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Texas v. New Mexico: The Pecos River Compact Litigation

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COMMENT

TEXAS v. NEW MEXICO: THE PECOS RIVER COMPACT LITIGATION

> While the river is not large, it has most of the problems that any western stream system can have. The water supply is not sufficient adequately to serve present development. The quality of the water is poor. Frequent floods occur in various parts of the basin. The river carries considerable sediment during flood periods which results in a major problem in maintaining reservoir capacities on the stream. Salt cedar areas at the heads of reservoirs are expanding rapidly and consuming unusually large volumes of water. Among the problems of the Pecos River Basin, one of major importance is the interstate problem.[1]
>
> No interstate issue has been more productive of prolonged quarrels and bitter hostility than use of the waters of interstate streams, especially among the arid western states, where water is so precious a commodity. In many instances, recourse to the United States Supreme Court has been thought necessary, but interstate compacts have been increasingly relied on to settle water disputes. . . . One of the most successful [compacts] is the Pecos River Compact between Texas and New Mexico.[2]

After years of dispute between Texas and New Mexico over the use of the waters of the Pecos River, the two states agreed to the Pecos River Compact of 1948. In 1975, Texas, displeased with the activities of the commission entrusted with applying the provisions of the compact, filed suit against New Mexico in the United States Supreme Court. The Court appointed a special master to hear the dispute.[3] This comment summarizes the principal conclusions of the master's report[4] and the states' objections to that report.

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1. REPORT OF THE ENGINEERING ADVISORY COMMITTEE TO THE PECOS RIVER COMPACT COMMISSION 19 (1948).

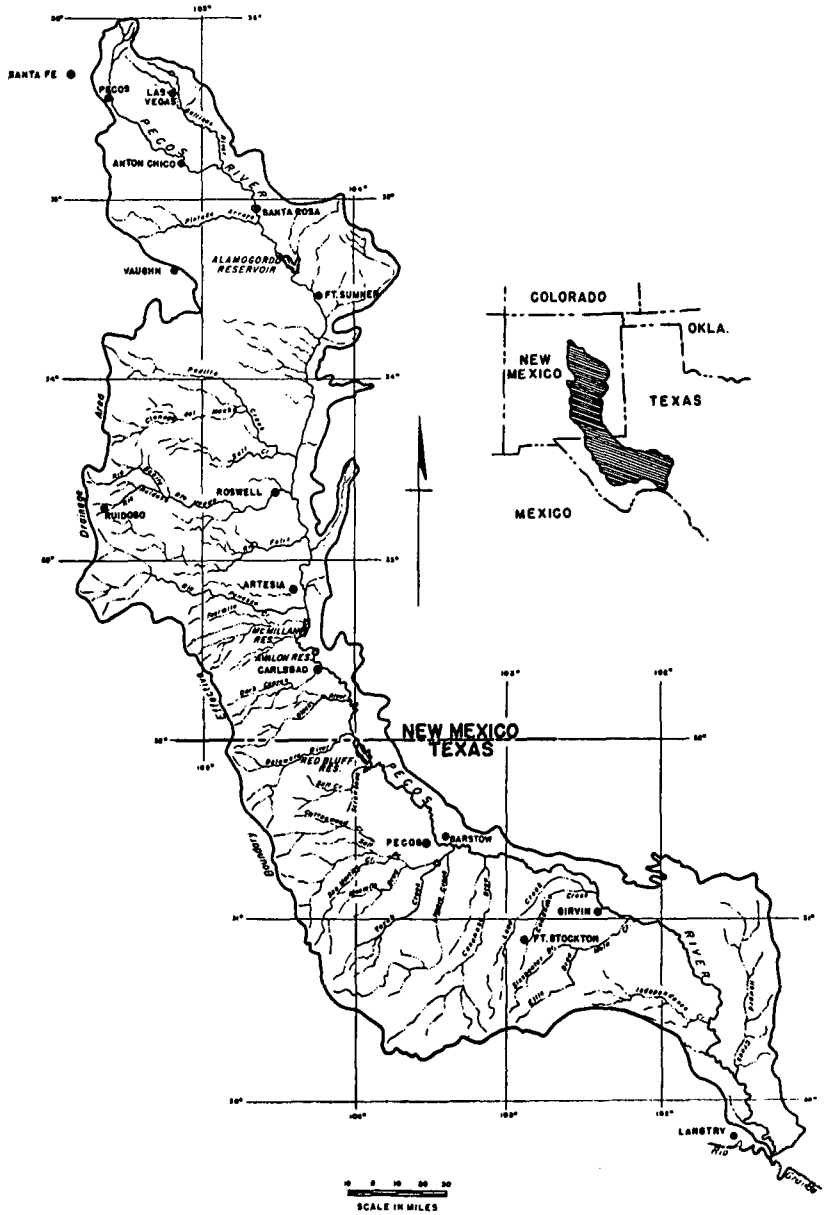
2. PECOS RIVER COMMISSION, A REPORT OF A DECADE OF PROGRESS, 1950-1960, at 173 (1961), *quoting* R. LEACH & R. SUGG, JR., THE ADMINISTRATION OF INTERSTATE COMPACTS 158 (1959).

3. A special master often is appointed in water disputes because of the complexity of the engineering and hydrologic issues.

4. Breitenstein, REPORT OF THE SPECIAL MASTER ON THE OBLIGATION OF NEW MEXICO TO TEXAS UNDER THE PECOS RIVER COMPACT 2, Texas v. New Mexico (United States Supreme Court No. 65 Orig.) [hereinafter cited as MASTER'S REPORT].

FIGURE 1

THE PECOS RIVER BASIN



Source: THE PECOS RIVER COMMISSION, A REPORT OF A DECADE OF PROGRESS (1961).

I. THE PECOS RIVER–SCENE OF THE CONTROVERSY

A. *Characteristics and Hydrology of the Pecos River Basin*

The Pecos River rises high in the Sangre de Cristo Mountains in north-central New Mexico, and flows in a southerly direction approximately 900 miles to join the Rio Grande at Langtry, Texas.[5] Most of the land is semi-arid, and the demand for water exceeds supply.[6] Much of the watershed is used for livestock grazing, but where water is available, irrigated farming predominates. Principal industries in the area include oil and gas production, cultivated farming, potash production, livestock raising, and manufacturing.[7]

Climatic conditions vary considerably within the watershed, owing to variations in geographic location and topography. Generally speaking, the summers are warm in the upper part and hot in the lower. The average growing season at the lower elevations in Texas is about 220 days, from March to November. In the mountainous northern sections of New Mexico, it ranges from June to September, about 100 days. Average annual precipitation varies from about ten inches near Pecos, Texas, to more than thirty inches in the mountains, with snowfall accumulations following the same general pattern. Approximately 75 percent of the mean annual precipitation occurs from May through October, with about 46 percent occurring from July through September. This pattern of rainfall, often torrential and brief, results in frequent disastrous floods[8] which cause reservoir sedimentation and channel deterioration. The stream flow is extremely variable, and in the absence of flood inflows, the normal base flow of the stream is entirely lost and reestablished many times in the length of the stream. Salt cedar areas consume unusually large volumes of water.[9]

The river divides into three distinct sub-basins. The Upper Basin ranges from the headwaters to Alamogordo Dam. Development in this area has remained much the same as it was under early Spanish colonization.[10] The Middle Basin is that portion between Alamogordo Dam and the New Mexico-Texas state line. This is the area of present controversy. It is the most populous of the three sub-basins and accounts for more than half of its total inhabitants. It is richly endowed with mineral wealth, and contains broad areas of irrigable

5. *Id.* at 5.
6. THE PECOS RIVER COMMISSION, A REPORT OF A DECADE OF PROGRESS, 1950-1960, at 3 (1961) [hereinafter cited as P.R. COMMISSION].
7. *Id.* at 5.
8. *Id.* at 5, 6.
9. MASTER'S REPORT, *supra* note 4, at 6.
10. *Id.*

land.[11] The three principal communities in the Middle Basin are Roswell, Artesia, and Carlsbad, whose populations are roughly 34,000, 10,000, and 21,000 respectively.[12] The Lower Basin extends from the New Mexico-Texas state line southward.

The most important irrigation developments in the Middle Basin are in the Fort Sumner, Roswell, and Carlsbad areas. In Roswell and Carlsbad, irrigation by surface flow diversions began near the end of the Nineteenth Century. In the Roswell region, surface irrigation was supplemented with artesian flow in 1891 and with shallow wells after 1927. Irrigation in Carlsbad was first served by the McMillan and Avalon Reservoirs, which were completed in 1893, and then superceded by the construction of the Alamogordo Reservoir in 1937.[13]

B. *Applicable State Water Law in the Basin*

1. New Mexico

As a result of the artesian pumping in the Roswell area, by 1920 the "once desolate Roswell flats were known as 'The Garden Spot of New Mexico.' "[14] Because the use of groundwater was unregulated, lending institutions would not make loans to irrigators for fear that the water would run out. The irrigators, therefore, brought pressure to bear on the New Mexico legislature.

A law regulating the appropriation and use of groundwater was enacted. This law requires a permit from the State Engineer to use groundwater in basins that have been declared "public waters."[15] Waste of water is curtailed and use of well water in irrigation is limited.[16]

2. Texas

Except for statutes prohibiting the waste of artesian water,[17] there is no statewide regulation of the use of groundwater in Texas, and development has been limited only by geologic-hydrologic conditions. Underground water belongs to the owner of the overlying land, who has the right to take as much water as he chooses. Texas landowners have always had this "right of capture" insofar as groundwater is concerned.[18]

11. P.R. COMMISSION, *supra* note 6, at 9.
12. MASTER'S REPORT, *supra* note 4, at 8.
13. *Id.* at 9.
14. P.R. COMMISSION, *supra* note 6, at 99.
15. N.M. STAT. ANN. §72-12-1 (1978).
16. P.R. COMMISSION, *supra* note 6, at 101.
17. TEX. WATER CODE ANN. tit. 5, §205 (Vernon 1972).
18. P.R. COMMISSION, *supra* note 6, at 102.

The difference between the two systems is clear. While New Mexico has undertaken carefully to maximize its groundwater, Texas has not. This difference may in part help to explain the animosity between the two states. New Mexico understandably seeks to increase its return from efficient groundwater management, while Texas has resisted this concept entirely.

II. HISTORY OF THE COMPACT–YEARS OF DISPUTE, ATTEMPTS AT RESOLUTION

A. *The Need for Water Storage–The Immediate Cause of the Problem*

Since the early days of the development of the Lower Basin in the last half of the 19th Century, Texas, as the downstream water user, has actively sought a share of the river's water. The river was overappropriated in Texas, and the hydrographic surveys in New Mexico, while apportioning water among New Mexico users, did nothing to increase use for Texas. Texas irrigators claimed that New Mexico used all the water in the river from 1888 through 1895, leaving none for Texas. They believed that apportionment depended on building a dam at the state line to store waters for use in Texas and wanted some kind of agreement with New Mexico in order to be assured of a supply of water.

New Mexico was experiencing water shortages of its own. Leakage and siltation had greatly reduced the effectiveness of McMillan Reservoir, and the dam required replacement. Each state's desire to build a reservoir to serve its needs only increased the tension between them.

B. *The First Attempt–The Compact of 1925*

Texas' plan in 1923 to construct a large reservoir in Texas near the New Mexico state line prompted the first formal attempt to solve the problem.[19] One representative each from Texas, New Mexico, and the United States, along with an engineer from the Bureau of Reclamation, met and tentatively agreed on a draft compact. After certain amendments were added, the compact was signed in El Paso, Texas, on February 10, 1925, and was ratified by the legislature of each state.[20] The compact expressly authorized construction of Red Bluff Reservoir to provide storage to benefit irrigators in Texas, but it was silent regarding storage in New Mexico to offset sedimentation of McMillan Reservoir. The Pecos Water Users Association and other

19. [1946-1952] N.M. STATE ENGINEER, BIENNIAL REPORT 121 [hereinafter cited as N.M. STATE ENGINEER].

20. P.R. COMMISSION, *supra* note 6, at 121.

New Mexico irrigators did not think sufficient storage capacity for upper river needs was provided. The governor of New Mexico vetoed the bill and it failed to become law.[21]

C. *Failure of Federal Efforts at Cooperation*

Because negotiations at the local level failed to reach agreement, in 1926 state political leaders tried to address the problem at the national level. At the urging of Texas, Congress enacted legislation authorizing the Secretary of Interior to construct a dam in Texas. But New Mexican strategists injected a proviso dictating that the money be appropriated from the Reclamation Fund, which they knew to be depleted. Additional safeguards forbidding construction of a dam in Texas unless Texas agreed to protect New Mexico's uses of water were written into the law.[22] New Mexico saw no need, then, to reconsider the Compact of 1925. Finally, in 1931, the legislature of Texas repealed its ratification of the 1925 agreement.[23]

D. *The Alamogordo Agreement—A Victim of Distrust*

Each state continued to oppose the other's plan for constructing reservoirs. New Mexico irrigators proposed construction of a dam to provide replacement storage for the silted McMillan Reservoir. Texas irrigators, still without any storage whatsoever, vigorously opposed this project. Texas wanted to construct a dam to impound water for use in Texas. New Mexico objected to this plan because it required the state to pass on to Texas water already appropriated for use in New Mexico.[24]

When the Secretary of Interior threatened to drop both projects if the states could not resolve their differences, representatives of the Carlsbad Irrigation District in New Mexico and the Red Bluff Water Power Control District of Texas signed the compromise Alamogordo

21. *Id.* at 122.

22. In the event that any irrigation works are constructed under the authorization contained in this Act, neither the United States, the State of Texas, nor any of the parties for whose benefit said works are to be constructed shall at any time hereafter have claim, or attempt in any manner to acquire, any right to the use in the State of Texas of any water which shall flow in the Pecos River, or any of its tributaries, in New Mexico at or above the Avalon Dam, except such of said water as may not at any time be used or diverted from or above said dam: *Provided,* That nothing in this section shall be construed to curtail the quantity of water to which present users in Texas may now be lawfully entitled; *And provided further,* That no construction under his Act shall begin until the State of Texas, through legislative act, signed and approved by the governor of said State, shall have agreed to the provisions of this section.

Act of June 18, 1926, ch. 622, Pub. L. No. 404, 44 Stat. 753 (1926).

23. P.R. COMMISSION, *supra* note 6, at 123.

24. N.M. STATE ENGINEER, *supra* note 19, at 121.

Agreement. This agreement provided for the construction of both dams, with New Mexico guaranteeing that it would continue to pass on downstream to Texas the same proportion of floodwaters originating above the Carlsbad Project as had reached Texas during the previous 20 years.[25] The agreement also contemplated that a formal compact would follow.[26]

By the time the biennial legislatures of both states met in 1935, the Red Bluff and Alamogordo Dams had been constructed. Each state had achieved its immediate objective. Consequently, neither was willing to enter into a formal compact.

Events in 1937 highlighted the problems on the river. Unusually heavy precipitation in the Middle Basin caused floods resulting in millions of dollars damage in Roswell and other communities. Later that year, suit was brought by three farmers against the United States Potash Company alleging that the company was contributing to the salinity of the river. While the suit was settled in favor of the company on he basis of U.S. Geological Survey reports absolving the potash company of adding to the salinity of the river, the litigation, together with the floods, made New Mexico cautious about entering into a compact until more was known about the hydrology of the river.[27] It was becoming apparent that the problems involved in the Pecos River dispute were far too complex to be solved by casual negotiation at the state level.[28] In 1941, the Texas legislature repealed its approval of the Alamogordo Agreement with the idea of bringing suit against New Mexico.[29]

Two years before this repeal, however, the newly created National Resorces Planning Board had opened an office in Roswell and had begun field work on the Pecos River Joint Investigation. Included in the investigation were issues of water supply, irrigation development, salinity, water uses and requirements, floods, erosion and sedimentation, and availability and use of water under given conditions.[30] The factual data and river operations study were published in 1942 and provided material aid in subsequent compact negotiations.

E. *A Compact Is Signed—The Pecos River Compact of 1948*

In 1942, Texas and New Mexico each designated a representative to a new compact commission with instructions to negotiate a work-

25. *Id.* at 121-22.
26. *Id.*
27. P.R. COMMISSION, *supra* note 6, at 130.
28. *Id.* at 28, 29.
29. *Id.* at 130.
30. *Id.* at 134.

able and binding agreement.[31] At the end of the year, a United States representative was designated, and as negotiations proceeded, the chairman of the consulting board of the recently completed Pecos River Joint Investigation was designated to act as engineering advisor to the U.S. representative.

In 1947, the commission appointed an Engineering Advisory Committee and instructed it to formulate a plan to be followed in preparation of engineering data pertinent to compact negotiations.[32] After extensive negotiations by the states, a compact agreement was reached and was signed in Santa Fe, New Mexico, on December 3, 1948. It was ratified by the legislatures of both states early in 1949, was consented to by Congress, and was signed into law by President Truman on June 9, 1949.[33]

III. PROVISIONS OF THE COMPACT IN DISPUTE

Broad, vague, and dependent for meaning on engineering data, the compact apportions the river's flow by limiting the water New Mexico may take to the amount depleted by New Mexico under "the 1947 condition."[34] The purposes of the compact are: 1) to provide for equitable division and apportionment of the river; 2) to remove causes of controversy; 3) to protect present development within the states; and 4) to facilitate the construction of works for water salvage, more efficient use of water, and flood protection.[35]

The all-important apportionment article provides that "New Mexico shall not deplete by man's activities[36] the flow of the Pecos River at the New Mexico-Texas state line below an amount which will give to Texas a quantity of water equivalent to that available to Texas under the 1947 condition."[37] Water salvaged[38] in New Mex-

31. *Id.* at 135.

32. *Id.* at 137.

33. N.M. STATE ENGINEER, *supra* note 19, at 122.

34. "The term '1947 condition' means that situation in the Pecos River Basin as described and defined in the Report of the Engineering Advisory Committee. In determining any question of fact hereafter arising as to such situation, reference shall be made to, and decisions shall be based on, such report." PECOS RIVER COMPACT art. II(g) (1948).

35. *Id.* art. I.

36. The term "deplete by man's activities" means to diminish the stream flow of the Pecos River at any given point as a result of beneficial consumptive uses of water within the Pecos River Basin above such point. For the purposes of this compact it does not include the diminution of such flow by encroachment of salt cedars or other like growth, or by deterioration of the channel of the stream.

Id. art. II(e).

37. Except as stated in paragraph (f) of this article [referring to unappropriated flood water] New Mexico shall not deplete by man's activities the flow of the Pecos River at the New Mexico-Texas state line below an amount which will

ico through the efforts of both states is apportioned 43 percent to Texas and 57 percent to New Mexico.[39] Water recovered in excess of that being nonbeneficially consumed (lost or wasted, particularly from water-consuming vegetation) under the 1947 condition is apportioned to New Mexico insofar as the amount of water apportioned to Texas is not diminished.[40] Article VI sets out the reports and methods used in accumulating data by which the water is apportioned, including the Report of the Engineering Advisory Committee[41] and the use of the inflow-outflow method[42] to measure water apportioned under the compact and to determine changes in depletions.

IV. THE LITIGATION–AN ATTEMPT TO DEFINE THE TERMS OF THE COMPACT

A. *General Issues in Dispute*

Texas has filed suit against New Mexico over New Mexico's water delivery obligation.[43] The extent of this obligation will turn on the definition of the term "1947 condition."[44] New Mexico and Texas

give to Texas a quantity of water equivalent to that available to Texas under the 1947 condition.

Id. art. III(a).

38. "The term 'water salvaged' means that quantity of water which may be recovered and made available for beneficial use and which quantity of water under the 1947 condition was non-beneficially consumed by natural processes." *Id.* art. II(h).

39. *Id.* art. III(c).

40. Except as to water salvaged, apportioned in paragraph (c) of this Article, the beneficial consumptive use of water which shall be non-beneficially consumed, and which is recovered, is hereby apportioned to New Mexico but not to have the effect of diminishing the quantity of water available to Texas under the 1947 condition.

Id. art. III(d).

41. The term "Report of the Engineering Advisory Committee" means that certain report of the Engineering Advisory Committee dated January 1948, and all appendices thereto; including, basic data, processes, and analyses utilized in preparing that report, all of which were reviewed, approved, and adopted by the Commissioners signing this Compact at a meeting held in Santa Fe, New Mexico, on December 3, 1948, and which are included in the Minutes of that meeting.

Id. art. II(f).

42. *See* note 48 *infra.*

43. After New Mexico's obligation under the compact is decided, then it must be determined whether New Mexico actually has complied with her obligations. This latter determination will require complex, time consuming, and expensive river studies. It is likely that lengthy hearings will then be required to resolve disputes over technical and engineering problems. After the legal question is answered, and the engineering data are agreed upon, the next phase of the suit will be to determine how much of the depletion is caused by "man's activities." (The only depletions which will be charged to New Mexico are those caused by activities of man. Depletions by salt cedars, for example, are not chargeable against New Mexico's obligation.)

44. *See* note 37 *supra.*

disagree on 1) how that term should be defined; 2) what engineering data should be used in reaching the definition; 3) whether the entire year 1947 is included in the definition; 4) the effect of stream depletion due to groundwater pumping; and 5) the effect of consumption by phreatophytes[45] on water apportioned (see Table 1).

B. *Is "The 1947 Condition" Immutable or Subject to Change?*

The master concluded that the 1947 condition should be defined and limited as follows:

> 1) The 1947 condition is that situation in the Pecos River Basin which produced in New Mexico the man-made depletions resulting from the stage of development existing at the beginning of the year 1947 and from the augmented Fort Sumner and Carlsbad acreage.
> 2) Determination of a change in that situation is to be made by the inflow-outflow method.
> 3) Neither the 1947 routing study, nor any other portion of the various engineering reports, appendices, and supplements, supplies adequate information or direction to permit the use of the inflow-outflow method in determination of stream depletion by New Mexico.[46]

In effect, the master construed the 1947 condition as the condition of the river at the beginning of 1947, subject to modification by use of additional data.

Texas objects to the master's definition because it does not rely on the report of the Engineering Advisory Committee.[47] Texas contends that the compact expressly defines the 1947 condition in terms of that report,[48] and claims that the 1947 condition routing study

45. Species of vegetation (e.g., salt cedars) which grows along stream beds and consumes large amounts of water.

46. MASTER'S REPORT, *supra* note 4, at 41.

47. TEXAS' OBJECTIONS TO THE REPORT OF THE SPECIAL MASTER ON THE OBLIGATION OF NEW MEXICO TO TEXAS UNDER THE PECOS RIVER COMPACT 14, Texas v. New Mexico (United States Supreme Court No. 65 Orig.) [hereinafter cited as TEXAS' OBJECTIONS].

48. The engineering studies which led to the Engineering Advisory Report referred to by Texas included the method of apportionment established in the compact, the inflow-outflow method, and the routing studies.

The inflow-outflow method of apportionment involves the determination of the correlation between an index of the inflow to a basin as measured at certain gauging stations and the outflow from the basin. MASTER'S REPORT, *supra* note 4, at 12. The Inflow-Outflow Manual establishes a relationship between the inflow occurring during the period of the routing study and the outflow produced by the routing. TEXAS' OBJECTIONS, *supra* note 47, at 5.

A river routing study is an arithmetic model of the river's performance under hypo-

TABLE 1

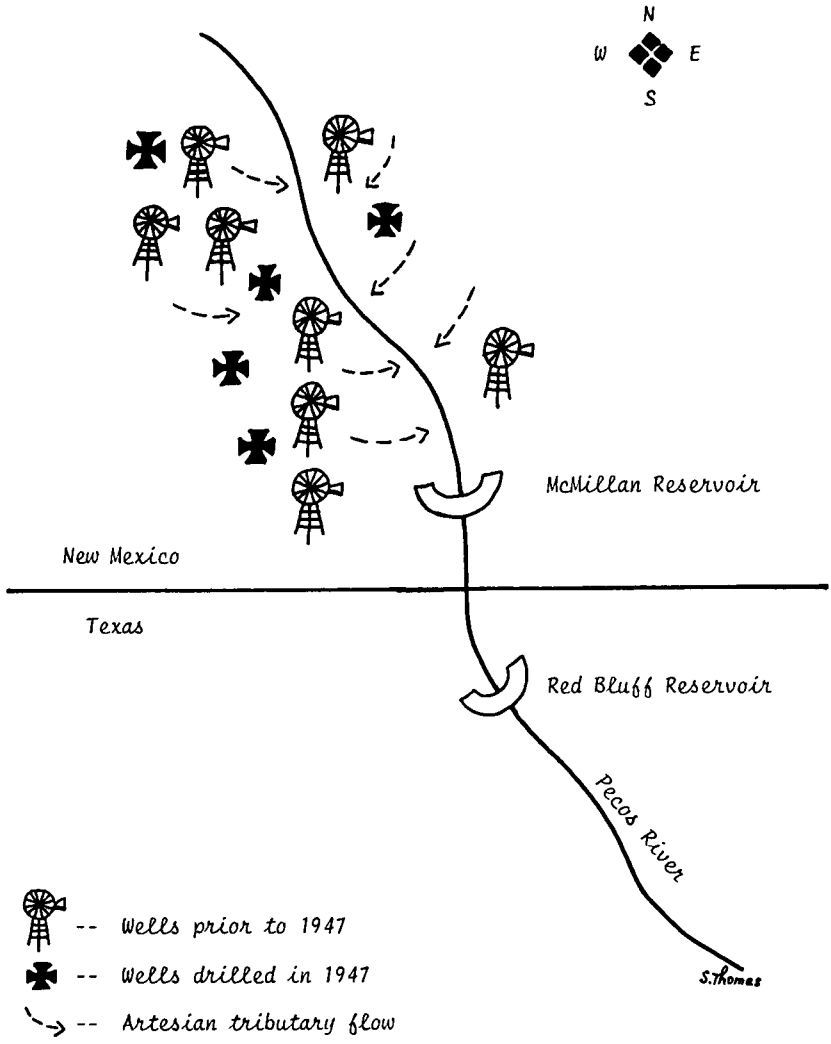
A SUMMARY OF POSITIONS OF THE PARTIES IS REFLECTED IN THE CHART BELOW

ISSUES IN THE CASE	*TEXAS*	*NEW MEXICO*
1. Is the term "1947 condition" as used in the compact limited to 1947 technology or does it expand as technology increases?	The 1947 condition is expressly defined in Article II(g) of the compact. That definition is immutable.	The definition of the 1947 condition may be modified. Changes in data subsequent to the signing of the compact should be used in defining that condition.
2. Does "the 1947 condition" mean the condition of the river on January 1, 1947 or December 31, 1947? (*See* Figure 2 *infra.*)	The 1947 condition means the condition of the river on January 1, 1947. All depletions caused after that date must be subtracted from New Mexico's compact share.	The 1947 condition means the condition of the river *at the end of 1947.* New Mexico is entitled to its uses as of the end of the year.
3. Is New Mexico entitled to continue groundwater pumping as of 1947 even though that pumping was not evidenced in diminished streamflow, or is it limited to the pumping already diminishing the streamflow as of 1947?	New Mexico is entitled to deplete the streamflow by groundwater pumping only to the extent the depletions were already evident in the river under the 1947 condition.	New Mexico is entitled to continue the groundwater pumping taking place in 1947 even though those depletions were not evident in the river's flow.
4. If New Mexico salvages water through removal of salt cedars or through some other system, how does that impact on New Mexico's obligation to Texas?	New Mexico may not increase streamflow depletions through continued groundwater pumping. But if New Mexico salvages water, it may retain that water for use in New Mexico in exchange for the pumping.	New Mexico may continue its groundwater depletions with the resulting decrease in stream flow by substituting water salvaged for the diminished supply. New Mexico would pass on the salvaged water to Texas in exchange for expanded groundwater depletion.

thetical or assumed conditions. *Id.* at 2. The engineers summarized their work in a series of routing studies. Ten routing studies were presented to the negotiators, and they accepted the one entitled, "Summary of Operations 1947," which assumed "[a]ll conditions as of the present." MASTER'S REPORT, *supra* note 4, at 13.

FIGURE 2

Schematic drawing. Information from
THE REPORT OF THE SPECIAL MASTER.



The question underlying the controversy is whether New Mexico will be allowed to continue to pump from those wells drilled in 1947. This, in turn, depends on whether the "conditions" to be preserved by the compact were to be those of January 1, 1947 or December 31, 1947. New Mexico claims the right to pump all wells. Texas argues that New Mexico is limited to those represented by a .

was intended to depict conditions on the river as they existed at that time.[49] The master disagreed with Texas on this point. He compared the language used in Article II(g)[50] in the report to the word "situation." The latter, he concluded, referred to a fact or group of facts having physical existence, whereas the routing study is an artificial study which does not define any actuality.[51]

New Mexico argues that the compact agreed on a description of a hypothetical condition to be maintained. While the condition itself is immutable, the method of maintaining that condition is subject to revision as new information emerges.[52] It agrees with the master that the term "1947 condition" could not have been immutably defined because the compact would allow replacement of the inflow-outflow method with new information.[53] New Mexico concludes that the definition of the condition has been changed based on revised data, and that the revised definition is acceptable and capable of use by the commission.[54]

C. *Does the "1947 Condition" Include the Year 1947?*

In his explanations of the routing studies and the Inflow-Outflow Manual, the master introduced into the controversy a point neither state had perceived as an issue; whether the "condition" existing in 1947 meant as of January 1, 1947, or December 31, 1947. He concluded that since the 1947 routing study covered the years 1905-1946 and contained no 1947 figures, the intent was to relate the study to the condition on the river beginning in the year 1947,

49. TEXAS' OBJECTIONS, *supra* note 47, at 15-16. In objecting to Texas' view of the immutability of the 1947 condition, the master focused on the artificiality and the errors in the study.

The irrigated acreages for the Carlsbad and Fort Sumner projects were overestimated, and the values for other gains and losses reflected in the routing study were based on estimates, assumptions, and calculations because actual recorded values for the streamflow variations were not available.

50. *See* note 34 *supra.*

51. MASTER'S REPORT, *supra* note 4, at 2.

52. Routing studies "mathematically rout[ed] river flows through various sets of circumstances in order to determine the cumulative effects of those circumstances on river flow at critical points such as the state line. . . . The agreement ultimately reached by the negotiators was grounded upon one such set of circumstances on the river and not upon the resulting delivery expectations that Texas might have had by routing various amounts of water through that condition." NEW MEXICO'S OBJECTIONS TO THE REPORT OF THE SPECIAL MASTER AND BRIEF IN SUPPORT THEREOF 23, 24, Texas v. New Mexico (United States Supreme Court No. 65 Orig.) [hereinafter cited as NEW MEXICO'S OBJECTIONS].

53. The compact mandates use of the inflow-outflow method "[u]nless and until a more feasible method is devised and adopted by the Commission." PECOS RIVER COMPACT art. VI(c) (1948).

54. NEW MEXICO'S OBJECTIONS, *supra* note 52, at 36.

and not at the end of that year.[55] Texas agrees with this conclusion.

New Mexico objects, explaining that if the term "1947 condition" does not include those changes occurring in 1947, it will lose that substantial part of its groundwater usage that was developed in that year[56] and upon which much of the economy of the Middle Basin depends. New Mexico contends that 1947 data were used to explain the compact both at the time of its signing and at its consideration before Congress.[57] At the hearing before the master, New Mexico tendered testimony that 1947 data would have been used by the Engineering Advisory Committee if it had been available. The master did not admit the testimony, determining there was nothing to show such data was available.[58] New Mexico claims that Texas "received a windfall in the form of the Master's supposition."[59]

D. *Should New Mexico Get Credit Against Its Groundwater Depletions For Water That Is Allowed to Flow to Texas?*

Neither New Mexico nor Texas wants the non-beneficial consumption of water by phreatophytes charged against its river allotment.[60] Texas' position is that New Mexico could salvage water by eliminating salt cedars, and that New Mexico did in fact agree to trade off the groundwater depletions for this salvaged water.[61] The salvaged water would be used by New Mexico but the groundwater pumping would be stopped. The master disagreed with Texas' trade-off argument, because he saw Texas' argument contradicted by the conflict between the engineers' treatment of salvaged water during negotiations and the treatment in the compact apportionment provisions.[62] Instead, the significant event to he master was the negotiators' rejection of the "1947-A Operation Study" which represented "all conditions as of the present except the base flow fully depleted."[63]

New Mexico argues that the compact allows continuation of 1947

55. MASTER'S REPORT, *supra* note 4, at 16.
56. NEW MEXICO'S OBJECTIONS, *supra* note 52, at 42.
57. *Id.* at 44.
58. *Id.* at 49.
59. *Id.* at 51.
60. Although under the compact New Mexico technically is not liable for non-beneficial consumptive use, this issue is confused by the apportionment of salvaged water.
61. Texas supports this contention by the compact interpretation made by the chairman for the Senate Committee on Interior and Insular Affairs while Congress was considering consent to the compact. The chairman stated in his letter that although depletion effects of present pumping would not appear in the 1947 condition, this effect would be offset by not charging to New Mexico consumption by salt cedars. MASTER'S REPORT, *supra* note 4, at 25.
62. "The engineers compared salvaged water with base flow in total amounts, but the Compact apportions to New Mexico only 57% of the salvaged water. Art. III(c)." *Id.*
63. *Id.* at 26. *Cf.* note 48 *supra.*

groundwater uses by substituting water salvaged for the supply diminished through pumping. The salvaged water would then be passed on to Texas. New Mexico further contends that its legislature would never have agreed to a condition which would have taken away 10,000 acres already under irrigation.[64]

New Mexico argues further that its uses of the water as of the time of ratification of the compact are protected by the compact purpose to "protect present development within the states."[65] The master disagreed, concluding that protection for Texas can only come by restricting New Mexico's uses.[66] The master interpreted the compact negotiations to demonstrate the compromise nature of the compact in this area: by Article III(a)[67] New Mexico accepted a limitation on its base flow depletions, and by Article II(e)[68] Texas agreed that depletions from the encroachment of salt cedars and channel loss would not be charged against New Mexico as activities of man.[69]

Each state seeks to maximize its water right by construing the term "1947 condition" in the manner most favorable to it. New Mexico seeks to maximize its allowable groundwater pumping near the river. Texas seeks to minimize it.[70] New Mexico argues in essence that it is entitled to all groundwater depletions of the base

64. NEW MEXICO'S OBJECTIONS, *supra* note 52, at 58.

65. PECOS RIVER COMPACT, art. I (1948).

66. New Mexico claims that as a result of the master's decision, New Mexico alone will be liable for base flow declines in the absence of water salvaged, and that the 1947 condition would be the 100,000 acres under irrigation in 1939 instead of the 125,000 acres in 1947. Even to restore the base inflow to the 1947 condition would require a reduction in acreage to an amount below that irrigated in 1939. This would result because Article IV requires the application of the principle of prior appropriation in maintaining flows at the state line. According to New Mexico:

> In general, surface water uses in New Mexico are the most senior, followed by the artesian groundwater uses, and then the shallow groundwater uses. The base inflow responds most slowly to changes in shallow groundwater withdrawals. Accordingly, virtually all of the shallow ground water use in New Mexico would have to be terminated before an early, substantial increase in state line flow could be realized by reducing artesian ground water and junior surface water uses.

NEW MEXICO'S OBJECTIONS, *supra* note 52, at 81 n.12.

67. *See* note 37 *supra.*

68. *See* note 36 *supra.*

69. MASTER'S REPORT, *supra* note 4, at 22.

70. The groundwater contribution to the base flow is both from artesian and shallow sources. There can be interchange of water from artesian and shallow sources, and from shallow strata and stream flow. Pumping from shallow sources reduces the contribution of shallow groundwater sources to the stream: shallow pumping has significantly affected the base flow since 1927. Pumping from artesian sources may pull water from shallow sources. The movement of water from artesian to shallow sources and vice versa is not capable of measurement.

Id. at 22-23.

flow[71] resulting from the development of the river as of 1947, even though these depletions had not yet affected the river's flow.[72] Texas disagreed with this position. The special master agreed with neither state.

CONCLUSION

While the master clarified some issues, he nevertheless expressed doubt that the Pecos Compact ever will be workable, because it permits a one-state veto of any proposed commission action.[73] In addition, the compact is not self-executing; it requires constant administration through use of complex engineering data on which the states cannot agree. The compact provides no means to resolve good faith differences of opinion over the selection and acceptance of the relevant facts. After the legal issue (the obligation of New Mexico to Texas) is decided, it is likely that lengthy hearings will be required to resolve disputes over technical or engineering problems. The master's technical assistant estimated the required time to complete such studies to be nine to 18 months at a cost of from $70,000 to $200,000.[74] The master concluded his report by noting that "the intransigent attitude of each state over the many years of this controversy suggests the probability that little agreement may be expected. . . ."[75]

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71. Base flow is "that portion of the flow at any given point which arises from natural contributions of water either from surface run-off or ground water accretions to stream flow." *Id.* at 22.

72. During negotiations, the engineers reported these conclusions to the negotiators:

1) Shallow pumping is exceeding safe yield. ("Safe yield" refers to the stability between the amount of water pumped from an aquifer and that replenished.)
2) The total area irrigated by pumped water is 50,000 acres.
3) Shallow pumping depletion is 20,000 acre feet per year.
4) Shallow pumping at the present rate will deplete almost all accretion to the base flow of the river between Roswell and Artesia.
5) Some future shallow pumping may be curtailed because of economics and overdraft.
6) Depletions will occur at a slow rate, with the ultimate effect on streamflow in fifty or more years. *Id.* at 23-24.

73. *Id.* at 45.

74. *Id.* at 48.

75. *Id.*