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THE MEXICAN WATER TREATY
AND ITS RELATIONSHIP TO COLORADO RIVER WATER SUPPLIES

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The meetings in June between Presidents Nixon and Echeverria thrust the matter of the salinity of the Colorado River water delivered to Mexico pursuant to the Mexican Water Treaty on the front pages of our Nation's newspapers. While the press focused on salinity problems of the water delivered to Mexico, these problems and potential solutions are intimately connected with the water supply used within the United States in the seven states of the Colorado River Basin.

In order to understand the current situation and future possibilities in connection with the Treaty, it is necessary to have some background information.

1944 Mexican Water Treaty

This Treaty covers the waters of the Colorado, Rio Grande, and Tijuana Rivers. It was Mexico that insisted on having one agreement covering both the Colorado River and the Rio Grande, rather than having separate treaties. Since the United States is the basic source of water delivered to Mexico from the Colorado River, while Mexico is the source of a large part of the waters used by the United States in the Lower Rio Grande Valley, Mexico felt that

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they could obtain better terms on the Colorado by considering the two rivers together in one treaty. It was also significant that the chairman of the Senate Foreign Relations Committee in the 1940s was Senator Connally of Texas, which state would benefit greatly from an agreement with Mexico on the Rio Grande.

Negotiations between the United States and Mexico concerning the Colorado River commenced originally in 1929, but were broken off. They were reinstated in the late thirties, but it was not until 1941 that the negotiations were undertaken which finally led to the 1944 agreement.

The initial United States position in 1929 was that Mexico should receive 750,000 acre-feet per year from the Colorado River, which was then the largest amount of water that Mexico had used in any one year. The 1928 Boulder Canyon Project Act had authorized construction of Hoover Dam with one of the stated purposes being the delivery of stored water for ". . . beneficial uses exclusively within the United States . . ." The 750,000 acre-feet per year was also considered by engineers to be the largest practical supply that Mexico could use without regulation by upstream storage reservoirs. Mexico countered with a demand for 3.6 million acre-feet per year, and negotiations were abandoned.

In 1941, the United States offered 0.9 million acre-feet per year (maf/yr) of stored Colorado River water to be released on demand to Mexican users. Early in 1942, the United States' offer

was amended to 1.15 maf/yr, but with the delivery to be from "any source whatsoever." Mexico countered with a demand for 2 maf/yr.

A Committee of Fourteen composed of two representatives from each of the seven Colorado River Basin states had been formed in 1938 to consider basinwide problems. As negotiations between the United States and Mexico developed in the early 1940s, this Committee became involved in advising the State Department on matters relating to the proposed treaty. Before signing the Treaty in February 1944, which called for delivery of a guaranteed annual quantity of 1.5 maf/yr, the State Department reported on the treaty to the Committee. The Department explained their agreement to deliver such a large quantity of water by pointing out that more than one-half of the 1.5 maf/yr would be irrigation return flows entering the river below Imperial Dam, which would go to Mexico under any circumstances. Thus, the State Department's position was that the United States' users would be better off agreeing to deliver a larger quantity of water to Mexico, which included return flows, than a smaller quantity which did not include return flows.

Five of the states agreed with the proposed treaty. However, California vigorously dissented, and Nevada abstained. Because of California's dissent and Nevada's nonconcurrence, the remaining five states joined with Texas in July, 1944 to form a new group called the Six State Committee, which actively supported ratification of the Mexican Water Treaty.

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The Treaty which became effective on November 8, 1945 after ratification by the two Governments, does not specifically refer to water quality. However, State Department representatives and their consultants testifying before the United States Senate in support of the Treaty stated that water quality was extensively discussed, and that Mexico fully understood that the Treaty required them to take return flows. The specific provisions that were included in the Treaty to insure that Mexico must accept return flow and drainage water are in Articles 10 and 11. Article 10 states that Mexico's allotment includes water from "any and all sources," and Article 11 states that "waters shall be made up of the waters of the said river whatever their origin."

Wellton-Mohawk Drainage Problem

Between 1945 and 1961, there were no particular problems with respect to quality, as the salinity of the water delivered to Mexico at the northerly international boundary was generally within 100 parts per million of the water at Imperial Dam, the last diversion point for users in the United States. However, in 1961, the Wellton-Mohawk Project in Arizona commenced operation of its drainage system and discharged its drainage water into the Colorado. Initially, the drainage water included a substantial proportion of highly saline groundwater that had been concentrated through reuse during the previous half-century. This groundwater averaged around 6,000 parts per million. There was a sharp increase in the salinity of the water delivered to Mexico which resulted in strenuous objections being raised by Mexico.

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Although the Wellton-Mohawk drainage was the primary cause of the increase in salinity, another factor also had a significant impact. Beginning in 1961, releases into Mexico were sharply reduced in anticipation of storage in Lake Powell behind the newly constructed Glen Canyon Dam. This loss of dilution water can be emphasized by two figures; for the 10-year period from 1951 to 1960, the average delivery to Mexico at the northerly international boundary was 4.24 million acre-feet per year, while for the succeeding 10-year period from 1961 to 1970 the flow averaged only 1.5 million acre-feet per year. The Wellton-Mohawk drainage water and the decreased flows caused the average salinity of the waters delivered to Mexico to increase from 800 parts per million in 1960 to 1500 parts per million in 1962.

Although, as previously indicated, the United States intended that Mexico must receive return flows below Imperial Dam under the Treaty, no one had anticipated return flows as high in salinity as the Wellton-Mohawk drainage or that there would be such a precipitous rise in the salinity of the waters delivered to Mexico. Consequently, after the winter of 1961-62, the United States undertook certain provisional measures to minimize the impact of the high salinity drainage returns from Wellton-Mohawk. The United States also entered into negotiations with Mexico to arrive at a practical solution. The State Department asked the governors of the seven Colorado River Basin states to appoint two members to a reconstituted Committee of Fourteen in order to advise the State Department in connection with the Wellton-Mohawk problem. (The current members from California appointed by Governor Reagan are William Gianelli, Director of Water Resources, and myself.)

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Extensive negotiations were conducted between 1962 and 1965 and in November 1965, with the concurrence of the Committee of Fourteen, a five-year agreement was incorporated in Minute 218 of the International Boundary and Water Commission. Under Minute 218, the United States agreed to take several actions to alleviate the problem. First, the United States constructed an extension of the Wellton-Mohawk Drain so that water can either be bypassed around Morelos Dam or mixed with other Colorado River waters above Morelos Dam, at the option of Mexico. Second, the United States constructed additional drainage facilities in the Wellton-Mohawk project which allow selective pumping of the most saline waters at times when Mexico is bypassing Wellton-Mohawk drainage water, and allow the pumping of higher quality groundwater at times when Mexico is using Wellton-Mohawk water. Third, the United States agreed to replace a portion of the bypassed Wellton-Mohawk water which resulted in the release of approximately 40,000 acre-feet of mainstream water per year from Imperial Dam in excess of the 1.5 million acre-feet per year required by the Treaty.

Minute 218 was extended for one year in November 1970, and again extended in November 1971. Under the measures taken by the United States, at a cost of about \$12 million, the quality of the water delivered to Mexico was improved from about 1500 ppm in 1962 to 1240 ppm in 1971. Between November 1965 and November 1971, operation of the minute has resulted in delivery to Mexico of 232,000 acre-feet in addition to the amount guaranteed by the Treaty.

Negotiations in 1970-72

Prior to the first expiration date of Minute 218, November 1970, the United States and Mexico commenced negotiations with the purpose of arriving at another five-year agreement. Mexico had objections to operations under Minute 218, and they wanted changes in any new long term agreement. The United States made a proposal in order to meet Mexico's objections. The Diaz Ordaz Administration considered the proposal to be constructive, however, they did not want to enter into a new long-term agreement, since a new President would take office on December 1, 1970. This led to the first one-year extension of Minute 218.

Negotiation commenced in 1971 with the Echeverria Administration. The United States, supported by the Committee of Fourteen, proposed a new minute in which additional quantities of water would be substituted for Wellton-Mohawk drainage water. The quantities proposed to be substituted each year were estimated on the basis of what has been termed the "equivalent salt balance" approach.

In arriving at the equivalent salt balance concept, United States reasoned that (1) water users in the United States have a right to irrigate lands below Imperial Dam, (2) Mexico has to receive drainage water under the Treaty, (3) creating a situation of ideal return flow conditions below Imperial Dam with respect to salinity would be the best Mexico could expect, (4) the total deliveries should be water of a quality that would be usable for irrigation of the type of crops grown by Mexico, considering its soil conditions.

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Salt balance in an irrigation system simply means that the amount of salt returned in drainage waters is equal to the amount of salt in the water applied to the land. An irrigation system that is in salt balance neither accumulates salt in the soil nor leaches salt from the soil. As proposed in this situation, the equivalent salt balance program would insure that water delivered to Mexico would have the same salt concentration as would exist if the projects in the United States which divert from Imperial Dam and have drainage returns to the river were in salt balance.

Equivalent salt balance would be obtained by bypassing some of the irrigation return flows from the Wellton-Mohawk Project and substituting therefor a combination of better quality groundwater from the Yuma Mesa, and additional releases from Imperial Dam. Even with equivalent salt balance, there would be an increase in salinity concentration between Imperial and Morelos Dams caused by evaporation of a portion of the applied irrigation water on lands in Arizona and California, i.e., the tons of salt applied to, and returned from, the land are equal, but the amount of return flows are only a portion of the applied water.

The deliveries under the equivalent salt balance proposal for the first year would have been 130,000 acre-feet per year beyond the Treaty requirements. The source of the additional water would be releases of Colorado River water from storage above Imperial Dam and from wells on Yuma Mesa near Yuma, Arizona. In 1971 salinity of the Wellton-Mohawk drainage water was approximately 3700 ppm and it is anticipated that the amounts of substitute water would diminish in future years as

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salinity of the Wellton-Mohawk drainage water continues to decline.

The United States also informed Mexico that, for the long term future, a more serious problem for Mexico and for United States users in the Lower Colorado River Basin is the projected increase in the salinity of the river at Imperial Dam. Mexico was informed of the United States' plans to undertake a major basinwide salinity control program, and of feasibility studies being under way by the U. S. Bureau of Reclamation. The objective of this program is to keep the salinity at or below present levels. California has been working very closely with the federal government and the other basin states in developing the salinity control program.

Although the United States negotiators thought they were near agreement with Mexico in November 1971, Mexico finally rejected the American proposals and negotiations were discontinued. In the early part of 1972, there was a resumption of talks at different levels within the two governments, however no agreement was reached.

Joint Communique Between President Nixon
and President Echeverria - June 17, 1972

On June 15 and 16, President Nixon and President Echeverria met and following the meetings, issued a joint communique dated June 17, 1972. With respect to the Colorado River, President Echeverria gave the essence of the current Mexican position as wanting water under the 1944 Treaty to be the same quality as the water at Imperial Dam. President Nixon replied that "this was a highly complex problem and needed careful examination of all aspects." The President then

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outlined four points and said that the United States was prepared to:

"(a) undertake certain actions immediately to improve the quality of water going to Mexico;

(b) designate a special representative to begin work immediately to find a permanent, definitive and just solution of this problem;*

(c) instruct the special representative to submit a report to him by the end of the year; and

(d) submit this proposal, once it has the approval of this government, to President Echeverria for his consideration and approval."

The immediate action referred to by the President is the substitution of Colorado River water and Yuma Mesa water at an annual rate of 118,000 acre-feet for an equal quantity of Wellton-Mohawk water. The 118,000 af/yr was computed by the previously referred to equivalent-salt-balance concept. The substitution of the water by the United States will result in delivery of water to Mexico at the northerly international boundary with an average salinity of 1140 ppm as compared to 1240 ppm delivered to Mexico for the calendar year 1971.

At the request of Mexico, the United States will also bypass the balance of the Wellton-Mohawk drainage water (approximately

*Mr. Herbert Brownell, former Attorney General of the United States was appointed President Nixon's Special Representative on August 16, 1972.

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100,000 af/yr) which results in Mexico delivering water into its Alamo Canal with a salinity of around 950 ppm. These actions are incorporated in Minute 241, which became effective on July 14, 1972, and are to remain in effect until December 31, 1972. Minute 218 was terminated when Minute 241 became effective.

It is worth examining for a moment the Mexican position that they should receive the same quality of water as that at Imperial Dam. Presently, more than 500,000 af/yr of the water delivered to Mexico under the 1944 Treaty is derived from return flows below Imperial Dam. The Wellton-Mohawk Project furnishes approximately 220,000 af/yr, and the balance comes from other United States projects, including the delivery of drainage water at the southerly international boundary. All Colorado River water above the 1.5 maf/yr Treaty obligation to Mexico is committed to use within the United States. To provide Mexico water of Imperial Dam quality would either require the conveyance of all return flows below Imperial Dam to the Gulf of California and the substitution therefor of Colorado River water (to the detriment of United States users), or would require a major augmentation of the river or a massive desalting effort. Desalting of 500,000 af/yr is estimated to cost in the order of \$25 to \$50 million a year. Desalting would leave a brine disposal problem of at least 50,000 af/yr.

Major Outstanding Issues with Mexico

There are two basic issues with Mexico: (1) Does Mexico have to receive return flows below Imperial Dam under the 1944 treaty?

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(2) Is the water usable?

With respect to the return flow issue, the history of the negotiations, the legislative history leading to ratification and the Treaty language itself make it clear that return flows delivered to Mexico are to be counted in meeting the 1.5 maf/yr. obligation to Mexico. Return flows have been included since operations commenced under the Treaty in 1945. Had return flows and other miscellaneous waters not been included, United States negotiators could not have agreed to a guaranteed quantity of more than twice the water which Mexico used prior to construction of storage reservoirs in the United States.

With respect to the usability issue, deliveries under the equivalent-salt-balance concept will result in Mexico receiving water with an average salinity of 1140 ppm during the ensuing year. That Mexico has used and now does use waters with a higher salinity to grow crops is indicated by the following items:

1. Up until July 14, 1972, when Minute 241 became effective, the Mexicans, based on their own scientific studies, accepted Wellton-Mohawk drainage water along with other water to the extent that it did not result in overall salinities in excess of 1230 ppm.

2. The approximately 140,000 acre-feet per year of Colorado River drainage water delivered to Mexico at the southerly international boundary near San Luis in the State of Sonora averages between 1400 to 1500 ppm, and

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Mexico has been satisfactorily growing crops with this water without complaints to date.

3. In the eastern Mexicali Valley, Mexico irrigates with water from wells that have a salinity of 1300 to 1400 ppm. The pumping apparently helps the drainage situation, and there are no complaints concerning the use of this water for their crops.

4. It is only in the western Mexicali Valley, where the soils are of a similar nature to those of Imperial Valley, that the Mexicans have complained about the water. However, Imperial Valley has installed approximately 17,000 miles of underground tile drains at a cost to the farmers of over \$40 million to carry away the drainage water, while Mexico has not installed any drainage tiling.

Certainly, Mexico should receive usable water to support its agricultural economy which relies on Colorado River water. The United States, the Colorado River Basin states, and Colorado River water users have been concerned that Mexico does receive usable water. To this end, the United States has expended considerable funds, and to date the states have agreed to giving Mexico Colorado River water above the Treaty requirements. Further, the states are willing to continue to give additional water for a limited number of years.

Special Representative of President Nixon

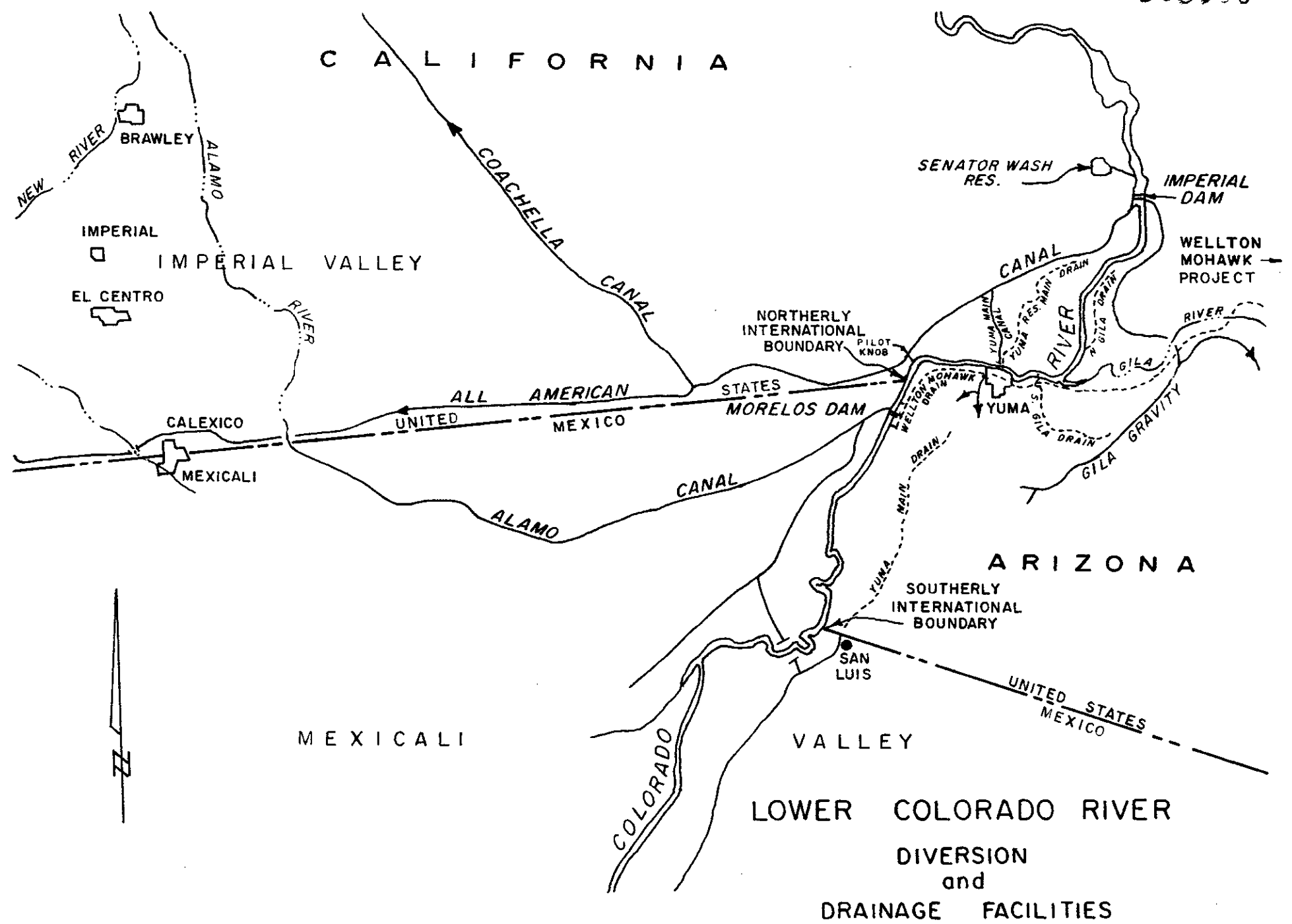
It is apparent from the above that the special representative

of the President has quite a formidable task before him in arriving at a permanent solution to this problem in $4\frac{1}{2}$ months. He will have to consider many items and complex issues which have been discussed for over a decade and solved to date by various temporary but practical solutions. His analyses will have to include:

- a. the legal aspects of the Treaty,
- b. the usability of waters of various salinities,
- c. the return flow issue,
- d. international relations with Mexico, and
- e. the various alternatives that will be proposed.

In summary, it looks like we have a very interesting time in the next few months in connection with the Mexican Water Treaty.

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