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Principal Economic Aspects of the Problem of Salinity of the Colorado River

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PRINCIPAL ECONOMIC ASPECTS OF THE PROBLEM OF SALINITY OF THE COLORADO RIVER*

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Undoubtedly the main problem that has existed between our country and the United States, and that which we are attempting to resolve through Minute 242,[1] is the problem of the salinity of the Colorado River. This river serves as the international border between the two countries for a length of only 29 km. of a total 2,250 km. from its source in the Rocky Mountains to its mouth in the Gulf of California. Although such a short stretch of the river serves as the border, the waters of the Colorado River, due to artificial conditions, have been causing great problems for the governments of both countries for over 12 years. These problems are greater than those of the Rio Grande and the Tijuana River, even though the former flows for 2000 km. between the two lands.

ORIGINS OF THE PROBLEM[2]

The United States Government, upon the demand of the farmers of Wellton-Mohawk and the Arizona State Government in 1960 began expensive works in order to regenerate and rehabilitate the unused lands in this district, which, for more than 40 years, had been washed with salt water which originated in deep wells and which was not related to the waters of the Colorado River. The waters of this river were transported to the Wellton-Mohawk Valley in order to leach the salt deposits. Later, this water was recombined with the flow of the Colorado[3] at the mouth of the Gila River and delivered to Mexico within the quota assigned by the Treaty of 1944.[4]

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1. Reprinted in this issue at page 2.

2. For more comprehensive discussions, *see* Note, *A History and Interpretation of the Water Treaty of 1944,* 12 Natural Resources J. 600 (1972); Vela, *La diplomacia de la sal,* Boletín del Centro de Relaciones Internacionales, June 1972, at 1; Lopez Zamora, *El conflicto internacional de la contaminacion de las aguas del Río Colorado. Un análisis de carácter político,* Política, Dec. 10, 1974, at I.

3. Sobarzo, *La salinidad de las aguas del Río Colorado,* 8 Pensamiento Político 197 (1971).

4. Treaty with Mexico Respecting Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, February 3, 1944 (with protocol of November 14, 1944), 59

This irrigation system was put into operation on February 10, 1961[5] and has grown through the addition of a large number of wells drilled near the border to intercept water for use in Arizona which normally supplies the subterranean currents of the Mexicali Valley. By the end of 1961, the farmers of the Mexicali Valley began to observe that the saline concentration of the river was increasing considerably, causing serious damage to their land and crops.

The agriculture of the Mexicali Valley at that time was known for its high production, superior to the rest of Mexico, although at a relatively high cost. The main projects were cotton and wheat. Cotton harvests had tripled in less than two decades, and three tons of wheat per hectare were being produced.

The major interests of the people of the Mexicali Valley, especially of the rural population, have been cruelly affected by this action which has lasted 12 years, causing great economic losses, raising production costs, and increasing expenditures for research concerning the possibilities of developing crops resistant to salinity. This same action has had considerable and permanent repercussions in regional sources of labor and in agriculture as well as in commerce, industry, and even in public services. These repercussions are permanent because the salinity of the land will not disappear by simply restraining the use of salt water in the future.

The analyses, previously carried out both in the United States and in Mexico, show that the median concentration of salts in the river waters fluctuated between 700 and 928 parts per million (ppm).[6] However, in December 1961, the concentration suddenly went beyond 3000 ppm and continued above 2000 ppm until the end of 1965,[7] when, through application of Minute 218,[8] signed in March of the same year, the salinity was reduced to 1300 ppm.[9] Later, the concentration was reduced to 1140 ppm by the end of 1972 and to less than 1010 ppm in these first months of 1974, through application of Minutes 241[10] and 242,[11] respectively.

Stat. 1219 (1945), T.S. No. 994 (Tratado con los Estados Unidos de América para la Distribución de Aguas Internacionales de los Ríos Bravo, Colorado y Tijuana, 3 de febrero de 1944, Diario Oficial, 30 de enero de 1946).

5. Lopez Zamora, *supra* note 2, at XIV-XV.

6. Federal Water Pollution Control Administration, U.S. Dep't of the Interior, General Background on the Mineral Pollution Problem in the Colorado River Basin 5 (1968).

7. Sobarzo, *supra* note 3, at 197.

8. 4 Int'l Legal Materials 545 (1965), 55 Dep't of State Bull. 555 (1965); Secretaría de Relaciones Exteriores, Memoria, 1964-65, at 545.

9. Secretaría de Relaciones Exteriores, Memoria, 1968-69, at 114.

10. 67 Dep't State Bull. 198 (1972); Secretaría de Relaciones Exteriores, 1971-72, at 102.

11. Reprinted in this issue at p. 2.

EFFECTS OF SALINITY

It is a well-known fact that when there is a major concentration of salts in irrigation waters, crops benefit less from these waters; therefore, the demand for water increases and it is necessary to gradually reduce the production area to maintain proportional yields.[12]

The degree of salinity tolerance of crops is variable, but there are few species that can tolerate high concentrations of salts in the soil without a readily perceptible change in yield. Some of these salt-tolerant species are sugar beets, barley, and, to a lesser extent, cotton. However, studies carried out in the United States, such as the report presented to the Department of the Interior by the Committee to Establish Criteria Concerning Water Quality, clearly state that "water with 1000-2000 ppm may have adverse effects upon agriculture and at the same time require careful treatment."[13] Other studies carried out specifically to determine the maximum salinity that water used in agriculture should contain, show figures which vary between 1400 and 500 ppm, according to research carried out by Dr. Becket and the California State Government.[14]

MEASURES TAKEN BY THE UNITED STATES GOVERNMENT

The Kennedy administration financed and developed the Wellton-Mohawk projects which caused the excessive and artificial saline contamination of the Colorado River.

During the development of these projects, studies were initiated in order to solve the problems, and Mexico received only an additional 280,000 acre-feet (1 acre-foot = 1233.5 m^3) of water from Lake Mead in the winter of 1962, which improved the situation of the Mexicali Valley farmers only slightly. The terms of Minute 218 became effective at the end of 1965. It provided that the waters that were used to leach the saline deposits in the Wellton-Mohawk Valley would be drained toward the riverhead, upstream from the Morelos Dam, through a canal which crossed the above mentioned dam, so that Mexico could discharge the saline water into the Gulf of California. This first step, along with other arrangements, reduced the salinity of the river to 1300 ppm. Minute 241, signed on July 13, 1972, replaced Minute 218, and Mexico began to receive water with a lower saline concentration which was brought from the Yuma Wells

12. Miramontes, *La doctrina Harmon: El Tratado de Aguas de 1944 y algunos problemas derivados de su aplicación*, 6 Foro Internacional 49, 95 (1965).

13. Bureau of Reclamation, U.S. Dep't of the Interior, Colorado River Water Quality Improvement Program (1972).

14. Miramontes, *supra* note 12, at 95.

instead of the Arizona wells; consequently the salinity was reduced to 1140 ppm.

Finally, trying to arrive at a definitive solution to the problems of the delivery of contaminated water to Mexico, Minute 242 was signed on August 30, 1973. Pursuant to this Minute, water with a saline concentration which exceeds the saline concentration of the water at Imperial Dam by more than 150 ppm will not be delivered to Mexico. The following plan was agreed to: The United States will build, at its own expense, an extension of the canal that drains the salt water from the Morelos Dam to the Santa Clara Marsh in the Gulf of California. (This will not mean that the canal will be an American right-of-way through Mexico.) The United States will also promise to prevent these drainage waters from containing radioactive materials or residues; however, *the Minute does not refer specifically to any other type of contaminant.*

It should also be pointed out that the United States is committed to "support efforts by Mexico to obtain appropriate financing on favorable terms for the improvement and rehabilitation of the Mexicali Valley,"[15] and to give "nonreimbursable" technical assistance[16] for the same objectives.

FINAL REMARKS

Obviously, the artificial contamination of the waters of the Colorado, as an international river, has caused serious losses to the Mexican national economy. A definitive solution to this grave problem should come about only after reestablishing the status quo, and after the United States has paid compensation for the following items:

1. Lands which have become unusable.
2. Repercussions in agriculture which include losses ranging from decreasing production per hectare to the total loss of crops.
3. Repercussions in public services, commerce, and industry in the Mexicali Valley.
4. The amount of uncontaminated water that has not been received or that has been wasted, based on the quota that is assigned to Mexico by the Treaty of 1944.
5. Expenses for rehabilitating the Mexicali Valley which, under other circumstances, our country could have avoided.
6. Expenditures for the rehabilitation of damaged lands.
7. The difference in the price of products which are now being imported because they cannot be produced in the area.

15. Minute 242, para. 7. Reprinted in this issue at p. 2.
16. *Id.*

However, Minute 242 only attempts to improve as far as possible the technical aspect of the problem, since Mexico will continue to receive water with a higher saline content than it had normally received up to 1960, and with a higher saline content than the water received by American farmers. It is also possible that if the United States Congress approves expenditures for a desalinization plant to be built in Arizona at a cost of 62.6 million dollars and also for a canal that would carry the saline waters to the Gulf of California,[17] a "drainage canal" built by the United States would run through our land, possibly contaminating the Gulf of California with nonradioactive industrial wastes that are as damaging as radioactive residues. Then the United States could also argue, as it did in relation to the Treaty of 1944, that the new agreement does not have an express stipulation in this regard.

Regarding the economic aspect, Mexico is abandoning its right to claim the indemnification due for past damages and consequential damages which will even have repercussions for the future, and seems to be resigned to accepting the promise of loans and "nonpayable assistance" made by the United States. Nevertheless, if the United States Congress is hindering the approval of funds for the desalinization plant by mixing this project with the two others the Congress will be even less interested in approving budgetary allocations for "nonpayable assistance" which might signify a form of indemnification, if only partial.

Finally, sharing the waters of an international river as well as fighting against contamination and its consequences should be carried out according to a good neighbor policy. However, resolving a country's internal problems without considering damages that might be caused to other countries is not a good example of this policy, since it is to abdicate international responsibility.

17. Congress passed the Colorado River Basin Salinity Control Act, Pub. L. No. 93-320, 88 Stat. 266 (1974), approving these expenditures, on June 24, 1974 [Ed.].