required to carry the salt away and the lower the economic return per unit of water.

The quantity of irrigation water required to grow a particular crop, then, depends on the amount of water actually used by the plants, the amount of evaporation and seepage losses, and the volume of overirrigation water required to maintain the saline balance of the soil. The volume of overirrigation water required is a function of the salinity of the original irrigation water.

Optimal use of water requires that as little drainage water as possible be produced. Therefore the drainage water is commonly so high in salinity that it is useless for irrigation. If a volume of drainage

6. Treaty with Mexico Respecting Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, Feb. 3, 1944, 59 Stat. 1219, T.S. No. 944 (effective Nov. 8, 1945) [hereinafter cited as Water Treaty of 1944].

water is mixed with water of lower saline content, in order to reuse it for irrigation purposes, the result is that an even greater volume of the mixed water is required to carry off the salt imported in the drainage water. So to try to reuse drainage water is uneconomical and risks damage to the soil. According to modern irrigation techniques, volume itself fails to represent the utility of the available resource and it is essential to consider the quality because it alters the utility. A reduction in the quality of the water received by an irrigation farmer has the same effect as a reduction in the quantity of water received. Crop yields decline in either case because fewer acres can be irrigated.

III.

During the first seventeen years the Treaty of 1944 was in force, Mexico received its allotment of water, and even considerable surpluses, with a quality substantially equal to that of the Imperial Valley in California and the Yuma region in Arizona. This was to be expected logically, since all three regions are part of the same geographical and topographical region and since there had been a history of equal water quality for more than half a century.

In 1961, when the problem of salinity appeared, highly saline ground water was pumped from the Wellton-Mohawk Irrigation District in Arizona and released to Mexico as part of its allotment. The United States denied that this was a violation of the Treaty. The United States argued that the quality of the water to be released to Mexico was not stipulated in the Treaty; that the only stipulation in the Treaty was that the water come from the Colorado River, whatever its source; and that the Wellton-Mohawk drainage water came from the Colorado River. The United States further argued that the situation was the result of a technical irrigation problem within the United States and therefore of no concern to Mexico, and that in any case, the water released to Mexico was usable.

Mexico, taking the opposite position, maintained that the Treaty was being violated, that the deterioration of the quality of the water released to Mexico was clearly damaging its property and that the essential part of the problem was not of a technical character but rather of a moral and juridical nature.

The Treaty of 1944 did not specify a technical, precise standard for water quality, but it did refer to quality implicitly always referring to the waters of the Colorado River which the United States also used. Thus, the Preamble stated that although previous treaties had regularized the waters of the Colorado River only for navigation

purposes, and since it was advantageous for both countries to use and consume the waters, both countries welcomed the Treaty in order to obtain a more complete and satisfactory utilization of the waters. As can be seen, reference was being made to the waters that ran through the Colorado River and which the United States also used. These waters were the same as those of the Colorado River Compact of 1922 which gave priority to any international compromise with Mexico which promised Mexico a part of the ownership of the waters of the Colorado River. The Treaty further states that when there is water in excess of what is necessary to supply the consumption of the United States and the guaranteed annual volume to Mexico, the United States would be obligated to turn over to Mexico additional quantities of water and that in cases of extraordinary drought, the water assigned to Mexico shall be reduced in the same proportion as water use is reduced in the United States.⁷ As can be seen, the Mexican water and the United States water is one and the same, and both form part of what exists in the Colorado River, regardless of whether the river's volume is sufficient to fulfill all of the existing commitments. Furthermore, the spirit that prevails in this Article of the Treaty indicates that Mexico and the United States agreed to accept the same risks and benefits in using a common beneficial resource. Equality in rights is also present since the treaty gives Mexico a right to use part of the capacity of the All American Canal.

In summary, the Treaty consistently refers to the water used by Mexico and that used by the United States as the same water; never does it make any differentiation between the two. Another way to put it is that the Treaty of 1944 recognized Mexico as the eighth user of Colorado River water with the same privileges and risks as the seven states which had signed the Colorado River Compact of 1922. Looking at the Treaty, it could be argued to Mexico in a time of shortage that there was not sufficient water to fulfill Mexico's allotment, but it could not be argued that Mexico's water was different in quality.

IV.

The first technical argument that the United States tried to maintain and in the end abandoned was that the Wellton-Mohawk drainage water was Colorado River water within the terms of the Treaty which stated that Mexico would be allotted "waters of the Colorado River, from any and all sources." By itself this argument

7. Water Treaty of 1944, art. 4(B)(d).

was absurd and could be refuted logically. When man pumps drainage water and diverts it where he wants, he can take it to a river or to the ocean or to any other water course, but this does not convert the drainage water into the source of the river or of the ocean since the source is a natural accident intrinsic to the river or the ocean; to say that drainage water is the source of a river would make it potentially the universal source of all rivers; to say this would mean that anything which is dumped into a river would be its source. This is the opposite of reality since a river is generally the source of the drainage waters, not the other way around. It would make as much sense to pump water from the Gulf of California to the headwaters of the Colorado and call it the source of the Colorado.

Next, the United States tried to find an irrefutable technical explanation for its actions by arguing that the situation was a result of a reasonable use of the waters of the Colorado River within its territory. This argument was based on four assumptions which the United States considered sound.

First, the quality of the waters of a river, because of natural reasons and because of their reasonable use, gradually deteriorates downstream. Mexico would accept this first assumption as a fact and recognize the successive and gradual deterioration of the waters of the Colorado as it flows downstream, if this were a reasonable deterioration that the United States users would also accept. But Mexico does not accept as reasonable the abrupt deterioration caused to its water by the notorious and discriminatory action by the United States authorities.

Second, all irrigation districts have a right to maintain a saline equilibrium, and the use of water to maintain such an equilibrium is a reasonable use. As we have seen, modern and universally accepted agricultural techniques recognize as a reasonable use the operation of an irrigation system with a saline equilibrium. These agricultural techniques do not say, however, that it is reasonable to oblige the downstream user to receive the drainage water even though it may be unusable or even positively harmful. Furthermore, what the agricultural techniques do say is that drainage waters which, because of their poor quality, are not usable, should be discarded and not reused. Also, as we have already said, the drainage water was not included in the water that was promised to Mexico by the Treaty of 1944. Therefore, this drainage water should not be released to Mexico unless Mexico consents.

Third, the United States has a right to turn over to Mexico,

within its quota and as "return flow" of the waters of the Colorado, drainage waters which were a product of the reasonable operation of its irrigation districts. In discussing this assumption, we should note that the Treaty of 1944 only mentions return flow with respect to the Rio Grande and says nothing about the Colorado.⁸ Further, even if Mexico is obligated to accept return flows under the Treaty, the definition of return flow used in the Treaty (particularly as defined in English) refers to excess irrigation water which returns by itself to the River.⁹ This definition does not include drainage waters. Of course, being one of the users of the Colorado River, Mexico has the obligation to cooperate with the other users in the same geographical area in the management of the waters of the river. But Mexico does not have the obligation to receive different quality water as a part of its quota, much less drainage water since that is not Colorado River water within the meaning of the Treaty.

The assumption that drainage waters are return flow waters under the Treaty, or that any water that returns to the River should be accepted as return flow, is quite a weak argument if we examine it in light of the use of the term in United States case law. In *California v. Arizona*,¹⁰ the United States Supreme Court, in defining "consumptive use", clearly defined waters that can be accepted as return flow as being similar or practically equal in quality to those of the original source.

"Consumptive use" means diversions from the stream less such return flow thereto as is available for consumptive use in the United States or in satisfaction of the Mexican Treaty obligation.¹¹

It is clear that, according to this definition, return flow should have a degree of usability that drainage waters do not have.

Fourth, Mexico is the user of the furthest downstream waters and also the last user on the river. This assumption seems to forget the time when the waters of the Colorado were diverted through the Mexicali Valley to the Imperial Valley. The United States also seems to ignore the fact that the Yuma Valley and the Mexicali Valley are on the same level and that the River flows between them. The United States ignores the fact that the Mexicali Valley, the Imperial Valley, and the Yuma Valley are really all one valley and that all of the irrigation districts in this one big valley are, taken together, the last user

8. Water Treaty of 1944, art. 9(d).

9. Water Treaty of 1944, art. 1(h).

10. 373 U.S. 546 (1963).

11. *Id.* at 557 n. 23.

on the river. This point of view is buttressed by the fact that United States irrigation management practices provide all of the United States irrigation projects in the area with the same quality water, from the highest lands in Wellton-Mohawk to the lowest lands in Imperial Valley.

V.

In the final negotiations, both sides abandoned their various arguments in the interest of finding a mutually satisfying solution to the problem. After prolonged and complex negotiations, they worked out a final and definitive solution.¹² The United States, which has under its control the volume and quality of all of the waters of the Colorado River, promised that it would take measures to guarantee that, in the future, the waters of the river turned over to Mexico at Morelos Dam will be of an acceptable and satisfactory quality and that that quality will be maintained permanently.

12. Minute 242. Reprinted in this issue at p. 2.