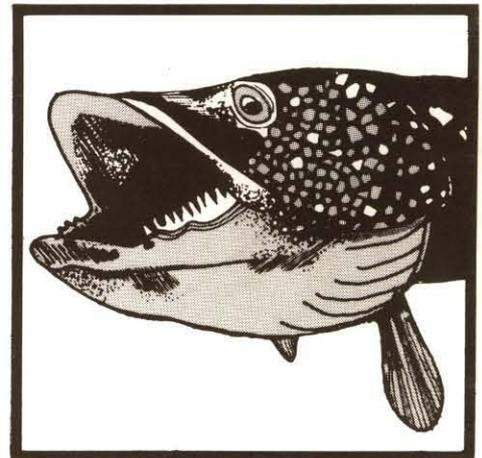
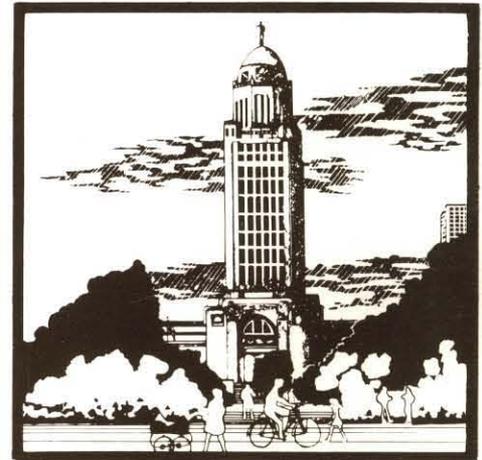


Report # Six
POLICY ISSUE STUDY
ON SELECTED
WATER RIGHTS ISSUES

INTERSTATE WATER USES AND CONFLICTS

State Water Planning and Review Process
Nebraska Natural Resources Commission

APRIL 1983



**POLICY ISSUE STUDY
ON
SELECTED WATER RIGHTS ISSUES**

STATE WATER PLANNING AND REVIEW PROCESS

**REPORT #6
INTERSTATE WATER USES AND CONFLICTS**

**REPORT
OF THE
NATURAL RESOURCES COMMISSION
TO
GOVERNOR ROBERT KERREY
AND
THE MEMBERS OF THE NEBRASKA LEGISLATURE**

APRIL, 1983

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PROGRAMS:

SOIL & WATER CONSERVATION
WATERSHED PROTECTION
COMPREHENSIVE PLANNING
FLOOD PLAIN MANAGEMENT
DATA BANK
WATER CONSERVATION FUND
DEVELOPMENT FUND



STATE OF NEBRASKA
NATURAL RESOURCES COMMISSION

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The Honorable Robert Kerrey
Governor, State of Nebraska
State Capitol, 2nd Floor
Lincoln, Nebraska 68509

Members of the Nebraska Legislature
Eighty-eighth Nebraska Legislature, First Session
State Capitol
Lincoln, Nebraska 68509

Governor Kerrey and Members of the Legislature:

This report entitled "Interstate Water Uses and Conflicts" has been reviewed and approved by the Natural Resources Commission. It is the sixth report of the Selected Water Rights Issues policy study.

Twelve policy alternatives related to interstate water uses are analyzed in this report. The Commission's recommended course of action is also provided and can be found on the blue pages immediately following the Table of Contents.

It is the hope of the Natural Resources Commission that this report will be helpful in making policy decisions, and, if necessary, statutory changes. The Natural Resources Commission is prepared to answer any further questions you may have.

Sincerely,



Chairman
Natural Resources Commission

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Foreword

This report, "*Interstate Water Uses and Conflicts*," is the sixth report of the Selected Water Rights Issues Policy Study. It is being forwarded by the Natural Resources Commission to the Legislature and Governor for consideration and appropriate action. The Selected Water Rights Issues Policy Study is one of eleven water policy studies being conducted through the State Water Planning and Review Process.

The base document for this report was prepared by Annette Kovar of the Natural Resources Commission, with the assistance of an interagency task force. Members of that task force and the agencies represented are as follows:

James R. Cook Natural Resources Commission, (*Leader*)
Richard Hansen Department of Environmental Control
J. Michael Jess Department of Water Resources
William Lee Department of Health
Darryll Pederson Conservation & Survey Division, UNL
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Norman Thorson, Professor of Law, UNL, and Bob Kuzelka, UNL Conservation & Survey Division, also contributed to the preparation of this report.

Three members of the Commission were assigned the responsibility for considering comments on the report and for preparing suggested changes in and recommendations on the report. The committee members were:

Henry P. Reifschneider, Chairman
Robert W. Bell
Rudolf C. Kokes

Other reports prepared as part of the Selected Water Rights Issues Policy Study include:

Preferences in the Use of Water
Drainage of Diffused Surface Water
Property Rights in Groundwater
Water Rights Adjudications
Riparian Rights
Transferability of Water Rights

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Comments and Recommendations of the Natural Resources Commission

INTRODUCTION AND PURPOSE

The responsibility of the Natural Resources Commission in preparing policy issue study reports is twofold. First, the Commission is responsible for presenting policy alternatives which are both representative in scope and objective in substance. It is hoped that this report accomplishes that purpose. Second, the Commission is responsible for providing its opinion and recommendations on the various alternatives presented in each report to the general public, the Legislature, and the Governor.

The Commission arrives at its recommendations following a review of the report and consideration of comments generated from public hearings and from the Public Advisory Board. Comments and recommendations are offered in this section on each of twelve alternatives identified in this report. Some alternatives are recommended in whole, some in part with qualifications, and others are not recommended.

RECOMMENDED ALTERNATIVES

Alternative #2: Authorize and initiate the negotiation and formation of interstate agreements or compacts on interstate streams on which no compacts currently exist.

The Commission perceives the problems facing interstate water use of the Missouri River to be more urgent than either the Lower Niobrara River and Ponca Creek or the White River. It is likely that increasing demands on water for satisfying Indian and federal water rights claims and for energy development, among others, will raise the potential for interstate conflict among states in the Missouri River Basin.

Therefore, the Commission recommends pursuing an interstate agreement or compact with respect to the Missouri River. The Commission also supports present efforts which are being made in this direction. A specific agreement on an isolated issue of concern to basin states is also possible. For example, an agreement could

be negotiated on whether or not individual basin states could unilaterally sell water out of the Missouri River. However, it should be noted that all agreements and compacts between states require the consent of Congress.

Alternative #4: Declare that natural flow permits may be issued for other beneficial uses including instream uses.

The Commission recommends adoption of this alternative only insofar as it does not conflict with our recommendation on the *Policy Issue Study on Instream Flows*. We believe that it would benefit the State of Nebraska to recognize instream uses, to a certain degree, as legally valid and important uses in certain stream reaches in the state. In our view, the fact that courts may consider the amount of water allocated to legal uses as a factor when making an interstate allocation further justifies our consideration of this alternative.

Consequently, we again recommend that natural resources districts be authorized to designate protected stream reaches in Nebraska which possess especially beneficial instream values. We would further emphasize that stored water can be used to contribute to the maintenance of instream flows.

Alternative #6: Strengthen the interstate groundwater transfer statute.

The decision of the United States Supreme Court in *Douglas v. Spohr* placed some limitations on the ability of states to categorically restrict the interstate transport of water beyond their borders. Even though the reciprocity clause in Nebraska's statute was declared unconstitutional, the conservation and preservation aspects of the law were recognized as legitimate and important goals of groundwater regulation.

For this reason, the Commission recommends strengthening Nebraska's policy on groundwater conservation and preservation. Nebraska's interstate groundwater transfer statute could be strengthened by enacting stronger groundwater statutes which could have an impact on it. We agree that the types of statutory

amendments suggested in the report - restrictions on all groundwater transfers not to exceed a certain distance or quantity - should be considered.

Alternative #8: Seek funding for additional water retention structures.

In view of current efforts and general policy statements which have been made regarding surface water storage, the Commission recommends implementation of this alternative as one method of making more water available for beneficial use across the state. Since our intent is to conserve and preserve our water by putting it to beneficial use within the state, this alternative would be one step toward an overall goal of maximum water utilization.

Alternative #11: Enact a statute requiring that persons comply with an out-of-state law as a condition for receiving a Nebraska permit to conduct seeding activities in Nebraska designed to have an impact out-of-state.

We recommend the adoption of this alternative for reasons of interstate courtesy and friendship and to encourage the mutual recognition of official state acts. While this alternative does not benefit Nebraska directly, it will aid those states having weather modification laws which could be circumvented by carrying out the activities in an upwind state which has no law forbidding them. It is one more way of cooperating with neighboring states without apparent detriment to Nebraska.

ALTERNATIVES NOT RECOMMENDED

The following alternatives are not recommended by the Commission:

Alternative #1 (Make no change) was rejected because the Commission felt, in light of certain current events, some changes were needed.

Alternative #3 (Negotiation of interstate groundwater compacts) is not recommended at this time because not enough precise information is available upon which to base any kind of apportionment.

Alternative #5 (Provide that certain uses of water not be considered beneficial uses) was rejected because the Commission believes that "beneficial" use should refer to the nonwasteful and efficiency elements of water use rather than

particular types of use. Furthermore, we feel the state policy should be to promote the **most** beneficial use of water. For this reason, we suggest waiting for the completion of the Policy Issue Study on *Water Use Efficiency* before making any definite recommendations on what types of water use may or may not be beneficial uses.

Alternative #7 (Provide for reservation of waters by the Department of Water Resources to fulfill public interest requirements) is not recommended. While a concept of reserving future streamflows has substantial merit from the standpoint of interstate water use and conflicts, it is viewed as having a comparatively small impact within the state of Nebraska itself. The idea could create potentially more discontent internally among water users than it could dispel by establishing a favorable posture for future interstate water allocations. The Report on *Preferences in the Use of Water* attempted to recognize such reservations for preferred water uses; however the *Municipal Water Needs* Policy Issue Study found very little application to municipalities for a similar alternative. Therefore, we have decided to reject this alternative at the present time.

Alternative #9 (Authorize a state agency to buy water rights in another state) is also not recommended. The Commission is of the opinion that if Nebraska wants the right to purchase water rights in other states, it would have to grant similar rights to other states to purchase water rights in Nebraska. We do not want other states **to be able** to buy Nebraska water.

Alternative #10 (Allow a state agency to participate in construction of water projects in other states) was rejected for the reason that the opportunity to participate in out-of-state water projects will come up so infrequently and will present such specialized problems that the Legislature will need to give each project individual attention.

Alternative #12 (Negotiation of an interstate weather modification compact) is not recommended at this time. The existing "science" of weather modification is not very precise and the lack of interest indicated by the cancellation of the Policy Issue Study on *Weather Modification* make the pursuit of an interstate weather modification compact inappropriate.

Introduction

The primary purpose of this study is to identify the policy alternatives relating to interstate water use and conflict. In order to assess these alternatives, it is necessary to view them in light of existing conditions with respect to interstate streams flowing in and out of Nebraska and interstate groundwater aquifers. Consequently, a general abbreviated summary of the interstate stream systems and some of the interstate groundwater aquifers in Nebraska is provided in the first chapter. It serves the twofold purpose of (1) introducing those readers who are unfamiliar with these interstate stream systems and aquifers to their general physical characteristics and any legal entitlements or obligations affecting them, and (2) serving as a concrete reference for the remainder of this report which examines institutional mechanisms for resolving conflicts which could arise with respect to them.

Weather modification is another activity which can affect the interstate use of water to the extent it supplements streamflow or causes an increase in precipitation. The limited amount of weather modification activity that has occurred in Nebraska is also summarized in Chapter One. Most of the weather alteration activity in this region, however, has been conducted in other states. Therefore, the emphasis in this report is placed on its interstate aspect.

An analysis of the traditional institutional mechanisms which have been used to allocate the waters of interstate streams and resolve interstate water disputes is contained in Chapter Two. A few illustrations of the types of conflicts which could arise are also presented. Finally, Chapter Three will evaluate a variety of policy alternatives available to the state for developing institutional mechanisms to promote greater interstate agreement, to improve Nebraska's position for future interstate allocations, and pertaining to interstate weather modification activities.

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Summary

CURRENT SITUATION

An estimated one million acre feet of water flows into the State of Nebraska every year by way of interstate streams while an average of seven million acre feet leaves the state annually. Approximately eighty-six million acre feet of water can be attributed to precipitation. About 1.8 billion acre feet of recoverable, good quality groundwater also underlies the state. Therefore, the amounts of inflow and outflow represent relatively small parts of the total water supply available for use in Nebraska. The inflow, however, is an important source of water for certain portions of the state. Any future developments or conflicts which would reduce this average amount of water could present some serious problems in those areas. In fact, the current situation would indicate that Nebraska frequently receives more water by way of interstate streams than is required to be delivered by compact or court decree.

There are seven major interstate streams in the state, both inflowing and outflowing. The White River, located in the northwestern corner of the state, flows northeastward into South Dakota. No interstate compacts currently allocate the waters of this stream, although the potential for some Indian water right claims exists from Indian reservations located in South Dakota.

The Niobrara River enters Nebraska in its northwestern corner from Wyoming, flowing across the state where it discharges into the Missouri River above Lewis and Clark Reservoir. An interstate compact was negotiated and ratified on the Upper Niobrara River (west of Agate, Nebraska) between Wyoming and Nebraska. A compact was negotiated but never ratified by Congress for the lower and greater portion of the Niobrara River and Ponca Creek, a stream in the basin which enters the state from South Dakota. The reason has been attributed again to the potential for Indian water rights claims.

The North Platte River heads in Colorado, flows through Wyoming, then into Nebraska. The river is highly regulated with several reservoirs located in Wyoming controlling flows. A U.S. Supreme Court decree apportions the river flows between Nebraska, Colorado, and Wyoming.

The South Platte River flows into Nebraska from Colorado. Along with its major Nebraska tributary, Lodgepole Creek, it is the subject of an interstate compact between those two states. Under the compact, a minimum mean daily flow line of 120 cubic feet per second at the state line is established for the irrigation season provided it will be beneficially used in Nebraska. A diversion limited to 500 cubic feet per second in Colorado for future irrigation of lands in Nebraska is also provided for, subject to prior reservation of storage in Colorado.

The Republican River, located in the southwestern part of the state enters Nebraska from Colorado and exits to Kansas. It, too, is subject to an interstate compact allocating the flows of the river and most of its major tributaries between the states of Colorado, Kansas, and Nebraska.

The Big and Little Blue Rivers originate in south-central Nebraska and flow in a southeasterly direction into Kansas. An interstate compact between Nebraska and Kansas has been negotiated and approved which establishes minimum daily flows to be delivered at the state line from May 1 to September 30 of each year.

A major interstate river, the Missouri, forms part of the northern and eastern boundaries of the state. It arises in Montana and flows in a southeasterly direction draining sections of ten states. Major developments on the river consist of six mainstem reservoirs and a navigation channel below Sioux City, Iowa. There are interstate compacts on portions of a number of the major tributaries to the Missouri River, including the Niobrara and the Platte. No compacts exist regarding the Missouri itself. Indian and federal reserved rights are a major issue in the basin due

to the large Indian and federal reservations located in the basin, particularly in upstream states.

Not as much is known about the situation with respect to interstate ground water aquifers and the movement of groundwater interstate. The problem is not as acute in most areas, however, due to the large amount of groundwater in storage as a whole. Reference is made to groundwater's relationship to surface flows in two existing interstate compacts, the Upper Niobrara and Blue River compacts, but no interstate apportionments have been made.

Very little activity in the area of weather modification has occurred in the state in recent years. Surrounding states have been experimenting with precipitation enhancement and hail suppression and there may be possibilities for interstate cooperation in this regard.

RESOLVING INTERSTATE CONFLICTS

Examples of interstate water use are numerous, and include the Narrows Unit, coal slurry pipelines, and the Grayrocks Dam. So too are the possibilities that conflicts may develop between states somewhere along the line. There are three commonly recognized methods of resolving interstate disputes: (1) adjudication, (2) congressional legislation, and (3) voluntary agreement.

Litigation between two or more states always occurs in the United States Supreme Court. Water users other than states may not sue in the first instance in the U.S. Supreme Court, but they may be able to bring suit in a state court or federal district court. This method of dispute settlement is often used "as a last resort" or as a coercive measure. For those interstate water disputes reaching the Supreme Court, the court has generally applied the doctrine of equitable apportionment. It is based on the principle of priority of appropriation applied interstate and provided the basis for the decree apportioning the surface flows of the North Platte River. While priority of appropriation is the guiding principle, other factors are also considered, including: physical and climatic conditions, various consumptive uses along the river, the character and rate of return flows, the extent of established uses, and the availability of storage water. In some cases, the U.S. Supreme Court may appoint a special master to act as its representative by holding hearings, gathering evidence, making findings and a report, and offering recommendations to the Court on the questions presented.

The U.S. Supreme Court's suitability to hear interstate water cases is limited for a number of

reasons. For one, the Court's exercise of jurisdiction is restricted to those questions which are actual cases or controversies. The Court has also imposed some restrictive qualifications on itself, even where jurisdiction may exist. For another, the questions involved in interstate disputes are often delicate and complicated, touching upon the vital interests of quasi-sovereign states, and may be better resolved by mutual agreement between the parties.

Congressional legislation is another option for resolving disputes between states. The Boulder Canyon Project Act, which authorized Hoover Dam, was probably one of the more extensive congressional enactments to directly affect interstate water use. It was an attempt to resolve the conflict which then existed over the apportionment of the waters of the Colorado River.

The Water Resources Planning Act of 1965 is another example of congressional legislation which had an impact on reducing interstate water conflicts. It encouraged states to establish regional management authorities for interstate river systems. It established a federal water resources council and a framework of regional river basin commissions and financial assistance. The goal was to coordinate the planning activities of the various federal agencies and the states. A number of river basin commissions have now been terminated by President Reagan.

Other pieces of federal legislation which could have an impact on interstate water use include the Clean Water Act, the National Environmental Policy Act, and the Endangered Species Act.

One of the problems associated with seeking congressional legislation to resolve an interstate water conflict is that it can be a lengthy process. It is often hampered by the fact that there are fifty states, each with strong state interests in controlling their own water resources.

The third method, the interstate compact, is probably preferred in most instances because it reflects the voluntary agreement of the parties involved. A number of interstate compacts have been negotiated between states allocating the waters of an interstate stream. The authority for the formation of these agreements or compacts is found in the U.S. Constitution, which requires the consent of Congress before they become effective.

The interstate compact has three major advantages as a way of resolving interstate water allocation problems. First, it provides a framework for dealing with complicated interstate allocation questions. Second, it provides increased flexibility for dealing with possible changes in conditions in the future. Finally, it can provide expert administration to deal with the technical issues involved in interstate water management.

Many of the problems related to interstate compacts stem from the language of the agreement itself. Compacts often suffer from a lack of enforcement or adjudicatory powers, and inadequate administrative mechanisms to deal with evolving problems of a basin. Careful compact negotiation can eliminate most of these weaknesses if the parties so choose.

Groundwater may pose some different problems requiring interstate resolution. The methods just discussed have all been in the context of surface water disputes and may require some modification to deal effectively with interstate groundwater problems. Both the Upper Niobrara River Compact and the Blue River Compact recognize the interrelationship of ground and surface water but do not make any attempt to apportion the groundwater supply.

Most interstate weather modification problems in the past have been resolved through cooperation instead of litigation.

ALTERNATIVE LEGISLATIVE AND ADMINISTRATIVE POLICY ACTIONS

Twelve alternatives have been identified for consideration relating to interstate water uses and conflicts. They represent a range of possible policy options.

Alternative Requiring No Action

Alternative #1: Make no change in present policies.

This alternative would continue Nebraska's present policy of dealing with interstate conflicts on a case-by-case basis. Existing state policies, if enforced as reflected by interstate compacts and court decrees, however, could result in much less water flowing into the state. Economically, the cost for failure to anticipate problems and seek solutions that avoid them can be high. Existing policy also has a tendency to promote maximum water use at the expense of interstate cooperation.

Alternatives to Seek Greater Interstate Agreement

Alternative #2: Authorize and initiate the negotiation and formation of interstate agreements or compacts on the interstate streams on which no compacts currently exist.

The limited applicability of this alternative - to the White River, Niobrara River and Ponca Creek, and the Missouri River - would be a step towards establishing firm water rights to the streamflow in

these streams. Compacts for these streams could provide added protection for both upstream and downstream rights and a more realistic appraisal of the water available for future project development.

Alternative #3: Authorize and initiate the negotiation and formation of interstate compacts with states sharing interstate groundwater basins with Nebraska.

Two existing compacts to which Nebraska is a party currently address groundwater with respect to its effect on surface flows. Where not enough information is available about an interstate groundwater basin to make an apportionment, a compact could be negotiated to conduct a study for the purpose of making a determination on apportionment.

Alternatives to Better Nebraska's Position for Future Interstate Allocations

Alternative #4: Declare that natural flow permits may be issued for other beneficial uses including instream uses.

By recognizing other beneficial uses including instream uses, Nebraska may be able to improve its overall position in any future interstate water disputes. Courts will generally consider the amount of water appropriated for legal uses in considering the best allocation scheme.

Alternative #5: Provide that certain uses of water are not considered beneficial uses.

Since water in Nebraska can be appropriated only for beneficial uses, it may be possible to restrict or prohibit certain types of diversions by enacting legislation specifying that such uses are not beneficial uses of water.

Alternative #6: Strengthen the interstate groundwater statute.

The U.S. Supreme Court decision in *Sporhase* seems to indicate that a state can impose withdrawal and use restrictions on in-state citizens and out-state water users equally in order to prevent the uncontrolled transfer of groundwater outside the state. Even though this may not discriminate against interstate commerce, the state must be careful in tailoring the regulation to meet a legitimate local interest. The regulation must also be a reasonable one.

Alternative #7: Provide for the reservation of waters by the Department of Water Resources to fulfill public interest requirements.

This alternative would permit the reservation of waters by the Department of Water Resources to meet a legitimate, foreseeable need by setting

aside an earlier priority date for anticipated future beneficial uses which may not yet be ready for actual planning, funding, or construction. This would give notice to subsequent appropriators of the state's intent to actively pursue this new use at a later date and could eliminate the monetary and social costs associated with eminent domain proceedings.

Alternative #8: Seek funding for additional water retention structures.

By increasing the number of water retention structures, the state could provide more water for beneficial uses and thereby establish certain rights to it. This would also be a step towards maximum water utilization in the state.

Alternatives to Improve Current Supply

Alternative #9: Authorize a state agency to offer to buy water rights in another state.

If Nebraska were able to purchase natural flow rights or storage rights in upstream reservoirs, streamflows, in western Nebraska at least, could be increased. This water could be used to satisfy existing water appropriations, increase storage, or be applied to new appropriations.

Alternative #10: Authorize a state agency to participate in the construction of projects in other states in return for a voice in project operations.

This alternative would give authority to a state agency to determine, on a case-by-case basis, which projects in other states would be worthwhile investments for Nebraska. Funds could then be provided for Nebraska to offer to aid in construction of the projects in return for storage rights or a voice in the timing of flow releases.

Alternatives Pertaining to Weather Modification

Alternative #11: Enact a statute requiring that persons comply with an out-of-state law as a condition for receiving a Nebraska permit to conduct seeding activities in Nebraska designed to have an impact out-of-state.

This alternative would primarily promote interstate accord by requiring compliance with an out-of-state law if that state would be receiving the impact of weather modification activities being conducted in Nebraska. It would also prevent circumvention of the out-of-state law.

Alternative #12: Authorize and initiate the negotiation and formation of an interstate weather modification compact.

With a number of states now experimenting

with weather modification, it might be worthwhile to authorize the formation of an interstate compact for the purpose of conducting joint research activities in this regard. Nebraska could then keep abreast of activities going on in other states and perhaps share some of the benefits.

RELATIONSHIP TO OTHER STUDIES

Each of the policy issue studies being conducted demonstrates the inter-relationship between water policy issues. Water policy is a complex area and the issues involved cannot be decided in a vacuum. Significant relationships with the following reports have been identified: *Instream Flows, Water Quality, Groundwater Reservoir Management, Supplemental Water Supplies*, and several of the other reports issued in conjunction with the Selected Water Rights Issues Study.

CHAPTER 1

THE CURRENT SITUATION

INTRODUCTION

The purpose of this chapter is to describe, in a very general way, the physical situation with respect to surface water and groundwater in interstate river basins and interstate aquifers. It has been estimated that the average annual streamflow into the state is about one million acre feet, whereas the average annual outflow is about seven million acre feet.¹ This chapter is designed to give the reader a general idea of how and where that water is distributed in Nebraska. A summary of general topographic characteristics, average precipitation, high, low and average annual inflows and/or outflows on the major streams, and any legally established entitlements or obligations, whether by court decree or compact, has been included for each interstate stream basin in the state.

There is relatively little information for interstate groundwater aquifers underlying Nebraska. The expanding knowledge of groundwater in general, however, has also brought about an increased awareness of the interstate impacts associated with groundwater use by states sharing a common aquifer or interstate river basin. The ever-expanding use of groundwater, for irrigation and energy development among other uses, could bring increased pressure to bear on the groundwater resource as well. To date, there are no legal allocations of groundwater between Nebraska and neighboring states.

A third source of water which it may be possible to artificially "tap" is the atmosphere, through weather modification. Nebraska has had limited experience with weather modification activity but the legal framework and potential for it definitely exist.

SURFACE STREAMS

White River - Hat Creek Basin

Description. The White River and Hat Creek are located in the northwestern corner of the state. They originate in the Pine Ridge, a massive sandstone escarpment which forms a part of the northern boundary of the high plains, and flow northeastward into South Dakota. The White River begins in northern Sioux county near the Nebraska-Wyoming state line, and flowing northeastward into South Dakota eventually empties into the Missouri River above Fort Randall Dam. Hat Creek heads in the northwestern part of Sioux county and flows northward into the Cheyenne River in South Dakota.

The basin formed by these two streams is topographically marked with rugged steep slopes in the Pine Ridge area and a gently sloping area of clay hills and badlands forming narrow bottomlands to the north and west. The streams have cut deeply into the land and formed narrow valleys adding to the generally rough nature of the basin.

The typical groundcover, ranging from coniferous trees in the Pine Ridge to native grasses in the badlands, the rugged topography, and clayey soils make cultivation impractical and difficult in most cases. Of a total land area of 1,360,000 acres,² only about 26,600 acres were irrigated from surface water and 1,400 acres from groundwater as of 1975.

The average annual precipitation is about 15 inches.⁴ The runoff from precipitation is usually rapid because of the steep slopes and mostly impermeable soils. The one major reservoir in the region, Whitney Lake in Dawes County, is operated by Whitney Irrigation District. It has a storage capacity of 10,960 acre-feet.

WATER USE IN 1975³

WHITE RIVER HAT CREEK AND WHITE CLAY CREEK

SURFACE WATER			GROUNDWATER		
Acres Irrigated ACRES	Total Amount of Water Used ACRE-FEET	Average Amount of Water Used Per Acre ACRE-FEET/ACRE	Acres Irrigated ACRES	Total Amt. of GW Used ACRE-FEET	Ave. Amt. of GW Used Per Acre ACRE FEET/ACRE
26,600	25,250	0.95	1,300	2,000	1.54

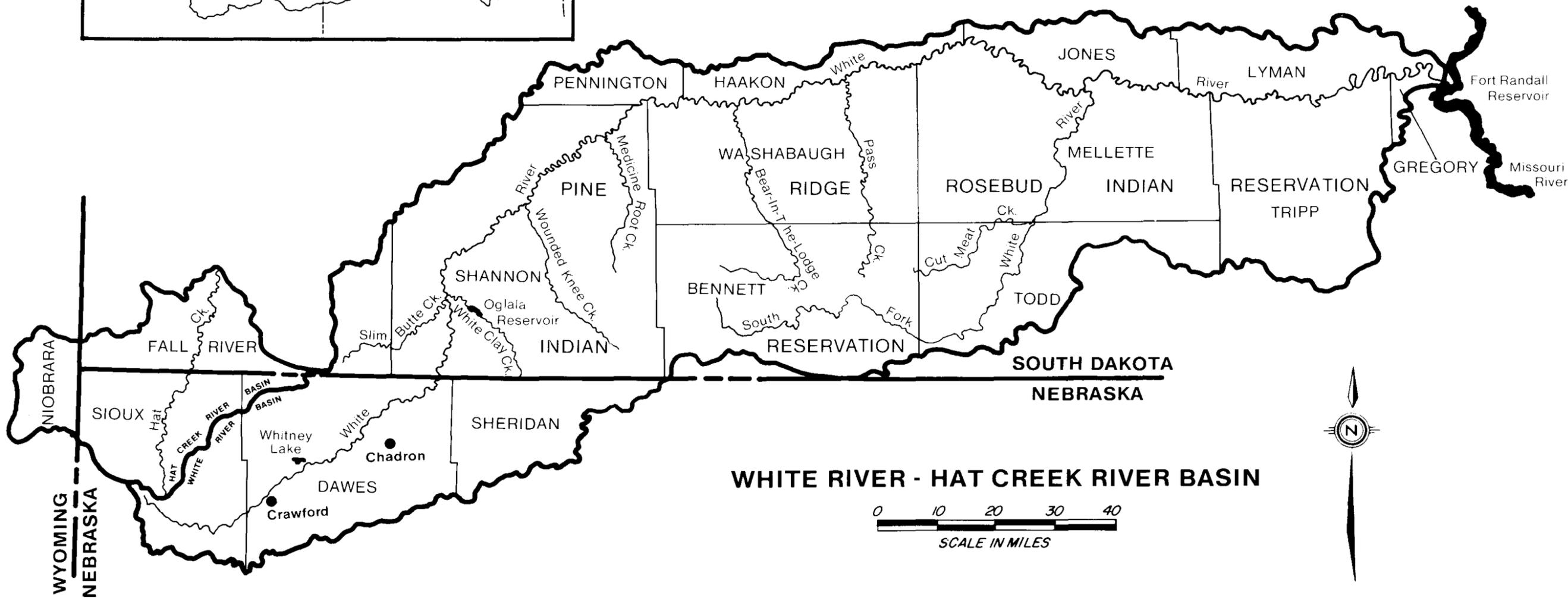
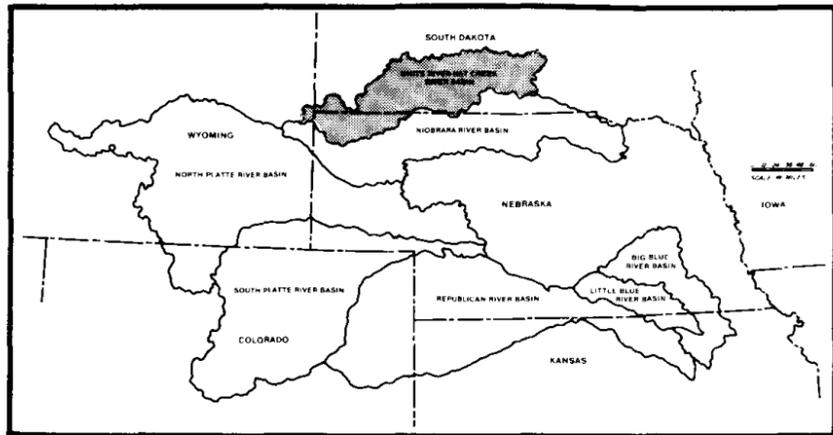
The mean annual discharge from the White River at Crawford is 14,627 acre-feet.⁵ Crawford is one of the few municipalities in the state which depends on a surface water stream to supply its municipal needs.

WHITE RIVER AT CRAWFORD MONTHLY STREAMFLOW IN ACRE-FEET (1931-1980)⁶

	Jan.	Feb.	Mar.	April	May	June
High	1,728	1,726	3,702	2,784	6,523	3,274
Low	901	1,034	1,200	1,141	1,059	802
Mean	1,294	1,313	1,674	1,508	1,571	1,323
	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	2,212	2,053	2,214	1,425	1,601	1,661
Low	514	389	512	798	964	962
Mean	948	778	792	1,024	1,157	1,242

Figures rounded to nearest whole number.

Interstate Arrangements. The Indians and U.S. Government hold in abeyance unquantified rights to water in these streams flowing through the Pine Ridge and Rosebud reservations in South Dakota. These Indian reservations claim superior rights to the streamflow under the federal reservation doctrine. These claims combined with the general physical makeup of the basin may limit the potential for future surface water development. No interstate compacts currently allocate water in the basin.



WHITE RIVER - HAT CREEK RIVER BASIN



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Niobrara River Basin

Description. The Niobrara River begins as a small stream in eastern Wyoming entering Nebraska in the northwestern corner of the state. It then flows eastward roughly parallel to the northern boundary of the state until it discharges into the Missouri River above Lewis and Clark Reservoir in the northeastern corner. Ponca Creek enters Nebraska from South Dakota in Boyd County where it then parallels the Niobrara River and empties into the Missouri River upstream from the Niobrara's mouth.

The western or upper part of the basin is characterized by flat tablelands bordered on the north by the Pine Ridge. The Sandhills region extends into this area and the central part of the basin. In places in the basin, the river has formed a narrow valley with steep walls rising hundreds

of feet to meet the uplands. The entire area provides many scenic vistas with coniferous trees and rock outcroppings in the western reaches and the remainder covered with a mixed forest of eastern hardwoods and western pines.

Major tributaries of the Niobrara River include the Keya Paha River, the Snake River, Pine Creek, Plum Creek, Long Pine Creek, Eagle Creek and Verdigre Creek. The steady flows of the Snake River, Plum and Long Pine Creeks and other Sandhills streams contribute to the constancy of the Niobrara's flow. The flow in the western section is variable.

Of approximately 7,582,000 total acres⁷ almost 2.2 million acres,⁸ mostly in the western part of the basin, are suitable for irrigation. However, only about 347,540 acres had been developed for irrigation in 1975.⁹

WATER USE IN 1975¹⁰

NIOBRARA-PONCA CREEK

SURFACE WATER			GROUNDWATER		
Acres Irrigated ACRES	Total Amount of Water Used ACRE-FEET	Average Amount of Water Used Per Acre ACRE-FEET/ACRE	Area Irrigated ACRES	Total Amt. of GW Used ACRE-FEET	Ave. Amt. of GW Used Per Acre ACRE-FEET/ACRE
54,600	115,100	2.11	292,940	389,600	1.33

The average annual precipitation varies from approximately 15 inches in the west to 24 inches in the east.¹¹ There are two major reservoirs in the basin which measure over 500 acres in surface area: Box Butte Reservoir in Dawes County, operated by the U.S. Bureau of Reclamation with a surface area of 1,060 acres and a storage capacity of 31,060 acre-feet, and Merritt Reservoir in Cherry County, also operated by the Bureau with a surface area of 2,906 acres and storage capacity of 74,500 acre-feet.¹² The potential O'Neill Unit which would include the Norden Dam and Reservoir, is located in the central part of the basin.

The mean annual inflow for the Niobrara River at the state line is 2,936 acre-feet compared with a mean outflow at its mouth of 1,124,103 acre-feet.¹³

A number of streams arising in the Sandhills contribute to the Niobrara's flow. There are also plentiful supplies of groundwater throughout most of the basin. The quality of groundwater in the sandstone aquifers in the west and in the Sandhills area has been described as excellent. Soils, for the most part, range from coarse sands in the Sandhills region to silts and clays on the

tablelands. More productive soils can be found on the Box Butte tablelands and in the western Mirage Flats area.

Interstate Arrangements. Two interstate compacts have been negotiated on the Niobrara River but only one has been finalized. The Upper Niobrara River Compact between Wyoming and Nebraska was ratified by both Legislatures in 1963 and the proposed Lower Niobrara River and Ponca Creek Compact between Nebraska and South Dakota was ratified by the Nebraska and South Dakota Legislatures in 1961, but has never been approved by Congress. The South Dakota Legislature subsequently repealed the compact.

The Upper Niobrara River Compact includes the area in Nebraska and Wyoming which is naturally drained by the Niobrara River west of Range 55 West of the 6th P.M. (west of Agate, Nebraska). It essentially gives Wyoming unrestricted use of the surface flow of the river with the exception of those restrictions imposed by Wyoming law and a few minor requirements relating to the size of storage reservoirs with priority dates after August 1, 1957, and to when water may be stored during the year for storage

MONTHLY STREAMFLOW IN ACRE-FEET¹⁴
(INFLOW) NIOBRARA RIVER AT WYO. - NEBR. STATE LINE (1955-80)

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	774	1,004	1,188	972	486	748	1,367	960	218	252	294	286
Low	123	127	185	192	179	93	87	63	60	109	129	125
Mean	220	294	379	371	302	250	236	175	143	175	190	200

(MOUTH) NIOBRARA RIVER NEAR VERDEL (1938-1980)

	Jan.	Feb.	Mar.	April	May	June
High	100,688	123,980	272,145	190,186	201,356	264,408
Low	43,416	52,259	93,450	76,322	75,533	62,157
Mean	77,660	94,210	159,022	125,468	115,441	100,289
	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	330,257	126,044	94,855	117,651	127,512	101,851
Low	33,914	40,172	41,882	62,060	56,108	48,390
Mean	80,090	62,496	68,047	81,310	83,598	76,459

(INFLOW) PONCA CREEK AT ANOKA (1949-1980)

	Jan.	Feb.	Mar.	April	May	June
High	2,313	2,430	46,850	44,840	32,623	57,048
Low	0	0	173	256	266	42
Mean	252	1,175	9,573	6,797	4,710	4,801
	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	40,198	11,172	4,781	2,436	2,323	1,972
Low	0	0	0	0	0	0
Mean	2,337	1,327	532	381	373	272

(OUTFLOW) PONCA CREEK AT VERDEL (1957-1980)

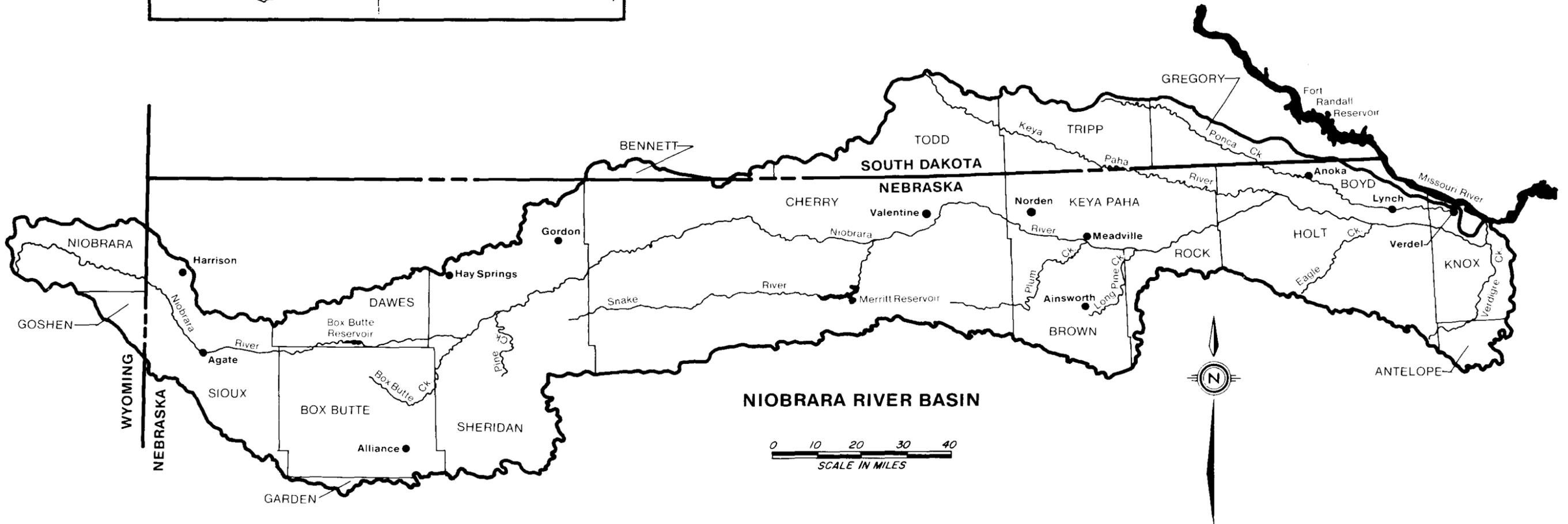
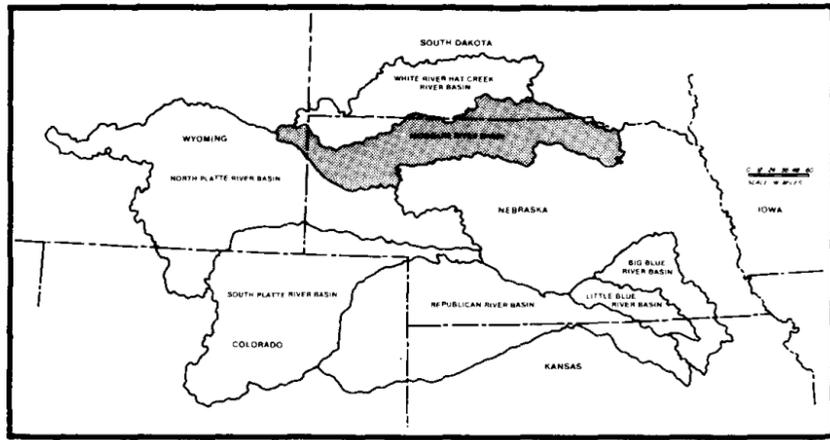
	Jan.	Feb.	Mar.	April	May	June
High	3,561	5,726	82,007	39,424	34,569	73,632
Low	0	0	401	1,345	530	335
Mean	516	1,853	15,078	9,109	7,013	8,355
	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	44,836	20,086	6,803	5,127	4,051	2,736
Low	0	0	0	0	0	0
Mean	4,327	2,061	780	756	839	464

Figures rounded to nearest whole number

reservoirs with a priority before August 1, 1957.¹⁵ Direct flow rights on the Niobrara River and Van Tassel Creek in Wyoming having a priority date after August 1, 1957, are to be regulated on a priority basis with Nebraska rights.

This compact was also somewhat unique in

recognizing that the future use of groundwater for irrigation might be a factor in the depletion of surface flows in the basin. The compact delayed any apportionment of groundwater until adequate data became available and provided that investigation be carried out to obtain the necessary data on groundwater. To date, no investigations have taken place.



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North Platte River Basin

Description. The North Platte River Basin in Nebraska is located in the western part of the state, mostly in the Panhandle. The river heads in Colorado and flows through Wyoming before entering Nebraska, where it extends to the confluence with the South Platte River near the city of North Platte. The basin also includes the drainage areas of Pumpkin Creek, Ninemile Creek, Blue Creek, Birdwood Creek, and several other tributary streams in Nebraska.

The river has cut a valley through Nebraska's high plains as much as 1,000 feet deep in places, producing such bluffs and buttes in the Wildcat

Ridge as Scottsbluff and Chimney Rock. The upper and lower sections of the river valley are broad while the central part where Lake McConaughy is located is narrower. The Sandhills border along the northern side of the valley in the central and lower sections. The valley is also characterized by broad tablelands high above the river valley, with steep cliffs and canyons covered with mostly native grasses.

Soils in the upper valley are generally very productive and extensively irrigated. Surface water irrigation in this basin began in the early 1860's and still ranks first among basins across the state in the amount of surface water diverted for irrigation.

WATER USED IN 1975¹⁶

PLATTE NORTH

SURFACE WATER			GROUNDWATER		
Acres Irrigated ACRES	Total Amount of Water Used ACRE-FEET	Average Amount of Water Used Per Acre ACRE-FEET/ACRE	Acres Irrigated ACRES	Total Amt. of GW Used ACRE-FEET	Ave. Amt. of GW Used Per Acre ACRE-FEET/ACRE
399,240	1,278,120	3.20	122,850	163,400	1.33

The average annual precipitation in the basin varies from approximately 16 inches in the central part to 18 inches in the lower.¹⁷ The spring-fed Sandhills streams contribute stable flows to the river while the runoff in the steeper escarpment areas is more sporadic. Upstream in Colorado and Wyoming, much of the runoff is due to snowmelt. The flow of the river is regulated by reservoirs in Wyoming, Lake McConaughy and the various irrigation canals in Nebraska.

The Wyoming reservoirs were constructed as part of the North Platte Project by the U.S. Bureau of Reclamation. The project was designed for the reclamation and irrigation of land in eastern Wyoming and western Nebraska. The Pathfinder Dam and Reservoir, which began operation in 1909, is the principal water supply feature of this project. The Pathfinder holds and stores excess spring flood flows making the water later available for summer use. Other structures in the project include the Guernsey Reservoir and Powerplant (1927), and Lakes Alice (1912), Minatare (1915), and Winters Creek (1912).¹⁸ Additional water projects were begun by the Bureau of Reclamation during the drought years of the 1930's and early 1940's including the Kendrick Project, consisting of Seminole and Alcova Reservoirs.

The major reservoirs in the North Platte Basin

in Nebraska include: Lakes Alice and Minatare in Scottsbluff County, with storage capacities of 11,015 and 62,190 acre-feet respectively; Lake McConaughy in Keith County, with 1,948,000 acre-feet of storage capacity, operated by the Central Nebraska Public Power and Irrigation District; and Lake Ogallala, located just below Lake McConaughy and operated by Nebraska Public Power District, with 13,000 acre-feet available storage capacity.¹⁹

The mean annual inflow for the North Platte River is 554,786 acre-feet, compared with an outflow at its confluence with the South Platte River of 591,329 acre-feet.²⁰

Interstate Arrangements. The flow of the river was apportioned by a U.S. Supreme Court decree between Nebraska, Colorado, and Wyoming. Nebraska brought suit against Wyoming in 1934 over the use of the waters of the North Platte River for irrigation purposes. The State of Colorado and the United States were also made parties to the suit.²²

The Court appointed a Special Master to conduct hearings and make a report and recommendations on the matter. The Supreme Court reviewed these recommendations and exceptions to the report and handed down its decision on October 8, 1945. The Court made the following assessment of the situation:

TOTAL MONTHLY STREAMFLOW IN ACRE-FEET²¹

(INFLOW) NORTH PLATTE RIVER AT WYO.-NEBR. STATE LINE (1929-1980)

	Jan.	Feb.	March	April	May	June
High	46,205	55,977	258,440	262,305	444,436	616,786
Low	11,144	10,884	11,789	10,392	8,422	12,342
Mean	22,354	20,709	29,603	33,738	70,668	91,903

	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	220,660	225,462	144,753	89,000	60,907	55,016
Low	37,563	9,487	13,715	9,359	10,358	13,461
Mean	84,516	71,735	47,340	31,175	26,161	24,873

(OUTFLOW) NORTH PLATTE RIVER AT NORTH PLATTE (1930-1980)

	Jan.	Feb.	March	April	May	June
High	163,402	155,863	202,725	211,891	275,181	416,144
Low	17,796	17,927	21,157	19,445	15,733	13,545
Mean	39,414	41,940	50,503	46,354	54,483	52,675

	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	131,579	151,121	183,798	241,949	185,206	186,992
Low	6,756	2,613	5,767	18,231	18,644	18,227
Mean	66,387	60,857	38,857	51,513	46,975	41,358

Figures rounded to nearest whole number

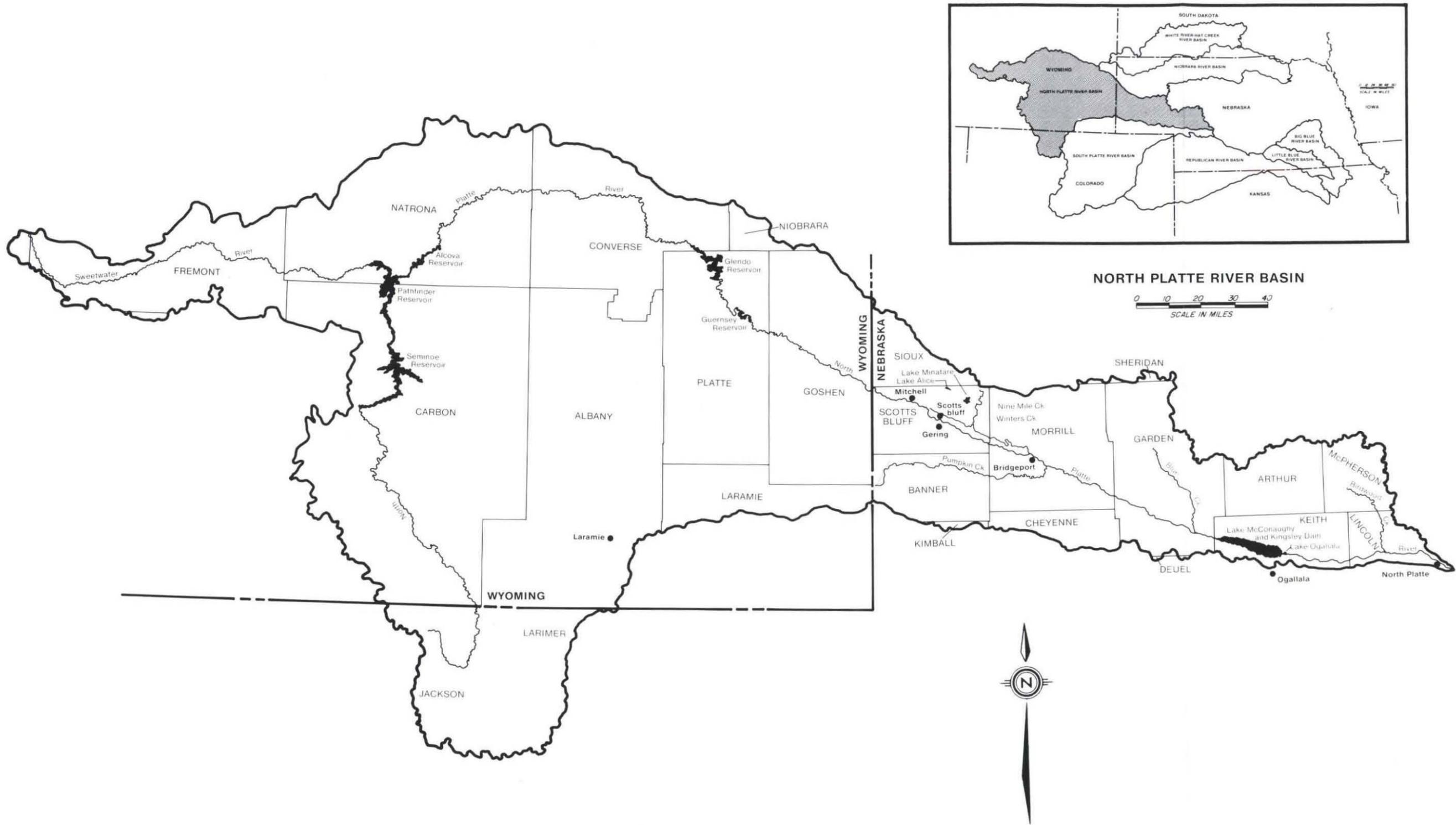
What we have then is a situation where three States assert claims against a river, whose dependable natural flow during the irrigation season has long been over appropriated, claims based not only on present uses but on projected additional uses as well. The various statistics with which the record abounds are inconclusive in showing the existence or extent of actual damage to Nebraska. But we know that deprivation of water in arid or semi-arid regions cannot help but be injurious.²³

The decree entered in the case places upper limits on the total amount of acres to be irrigated, storage of water for irrigation, export of water out of the basin to Colorado, acres to be irrigated above Guernsey Reservoir, and storage of water for irrigation above Pathfinder. The decree further fixes the relative storage rights to Pathfinder, Guernsey, Seminoe, Alcova, and Glendo Reservoirs, among themselves and in that order, as long as they do not interfere with the priority decreed for the French Canal and the State Line Canals in Nebraska. Finally, the natural flow from May to September in the Guernsey Dam to Tri-State Dam section of the river is apportioned twenty-five percent to Wyoming and seventy-five percent to Nebraska. The court also retained

jurisdiction of the suit, allowing the parties to apply for amendment of the decree for any one of a number of reasons, including "Any change in conditions making modification of the decree or the granting of further relief necessary or appropriate."²⁴ The Glendo Dam, Reservoir, and Powerplant was constructed by negotiation and agreement among the states of Nebraska, Colorado, and Wyoming with the approval of Congress and was also approved as a stipulation to the decree by the United States Supreme Court on January 11, 1953.²⁵

The specific terms of the decree may be summarized as follows:

1. Colorado is limited to:
 - a. Diverting no more water from the North Platte River and its tributaries than necessary for the irrigation of 145,000 acres in Jackson county during one season;
 - b. Storing no more than 17,000 acre-feet in Jackson county between Oct. 1 and Sept. 30;
 - c. Exporting to another basin no more than 60,000 acre-feet in any 10-year period.



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2. Wyoming (excluding the Kendrick Project and Seminoe Reservoir) is limited to:

- a. Diverting no more water than necessary for the irrigation of 168,000 acres during one season;
- b. Storing no more than 18,000 acre-feet of water above Pathfinder between Oct. 1 and Sept. 30;
- c. Storing water in the five reservoirs in the following order of priority: Pathfinder,

- Guernsey, Seminoe, Alcova, Glendo
- d. Storing water in these five reservoirs during May 1 and Sept. 30 only under the rule of priority in relation to the appropriations of Nebraska lands supplied by the French Canal and State Line Canals which are senior to the reservoirs.

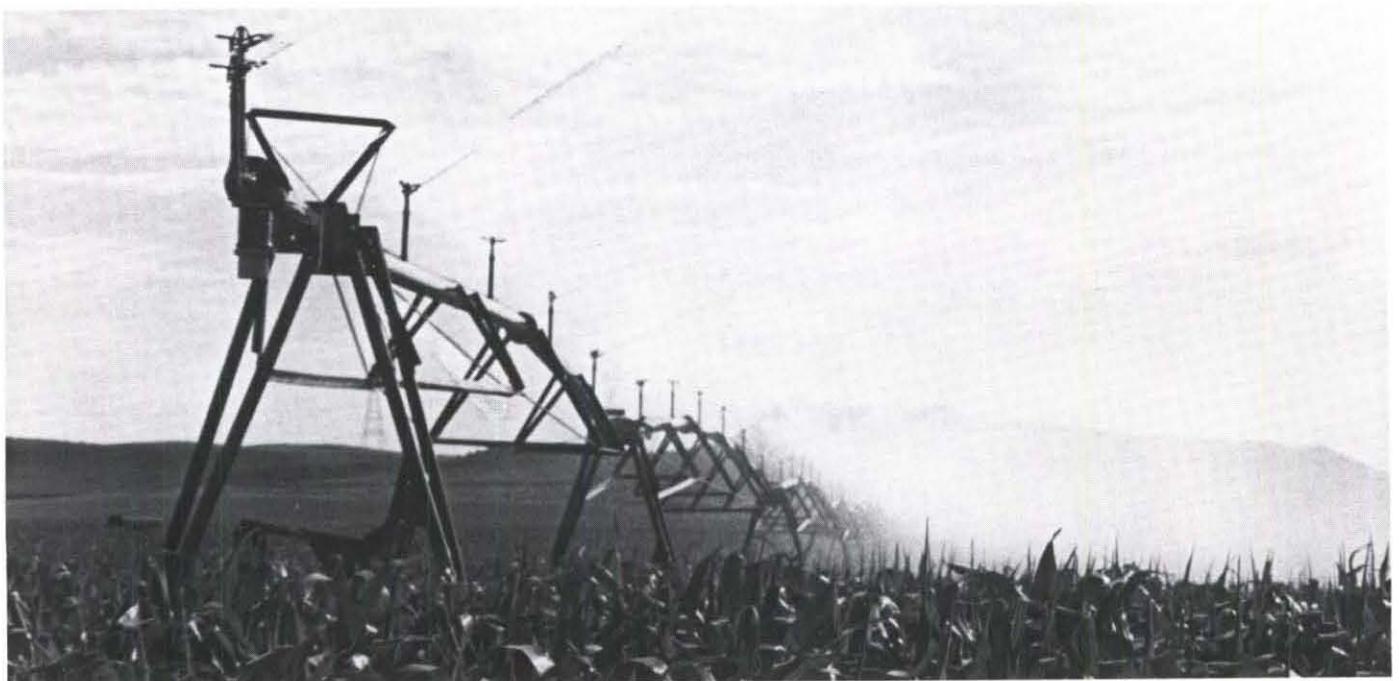
3. Nebraska appropriations and their diversions were fixed as follows:

	Limitation In second-ft.	Seasonal Limitation in acre-feet
a. Tract of 1,025 - French	15 cfs.	2,227 af
b. Mitchell Irrigation District	195	35,000
c. Gering Irrigation District	193	36,000
d. Farmers Irr. District - Tri-State	748	183,050
e. Ramshorn Irr. Dist.	14	3,000
Total	1165 cfs.	259,277 af

4. Apportionment of the natural flow in the Guernsey Dam to Tri-State Dam Section between May 1 and September 30 is on the basis of 75% to Nebraska and 25% to Wyoming.²⁶

The North Platte Decree apportioned only the natural flow of the river. The water in the North Platte alluvium, which is intimately associated and hydraulically connected to the river and which extends across the Nebraska-Wyoming state line, was not explicitly made part of the decree. It has been found that a major portion of the natural flow of the river reach from Guernsey

Reservoir to the Wyoming-Nebraska state line is river gain or return flow transmitted through the alluvium. Groundwater development in this area to date has been supplemental to surface water and the North Platte alluvium appears to be readily rechargeable. Therefore, any immediate interstate problems are not anticipated. Any significant increases in groundwater development, however, could present some water quality problems in the future. The continuing supervision of the North Platte River by the U.S. Supreme Court would permit amendment of the decree if it became necessary. An interstate compact approach could also be used.



South Platte River Basin

Description. The South Platte River heads in Colorado and enters Nebraska in the southern panhandle in Deuel county. It joins the North Platte River near the city of North Platte. Lodgepole Creek, which is the principal Nebraska tributary to the South Platte River, enters Nebraska from Wyoming and flows into the South Platte River just south of the Colorado-Nebraska state line. Consequently, the South Platte Basin extends from the Wyoming-Nebraska state line along the southern portion of the Panhandle to North Platte.

Topographically, this basin is marked by high plains and stream valleys. The western plains are gently rolling hills with broad basins. The eastern plains are more pronounced, dissected by canyons. The river valley in the eastern section is broad and flat. The steeper plains are covered in mostly native grass while the broader plains and tablelands have been cultivated.

The average annual precipitation ranges from approximately 16 inches in the west to 17-18 inches in the east.²⁷ The general water supply in the basin is variable. Most of the tributaries to the South Platte River dry up during late summer. In addition, development upstream in Colorado has had a significant impact on river quality; return flows from upstream diversions have degraded the water quality. High intensity storms produce most of the runoff from within the basin in Nebraska.

The groundwater in the alluvium of the South Platte River valley generally yields large amounts of water and has been developed extensively for irrigation. There are, however, only limited amounts of water in the Lodgepole Creek valley. The Ogallala formation underlies the high plains in the eastern part of the basin with sufficient quantities of water available, but at considerable depths.

Consequently, most of the land in the basin not located on Lodgepole Creek or the South Platte

River is devoted to dryland farming. Much more land is suitable for irrigation than is currently irrigated, and could be developed if a water supply were available.



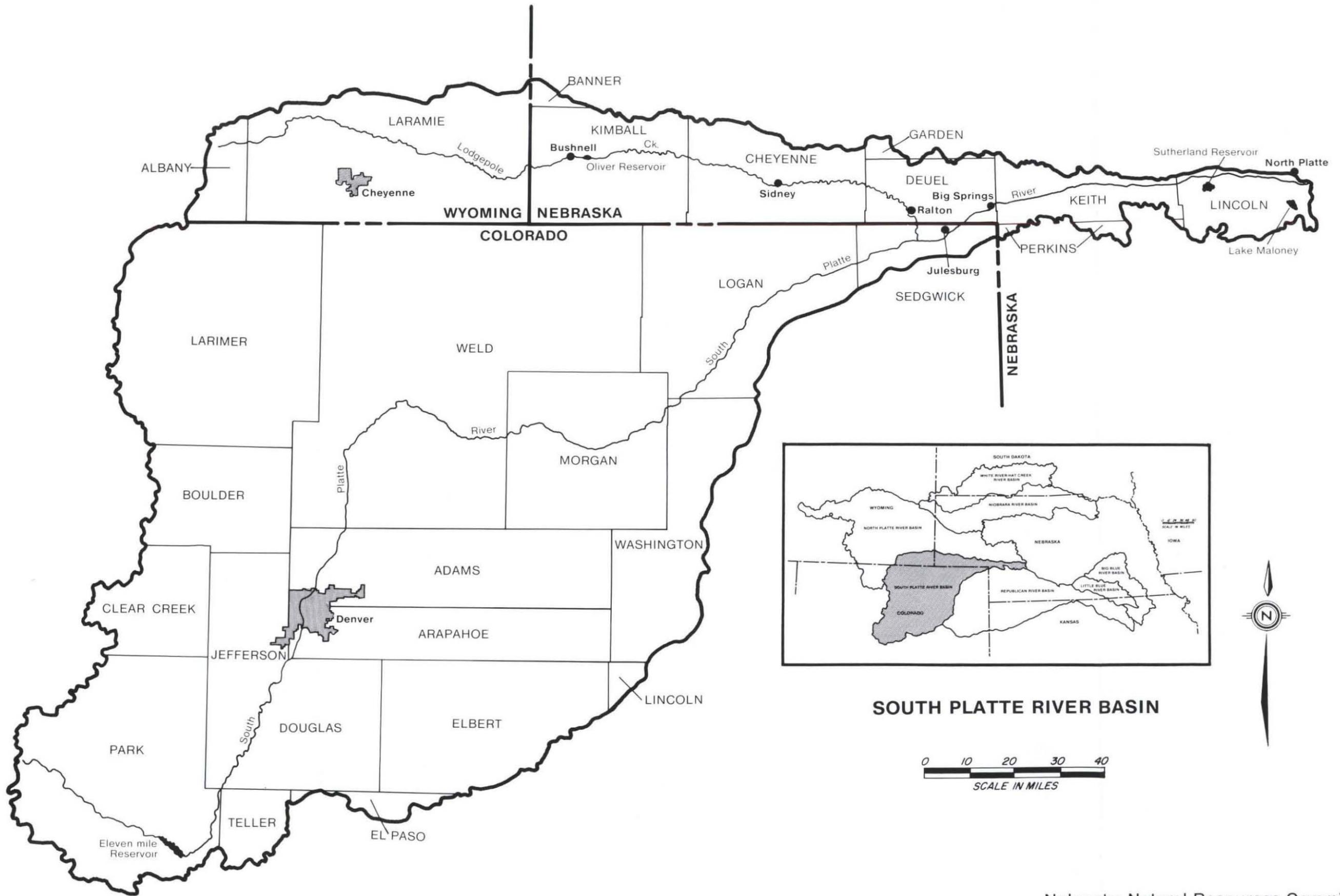
Losses from hail storms are a regular occurrence in this area, more so than in any other part of the state. In fact, southwest Nebraska and northeast Colorado have been called "Hailstone Alley" due to this almost yearly storm activity. Research to determine the cause is currently being conducted.

The Nebraska Public Power District operates two reservoirs in the basin: Sutherland, with a surface acreage of 3,190 acres and storage capacity of 380,000 acre-feet, and Lake Maloney, with 1,670 surface acres and 6,000 acre-feet available storage capacity.²⁹ The recently revitalized Oliver Reservoir, located on Lodgepole Creek in Kimball County, has a surface acre size of 280 acres.³⁰

WATER USE IN 1975²⁸

SOUTH PLATTE

SURFACE WATER			GROUNDWATER		
Area Irrigated ACRES	Total Amount of Water Used ACRE-FEET	Average Amount of Water Used Per Acre ACRE-FEET/ACRE	AREA Irrigated ACRES	Total Amt. of GW Used ACRE-FEET	Ave. Amt. of GW Used Per Acre ACRE-FEET/ACRE
22,600	58,450	2.59	155,230	206,400	1.33



Nebraska Natural Resources Commission

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TOTAL MONTHLY STREAMFLOW IN ACRE-FEET³²

(INFLOW) SOUTH PLATTE RIVER AT JULESBURG (1902-1980)

	Jan.	Feb.	March	April	May	June
High	96,299	103,525	135,313	145,265	610,219	397,707
Low	5,559	4,381	3,502	1,030	1,480	496
Mean	26,607	29,683	31,532	29,546	61,796	76,765

	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	143,415	66,121	102,374	66,145	92,256	78,806
Low	133	155	333	359	1,369	1,157
Mean	13,733	8,287	9,837	15,842	19,743	22,409

(OUTFLOW) SOUTH PLATTE RIVER AT NORTH PLATTE (1931-1980)

	Jan.	Feb.	March	April	May	June
High	62,234	60,619	119,695	115,310	504,829	378,803
Low	2,803	6,746	6,492	1,716	1,544	1,815
Mean	15,741	18,870	21,935	20,913	54,320	58,024

	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	134,928	36,244	54,004	75,521	29,925	42,331
Low	0	0	0	0	0	0
Mean	16,729	8,912	11,098	11,829	9,989	10,787

(INFLOW) LODGEPOLE CREEK AT BUSHNELL (1934-1980)

	Jan.	Feb.	March	April	May	June
High	994	976	1,303	1,280	1,385	4,160
Low	181	236	294	276	194	157
Mean	575	621	772	742	724	766

	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	1,593	1,141	3,498	919	1,101	954
Low	52	56	77	135	204	218
Mean	605	498	645	561	589	587

(OUTFLOW) LODGEPOLE CREEK AT RALTON (1951-1979)

	Jan.	Feb.	March	April	May	June
High	1,182	1,341	1,962	2,055	2,101	5,442
Low	0	0	0	0	0	0
Mean	355	411	671	601	677	738

	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	3,012	8,089	7,254	1,835	1,603	1,226
Low	0	0	0	0	0	0
Mean	548	669	514	343	401	415

Figures rounded to the nearest whole number.

The mean annual inflow on the South Platte River is 345,781 acre-feet. The mean annual discharge at North Platte is 259,150 acre-feet.³¹

Interstate Arrangements. There is an interstate compact between Nebraska and Colorado apportioning the flows of the South Platte River and Lodgepole Creek.³³ According to the compact, Nebraska has full use of Lodgepole Creek in Nebraska above the point of division, which is 2 miles north of the Colorado-Nebraska boundary. Colorado has full use of the stream below the point of division, but Nebraska can use the channel of the stream and the channel of the South Platte River between the mouth of Lodgepole Creek and the interstate station to carry any waters stored on Lodgepole Creek above the point of division which Nebraska wishes to deliver to ditches from the South Platte River in Nebraska. This is not considered as part of the flow of the South Platte River.

The division of the South Platte River gives Colorado full and uninterrupted use of the water flowing within the State of Colorado between

October 15 of each year and April 1 of the succeeding year, with certain exceptions. Colorado shall not permit diversions from the lower section (Washington County, Colorado to state line) between April 1 and October 15 to supply Colorado appropriations with priority dates after June 14, 1897 if it will diminish the flow on any day below a meanflow of 120 cfs, provided this flow is being beneficially used in Nebraska. Provision is also made in the compact for the future diversion of water in Colorado for irrigation of lands in Nebraska by constructing a canal along or near the formerly proposed Perkins County Canal line. The canal is entitled to divert 500 cubic feet per second from the Lower Section only between October 15 of each year and April 1 of the succeeding year, and is given a priority of appropriation date of December 17, 1921. Colorado further reserves an aggregate of 25,000 acre-feet to be diverted for storage and use between October 15 of each year and April 1 of the succeeding year.



Republican River Basin

Description. The Republican River enters Nebraska in the extreme southwestern corner of the state from Colorado and enters Kansas near the town of Superior, Nebraska. Major tributaries of the Republican River include the Frenchman River, Driftwood Creek, Red Willow Creek, Medicine Creek, and Sappa Creek.

The valley of the river is narrow at the western border as it flows through high plains. It gradually widens toward the eastern or lower end of the

basin passing through a narrow extension of the Sandhills into flatter dissected plains.

Precipitation varies from an annual average of 18 inches in the western part of the basin to 22 inches in the eastern part³⁴ and is usually not distributed well for optimum crop growth. The streamflow in the tributaries of the Republican River vary accordingly with precipitation with the exception of those streams coming out of the Sandhills, which flow fairly steadily. Mean annual discharge to the Republican River is approximately 64,559 acre-feet with a subsequent mean annual outflow of 251,974 acre-feet.³⁵

TOTAL MONTHLY STREAMFLOW IN ACRE-FEET³⁶

(INFLOW) REPUBLICAN RIVER AT BENKLEMAN (1947-1980)

	Jan.	Feb.	March	April	May	June
High	7,892	9,130	33,087	13,918	20,259	22,699
Low	2,819	3,891	5,527	3,327	1,803	1,288
Mean	5,801	6,676	8,547	7,228	6,882	6,035
	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	29,359	15,301	22,376	7,150	7,835	7,771
Low	40	28	58	550	2,776	3,534
Mean	3,319	2,734	2,698	3,581	5,408	5,646

(OUTFLOW) REPUBLICAN RIVER NEAR GUIDE ROCK (1950-1980)

	Jan.	Feb.	March	April	May	June
High	36,143	54,548	66,224	147,824	154,431	215,423
Low	2,700	4,081	4,355	3,672	1,970	1,621
Mean	10,660	17,699	22,378	25,689	27,129	37,934
	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	264,368	105,309	214,417	127,502	72,779	38,255
Low	1,432	2,389	1,926	732	853	4,008
Mean	38,394	16,235	20,640	13,575	11,118	10,521

Figures rounded to nearest whole number.

There are approximately 2.5 million acres of soils in the basin which are suitable for irrigation, and where adequate water is available, irrigation

is practiced.³⁷ Much of the land, however, is used for grassland and nonirrigated cropland due to lack of a reliable supply of water.

WATER USE IN 1975³⁸

REPUBLICAN

SURFACE WATER			GROUNDWATER		
Acres Irrigated ACRES	Total Amount of Water Used ACRE-FEET	Average Amount of Water Used Per Acre ACRE-FEET/ACRE	Acres Irrigated ACRES	Total Amt. of GW Used ACRE-FEET	Ave. Amt. of Water Used Per Acre ACRE-FEET/ACRE
92,200	192,210	2.08	613,120	815,500	1.33

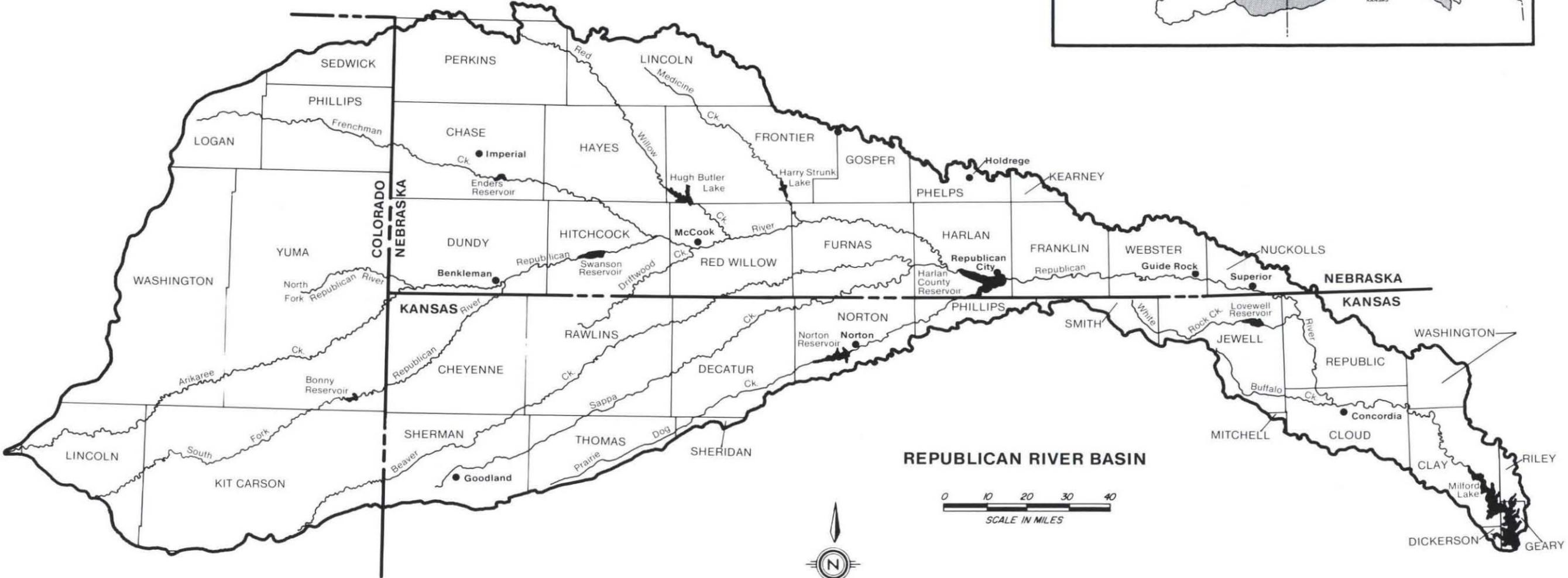
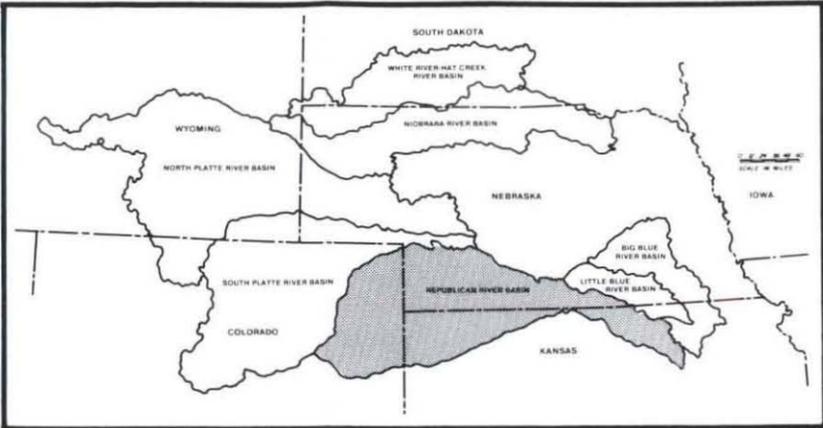
Storage reservoirs in the basin have improved the availability of waters significantly. Four reservoirs are operated by the U.S. Bureau of Reclamation. They include: Swanson Reservoir in Hitchcock County, with a surface area of 4,794 acres and a storage capacity of 120,160 acre-feet; Enders Reservoir in Chase County, covering 1,707 acres with available storage capacity of 44,480 acre-feet; Hugh Butler and Harry Strunk Reservoirs, both in Frontier County, with respective surface acreage of 1,629 acres and 1,850 acres, and storage capacity of 37,776 acre-feet and 37,141 acre-feet. Harlan County reservoir is operated by the U.S. Army Corps of Engineers,

and has a surface area of 13,024 acres, providing a storage capacity of 342,560 acre-feet.³⁹

Interstate Arrangements. An interstate compact on the Republican River allocating the flows of the river and most of its major tributaries between the states of Colorado, Kansas, and Nebraska has been in effect since 1943.⁴⁰ The allocations are based on computed virgin flow conditions which are recomputed annually to determine if the variation is in excess of the original limits of variation established in the compact. The breakdown between the states is as follows:

	Colorado Acre-Feet	Kansas Acre-Feet	Nebraska Acre-Feet
TOTAL	54,100	190,300	234,500
North Fork of Rep. R.	10,000		11,000
Arikaree R.	15,400	1,000	3,300
South Fork of Rep. R.	25,400	23,000	800
Beaver Creek	3,300	6,400	6,700
Driftwood Creek		500	1,200
Sappa Creek		8,800	8,800
Prairie Dog Creek		12,600	2,100
Rock Creek			4,400
Buffalo Creek			2,600
Medicine Creek			4,600
Frenchman Creek (River)			52,800
Red Willow Creek			4,200

In addition, Colorado is allocated the entire supply of Frenchman Creek (River) and Red Willow Creek in Colorado; Kansas is entitled to an additional 138,000 acre-feet from otherwise unallocated upstream supplies; and Nebraska has a right to 132,000 acre-feet in addition to its upstream supplies.



REPUBLICAN RIVER BASIN



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Little Blue and Big Blue River Basins

Description. The Little Blue River originates in the plains south of the Platte River in south-central Nebraska and flows in a southeasterly direction, entering Kansas southeast of Fairbury, Nebraska. The river is situated between the Republican River and the Big Blue River, which it joins in northern Kansas. Big Sandy Creek in the northern portion of the basin and Rose Creek in the southern portion are the major tributaries. The land in the Little Blue River Basin is characterized by plains in the upper end of the basin and gently rolling hills in the central part, with steeper slopes and bedrock outcroppings occurring in the lower end of the basin.

Most of the land in the basin is well suited for agriculture. The average annual precipitation in

this basin ranges from approximately 24 inches in the upper end of the basin to 28 inches in the lower portion.⁴¹ Even though most of the precipitation comes as rain during the growing season, irrigation is generally required. Groundwater supplies are plentiful but not inexhaustible in the northern and western parts of the basin. Elsewhere, however, groundwater sufficient for irrigation is difficult to obtain. The streamflow in the Little Blue River varies considerably in response to precipitation but manages to maintain a fairly steady baseflow.

There are approximately one million acres suitable for irrigation in the Little Blue basin.⁴² Of this amount, 13,300 acres were irrigated with surface water and 336,340 acres were irrigated with groundwater in 1975.⁴³

WATER USE IN 1975 ⁴⁴

LITTLE BLUE

SURFACE WATER			GROUNDWATER		
Area Irrigated ACRES	Total Amount of Water Used ACRE-FEET	Average Amount of Water Used Per Acre ACRE-FEET/ACRE	Area Irrigated ACRES	Total Amt. of Water Used ACRE-FEET	Ave. Amt. of Water Used Per Acre ACRE-FEET/ACRE
13,300	13,300	1.00	336,340	447,300	1.33

The Big Blue River Basin lies to the east of the Little Blue River and also drains into Kansas. It extends along the northern and eastern portion of the basin. Lincoln Creek, the West Fork of the Big Blue River, and Turkey Creek drain the western reaches of the basin and empty into the Big Blue River along the eastern edge.

The upper part of the basin is comprised of plains underlain by a plentiful supply of groundwater. The central portion is made up of dissected tablelands with rather narrow main stream

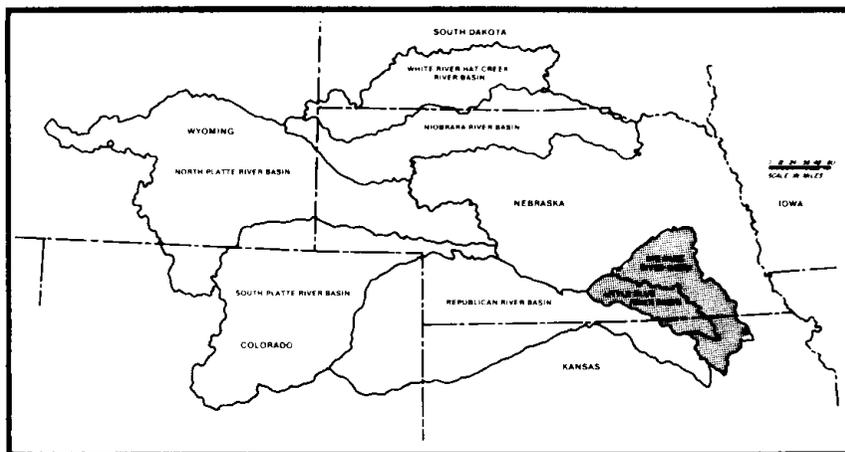
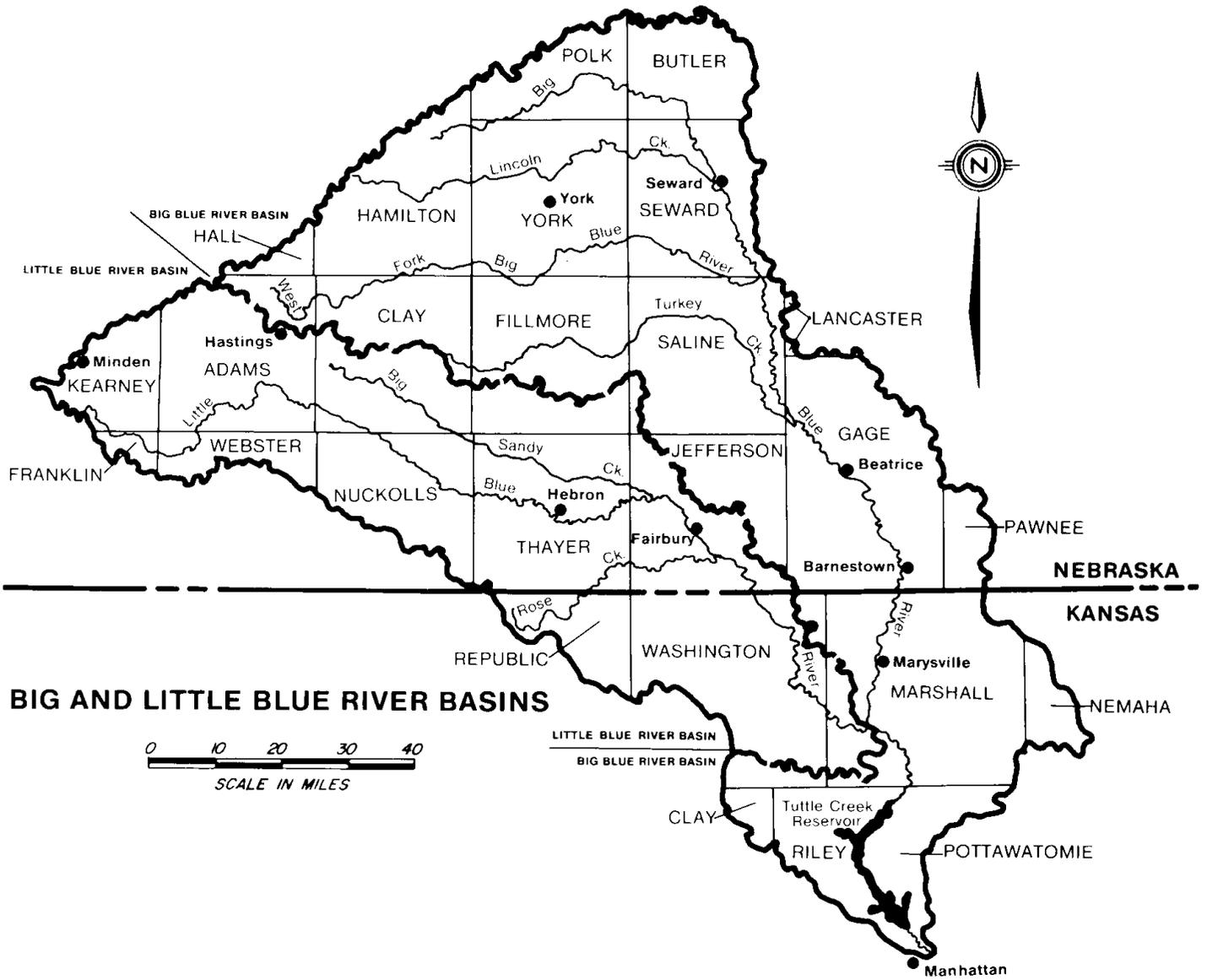
channels bordered by wide high terraces. The lower part of the basin contains both dissected tablelands and rolling hills with only limited supplies of groundwater available.

Of the approximately 2,796,000 acres suitable for agricultural use, slightly over two million acres have been classified as suitable for irrigation.⁴⁵ The average annual precipitation is approximately 30 inches and supplemental irrigation is often used.⁴⁶

WATER USE IN 1975 ⁴⁷

BIG BLUE

SURFACE WATER			GROUNDWATER		
Area Irrigated ACRES	Total Amount of Water Used ACRE-FEET	Average Amount of Water Used Per Acre ACRE-FEET/ACRE	Area Irrigated ACRES	Total Amt. of Water Used ACRE-FEET	Ave. Amt. of Water Used Per Acre ACRE-FEET/ACRE
40,300	40,300	1.00	949,940	1,263,400	1.33



The annual streamflow of the Big Blue River varies a great deal. The relatively impermeable soils permit little infiltration of water into the ground; consequently, the base flow of most of the streams in the basin is small and the runoff from heavy storms is rapid. Runoff from groundwater irrigation development has increased

streamflow in some streams during the irrigation season and in some cases has been reused by surface water irrigators.

The annual outflow of the Little Blue and Big Blue Rivers for 1975 was 264,862 acre-feet and 566,232 acre-feet respectively.⁴⁸

TOTAL MONTHLY STREAMFLOW IN ACRE-FEET ⁴⁹

(OUTFLOW) LITTLE BLUE RIVER NEAR FAIRBURY (1910-1980)

	Jan.	Feb.	Mar.	April	May	June
High	36,521	57,752	166,410	55,651	148,770	281,839
Low	4,613	5,561	6,807	6,319	6,551	4,650
Mean	9,868	15,174	30,770	17,795	31,990	53,614
	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	158,787	110,233	130,269	271,010	38,880	17,358
Low	3,049	3,121	2,508	5,291	5,583	5,075
Mean	28,123	19,745	22,360	16,681	9,970	8,589

(OUTFLOW) BIG BLUE RIVER AT BARNESTON (1932-1980)

	Jan.	Feb.	Mar.	April	May	June
High	98,184	129,400	649,700	262,902	257,095	622,793
Low	4,160	6,569	8,410	7,837	5,906	4,123
Mean	17,560	32,395	86,235	45,436	64,494	119,270
	July	Aug.	Sept.	Oct.	Nov.	Dec.
High	335,848	321,481	201,561	458,248	60,347	40,239
Low	1,891	1,296	3,964	3,783	4,615	5,373
Mean	62,948	38,617	40,648	32,050	14,805	11,765

Figures rounded to nearest whole number.

Interstate Arrangements. A compact to apportion the waters of the two rivers between the states of Nebraska and Kansas has been negotiated and approved.⁵⁰ Basically, the compact provides that between May 1 and September 30

of each year, Nebraska shall regulate diversions of natural flow by appropriators junior to November 1, 1968 so as to maintain minimum mean daily flows at the state line each month as follows:

	Little Blue	Estimated Acre-Foot for 30 days	Big Blue	Estimated Acre-Foot for 30 days
May	45 cfs	2,678	45 cfs	2,678
June	45 cfs	2,678	45 cfs	2,678
July	75 cfs	4,464	80 cfs	4,762
Aug.	80 cfs	4,762	90 cfs	5,357
Sept.	60 cfs	3,571	65 cfs	3,869

In addition, the compact provides that withdrawals from certain irrigation wells in the alluvium and valley side terrace deposits within one mile of the thread of the river may be regulated in the same manner that natural flow diversions are regulated if necessary to maintain the above-

listed flow levels. The storage capacity in reservoirs in the Little Blue River Basin is limited to 200,000 acre-feet total and in the Big Blue River Basin to 500,000 acre-feet total. The exclusive use of any water imported into either basin shall accrue to the state making the importation.

Missouri River Basin

Description. The Missouri River forms the eastern and part of the northern boundaries of the state. The river arises in Montana with the junction of the Jefferson, Gallatin, and Madison rivers at Three Forks, Montana. It flows for 2,315 miles in a southeasterly direction to its junction with the Mississippi River above St. Louis, Missouri. The drainage area of the Missouri River Basin includes all of Nebraska, most of Montana, North and South Dakota, and Wyoming, about half of Kansas and Missouri, smaller parts of Colorado, Minnesota and Iowa, and some territory in Canada.

The topographic features of the basin can be divided up into three major groups: the Rocky Mountain system; the Interior Plains, including parts of the Great Plains and Central Lowlands, which encompasses all of Nebraska and a major portion of the basin; and the Interior Highlands, characterized by the Ozark Plateaus region in Missouri. The Interior Plains generally have a flat to gently rolling topography. The Black Hills of South Dakota and the Sandhills of Nebraska are distinct topographic features in the Great Plains section. Major tributaries to the south and west include: the Yellowstone, Little Missouri, Cheyenne, Niobrara, Platte, Kansas, Osage, and Gasconade rivers; to the north and east are the Milk, James, Big Sioux, Little Sioux, Grand, and Chariton rivers. The Missouri River and its tributaries drain approximately 328.5 million acres within the United States.⁵¹

The average annual precipitation in the basin varies from over 35 inches in the Rocky Mountains on the western edge to about 14 inches on the Great Plains, about 26 inches on the Central Lowlands, and over 36 inches in the Ozark Highlands. The weather in this mid-continent location, however, is known for its wide fluctuations and extremes. It has been estimated that about 70% of the precipitation comes as rainfall during the growing season.⁵²

Abnormally high and low streamflows often result from wide fluctuations in natural runoff.⁵³ The mean annual discharge at Sioux City is 21,212,934 acre-feet and at Omaha is 21,611,819 acre-feet. Below the junction of the Platte River with the Missouri River, the mean annual discharge is 28,776,226 acre-feet at Rulo.⁵⁴

There are six major main stem reservoirs on the Missouri River, all multi-purpose projects constructed by the U.S. Army Corps of Engineers. Fort Peck Reservoir, located in Montana, was completed in 1937. The remaining main stem reservoirs were authorized as part of the Pick-Sloan Plan which was included in the Flood

Control Act of 1944. They are Sakakawea (North Dakota), Oahe (South Dakota), Sharpe (South Dakota), Francis Case (South Dakota), and Lewis and Clark (Nebraska and South Dakota). The Pick-Sloan Plan was designed to provide an irrigation water supply, flood control, hydroelectric power generation, navigation, recreation, fish and wildlife enhancement, and industrial water supply. A number of other projects, primarily for irrigation development and authorized by the 1944 Flood Control Act, have been constructed or are in various stages of planning.

A third major provision of the Pick-Sloan Plan was the continued development of navigation on the Missouri River, supported by releases from the main stem reservoirs and inflows from tributaries. A nine foot deep channel, 300 feet wide, is maintained for 732 river miles from Sioux City, Iowa to the mouth of the river at St. Louis, Missouri, usually from April 1 through December 1.⁵⁵ The navigation channel was authorized by Congress in the Rivers and Harbors Act of 1945 and is currently maintained by the U.S. Army Corps of Engineers. Streamflow for navigation is generally maintained at a minimum of 30,000 cfs during the spring, summer, and fall.⁵⁶

Interstate Arrangements. There are at the present time 8 interstate compacts, 1 international treaty, and 2 interstate decrees controlling some of the tributary waters of eight of the basin states; however, no similar legal agreements currently exist for the Missouri River itself. The **Missouri River Basin Water Resources Plan** recognizes that there are some legal and institutional problems associated with current issues in the basin. The report states that,

Legal responsibilities, in many cases, are reasonably clear. However, as in other parts of the country, institutional arrangements for resolution of current issues in this Basin often lag the technologic and financial means for implementation. Current examples are proposals for coal-slurry pipelines and other lines of transport that would cross several state and hydrologic boundaries; water marketing from main stem reservoirs for industrial purposes; allocation of scarce ground water resources; and determination of Indian and federal reserved water rights. There are many questions of availability and alternative uses of water that focus on the need for advance study to guide efforts in the equitable allocation for consumptive use of water, yet making provisions also for needed reservations for in-stream uses.⁵⁷

Indian and federal reserved water rights are a major issue in the basin due to the large Indian and federal reservations located in the region.



There are 23 Indian reservations in or partially in the Missouri river basin, several of which have large coal deposits. Considerable irrigation has been developed on the reservations; however, the potential for much more irrigation development remains. The situation has been assessed as follows:

In some parts of the Basin there are adequate water supplies to accommodate both Indian and non-Indian development needs, and State water plans can be adjusted to reflect Indian requirements without difficulty. However, in other water-short areas, obtaining adequate supplies of water to provide for tribal needs will, at best, be a difficult achievement. This is particularly true for those tribes located where competing users have already, or are fast approaching the point of oversubscribing the existing supplies of water. The ultimate quantity of water and the pace at which it is made available for Indian development in these critically short areas will depend primarily on the speed by which Indian water entitlements can be legally established in the courts.⁵⁸

Similar problems are associated with reserved water rights on federal lands.

The state of Montana has undertaken the adjudication of all existing claims to the state's water including rights held by the several Indian tribes located in the state with the passage of an amendment to the Montana Water Use Act.⁵⁹ It promises to be a costly and hard-fought battle before any resolution of the issues is reached.

In Nebraska, the Santee Indian Reservation located in Knox County, and the Winnebago and Omaha Indian Reservations overlapping parts of Thurston, Cuming, and Burt Counties, are all situated on the Missouri River and could have potential claims to the river's water.

WATER QUALITY

The quantity of water is very much interrelated with water quality. Any reduction of the quantity of surface water will provide a consequent reduction in water quality. Water quality problems can also exist without and apart from any quantity reductions. The Policy Issue Study on *Water Quality* addresses some of the water quality problems associated with low streamflow. It therefore stands to reason that any reduction of flows on interstate streams flowing in Nebraska will have an impact on the water quality of the stream. At the present time, none of the compacts or decrees to which Nebraska is a party address the water quality aspects of interstate water allocation.

GROUNDWATER

It has been estimated that there is approximately 1.875 billion acre-feet of recoverable, good quality groundwater underlying the State of Nebraska.⁶⁰ Most of this water is contained in the principal aquifer and concentrated in the central part of the state.⁶¹ The principal aquifer refers to the hydrogeologic unit composed of rocks of the Tertiary and Quaternary age from which most of the groundwater utilized in Nebraska is derived.⁶² Many areas near the boundaries of the state lack sufficient amounts of groundwater to sustain significant irrigation development.⁶³ therefore, apart from the differing physical characteristics of groundwater and surface water, and with certain isolated exceptions, groundwater does not present the same types of interstate allocation problems which have been associated with surface water.

There are, however, several groundwater aquifers which underly portions of more than one state. The Madison Formation is an aquifer underlying parts of Sioux and Dawes counties in Nebraska and parts of South Dakota, Wyoming, and Montana. A dispute between South Dakota and Wyoming over a proposal to supply groundwater from the aquifer for use in a coal slurry delivery system gave rise to suggestions that an allocation of water in the aquifer be made to the overlying states. Present plans are to use an alternative water source for that particular project but future projects could again look to the Madison formation for a water supply.

Nebraska's location on the periphery of the Madison Formation does not present any serious concerns at the present time. Irrigation development from groundwater in that portion of the state is minimal with no uses being made of the water in the Madison Formation. Nebraska, however, would be a party to any adjudication or allocation of water in the formation.

The opposite situation exists in the Republican River Basin. Southwestern Nebraska and northeastern Colorado share a common aquifer which is being extensively tapped for irrigation purposes in both states. Water levels are falling in both states and some surface streams relying largely upon ground water discharge for a base flow are showing reduced flows. The general movement of the water in the aquifer is from west to east, with an estimated 46,000 acre-feet entering Nebraska each year. At present, both Nebraska and Colorado are administering their own groundwater management systems and no effort has been made by either state to address interstate impacts of present or future developments.

Another interstate aquifer which has received

some attention in the past is the North Platte alluvium extending across the Nebraska-Wyoming state line. Development in this area, which is hydraulically connected to the river, could have an impact on the quality and quantity of surface water flows.

Much of Nebraska's groundwater is located within the massive formation known as the Ogallala Aquifer. A regional study of the Ogallala aquifer and high plains region is currently being conducted, with primary responsibility for the task lying with the Economic Development Administration in the U.S. Department of Commerce. The study area covers parts of six states: Texas, New Mexico, Oklahoma, Kansas, Colorado, and Nebraska. Congress authorized the study in 1976 with the passage of Public Law 94-587. The intent of Congress and the objectives of the study are expressed in Section 193 of that law:

In order to assure an adequate supply of food to the nation and to promote the economic vitality of the High Plains Region, the Secretary of Commerce ... is authorized and directed to study the depletion of the natural resources of those regions ... presently utilizing the declining water resources of the Ogallala aquifer, and to develop plans, to increase water supplies in the areas and report thereon to the Congress... In formulating these plans, the Secretary is directed ... to examine the feasibility of various alternatives to provide adequate water supplies to the area ... to assure the continued economic growth and vitality of the region...⁶⁴

It has been reported that in some areas of Nebraska water is being pumped faster than it can be replaced and consequently groundwater tables in those areas are declining. In some places, irrigators along with cities, villages and other landowners have had to lower or replace wells that supply their water. On Frenchman Creek, this groundwater depletion has also reduced the baseflow of the stream and the water supply in Enders Reservoir to the extent that irrigation districts dependent upon the reservoir have received water for only about half their project acres. The problems are not as severe in Nebraska, however, as in other states, such as Texas.⁶⁵

One of the alternatives being examined in the High Plains Ogallala Aquifer Study is the exportation of water from other states to recharge the Ogallala Aquifer. The report on the study will make recommendations for further congressional action.

A number of states, in an effort to conserve and protect their groundwater resources, have prohibited the exportation of groundwater either

absolutely or under certain conditions. Nebraska law permits exportation of groundwater only if the receiving state grants reciprocal rights.⁶⁶ This statute was challenged in *State ex rel. Douglas v. Sporhase*⁶⁷ on the grounds that it violated the Commerce Clause of the United States Constitution as an unreasonable burden on interstate commerce. The Nebraska Supreme Court rejected the argument and upheld the statute. The case was appealed to and heard by the U.S. Supreme Court and was reversed and remanded. This decision could significantly affect a state's ability to prohibit the interstate transport of groundwater.

WEATHER MODIFICATION

Weather modification is another activity which can affect the interstate use of water. It is "a form of atmospheric environmental alteration."⁶⁸ Most of the weather modification projects which have been attempted have been designed primarily for precipitation enhancement or hail suppression. The most common practice consists of "placing silver iodide particles in clouds to serve as nuclei around which cloud droplets might form ice crystals. When large enough, the crystals fall as precipitation from seeded clouds."⁶⁹ Careful attention must be given to inserting an appropriate amount into the right type of cloud at the proper time and place for results to be successful.

Nebraska has had only limited experience with weather modification. Interest in rain enhancement and hail suppression developed in Nebraska in the early 1950's. The Legislature enacted a weather modification law in 1957 providing for the creation of weather control districts. A key provision of the Act was declared unconstitutional in *Summerville v. North Platte Valley Weather Control District*.⁷⁰ The law was amended to remedy the defect; however, no weather control districts have since been created.

Under Nebraska's existing Weather Control Act, the state "claims its sovereign right to the use, for the best interests of its residents, of the moisture contained in the clouds and atmosphere within its sovereign state boundaries."⁷¹ The Act is administered and enforced by the Department of Agriculture. Anyone wishing to engage in weather alteration activities must obtain a license from the Department. The Act, in addition, authorizes the creation of weather control districts upon petition and after a hearing has been held to gather and disseminate information concerning weather control. These districts can then aid in or conduct their own

programs for weather control. The districts are further authorized to levy a tax of not more than 3.5 cents per one hundred dollars on the actual value of all taxable, tangible property in the district.

In recent years, some weather modification projects have been conducted privately around the York area of the state; however, funds were privately collected and the group has now been disbanded. More extensive weather modification research and other activity has been and is being conducted in neighboring states, particularly Colorado and South Dakota.

FOOTNOTES

1. **Report on the Framework Study**, Nebraska Soil and Water Conservation Commission, May 1971, p. 29.
2. **Id.** at 132.
3. Bentall, R. & Shaffer, F.B., "Availability and Use of Water in Nebraska, 1975," Nebraska Water Survey Paper No. 48, June 1979, p. 45 & p. 77.
4. Mean Annual Precipitation for Station No. 1575 (Chadron Airport) is 14.96 inches, Retrieved from Nebraska Natural Resources Commission Data Bank, hereinafter referred to as NNRC Data Bank.
5. Total Monthly Streamflow in CFS-Days for station No. 4440 (White River at Crawford) for the period from 1931-1980, Retrieved from NNRC Data Bank.
6. **Id.**
7. **Supra** note 3 at 99.
8. **Supra** note 1 at 136.
9. **Supra** note 3 at 45 & 77.
10. **Id.**
11. Mean Annual Precipitation for:
Station No. 1045 (Box Butte) is 15.42 inches;
Station No. 8760 (Valentine) is 17.36 inches,
Station No. 5040 (Lynch) is 23.81 inches,
Retrieved from NNRC Data Bank.
12. **Supra** note 3 p.20.
13. Total monthly streamflow in CFS-Days for station Nos.:
4540 (Niobrara River at Wyo.-Nebr. State line) Mean Annual Discharge is 1479.60 CFS-Days (1955-1980);
4655 (Niobrara River near Verdel) Mean Annual Discharge is 566, 583.70 CFS-Days (1938-1980);
Retrieved from NNRC Data Bank.
14. Total Monthly Streamflow in CFS-Days for Station Nos.:
4540 (Niobrara River at Wyo.-Nebr. State Line)
4655 (Niobrara River near Verdel)
4535 (Ponca Creek at Anoka)
4536 (Ponca Creek at Verdel)
Retrieved from NNRC Data bank.
15. 1963 Laws, c. 332, p. 1063.
16. **Supra** note 3 at 45 & 77.
17. Mean Annual Precipitation for Station Nos.: 1145 (Bridgeport) is 15.71 inches, and 4455 (Kingsley Dam) is 18.32 inches. Retrieved from NNRC Data Bank.
18. "Report on the North Platte River Basin," U.S. Dept. of Interior, Bureau of Reclamation, Region 7-Denver, Colorado, June 1957, p. 49-51.
19. **Supra** note 3 at 20.
20. Total Monthly Streamflow in CFS-Days for Station Nos.:
6745 (North Platte River at Wyo.-Nebr. State Line) Mean Annual Discharge is 279,630.13 CFS-Days (1929-1980);
6930 (North Platte River at North Platte) Mean Annual Discharge is 298,048.52 CFS-Days (1930-1980);
Retrieved from NNRC Data Bank
21. **Id.**
22. *Nebraska v. Wyoming*, 325 U.S. 589 (1945). Colorado was impleaded as a defendant in the case and the United States was granted leave to intervene. 296 U.S. 533; 304 U.S. 545.
23. **Id.** at
24. **Id.** at 672.
25. "Report", **supra** note 18 at 54.
26. *Nebraska v. Wyoming*, 325 U.S. 589 (1945).
27. Mean Annual Precipitation for Station Nos.:
7830 (Sidney) is 16.36 inches, and 0865 (Big Springs) is 17.41 inches;
Retrieved from NNRC Data Bank.
28. **Supra** note 3 at 45 & 77.
29. **Supra** note 3 at 20.
30. Nebraska Resources Development Fund Files.
31. Total Monthly Streamflow in CFS-Days for Station Nos.:
7640 (South Platte River at North Platte) Mean Annual Discharge is 174,284.85 CFS-Days (1902-1980);
7655 (South Platte River at North Platte) Mean Annual Discharge is 130,619.94 CFS-Days (1931-1980).
Retrieved from NNRC Data Bank.
32. Total Monthly Streamflow in CFS-Days for Station Nos.:
7640 (South Platte River at Julesburg)
7655 (South Platte River at North Platte)
7625 (Lodgepole Creek at Bushnell)
7635 (Lodgepole Creek at Ralton)
Retrieved from NNRC Data Bank.
33. 1923 Laws, c. 125, p. 299.

34. Mean Annual Precipitation for Station Nos.:
2741 (Enders Lake) is 18.37 inches;
5388 (Medicine Creek Dam) is 20.01 inches;
3595 (Harlan County Lake) is 22.02 inches.
Retrieved from NNRC Data Bank.
35. Total Monthly Streamflow in CFS Days for station Nos.:
8245 (Republican River at Benkleman) Mean Annual Discharge is 32,539.89 CFS-Days (1947-1980)
8530 (Republican River near Guide Rock) Mean Annual Discharge is 127,002.92 CFS-Days (1950-1980);
Retrieved from NNRC Data Bank.
36. **Id.**
37. **Supra** note 1 at 193.
38. **Supra** note 3 at 45 & 77.
39. **Supra** note 3 at 20.
40. 1943 Laws, c. 109, p. 377
41. Mean Annual Precipitation for Station Nos.:
5565 (Minden) is 24.46 inches (1948-1980);
3735 (Hebron) is 28.16 inches (1948-1980).
Retrieved from NNRC Data Bank.
42. **Supra** note 1 at 200.
43. **Supra** note 3 at 45 & 77.
44. **Id.**
45. **Supra** note 1 at 205.
46. Mean Annual Precipitation for Station Nos.:
2020 (Crete) is 30.05 inches (1948-1980);
0620 (Beatrice) is 30.39 inches (1948-1980).
Retrieved from NNRC Data Bank.
47. **Supra** note 3 at 45 & 77.
48. Total Monthly Streamflow in CFS-Days for Station Nos.:
8840 (Little Blue River near Fairbury) Mean Annual Discharge is 133,499.18 CFS-Days (1910-1980);
8820 (Big Blue River at Barneston) Mean Annual Discharge is 285,398.56 CFS-Days (1932-1980).
Retrieved from NNRC Data Bank.
49. **Id.**
50. **Neb. Rev. Stat.** App., Vol 2A.
51. "The Missouri River Basin Water Resources Plan", Missouri River Basin Commission, August, 1977, p. 15.
52. **Id.** at 17.
53. **Id.** at 24.
54. Total Monthly Streamflow in CFS-Days for Station Nos.:
4860 (Sioux City, IA) Mean Annual Discharge is 10,692,002.89 CFS-Days (1928-1980);
6100 (Omaha) Mean Annual Discharge is 10,893,054.19 CFS-Days (1928-1980);
8135 (Rulo) Mean Annual Discharge is 14,504,145.81 CFS-Days (1949-1980);
Conversion rate used 1 CFS-Day = 1.984 acre-feet
Retrieved from NNRC Data Bank.
55. Plan, **supra**, note 51 at 27.
56. **Id.**
57. **Id.** at 42.
58. **Id.** at 42.
59. 1979 Mont. Laws, ch. 697.
60. Bentall & Shaffer, **supra**, note 3 at 32.
61. Policy Issue Study on "Groundwater Reservoir Management", Nebraska Natural Resources Commission, March 1982, p. 21.
62. **Id.** at 1.
63. **Id.** at 27.
64. Public Law 94-587.
65. "Summary of the Nebraska Research for the Six-State High Plains Ogallala Aquifer Study", Nebraska Natural Resources Commission, December 1981, p. 5.
66. **Neb. Rev. Stat.** §46-613.01 (Reissue of 1978).
67. 208 Neb. 703, 305 N.W. 2d 614 (1981), **rev'd** in part 102 S.ct. 3456 (1982).
68. Davis, R.J. "Weather Modification, Interstate Legal Issues," 15 **Idaho L. Rev.** 555 (1979).
Id. at 555.
69. 170 Neb. 46, 101 N.W. 2d 748 (1960).
71. Nebraska Weather Control Act, **Neb. Rev. Stat.** § 2-2401 **et seq.** (Reissue of 1977).

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CHAPTER 2

RESOLVING INTERSTATE WATER PROBLEMS

INTRODUCTION

The purpose of this chapter is twofold: (1) to give the reader some idea of the types of interstate water uses which could have an impact on Nebraska water supplies, and (2) to examine the traditional institutional mechanisms which have been used to allocate the waters of interstate streams between states and to resolve disputes which may arise.

Examples of interstate water use are numerous and varied, and include the storing of water for irrigation in one state which may reduce streamflows in a downstream state and interstate transfers of water for energy development projects. There are clearly a number of interests, often diverse, in the development of interstate water resources. Development in one state can have an impact on the availability of water in other states. Consequently, the potential for these interests to become conflicting and "the frequency and seriousness of these allocation problems [are] certain to increase as water development accelerates."¹

The states currently have the primary responsibility for the conservation and protection of their water resources. It should be noted, however, that "[t]he water cannot just be dammed up at the border and retained for use within the state. There is no way to make claim to all the state's water which would be effective against claims by other states and the federal government."² A point is reached where it would probably be in a state's interest to develop institutional mechanisms for achieving cooperative conservation efforts and coordination of water use between states bordering on a river basin or interstate aquifer in lieu of waiting until conflicts develop to seek a resolution.

The following examples are brief descriptions of some of the interstate uses which have occurred or been proposed for interstate streams affecting Nebraska. They are intended as illustrative examples only. No attempt has been

made to inventory the current or potential interstate water use conflicts affecting Nebraska as that is outside the scope of this report.

EXAMPLES OF INTERSTATE WATER USE

Narrows Unit

The Narrows Unit is a multi-purpose dam and reservoir project to be constructed on the South Platte River in Colorado. The project is designed to utilize surplus water normally available in the spring and store it for use during the short irrigation season. The development is planned to "provide supplemental irrigation water, flood control, recreation, and fish and wildlife development, and potential future municipal and industrial supplies."³ The flood control storage apparently will largely control the South Platte River into Nebraska and thus give the capability of reducing substantially that river's contribution to flood flows in the Platte River below North Platte.

Despite these favorable attributes to the proposed Narrows Unit, concern has been expressed over potential impacts in Nebraska. Some of the potential changes which could occur in Nebraska from construction of the project include a decrease in the amount of water available for storage and irrigation diversion in an average year. In some dry years, however, the amount of water available for irrigation diversion will be increased. The reduction of periodic high flows could degrade wildlife habitat due to changes in channel configuration and riparian vegetation. In addition, the concentration of total dissolved solids may be increased to significant levels. Sedimentation problems at diversion works, though, should be lessened as the reservoir will act as a sediment trap.

The Narrows Project has been authorized for construction by the Bureau of Reclamation and

approved by the Congress; funding, however, has been delayed. In a demonstration of support for the Narrows Unit, the Nebraska Legislature adopted Legislative Resolution 26 on March 18, 1981 urging the appropriation of funds by Congress to begin the project. The resolution states that the project "will provide supplemental water for several users along the South Platte River in Colorado thus increasing return flows to the river in Colorado and into Nebraska benefiting downstream Nebraska interests..."⁴

Interstate Energy Development - Coal Slurry

The question of the interstate division of groundwater came up recently in the context of a dispute between South Dakota and Wyoming over a proposal to take groundwater from the Madison formation, an aquifer underlying parts of both states and Nebraska, for use in a coal slurry delivery system. The State of Wyoming had allowed issuance of a water permit to Energy Transportation Systems, Inc. (ETSI) for water to be used in the operation of a coal slurry transportation project which would move coal from mines in Wyoming to power plants in Oklahoma, Arkansas, and Louisiana. The federal Environmental Impact Statement on the proposed project identified several areas of controversy including "the possible groundwater impacts to present and future uses of Madison aquifer water" and "the transportation of water from an area where readily available water is relatively scarce to an area where it is abundant."⁵

The project would require a total of 20,500 acre-feet of water per year. Under this proposal 20,200 acre-feet would be obtained from the Madison Formation and 300 acre-feet would be acquired from local wells at pump stations along the pipeline route. The major environmental impact identified for the proposed action is that the pumping of water of this magnitude for the 50-year life of the project would decrease the water level in the Madison aquifer within an area that would include the northern part of Sioux and Dawes counties in Nebraska.⁶

An alternative water supply system which has been proposed by ETSI would utilize the Oahe Reservoir on the Missouri River near Pierre, South Dakota, as the major water source for the coal slurry project. As conceived, "[t]here are two options for implementing this alternative: (1) Oahe Reservoir water could be purchased from the State of South Dakota; or (2) Oahe Reservoir water could be purchased from Water and Power Resources Service, [Bureau of Reclamation] a federal agency."⁷

The South Dakota Legislature paved the way

for this alternative when it approved a multi-million dollar agreement with ETSI, Inc. to provide 50,000 acre-feet of Oahe water annually for the coal slurry pipeline. The agreement bars ETSI from using water from the Madison Formation as long as water from the Missouri River is available. At a minimum, before South Dakota can sell the water out of Oahe Reservoir to ETSI, the state must negotiate a contract with the Bureau of Reclamation which manages the reservoir. An argument can be made, however, that South Dakota cannot unilaterally sell the water out of the reservoir.

The other option would be for ETSI to negotiate a water service contract directly with the Bureau of Reclamation. Both of these methods require ETSI to obtain a water right from the state of South Dakota. The states of Missouri and Nebraska have expressed reservations to the sale and diversion of water from the Oahe reservoir fearing it would open the door to attempts for similar diversions by other states.

Marketing Water Out of Federal Reservoirs

The general position of the federal government has been that it has control over the waters stored in its own reservoirs but that as waters are sold, state laws governing the use and diversion of those waters apply and state permits must be obtained where required. The legal authority for the marketing of stored water out of federal reservoirs appears to be based in part on Section 6 of the 1944 Flood Control Act. That authority, however, is not unqualified. Section 6 provides that,

The Secretary of the Army is authorized to make contracts with states, municipalities, private concerns or individuals, at such prices and on such terms as he may deem reasonable, for domestic and industrial uses for surplus water that may be available at any reservoir under the control of the Department of the Army. Provided, that no contracts for such water shall adversely affect then existing lawful uses of such water.⁸

Further support for this authority can be found in the decision in *Arizona v. California*⁹, in which the Supreme Court essentially said that "the power to construct federal enterprises and to store water includes the power to distribute that water among the states in proportions designated by the federal government."¹⁰ In that case, the Supreme Court upheld the Boulder Canyon Project Act of 1928, which created a comprehensive development plan for the Colorado

River, and authorized the construction of the Hoover Dam. One of the principal issues concerned the allocation and apportionment of the lower basin's share of water among the States of California, Arizona, and Nevada. The Court concluded that "[t]he Secretary of the Interior could make contracts for the sale and delivery of water stored in Lake Mead above Hoover Dam, and the use of such waters was prohibited without such a contract."¹¹

Non-Exportation Laws

The controversy surrounding the coal slurry pipeline issue emphasizes the concern states have about sharing the water within their borders with other states. "As sources of supply become increasingly critical, states are raising jurisdictional barriers to water exportations; and for the first time, questions are being raised as to the right of the state to preempt the use of water either directly by legislative proscriptions on extra-territorial diversions, or indirectly by narrow definitions of lawful beneficial uses."¹²

In an effort to conserve and protect their groundwater resources, a number of states have enacted statutes that prohibit the exportation of water, either absolutely or under certain conditions. For example, the City of El Paso, Texas has brought suit against New Mexico in federal court seeking to have a New Mexico statute which prohibits the exportation of groundwater declared unconstitutional.¹³ Two Nebraska landowners appealed to the United States Supreme Court to reverse a decision of the Nebraska Supreme Court upholding the constitutionality of a state statute prohibiting the exportation of groundwater to a state which does not grant similar reciprocal privileges in *State ex rel. Douglas v. Sporhase*.¹⁴ The United States Supreme Court reversed this decision holding that the reciprocity requirement violated the Commerce Clause of the U.S. Constitution as being an unreasonable burden on interstate commerce.¹⁵

There are clearly a number of factors influencing the validity of restrictions in non-exportation statutes. The U.S. Supreme Court's determination that water is an article of commerce requires that state groundwater regulations not be unreasonable burdens on commerce. The conservation and preservation of diminishing sources of groundwater was recognized by the Court as legitimate and important aspects of groundwater regulation. The Court goes on to say that,

The State's interest in conservation and preservation of groundwater is advanced by the first three conditions in §46-613.01 for

the withdrawal of water for an interstate transfer. Those requirements are that the withdrawal of the groundwater requested is reasonable, is not contrary to the conservation and use of groundwater, and is not otherwise detrimental to the public welfare.¹⁶

The Court further suggests that,

If it could be shown that the State as a whole suffers a water shortage, that the intrastate transportation of water from areas of abundance to areas of shortage is feasible regardless of distance, and that the importation of water from adjoining States would roughly compensate for any exportation to those States, then the conservation and preservation purpose might be credibly advanced for the reciprocity provision. A demonstrably arid state conceivably might be able to marshal evidence to establish a close means-end relationship between even a total ban on the exportation of water and a purpose to conserve and preserve water.¹⁷

The particular language of these statutes and their impact on interstate commerce will be strictly scrutinized to determine if they are facially discriminatory.

Grayrocks

The Grayrocks Dam and Reservoir are located on the mainstem of the Laramie River, 10 miles upstream from the mouth, a major tributary of the North Platte River in Wyoming. They provide the primary source of water for the operation of a coal-fired steam electric generating plant, known as the Laramie River Station, located northeast of Wheatland, Wyoming. The dam, reservoir, and power plant together comprise the Missouri Basin Power Project, commonly known as the Grayrocks Project. The Rural Electrification Association (REA) granted a loan guarantee for the Project in 1976 and the Omaha District of the U.S. Army Corps of Engineers (Corps) issued a construction permit in 1978. The reservoir is expected to have a normal storage capacity of approximately 104,100 acre-feet.

Both the North Platte and Laramie rivers are fairly heavily controlled as the United States Supreme Court has issued decrees affecting both rivers. The State of Nebraska became concerned early as to the possible effect the Grayrocks reservoir would have on North Platte River flows and particularly wintertime flows, much of which is stored in downstream Lake McConaughy. Nebraska's objective then became twofold: (1) to limit the amount of water consumed by the power plant to a minimum, and (2) to obtain guaranteed releases from the reservoir to maintain North Platte streamflows.

With the National Wildlife Federation, the National Audubon Society and others, the State of Nebraska filed suit against REA and the Corps to block the project. They alleged that REA and the Corps had failed to comply with Section 7 of the Endangered Species Act and had violated the National Environmental Policy Act of 1969. The federal District Court for the District of Nebraska ruled that there had been a violation of Section 7.¹⁸ Subsequently, the Director of the U.S. Fish and Wildlife Service issued the opinion that the Grayrocks project would likely jeopardize the continued existence of the endangered whooping crane and adversely affect its critical habitat along the Platte River in Nebraska. The



alternative they recommended was the establishment of an irrevocable trust agreement with sufficient income to provide for the protection of the critical habitat of the whooping crane.

The lawsuit was eventually settled out of court with, among other provisions, certain guaranteed releases from the reservoir to the North Platte River, a maximum amount of water that could be consumed by the power complex set at 23,250 acre-feet per year, and a trust fund set up to protect the wildlife habitat of the whooping crane on the Platte River.

OPPORTUNITIES FOR DEALING WITH CONFLICT

The foregoing examples of water development, and factors influencing such development, emphasize the fact that the management of interstate water resources involves multi-state

regions. They also suggest, in part, a reluctance on the part of states to relinquish sovereign rights to regulate, without interference, water use activity within their borders. As one author was inclined to comment, "The Western states have always guarded their waters jealously."¹⁹ The physical and climatological characteristics of most states make such an attitude almost inevitable. However, it is also this attitude which is for the most part the source of much of the conflict that exists with regard to interstate water use.

There are three commonly recognized methods of resolving interstate disputes: (1) adjudication, (2) congressional legislation, and (3) voluntary agreement. This section will address these three methods available for resolving interstate conflicts and allocating interstate waters. There are a number of problems and disadvantages to utilizing these existing mechanisms, particularly in the area of interstate water use. Some of these limitations will also be identified in this section.

Adjudication

The adjudication or litigation of disputes between two or more states always occurs in the United States Supreme Court. The judicial power of the Supreme Court extends "... to Controversies between two or more States...[and in] all cases ... in which a State shall be Party, the Supreme Court shall have original jurisdiction."²⁰ The Congress has further granted to the Supreme Court exclusive jurisdiction over disputes between states.²¹ This means that a lawsuit between two states can be instituted and heard in the first instance in the highest court in the land. This privilege, however, extends only to states acting in their official capacity; the citizens of one state are prohibited (barred) by the Eleventh Amendment to the United States Constitution from suing another state.²² Water users other than states may not sue in the original jurisdiction of the United States Supreme Court. They may, however, be able to bring suit in a state court or federal district court.

There are a number of factors which may make litigation an unattractive alternative, particularly in state and lower federal courts. It's availability "as a last resort," however, gives this method of resolving interstate disputes a coercive value in encouraging states to try other methods of conflict resolution first. The threat of suit between two states in the United States Supreme Court is an even more serious matter. There have been relatively few interstate water disputes settled in this manner, indicating perhaps a preference for other modes of settling disputes.

For those interstate water disputes reaching the Supreme Court, the court has applied, as the guiding principle, the doctrine of equitable apportionment.²³ The decree of the United States Supreme Court in *Nebraska v. Wyoming* (1945)²⁴ was based on this principle. Nebraska sought to have an equitable apportionment made of the North Platte River based on the principle of priority of appropriation applied interstate. The court considered that the literal application of the priority rule might not result in a just, equitable, or even possible solution. The court identified several factors involved in apportioning water in an interstate river between competing states.

For example, the economy of a region may have been established on the basis of junior appropriations. So far as possible those established uses should be protected though strict application of the priority rule might jeopardize them. Apportionment calls for the exercise of an informed judgment on a consideration of many factors. Priority of appropriation is the guiding principle. But physical and climatic conditions, the consumptive use of water in the several sections of the river, the character and rate of return flows, the extent of established uses, the availability of storage water, the practical effect of wasteful uses on downstream areas, the damage to upstream areas as compared to the benefits to downstream areas if a limitation is imposed on the former -- these are all relevant factors.²⁵

These factors were offered for illustrative purposes and do not constitute an exhaustive list. The court recognized that delicate adjustments must be made in apportionment cases.

Nebraska v. Wyoming was important for a number of other reasons. The court accepted jurisdiction to hear the case even though Nebraska had made no showing of actual damage. It was important to the court's decision to hear the case that the river was, in fact, overappropriated -- claims to the water of the river exceeded supply. The court stated that, "[i]f there were a surplus of unappropriated water, different considerations would be applicable. [Here however,] ...there is not enough water in the river to satisfy the claims asserted against it.... The present claimants being states we think the clash of interests to be of that character and dignity which makes the controversy a justiciable one under our original jurisdiction."²⁶ The court concluded that a flat percentage method of apportionment was the most equitable method to allocate the water in the river.

The Supreme Court's exercise of jurisdiction in interstate water cases has been rare for a number of reasons. In the first place, "the

Supreme Court's interstate function is circumscribed by the 'case or controversy' limitations in the Constitution."²⁷ The Constitution states that "The judicial Power shall extend to all **Cases**, in Law and Equity, arising under this Constitution, the Laws of the United States, and Treaties made,... to **Controversies** to which the United States shall be a Party; to **Controversies** between two or more States..."²⁸ (emphasis added). Secondly, the Court "has imposed severe restrictive qualifications, even where jurisdiction exists, on the exercise of that jurisdiction."²⁹ Finally, the Court is "not well-equipped to act as a trial court..."³⁰ A special master is frequently appointed in these water cases to conduct hearings and gather information on the frequently complex issues involved and make recommendations to the Court. The Court itself has expressed its reservations to hearing cases between states. It has proffered that,

The reason for judicial caution in adjudicating the relative rights of states in such cases is that, while we have jurisdiction of such disputes, they involve the interests of quasi-sovereigns, present complicated and delicate questions and, due to the possibility of future change of conditions, necessitate expert administration rather than judicial imposition of a hard and fast rule.³¹

There are, in addition, technical legal problems which can make interstate litigation difficult and cumbersome. One author has pointed out,

"[A] major problem in an interstate suit, particularly with respect to water compacts, is that the federal interests in the subject matter may be so significant as to make the United States an indispensable party, in which event the failure of the United States to consent to be joined in an action by one state against another compacting state may effectively block relief."³²

The Blue River Basin Compact entered into between Kansas and Nebraska in 1971 contains a provision designed to circumvent this event. It stipulates that,

This Compact shall become binding and obligatory when it shall have been ratified by the Legislature of each State and consented to by the Congress of the United States and when the Congressional act consenting to this Compact includes the consent of Congress to name and join the United States as a party in any litigation in the United States Supreme Court, if the United States is an indispensable party and if the litigation arises out of this Compact or its application, and if a signatory State is a party thereto.³³

Congressional Legislation

Congressional legislation has also produced results in reducing and resolving interstate water use conflicts. The congressional action which perhaps brought the most attention to the extent of congressional powers to directly affect interstate water conflicts was the enactment of the Boulder Canyon Project Act of 1928. That act was essentially a congressional apportionment of the waters of the Colorado River necessitated by the construction of Hoover Dam and Lake Mead. It was the first such congressional action, and the only one thus far, allocating waters interstate. The Boulder Canyon Project Act has been interpreted and upheld by the United States Supreme Court on two occasions, most recently in 1964 in *Arizona v. California*.³⁴

Congress passed the Boulder Canyon Project Act because the Colorado River Compact had failed to achieve what Congress had hoped -- that the states could reach an agreement among themselves on each states' share of water. The Act "authorized the Secretary of Interior to construct, operate, and maintain a dam and other works in order to control floods, improve navigation, regulate the river's flow, store and distribute waters for reclamation and other beneficial uses, and generate electrical power."³⁵ It treated the river problem as national rather than local.

The decision of the United States Supreme Court in *Arizona v. California* is significant for two reasons. First, the Court upheld a congressional apportionment of interstate waters. Second, that apportionment was neither controlled by the doctrine of equitable apportionment applied by the court in *Nebraska v. Wyoming*³⁶, nor by the Colorado River Compact. The court held:

In passing the Boulder Canyon Project Act, Congress intended to, and did, create its **own comprehensive scheme** for the apportionment among California, Arizona and Nevada of the Lower Basin's share of the mainstream waters of the Colorado River, leaving each state her own tributaries.... Congress gave the Secretary of the Interior adequate authority to accomplish this division by giving him power to make contracts for the delivery of water and by providing that no person could have water without a contract."³⁷ (emphasis added)

In distinguishing a later case, the Court noted that "because of the unique size and multistate scope of the [Boulder Canyon] Project, Congress did not intend the States to interfere with the Secretary's power to determine with whom and on what terms water contracts would be made."³⁸ The case, *California v. United States*,³⁹ held that Section 8 of the Reclamation Act not

only requires the Secretary to comply with state law when it becomes necessary to purchase or condemn vested water rights. "[I]t also requires the Secretary to comply with state law in the 'control, appropriation, use, or distribution of water.'"⁴⁰

Other pieces of congressional legislation have also had an impact on reducing interstate water conflicts by encouraging states to establish regional management authorities for interstate river systems. The Water Resources Planning Act of 1965 is a good example. This act when first enacted, was hailed as "a new approach not only to water resources development, but also to problem solving in general."⁴¹ It reflected the increasing federal involvement in water resources development. The act's preamble states that its purpose is "to provide for the optimum development of the Nation's natural resources through the coordinated planning of water and related...."⁴²

The act established a federal water resources council and a framework of regional river basin commissions with financial assistance to be provided to state and local agencies in the form of matching grants. The water resources council was "designed to coordinate the planning activities of the several federal agencies concerned with the conservation, development, and use of water resources and to serve as the main channel of communication for state and regional views on federal water resource development."⁴³ It was to be composed of the Secretaries of Interior, Agriculture, Army, Health and Human Services, the Chairperson of the Federal Power Commission, and any other appropriate federal agency head appointed by the President. The President also has the power under the Act to create regional river basin commissions. It has been stated that

[t]he great goal of river basin planning and management over the last half-century has been to achieve meaningful coordination of federal and nonfederal water resources plans and actions. With respect to interstate waters, the search has also been for a mechanism to provide a regional perspective to the development and implementation of a comprehensive plan.⁴⁴

The President also has authority to unilaterally terminate the Commissions, including the Missouri River Basin Commission, which President Reagan did in 1981.⁴⁵ A new Missouri Basin States Association has been formed to represent the interests of the ten states in the Missouri River Basin.⁴⁶ A major priority of the association is to complete the study of the Missouri River basin which was designed to inventory the water in the basin in order to provide member states

with a better understanding of the effect additional water demands could have on the water supply.

A recent development in federal legislation concerns granting the power of eminent domain to interstate coal slurry pipelines. The potential competition between the slurry pipelines and the railroad industry for the transport of coal has produced a number of legal obstacles with respect to crossing railroad "rights of way." Western states are particularly adamant, however, that such eminent domain power not extend to obtaining state granted water rights. Consequently, most of the opposition to such a measure has come from the railroads and western states.

There are a number of other congressional acts, not specifically designed to impact interstate water use, which can significantly affect interstate water development. The most prominent of these include the National Environmental Policy Act (NEPA), the Clean Water Act, and the Endangered Species Act. The Grayrocks example, noted earlier, illustrates very well the kind of unanticipated impact these pieces of federal legislation can have on a variety of interstate water activities. In the Grayrocks dispute, the 404 permit process in the Clean Water Act, NEPA, and finally the Endangered Species Act were used by objectors to the Grayrocks project in an attempt to allocate surface flows on the Platte River.

One sovereign power that is claimed by the state is, "That the state in the exercise of its police power may supervise and control the appropriation, diversion and distribution of public waters of the state..."⁴⁷ With fifty states claiming a strong state interest in controlling the water resources within their boundaries, federal regulation of water resources is more often resisted than pursued. The lack of accord between the states in this area makes congressional legislation a politically volatile issue. For example, a bill has been introduced in Congress by representatives from Missouri, Iowa, and Nebraska which would prevent a state from selling water from an interstate river or aquifer without the consent of all of the affected states in the particular river or groundwater basin. The proposed legislation is in direct response to the announced plans of South Dakota to sell water from Oahe Reservoir on the Missouri River to ETSI, Inc. for a coal slurry pipeline.

In addition, Congressional action can be a lengthy process, often made more so by delays and specific policy controversies. This trait is not unique to congressional legislation, however, as both litigation and compact formation can be time-consuming.

Interstate Compacts

A third method of fostering interstate cooperation and resolving disputes is the interstate compact. It has been used successfully in the area of interstate water allocations. The interstate compact is a legal instrument which combines the characteristics of a contract and a state statute into a composite legal and administrative mechanism. It is usually enacted by a state legislature in much the same manner as other legislation. It also possesses the basic attributes of a contract by conferring rights and obligations on the parties to it: the state and its citizens, and the federal government in some cases. An administrative commission is frequently established with responsibility for implementation of the compact provisions.

The United States Constitution provides authority for the formation of interstate compacts with the limitation that,

No State shall, without the Consent of Congress, ...enter into any Agreement or Compact with another State, or with a foreign Power....⁴⁸

The United States Supreme Court has stated a preference for interstate compacts, in lieu of litigation in the Supreme Court, and that "where possible, states settle their controversies by 'mutual accommodation and agreement'."⁴⁹ Congress has also encouraged "cooperative activities by the States" in the area of water resources.⁵⁰

The general practice for the negotiation of interstate compacts is by joint commissions made up of representatives of each state usually appointed by the governor. It has also been the practice for states to invite federal participation in compact negotiation. Less formal methods for creating a compact are also available. State officials, for instance, could formulate a proposed compact without prior authorization and then have it introduced as legislation in each state's legislature. Formation of a compact normally occurs by having each state legislature enact the **verbatim** compact text in the body of a statute.

The resulting compact does not, however, become effective until approved by Congress. In addition, Congress usually reserves its right to revoke or amend its consent. Another technique used by the Congress is that of "attaching conditions to its consent in order to preserve certain Federal prerogatives which have not been dealt with in the compact itself. Traditionally, most water resource compacts have contained provisions making it clear that the compact is to have no effect on Federal "rights', 'jurisdiction', or 'powers'."⁵¹

The states, however, once they have ratified a

compact by making it part of the states' statutory law, have made the compact "binding on the state and its citizens for the duration of the agreement."⁵² The provisions of the compact itself determine the conditions and procedures for termination or amendment of the compact. A later conflicting state statute cannot impair the agreement and the compact takes precedence.⁵³ Congress, on the other hand, may enact legislation which is incompatible with a compact even though it had previously granted its consent. It has, in fact, been suggested that,

In sum, the legal effect of Congressional consent may be said to be no more than an ad hoc approval by a particular Congress of the purposes of the compact, subject to the right of a later Congress to specifically revoke or amend its consent or to supersede the approved compact plan by conflicting legislation.... But while this uncertain tenure may seem an unsatisfactory foundation for an interstate undertaking, it is no different than the uncertainty attending any Congressional legislation, which is always subject to change.⁵⁴

The compact approach has a number of general advantages over the equitable apportionment approach, discussed with reference to litigation before the United States Supreme Court, as a way of resolving interstate water allocation problems:

1. First, a compact provides certainty and a framework for dealing with the complicated questions of interstate allocation of water...
2. Second, a compact provides increased flexibility. It can provide for the possibility of future change of conditions. Judicial resolutions are limited to the controversy at hand.
3. Third, a compact can provide for expert administration. The judiciary is ill-equipped to deal with the technical issues involved in interstate water management.⁵⁵

The Congress, however, is equally ill-equipped to design and implement a comprehensive plan for apportioning interstate waters.⁵⁶

The advantages of the compact approach have been touted by many and, in the analysis of one scholar, it

Affords a viable and desirable institutional approach to regional water problems in light of the following legal and political criteria[:]

- (1) The availability and adequacy of legal and administrative authority that may be exercised by compact.

- (2) The relative ease of creating, implementing and altering a compact program, including the ability to match function and area and to respond expeditiously to changing needs and conditions.
- (3) The ability to afford and promote meaningful public participation in planning and decision-making.
- (4) The ability to facilitate and achieve productive cooperation and coordination among federal, state, local and private interests.
- (5) Political accountability and responsiveness.
- (6) The ability to establish reasonable visibility and to attract adequate executive leadership and staff.⁵⁷

In addition, the fact that an interstate compact is based on the voluntary agreement of the states involved makes it an attractive method for handling interstate water problems.

"[A] major criticism of compacts is that they require an inordinately long time to negotiate and effectuate by state ratification and Congressional consent."⁵⁸ Delays in this regard are also usually caused by specific policy controversies. It has been suggested the principal drawback of compacts "is the lack of commitment to meaningful attack on regional water problems which has traditionally characterized most compact efforts, perhaps best reflected by anemic grants of authority and financial support."⁵⁹ In addition, compacts suffer in differing degrees from "lack of appropriate enforcement and adjudicatory powers, from interminable negotiating difficulties, from lack of flexibility, and from inadequate regulatory machinery."⁶⁰ In short, states may prefer the compact approach because it permits their active participation in any agreement that is forged, without the imposition of unwanted regulations or exaction of unwilling concessions. At the same time, however, states have been reluctant to grant sufficient powers and authority to a compact commission to insure the development and implementation of significant water resources projects.

Another weakness of compacts that has been identified is that agreements have been negotiated "too precisely and in too much detail, without sufficient information and study of the problems involved. Moreover, compacts have not provided the proper kind of administrative machinery to deal with the evolving problems of a basin."⁶¹ A state should be aware that when it signs an interstate compact it is bound by the terms of that agreement and may change or repudiate the compact only in accordance with

the provisions of the agreement. The state binds its citizens as well, "so that individual rights are affected along with sovereign rights. Thus states may alter, or even abrogate, private water rights by means of interstate water compacts."⁶²

There is one customary formality with regard to the ratification of interstate compacts which should not be underestimated. All congressional action involving interstate compacts has in the past been submitted to the President for approval or disapproval. While there is no constitutional requirement for this final step in the ratification process, Presidential disapproval has necessitated renegotiation in at least one case. On April 2, 1942, President Roosevelt vetoed the original Republican River Compact after Congress had granted its consent. The compact was renegotiated to alleviate the objections and was approved in revised form by both the Congress and the President.⁶³ This emphasizes the wisdom of including a federal representative appointed by the President in compact negotiations.

One final concern with respect to the creation of interstate compacts is "the power of the states and/or Congress to endow a compact entity with adequate revenue raising authority to make its operations largely self-sustaining and independent of the traditional reliance on legislative appropriations."⁶⁴ A compact administration that is financially independent of its component state legislature might be encouraged to take a more regional outlook in its development plans.

Many of these compact weaknesses can be alleviated or eliminated by careful and thorough compact negotiation. One author has recommended that "any effective interstate water compact contain the following provisions.

1. Establishing a compact commission (preferably limited to one commissioner from each state).
2. Conferring adequate enforcement, adjudicatory, and regulatory powers on the commission so that there is continuing supervision with coercive authority...
3. Providing a majority method voting procedure.
4. Provide adequate financing either through the states or through the operation of the commission.
5. Including a federal representative on the commission, preferably with equal rights of the state commissioners.⁶⁵

In summary there seems to be general agreement among observers of the compact approach that it is 'not inherently more cumbersome and time-consuming in its creation and change' than the other approaches to water resource problems.⁶⁶

GROUNDWATER

The methods of resolving interstate water problems which have been discussed have all been in the context of surface water disputes. The steadily increasing use of groundwater, however, has created problems and multiplied the potential for disputes involving the interstate use of groundwater as well. The differing characteristics of groundwater may make it difficult to translate these methods, which have been applied primarily in the area of interstate surface water, into effective means for resolving interstate groundwater problems.

As noted earlier, the State of South Dakota threatened to sue the State of Wyoming to prevent the withdrawal of substantial amounts of groundwater from the Madison Formation, a groundwater aquifer underlying both states, for the purpose of supplying water to ETSI, Inc. for its coal slurry pipeline and for an adjudication of the right to groundwater in the formation. The threatened litigation however has not been instituted, as an alternative water supply source has been proposed and adopted. It is unclear what type of legal theory would be applied in litigation brought to allocate groundwater resources between states.

The Ogallala Aquifer is another groundwater formation underlying six states which has already suffered serious declines in many areas. A study of the groundwater depletions in the region was authorized by the Congress in 1976 with an eye towards development of a plan to increase water supplies in the area. Recommendations on further congressional action should be forthcoming.

Finally, the desirability of compacting to apportion groundwater has been addressed on one occasion in Nebraska. The Upper Niobrara River Compact between Nebraska and Wyoming not only provides an equitable apportionment of the available surface water supply of the Upper Niobrara River Basin, but also provides for "obtaining information on groundwater and underground water flow necessary for apportioning the underground flow by supplement to this compact..."⁶⁷ The compact specifically provides that groundwater investigations were to begin within one year of the effective date of the compact. After an initial data collection period of twelve months, an analysis of this data by Nebraska and Wyoming with the cooperation of the United States Geological Survey was to be made to determine the desirability of apportioning the groundwater supply. If it was decided that an apportionment was not necessary or desirable at that time, reanalysis was to be made at least every two years until an apportionment was

made.⁶⁸ The Compact was ratified by Nebraska in 1963 and Congress in 1969. To date, no such investigations have taken place.

Reference is also made to groundwater in the Blue River Compact but only insofar as necessary to maintain surface flows at the Nebraska-Kansas state line at required compact levels.

OTHER STATES ON WEATHER MODIFICATION

Most interstate weather modification problems in the past have been resolved through cooperation instead of litigation. Local regulation of an activity like weather modification, which can have an interstate impact, inevitably produces some interstate problems. The potential for conflict usually arises in attempting to adjust the rights and liabilities resulting from interstate cloud seeding impacts. For instance, a dispute arose in 1977 between the states of Washington and Idaho over a bill in the Washington legislature which would have appropriated funds for drought relief cloud seeding in the Cascade mountain range. The Idaho Attorney General protested the bill and apparently announced that, "if the bill passed and it could be established that the seeding would cost Idaho water, he was prepared to file a suit in the United States Supreme Court seeking an injunction to stop the seeding."⁶⁹ The alternative of interstate cooperation was selected instead with a proposal for regional coordination of cloud seeding efforts between Washington, Oregon, and Montana.⁷⁰

South Dakota was the first state to develop a statewide weather modification control program, later adding a county-state cost-sharing program.⁷¹ However, during the drought of the mid-1970's interest dwindled and support for funding was withdrawn.⁷² North Dakota has also developed a statewide cloud seeding program modeled after South Dakota's law.⁷³ Even though state funding was cut off in South Dakota, border counties with North Dakota continue their own projects. North Dakota officials have shared radar equipment and provide other assistance to these counties for an interstate weather modification effort.⁷⁴

Some states have placed additional conditions on the "right" to conduct weather alteration activities. New Mexico and Colorado, for example, have laws similar in intent to the groundwater non-exportation statutes discussed earlier. They stipulate that cloud seeding within the state for the benefit of another state whose laws prohibit such seeding for the benefit of New Mexico or Colorado is not permitted.⁷⁵ Utah, in contrast, requires that persons applying for a permit to conduct cloud seeding activities in Utah which have a planned impact in an adjoining state, comply with that state's law as a condition to receiving the Utah permit.⁷⁶

In comparison, federal regulation of weather modification activities is relatively sparse, limited to a 1971 law requiring that such activities be reported to the National Oceanic and Atmospheric Administration.⁷⁷ In addition, projects using federal funds must comply with NEPA regulations.

FOOTNOTES

1. Comment, "Federal Reserved Rights and the Interstate Allocation of Water," 13 **Land & Water L. Rev.** 813 (1978).

2. Ladd, D. E., "Federal and Interstate Conflicts in Montana Water Law: Support for a State Water Plan," 42 **Mont. L. Rev.** 267, 313 (1981).

3. "Narrows Unit - Final Environmental Statement," U.S. Department of Interior, May 14, 1976, p. II-1.

4. Legislative Res. 26, 87th Legislature, 1st Session, **Nebr. Legis. Jnl.** 6734 (1981).

5. Environmental Impact Statement on the Energy Transportation Systems, Inc. Coal Slurry Pipeline Transportation Project - Bureau of Land Management, July, 1981, p. 1.

6. EIS, **supra** note 5 at 2.

7. EIS, **supra** note 5 at 1-60.

8. Section 6, Flood Control Act of 1944.

9. *Arizona v. California*, 373 U.S. 546 (1963).

10. Comment, "Marketing of Surplus Water from Federal Reservoirs," 13 **Land & Water L. Rev.** 835, 842 (1978).

11. Hutchins, W.A., **Water Rights Laws in the Nineteen Western States**, Vol. III, U.S. Department of Ag. Misc. Pub. No. 1206, 1977, p. 26, 34.

12. Martz, C. O. and Grazis, S. L., "Interstate Transfers of Water and Water Rights - The Slurry Issue," 23 **Rocky Mtn. Min. L. Inst.** 33 (1977).

13. *City of El Paso v. Reynolds*, Civ. No. 730 M (D.N.M., filed September 5, 1980).

14. *State ex rel. Douglas v. Sporhase*, 208 Neb. 703, 305 N.W. 2d 614 (1981) **rev'd and remanded** 102 S.ct. 3456 (1982).
 15. *Sporhase v. Nebraska*, 102 S.ct. 3456 (1982).
 16. 102 S.ct. at 3464.
 17. 102 S.ct. at 3465.
 18. *Nebraska v. Rural Elec. Adm'n.*, 12 E.R.C. 1157 (D. Neb. 1978).
 19. Gould, G., "State Water Law in the West: Implications for Energy Development," NTIS Publication, January 1979, U.S. Department of Commerce, p. 19.
 20. **U.S. Const.** art. III, § 2; see also 28 U.S.C. § 1251(a)(1).
 21. 28 U.S.C. §1251.
 22. **U.S. Const.** amend. XI.
 23. Muys, J. C., "Allocation and Management of Interstate Water Resources: The Emergence of the Federal-Interstate Compact," 6 **Den. Jnl. of Int'l. Law & Policy** 307, 309 (1976).
 24. *Nebraska v. Wyoming*, 325 U.S. 589 (1945).
 25. *Nebraska v. Wyoming*, 325 U.S. 589, 618 (1945).
 26. *Nebraska v. Wyoming*, 325 U.S. 589, 610 (1945).
 27. Clark, R. E., **Waters and Water Rights**, Vol. II, § 130 (Indianapolis, Indiana: The Allen Smith Co., 1967) p. 298.
 28. **U.S. Const.** art. III, § 2.
 29. Clark, **Supra** note 27 at 299.
 30. **Id.**
 31. *Colorado v. Kansas*, 320 U.S. 383, 392 (1943).
 32. Muys, J. C., **Interstate Water Compacts - The Interstate Compact and Federal-Interstate Compact**. National Water Commission, Legal Study 14, July 1971, p. 278.
 33. Blue River Basin Compact, art. VIII, § 8.1.
 34. *Arizona v. California*, 373 U.S. 546 (1962), decree entered 376 U.S. 340 (1964).
 35. *Arizona v. California*, 373 U.S. 546, 560 (1962).
 36. *Nebraska v. Wyoming*, 325 U.S. 589 (1945).
 37. *Arizona v. California*, 373 U.S. 546, 564-5 (1962).
 38. *California v. U.S.*, 438 U.S. 645, 674 (1978).
 39. *California v. U.S.*, 438 U.S. 645, (1978).
 40. **Id.** at 674.
 41. Comment, "Water Resources Planning Act of 1965 - An Experiment in Creative Federalism," 42 **Wash. L. Rev.** 952, 955 (1967).
 42. 42 U.S.C. § 1962 (1966).
 43. 42 U.S.C. § 1962 a-3(3)(b) (1966).
 44. Muys, **supra** note 23 at 318.
 45. Exec. Order No. 12,319, 3 CFR 175 (1981).
 46. The ten Missouri River Basin states include Wyoming, Colorado, Nebraska, Minnesota, Iowa, Kansas, and Missouri.
 47. *State ex rel. Cary v. Cocran*, 138 Neb. 163, 168 (1940).
 48. *U.S. Const.* art. I, sec. 10.
 49. *Arizona v. California* 373 U.S. 546, 564 (1962); see also *Nebraska v. Wyoming*, 325 U.S. 589, 616 (1945).
 50. Federal Water Pollution Control Act, As Amended by Clean Water Act of 1977, 33 U.S.C. § 1251 sec. 103(a).
 51. Muys, **supra** note 32 at 283.
- Two of Nebraska's interstate water compacts contain such provisions preserving federal rights, similar to the following:
- Nothing in this Compact shall be construed:
- (a) To affect the obligations of the United States of America to Indians or Indian tribes, or any right owned or held by or for Indians or Indian tribes which is subject to the jurisdiction of the United States.
- (b) To impair or affect any rights or powers of the United States in the water of the Lower Niobrara River and Ponca Creek Basins nor its capacity to acquire rights in and to the use of said waters; **provided that** any of said waters put to beneficial uses within either State by the United States, or by those acting under its authority, shall be taken into account by the Board when determining the extent of use within said State.
- (c) To subject any property of the United States, its agencies, or instrumentalities to taxation by the States or subdivisions thereof, nor to create an obligation on the part of the United States, its agencies, or instrumentalities, by reason of the acquisition, construction or operation of any property or works of whatsoever kind, to make any payments to any State or political subdivision thereof, State agency, municipality, or entity whatsoever in reimbursement for the loss of taxes. Republican River Compact, Art. X, 1943 Neb. Laws, c. 109, p. 377; Wyoming-Nebraska Compact on Upper Niobrara River, Art. IX, 1963 Neb. Laws, c. 332, p. 1063.
52. Muys, **supra** note 32 at 294.
 53. **Id.** see *Dyer v. Sims*, 341 U.S. 22, 28 (1951).
 54. Muys, **supra** note 32 at 293.
 55. Ladd, **supra** note 2 at 274.
 56. Muys, **supra** note 32 at 323.
 57. **Id.** at S-7 to S-8.
 58. Muys, **supra** note 23 at 317.
 59. Muys, **supra** note 32 at 5-7.
 60. King, D. B., "Interstate Water Compacts," **Water Resources and the Law** (Ann Arbor, MI 1958) 355,420.

61. Englebert, E. A., "Federalism and Water Resources Development," 22 **Law and Contemporary Probs.** 325, 341 (1957).
 62. King, **supra** note 60 at 368-9.
 63. King, **supra** note 60 at 361-2. The Republican River Compact between Colorado, Kansas, and Nebraska was finally approved on February 24, 1943. A representative of the President participated in the negotiation. 1943 Neb. Laws, c. 109, p. 377; 57 Stat. 86 (1943).
 64. Muys, **supra** note 32 at 301.
 65. King, **supra** note 60 at 421.
 66. Muys, **supra** note 32 at 360.
 67. Wyoming-Nebraska Compact on Upper Niobrara River, art. I, sec. A, 1963 Neb. Laws, c. 332, p. 1063, 83 Stat. 86 (1969).
 68. **Id.** at art. VI.
 69. Davis, R. J., "Weather Modification Interstate Legal Issues," 15 **Idaho L. Rev.** 555, 556 (1979).
 70. **Id.**
 71. **S.D. Code** §§ 4.2301-.2308 (1939), as amended, (Supp. 1960).
 72. Davis, **supra** note 69 at 558.
 73. **N. D. Cent. Code** §§ 2-07-01 to -13 (Supp. 1978).
 74. Davis, **supra** note 69 at 560.
 75. **Colo. Rev. Stat. Ann.** § 36-20-118 (1973); **N. M. Stat. Ann.** § 75-3-12 (1978).
 76. **Utah Code Ann.** § 75-15-6 (Supp. 1978).
 77. 15 U.S.C.A. § 330-330e (Supp. 1978).
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CHAPTER 3

ALTERNATIVE LEGISLATIVE AND ADMINISTRATIVE POLICY ACTIONS

INTRODUCTION

Preceding chapters have identified some of the potential areas for interstate water use and conflict involving Nebraska and have examined various methods which have been utilized to facilitate the interstate use of water and resolve conflict. One state cannot, of course, dictate water use in another state. A significant effect on use outside of a state's boundaries can be achieved only through cooperation between states, congressional legislation, or litigation. There are certain actions a state can take to better its "bargaining position" in compact negotiations, to strengthen its "case" in litigation, to promote more effective utilization of interstate compacts, to "protect" a state's water for its citizens to the extent that is possible, to achieve more efficient allocation of water among various uses, and perhaps even to increase the supply of water through weather modification. This chapter will identify a broad range of those alternative policy actions for consideration. An explanation of each alternative is presented and accompanied by an analysis of the physical/hydrologic, environmental and socio-economic impacts.

The alternatives contained in this chapter are designed to have an impact on Nebraska's ability to affect to its benefit the interstate use of water. They include an alternative requiring no action, alternatives to seek greater interstate agreement, alternatives to better Nebraska's position for future interstate allocations, and alternatives pertaining to weather modification. As noted earlier in this report, it is not the primary purpose of this study to propose solutions to specific interstate conflicts in which Nebraska might now be or later become involved. With the exception of *Alternatives 2 and 3*, all of the alternatives are therefore of a general nature and not directed towards any particular basin or problem.

While the alternatives listed are not the only policy actions possible, they constitute a repre-

sentative range of the options available. They contemplate both legislative and administrative implementation. None of the alternatives except *Alternative 1* are mutually exclusive - the adoption of one alternative does not necessarily preclude enactment of other alternatives.

The following alternative actions will be described in greater detail in this chapter.

ALTERNATIVE REQUIRING NO ACTION

Alternative #1. Make no change in present policies.

ALTERNATIVES TO SEEK GREATER INTERSTATE AGREEMENT

Alternative #2. Authorize and initiate the negotiation and formation of interstate agreements or compacts on the interstate streams on which no compacts currently exist.

Alternative #3. Authorize and initiate the negotiation and formation of interstate compacts with states sharing interstate groundwater basins with Nebraska.

ALTERNATIVES TO BETTER NEBRASKA'S POSITION FOR FUTURE INTERSTATE ALLOCATIONS

Alternative #4. Declare that natural flow permits may be issued for other beneficial uses including instream uses.

Alternative #5. Provide that certain uses of water are not considered as beneficial uses.

Alternative #6. Strengthen the state's interstate groundwater transfer statute.

Alternative #7. Provide for the reservation of water by the Department of Water Re-

sources to fulfill public interest requirements.

Alternative #8. Seek funding for additional water retention structures.

ALTERNATIVES TO IMPROVE CURRENT SUPPLY

Alternative #9. Authorize a state agency to offer to buy water rights in another state.

Alternative #10. Authorize a state agency to offer to and participate in the construction of projects in other states in return for a voice in project operations.

ALTERNATIVES PERTAINING TO WEATHER MODIFICATION

Alternative #11. Enact a statute requiring that persons comply with an out-of-state law as a condition for receiving a Nebraska permit to conduct seeding activities in Nebraska designed to have an out-of-state impact.

Alternative #12. Authorize and initiate the negotiation and formation of an interstate weather modification compact.

ALTERNATIVE REQUIRING NO ACTION

Alternative #1: Make no change in present policies.

Description and Methods of Implementation. This is sometimes referred to as the “no action” alternative. The state’s present policies regarding the interstate use of water and interstate weather modification would remain unchanged. It is likely that the policy of Nebraska and surrounding states will be to continue to design ways in which to use the waters of interstate streams and groundwater basins to the extent legally permissible within the individual state but with little interstate coordination. The interest which had developed in the early 1950’s in Nebraska for weather modification in the form of rain enhancement and hail suppression has waned considerably and will probably remain minimal. For the most part, the potential for interstate coordination in this area lies mainly in the area of cooperative research projects.

The methods for resolving conflicts which may arise over any particular interstate use will most likely continue along the traditional lines of litigation, congressional legislation, or voluntary agreement. Nebraska has chosen in the past to deal with conflicts on a case by case basis. Some

potential problems have not yet been addressed and no known effort has been made to design Nebraska’s internal water policies so that they would further the state’s interstate posture.

Physical/Hydrologic/Environmental Impacts. If the existing situation in the state continues, it is unlikely that any major changes in existing water use will occur. However, existing state policies as reflected by interstate compacts and court decrees could result in much less water flowing into and available for use in the state. Any impacts on the physical/hydrologic/-environmental condition are likely to be speculative and long-term, and dependent upon the actual interstate conflicts which will arise and the method of resolution selected to deal with them. The result, however, may be increasing uncertainty and apprehension of a secure supply of water, not just an adequate one. The current situation would indicate that Nebraska frequently receives more water into the state than is normally required to be delivered by compact or court decree. Any further developments or conflicts which would reduce this average amount of water and jeopardize the status quo situation could present some serious interstate problems.

Socio-Economic Impacts. Current policy with respect to interstate water uses and conflicts is typified by *ad hoc* responses to problems as they arise. Apparently, little effort has been directed at anticipating problems and seeking solutions that would avoid them. Economically, the cost of reaching efficient solutions to water problems during a crisis environment can be exceedingly high. Furthermore, the existence of a “problem” likely implies an unequal bargaining position among affected parties, making it that much more difficult to fashion an efficient and equitable solution.

A second economic difficulty with existing policy is its tendency to promote maximum water use in Nebraska at the expense of interstate cooperation. Other states promote similar parochial interests. If water is to be used efficiently, state borders should be ignored. On the other hand, individual states have an equitable claim to the water found within their borders. An economically sound policy would be to seek interstate cooperation and establishing a mechanism that would permit efficient use of water while protecting equitable claims of states.

ALTERNATIVES TO SEEK GREATER INTERSTATE AGREEMENT

Alternative #2: Authorize and initiate the negotiation and formation of interstate agreements or com-

pacts on the interstate streams on which no compacts currently exist.

Description and Methods of Implementation. This alternative is most applicable to three particular interstate streams or basins: the White River - Hat Creek Basin, the Lower Niobrara and Ponca Creek Basin, and the Missouri River. With the exception of these three interstate systems, all other major interstate streams affecting Nebraska are covered by compact or decree.

A compact was negotiated with South Dakota for the Lower Niobrara River and Ponca Creek but was never approved by the U.S. Congress. White River and Hat Creek flow northeast out of Nebraska and through Indian reservations in South Dakota. These Indian reservations claim superior rights to the streamflow in the basin under the federal reservation doctrine. These claims may potentially limit surface water development in this area of Nebraska.

Historically the Missouri River has had a plentiful supply of water with no great demand for an interstate allocation. Indian and federal reserved water rights claims, however, could have a potentially serious impact on the Missouri River.¹ In addition, demands for Missouri River water for such new uses as energy development are increasing. These potential demands are generating renewed interest in compact discussions among the Missouri Basin states.

By authorizing and initiating the negotiation and formation of agreements or compacts on these interstate streams, the state would be taking the first step towards establishing firm water rights to the streamflow. Ultimately all the states involved and the U.S. Congress must approve any agreement between states before it becomes effective. In addition, where Indian and federal reserved rights are involved, it will be necessary to inventory and preferably adjudicate and quantify those rights before any compact can be realistically negotiated.

If compacts regarding any of these streams could be finalized, they could provide added protection for both upstream and downstream water rights recognized by the agreement. The compacts could also provide more security in existing water projects and offer a more realistic appraisal of the water available for future project development.

This alternative could initially be implemented by an act of the Legislature. An agency or individual would have to be designated to conduct the negotiations. Considerable time would be involved with the negotiation process. The expense would vary according to the difficulty of

the issues to be addressed but should not be prohibitive.

Physical/Hydrologic/Environmental Impacts. To the extent that any compact, negotiated and approved, does not significantly change Nebraska's current status with respect to inflows and outflows on interstate streams, this alternative should not present any major physical/hydrologic/environmental impacts. However, on the Missouri River particularly, the potential exists for large scale upstream consumption. A compact on the Missouri might guarantee downstream states like Nebraska more water than they would receive if upstream diversions are subjected only to the approval of individual states.

Socio-Economic Impacts. In theory, interstate compacts promote economic efficiency by increasing water users' security of water right. Whether or not the result of a compact is efficient, however, depends on the skill of negotiation and the degree to which they seek to establish an allocation based on notions of economic efficiency. Furthermore, a compact that results in an efficient allocation of water today may result in inefficient allocations over time as economic conditions change. Consequently, compacts must be drafted with a degree of flexibility if long run economic efficiency goals are not to be thwarted.

Alternative #3: Authorize and initiate the negotiation and formation of interstate compacts with states sharing interstate groundwater basins with Nebraska.

Description and Methods of Implementation. Two existing compacts to which Nebraska is a party currently address groundwater with respect to its effect on surface flows: the Upper Niobrara River Compact and the Blue River Basin Compact.

In many situations, it may be that not enough information is available about either groundwater-surface water interrelationships on a given interstate stream or an interstate groundwater basin to make an apportionment. Under these circumstances, a compact could be negotiated to conduct a study for the purpose of making such a determination on apportionment.

Implementation of this alternative could be accomplished in the same way as *Alternative 2*. Legislative action would be needed to assign negotiating responsibilities to a particular agency.

Physical/Hydrologic/Environmental Impacts. Implementation of this alternative could

have a significant impact on water use in the compact area, but the exact nature of that impact is impossible to assess before any agreement has, in fact, been negotiated. Depending upon the purpose of the compact, for example to jointly conduct a study or allocate the water, it might in some cases be necessary to regulate groundwater use.

Socio-Economic Impacts. Groundwater compacts pose many of the same economic issues as were discussed in *Alternative #2*. Additional factors, however, bear on the socio-economic impacts of groundwater allocation. First, and perhaps foremost, hydrologic data may not be available in sufficient form to serve as a basis of a compact. While streamflows can be accurately measured at relatively low cost, determining the amount of groundwater in storage is a complex and costly task. If a groundwater compact is to be effective, the boundaries and storage capacity must be known as well as the rate and direction of water movements in the aquifer. Detailed information can only be developed at great cost particularly if the aquifer does not possess uniform characteristics throughout.

A second socio-economic impact of groundwater compacts relates to the degree of control that must be exercised if compact terms are to be enforced. Without mutual controls on withdrawal rates on both sides of the state line, users in one state will be able to pump water from beneath the other state. The problem raises complex issues that are discussed in other reports.

ALTERNATIVES TO BETTER NEBRASKA'S POSITION FOR FUTURE INTERSTATE ALLOCATIONS

Alternative #4: Declare that natural flow permits may be issued for other beneficial uses including instream uses.

Description and Methods of Implementation. A variation of this alternative first appeared in the Policy Issue Study on *Instream Flows* and is described in more detail in that study. As is stated in that report, the "present law is unclear as to whether natural flow appropriation permits may be issued for instream uses other than hydroelectric power production. This alternative would allow the Department of Water Resources to issue natural flow permits for such uses on stream segments that have significant instream flow values and unappropriated natural flow."²

It has been suggested that Nebraska recog-

nize and appropriate water for instream uses in order to improve its overall position in any future interstate arguments over water. Courts, in general, will consider the amount of water appropriated for legal uses in considering the best allocation scheme. The effectiveness of such an alternative, however, should not be overestimated. Appropriations for instream uses could in fact "use" all the water remaining in the streams and courts will not necessarily allocate enough water to meet all of the state's claims.

Another method of implementation would be to statutorily define beneficial use of water to include instream uses. Beneficial use for the purposes of evaluating an application for an interbasin transfer of water, for example, has been defined to include "reasonable and efficient use of water for domestic, municipal, agricultural, industrial, commercial, power production, subirrigation, fish and wildlife, groundwater recharge, an interstate compact, water quality maintenance, or recreational purposes."³ Current and foreseeable beneficial uses of water in the basin of origin are considered in weighing the benefits to the state in deciding whether to grant an application to transfer water between basins. Broadening the scope of this definition to include all references to beneficial use in the statutes, while not having the same legal impact as actual appropriations, would appear to indicate an overall desire to reserve the waters of the state for use within the state. A court making an allocation, however, would probably not give the same weight to recognized beneficial uses as it would give to issued permits to appropriate.

This alternative could be implemented by an act of the legislature declaring that those instream uses for which it desires natural flow permits to be issued are beneficial uses of water and directing the Department of Water Resources to issue natural flow permits for these uses when requested. The legislature would also have to determine who could acquire these rights.

Physical/Hydrologic/Environmental Impacts. This alternative would help to ensure the availability of water for instream uses. It may also reduce or prevent further alterations in flow that additional water developments might cause, depending on the amount of the right.

The potential environmental and recreational impacts which could result from the implementation of this alternative could benefit the entire state. The benefits could come in the areas of water characteristics, fisheries, recreation, and aesthetics.

Socio-Economic Impacts. Economic efficiency is enhanced by recognizing the value of instream uses. Such uses ought to be included in

the allocation calculus of an interstate stream if an economically efficient allocation of water is to be made. If recognizing instream appropriations or holding instream uses to be beneficial would enhance the prospect of including such uses in any system of interstate allocation, then the alternative would make it more likely that an efficient allocation of water would be achieved.

Alternative #5: Provide that certain uses of water are not considered beneficial uses.

Description and Methods Implementation.

Water in Nebraska can be appropriated only for beneficial uses. The term "beneficial use" is not currently defined in any Nebraska statutes except those pertaining to interbasin transfers. In some cases, narrow definitions of lawful beneficial use have been used to restrict diversions of water. The State of Montana, for example, has enacted a law prohibiting the use of water for the slurry transport of coal.⁴ Similar restrictions as to other uses of water likely to be large interstate uses might also be possible. Care should be used in selecting these prohibited uses so as not to similarly restrict desired in-state uses of water. In light of the decision in *Sporhase*, this alternative could pose some interstate commerce questions.

This alternative could be implemented in one of two ways. The legislature could define beneficial use as excluding those uses for which prohibitions on diversions are desired, or it could take the path of the state of Montana in specifying those uses that are not to be considered as beneficial.

Physical/Hydrologic/Environmental Impacts. The impact of this alternative would depend on what types of water uses were determined to be beneficial and what were not. If the purpose is to prevent large-scale diversions of water out of state, then a long term result may be more water available in the future in the state than would have been if such development had been permitted.

Socio-Economic Impacts. This alternative would have definite negative economic impacts unless the "nonbeneficial" uses were defined as uses that were wasteful and of no economic value. Generally, however, attempts to restrict use, as typified by the Montana coal slurry statute, are economically inefficient on their face. The very purpose of such statutes is to prevent an economic use of water.

Alternative #6: Strengthen the interstate groundwater transfer statute.

Description and Methods of Implementation. In *Sporhase v. Nebraska*⁵, the United States Supreme Court held that the reciprocity requirement contained in Nebraska's non-exportation statute, §46-613.01⁶, was an unreasonable burden on interstate commerce in violation of the Commerce Clause. In declaring water an article of commerce, the Court subjected the state's non-exportation statute to strict scrutiny to determine if it was discriminatory. The reciprocity provision is apparently the only part of the statute which failed to legitimately meet the stated objectives of conserving and preserving diminishing sources of groundwater.

Groundwater regulations which would meet this conservation end might, however, survive the court's strict scrutiny test and offer ways to strengthen the interstate groundwater statute. The state would have to be careful to impose the same restrictions on its own citizens. The Court observed that, "Obviously, a state that imposes severe withdrawal and use restrictions on its own citizens is not discriminating against interstate commerce when it seeks to prevent the uncontrolled transfer of water out of the state."⁷ Whether the state perceives the control of out-of-state transfers of groundwater important enough to justify the same regulation of its own citizens is a policy decision which will have to be weighed.

Examples of restrictions which could be imposed are limitations on transfers not to exceed one quarter mile from the point of withdrawal and specific limitations on quantity.

This alternative could be implemented by an amendment to the statutes. By placing restrictions on transfers not to exceed a certain distance or quantity, the large scale interstate demands for water, such as energy development, would be prevented.

Physical/Hydrologic/Environmental Impacts. Presently, there are only a few isolated situations of groundwater being transferred for use in another state. Consequently, no significant physical/hydrologic/environmental impacts should result immediately from the implementation of this alternative.

With the reversal of the Nebraska *Sporhase* decision by the U.S. Supreme Court, the potential for massive transfers of groundwater continues to exist. The criteria set out in the statute are such that large scale transfers in some areas might not be preventable. This alternative could be used to make them preventable, thus preserving those groundwater supplies for Nebraska use.

Socio-Economic Impacts. An absolute ban on the interstate transfer of groundwater would be economically inefficient. Economic criteria support the use of water where it will earn the

highest return irrespective of the existence of state boundaries. The problem is that an individual state may be disadvantaged by a transfer of water beyond its jurisdiction, even though the transfer itself enhances economic efficiency. This raises significant equity issues. The problem is raised because a state may receive no compensation from the transfer. If the state was able to profit from the transfer, many of its equity concerns would be alleviated.

Alternative #7: Provide for the reservation of waters by the Department of Water Resources to fulfill public interest requirements.

Description and Methods of Implementation. The State of Montana currently permits such a reservation of waters for future beneficial uses including approved instream uses. The reservation right under Montana law is “equivalent to a duly perfected permit right. The reservation receives a priority as of the date the order is adopted by the Board [of Natural Resources]”.⁸ If a reservation meets a legitimate foreseeable need, interstate allocations included, it may be considered; if it is used merely to stake a claim, it probably will not. It has also been noted that the “process must bear some rational relationship to the development of the state’s water resources or it will be considered a sham, as well as becoming vulnerable to constitutional attack.”⁹

This reservation system could prove beneficial to the state by permitting the Department of Water Resources to set aside an earlier priority date for anticipated future beneficial uses which may not yet be ready for actual planning, funding, or construction. This would ensure that all subsequent appropriators were aware of the state’s intent to actively pursue the new use at some later date. It could eliminate the monetary and social costs associated with eminent domain proceedings. It might also preclude other entities and individuals from seeking a permit solely to block a potential project in the future.

This alternative could be implemented by a statutory enactment authorizing the Director of Water Resources to reserve flows and deny water right applications. Criteria would have to be established, probably legislatively and administratively, for evaluating proposed reservations and comparing their benefits to the benefits of other potential uses.

Physical/Hydrologic/Environmental Impacts. This alternative could have significant physical/hydrologic/environmental impacts depending upon the decision made by the Department of Water Resources on whether or not to

make certain reservations. In the short run, it could result in fewer diversions from streams than would be likely to occur under present conditions due to uncertainty as to future availability of water. This could provide benefits in the areas of water characteristics, fisheries, recreation, and aesthetics.

A priority date as of the date the reservation is made could have a definite impact on after-acquired rights, during times of water shortage, once the project is completed. These junior water rights might be required to shut down to satisfy the reservation if not enough water is available.

Socio-Economic Impacts. Reservations would have similar economic impacts to instream appropriations discussed in *Alternative #5*. Instream uses have economic value, although the value may be harder to quantify than for consumptive uses. Given the economic value of instream uses, formally recognizing them through reservations would promote economic efficiency. Furthermore, if reservations increased the chances of instream uses being considered in any interstate allocation of water, the reservation system would help achieve an economically efficient allocation of water among the states.

Alternative #8: Seek funding for additional water retention structures.

Description and Methods of Implementation. An increase in the number of water retention structures at strategic locations across the state would provide more water for beneficial uses and thereby establish certain rights to it. It would be a step toward maximum utilization of water in the state. The rationale for this alternative is much the same as that behind most non-exportation laws—that is that water can be put to beneficial use within the state and measures should be taken to prevent its leaving the state. This alternative would indicate an intent to conserve and preserve the water for use within the state.

It should be noted that if this alternative were combined with an interbasin transfer of water, it could be counter-productive to the overall goal of maximizing the water available for use in Nebraska. It has been argued that once the state begins permitting interbasin transfers to areas within the state which may **need** the water, it becomes more difficult to justify the prohibition of interstate transport of water to an area which may similarly need the water or to complain about interbasin transfers in other states which reduce Nebraska’s supply.

There are a number of ways in which the legislature might provide funding to implement this alternative. They include general fund appropriations, ear-marking of specific tax income (e.g. cigarettes), and financing through the issuance of bonds, among others. The most likely method for disbursement and administration of these funds would be by a state agency through either an existing fund (e.g. Nebraska Resources Development Fund) or a newly created one. Rules and regulations establishing criteria for the distribution and accountability of the funds would have to be developed.

Physical/Hydrologic/Environmental Impacts. An increase in the number of water retention structures would have significant physical/hydrologic/environmental impacts. Supplemental water could be supplied to areas which are currently plagued by wide stream flow fluctuations or have no reliable water supply available. The benefits normally associated with reservoirs and other water retention structures may also be realized. In certain areas, these structures could reduce or prevent flood damage.

On the other hand, if these structures are located on or associated with a stream, the possibility that downstream flows could be reduced is a negative feature. Any alteration in flow is bound to produce some unwanted results, affecting such things as fisheries, recreation, and potential future downstream appropriators.

Socio-Economic Impacts. This alternative is economically efficient only if the water users pay or could afford to pay the full costs of capturing and storing the water. Individual projects would have to be evaluated on a case by case basis. The opportunity cost of using water for instream uses or in other states would need to be ascertained before an economic evaluation of individual projects would be conducted accurately.

ALTERNATIVES TO IMPROVE CURRENT SUPPLY

Alternative #9: Authorize a state agency to offer to buy water rights in another state.

Description and Methods of Implementation. All western states but Nebraska allow the buying and selling of water rights. If Nebraska were able to purchase water rights in Colorado and Wyoming, streamflows, at least in western Nebraska, could be increased. Nebraska could offer to purchase storage rights in upstream reservoirs or large natural flow rights. This water could then be used to satisfy existing water appropriations, increase storage, or apply to new appropriations.

The Department of Water Resources would probably be the agency best suited to carry out this alternative. The legislature could grant authorization to offer to buy water rights in another state. Funding would probably be provided by separate legislative appropriation or through a fund designed specifically for such purchases.

Physical/Hydrologic/Environmental Impacts. If Nebraska were to purchase water rights and storage rights on interstate streams from other states, streamflows on those streams entering Nebraska could be increased. Any further impacts would depend upon the use to which this additional water is put.

Socio-Economic Impacts. States may not possess a sufficient proprietary interest in waters found within their borders to support an interstate "sale" of water. Furthermore, to be safe, all other states on the stream, the federal government, and any affected Indian Tribes would have to consent to the "sale". Consequently, transaction costs would be very high. In contrast to a purchase of water, however, a purchase of storage rights might be arranged. This would put Nebraska in the position of storing its sovereign waters in a reservoir located within another state's sovereign jurisdiction. The economic impacts of any such proposal, however, cannot be determined absent detailed information about an actual proposal.

Alternative #10: Authorize a state agency to participate in the construction of projects in other states in return for a voice in project operations.

Description and Methods of Implementation. An example of implementation of this alternative would be for Nebraska to offer to aid in the construction of the Narrows Project in Colorado in return for some storage rights or some say in the timing of flow release. The North Platte Project in Wyoming and western Nebraska is an example of an existing joint effort in this respect.

Authorization for the implementation of this alternative could be given to a state agency by the legislature. That agency would then determine, on a case-by-case basis, which projects in other states would be worthwhile investments for Nebraska. The legislature then could appropriate funds for the state's share of construction costs.

Another method of implementing this option would be to increase the amount of an existing fund, for example the Nebraska Resources Development Fund, and provide that out-of-state

projects could come in and request assistance from the fund. Criteria could be established for these special projects.

Physical/Hydrologic/Environmental Impacts. The physical/hydrologic/environmental impacts for this alternative are comparable to those for *Alternative 9*.

Socio-Economic Impacts. The economic impact of this alternative is similar to that of the previous one. Precise impacts cannot be determined with detailed knowledge of project proposals. Potentially, however, interstate cooperation in the construction and management of storage projects could yield important efficiencies. As a practical matter, Nebraska's bargaining position might be weakened by the existence of interstate compacts and Supreme Court decrees governing the inflow of water into the state. Since far more water enters the state currently on some rivers than is required, Nebraska's ability to purchase storage space may be limited by the compact or decree absent an agreement to modify the basic allocation documents.

ALTERNATIVES PERTAINING TO WEATHER MODIFICATION

Alternative #11: Enact a statute requiring that persons comply with an out-of-state law as a condition for receiving a Nebraska permit to conduct seeding activities in Nebraska designed to have an impact out-of-state.

Description and Methods of Implementation. The State of Utah has such a requirement as a condition for receiving a Utah permit to conduct cloud seeding activities. Utah law provides that, "cloud seeding in Utah to target an area in an adjoining state is prohibited except upon full compliance of the laws of the target area state the same as if cloud seeding operation took place in the target area state. . . ." ¹⁰ This statute affects only states adjoining Utah; non-bordering downwind states do not receive the benefits of this law. Such a statute would presumably reduce the incidence of conflict arising over cloud seeding activities in the sponsoring state.

This alternative would promote interstate accord particularly where the target area state bans or restricts weather modification activity. It would prevent circumvention of the target state law by prohibiting the activity from being conducted in an upwind state for the same purpose. It also recognizes the potential interstate impact of cloud seeding activities.

This alternative could be implemented by legislative enactment providing that an applicant demonstrate compliance with the target state law before being granted a permit to conduct cloud seeding in Nebraska designed to affect the target state.

Physical/Hydrologic/Environmental Impacts. It is not anticipated that any significant physical/hydrologic/environmental impacts would result from implementation of this alternative.

Socio-Economic Impacts. The socio-economic impacts of this alternative are completely unpredictable. Such a law would improve economic efficiency only if the other state's law was designed to enhance economic efficiency. To the extent that the other state prohibited efficient activity, legislation that would thwart efforts to bypass the prohibition would also be inefficient.

Alternative #12: Authorize and initiate the negotiation and formation of an interstate weather modification compact.

Description and Methods of Implementation. Approximately two-thirds of the states, including Nebraska, have enacted weather-control laws that attempt to regulate the use of moisture artificially retrieved from the clouds. Nebraska "claims its sovereign right to the use, for the best interests of its residents, of the moisture contained in the clouds and atmosphere within its sovereign state boundaries." ¹⁰ Clouds, however, are by nature elusive and a few states have recognized that cloud seeding may have an interstate impact by requiring compliance with out-of-state laws in some cases (*Alt. 11*) or sharing information. North Dakota has even shared radar equipment and provided other technical assistance to border counties in South Dakota whose funding for weather modification has been cut off.

An interstate weather modification compact could be established for a variety of purposes. One would be to authorize joint research activities to gain better information on the impacts of cloud seeding. The Council of State Governments has prepared a suggested weather modification compact. In adopting this type of compact, states would agree to establish a joint weather control project. It would create an Interstate Weather Modification Commission with "authority to gather and disseminate information, acquire facilities, and carry out projects." ¹² It would be funded by member states.

Such a compact would also be a way of keeping abreast of weather alteration activities being

conducted in other states that could have an impact on Nebraska. It might also give Nebraska a greater degree of influence over these activities in other states than ordinarily it would have had. Therefore, while Nebraska might not be able to prevent cloud seeding in the mountains of Colorado, under a compact, it most likely could participate jointly with Colorado in the activity and share in some of the benefits.

The legislature could initiate implementation of this alternative by authorizing or designating an agency to begin negotiations. The Department of Agriculture currently administers the state weather-control law and is, therefore, a likely candidate. However, the Department of Water Resources also is a possibility.

Physical/Hydrologic/Environmental Impacts. It is unlikely that any significant physical/hydrologic/environmental impacts will result by adopting this alternative.

Socio-Economic Impacts. Arguably, many of the effects of weather modification have impact beyond state borders. Consequently, interstate cooperation is necessary if economically efficient weather modification decisions are to be made. Given the infant state of the weather modification art, however, it is questionable whether a meaningful weather modification compact could be negotiated. Generally, however, anything that would encourage 'interstate' cooperation in this area would be desirable from an economic perspective.

FOOTNOTES

1. Report on "Missouri River Basin Water Resources Plan", Missouri River Basin Commission, August, 1977, p. 42
2. Policy Issue Study on Instream Flow, Nebr. Natural Resources Commission, 1982, Alternative #2, p. 61.
3. **Neb. Rev. Stat.** § 46-288 (Supp. 1981).
4. **Mont. Rev. Codes Ann.** § 85-2-104 (Supp. 1981). The law states:
 - (1) The Legislature finds that the use of water for the slurry transport of coal is detrimental to the conservation and protection of the water resources of the state.
 - (2) The use of water for the slurry transport of coal is not a beneficial use of water.
5. *Sporhase v. Nebraska*, 102 S.ct. 3456 (1982).
6. **Neb. Rev. Stat.** §46-613.01 (1943).
7. *Sporhase v. Nebraska*, 102 S.ct. 3456, 3464 (1982).
8. Ladd, D.E., "Federal and Interstate Conflicts in Montana Water Law: Support for a state Water Plan," 42 **Mont. L. Rev.** 267, 312 (1981). See **Mont. Rev. Codes Ann.** § 85-2-316 (1) (Supp. 1981) which provides that, "The State or any political subdivision or agency thereof or the United States or any agency thereof may apply to the board [of Natural Resources] to reserve waters for existing or future beneficial uses or to maintain a minimum flow, level, or a quality of water, throughout the year or at such periods or for such length of time as the board designates."
9. *Id.* at 312.
10. **Utah Code Ann.** § 73-15-8 (Supp. 1980).
11. Nebraska Weather Control Act, **Neb. Rev. Stat.** §§ 2-2401 *et seq.*, § 2-2401 (Re-issue of 1977).
12. Interstate Weather Modification Compact, 38 **Suggested State Legislation** 148, Council of State Governments, 1979.

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CHAPTER 4

RELATIONSHIP OF THIS STUDY TO OTHERS

Each of the policy issue studies being conducted demonstrates the inter-relationship between water policy issues. Water policy is complex, and no method of distinguishing issues can successfully eliminate overlaps. The purpose of this chapter is to identify the most significant relationships between this study and the other policy issue studies being conducted as part of the State Water Planning and Review Process.

Identifying those relationships is important in each case. Such identification promotes awareness of the fact that any particular water policy action will have greater impact upon overall water policy than on the resolution of the immediate issue at hand. The result of this awareness should not be to delay automatically what may otherwise appear to be a favorable action, although that may be appropriate in some cases. However, such awareness should at a minimum discourage actions that will prevent consideration of new information at a later date.

Significant relationships can be identified between the subject of this report, *Interstate Water Uses and Conflicts*, and several of the other policy issue studies being conducted. The extent of that relationship, if any, is addressed study by study in the material which follows.

STUDY #1: INSTREAM FLOWS

Most of the alternatives in this report relate to the allocation of surface water. As a result, those alternatives have a very close relationship to the *Instream Flows Study*. If instream uses are recognized in Nebraska on interstate streams, that recognition could have a significant impact on the amount of water needed by the state to satisfy those uses. More opportunity for conflict with adjoining states will be presented because of the increased demand for the water. On the other hand, official Nebraska recognition of

these instream uses might place the state in better relative position for interstate allocations than if such uses are given no recognition at all. *Alternative #4* in this report is designed specifically with this last point in mind.

STUDY #2: WATER QUALITY

Interstate conflicts over water use are not necessarily limited to issues of quantity. The water quality of interstate streams can also be affected by activities in upstream states. The proposed Narrows Project in northeastern Colorado is an example. Degradation of water quality in Nebraska is expected if that project is completed. None of the compacts or decrees to which Nebraska is a party presently address water quality matters and such matters traditionally have not been addressed in compacts involving other states. More attention to this issue may be expected in the future.

If waste assimilation were recognized as a valid instream use, the *Water Quality Report* would have the same relationship to this report as noted above for the study on *Instream Flows*.

STUDY #3: GROUNDWATER RESERVOIR MANAGEMENT

Alternatives #3 and *#6* in this report deal specifically with the interstate aspects of groundwater use. Both are intended as potential integral components of an overall groundwater reservoir management policy for the state. Both are therefore very closely related to a *Groundwater Reservoir Management Study*. The other alternatives which deal with the allocation of surface water are also related to the *Groundwater Reservoir Management Study*, but not as directly. The relationship which does exist results from the fact that groundwater utilization can affect

surface flows and vice-versa. The Upper Niobrara and Blue River compacts are good examples of how this interrelationship can be recognized in an interstate agreement.

STUDY #4: WATER USE EFFICIENCY

There appears to be little direct relationship between this study and the one on *Water Use Efficiency*. That study will primarily address how water supplies available in Nebraska can be best used within the state. However, efforts to achieve efficiency in use could have an impact either positively or negatively on Nebraska's claims to interstate water. On one hand, it can be argued that we do not serve the state's interest by becoming highly efficient as our demands for water will then be diminished and we will not be entitled to as much in the future. On the other hand, public policy generally favors more efficient uses of water and it could be argued that Nebraska's efforts to achieve increased efficiency should be rewarded when the interstate allocation of waters are being considered.

STUDY #5: SELECTED WATER RIGHTS ISSUES

Report #1, Preferences in the Use of Water. In negotiation or litigation over interstate water uses, the uses afforded statutory preference in Nebraska could affect the state's right to water. Courts will look at state law as one factor in deciding interstate allocations. However, the way in which the state defines beneficial use of water will have as much, if not more, impact in this regard than will the specific order in which those uses are preferred.

Report #2, Drainage of Diffused Surface Waters. No significant relationships with this study have been identified.

Report #3, Water Rights Adjudication. In its comments on the *Water Rights Adjudication Report*, the Commission recommended an alternative which would statutorily specify a number of excuses for non-use of surface water rights for more than three years. If that alternative were adopted, fewer surface water rights would be subject to cancellation. The continued recognition of these rights could increase the number of claims considered in an interstate allocation, thus bettering Nebraska's position in that event.

The *Water Rights Adjudication Report* also deals with the adjudication of previously unquantified water claims like those for Indian and federal reserved rights. While quantifications of these types of rights within Nebraska will likely

have little impact, quantification and exercise of those rights in upstream states could have significant impact on the water supplies available for use in Nebraska.

Report #4, Property Rights in Groundwater. The study on *Property Rights in Groundwater* does not appear to be related to any of the alternatives in this report except *Alternatives #3 and #6*. The nature of the groundwater property right could very definitely affect the ability of the state to negotiate an interstate groundwater compact as is proposed in *Alternative #3*. Implementation of *Alternative #6* would be possible only if certain alternatives in the *Property Rights in Groundwater Report* were not adopted. With a strong private property right, in fact, it is likely that few restrictions on transportation of groundwater across statelines could withstand attack. Additional guidance in this regard is provided in the U.S. Supreme Court decision in *Douglas v. Spohr*.

Report #5, Riparian Rights. The possibility of increasing the number of established and officially recognized claims to surface water is presented by the *Riparian Rights Study*. Any action taken to increase those numbers should enhance Nebraska's position in interstate disputes.

Report #7, Transferability of Water Rights. *Alternative #9* in this report is directly on point, at least in concept, with the issues to be considered in the transferability study. While water rights are not presently transferable in Nebraska except through transfer of the land to which they are attached, *Alternative #9* would take advantage of the laws to the contrary in upstream states.

The relationship of the other alternatives in this report to the study on transferability are less direct. One impact of authorizing the transfer of water rights would likely be the retention of some earlier priority dates. Instead of allowing a water right to be cancelled for more than three years nonuse, an appropriator who no longer desired to use that right might instead sell it to another user. The resulting retention of the earlier priority date might prove to be advantageous in the resolution of an interstate dispute where relative priority dates could be one factor considered.

Report #8, Beneficial Use. Although a task force report has been completed on this particular issue, a report on *Beneficial Use* may not be finalized by the Commission because of the increasingly evident overlap between that study and the other studies being conducted, particularly *Water Use Efficiency*. Whether or not a study on beneficial use is completed, the determination of what constitutes a beneficial use of water in Nebraska could have considerable impact on claims by the state to water in interstate streams. The more beneficial uses which are recognized

in Nebraska law, the better the state position will be when limited water supplies are divided up among states.

STUDY #6: MUNICIPAL WATER NEEDS

No significant relationships have been identified between this study and the *Municipal Water Needs Study* beyond the general issues of quality and quantity discussed earlier in this chapter.

STUDY #7: SUPPLEMENTAL WATER SUPPLIES

The *Supplemental Water Supplies Study* will outline ways Nebraska can make use of its available waters. One of the best ways to build a favorable position for purposes of interstate allocations is to make beneficial use of as much water as possible. *Alternative #8* in this report (additional water project financing) is particularly pertinent. *Alternatives #9* and *#10* in this report are also of significance because they suggest ways to obtain supplemental water for use in Nebraska.

STUDY #8: INTERBASIN TRANSFER STUDY

The *Interbasin Transfer Study* is no longer scheduled to be conducted as a part of the State Water Planning and Review Process. Therefore, no attempt has been made to identify possible relationships with this study.

STUDY #9: WEATHER MODIFICATION

The *Weather Modification Study* has also been cancelled, but portions of that issue are addressed in this report in *Alternatives #11* and *#12*. Those alternatives are restricted to the interstate aspects of weather modification and do not attempt to consider changes in internal Nebraska policy in that regard.

STUDY #10: WATER - ENERGY

STUDY #11: SURFACE - GROUNDWATER INTEGRATION

These two studies are identified and discussed in the September 15, 1982 Annual Report and Plan of Work. The scope of these studies has not been well defined at this time and no attempt has been made to identify possible relationships with this study.

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SUMMARY OF HEARING
REPORT #6, INTERSTATE WATER USES AND CONFLICTS

2:00 p.m., 7:00 p.m.
SEPTEMBER 8, 1982
Lincoln, Nebraska
Nebraska State Office Building

PUBLIC NOTICE

Legal notice of this hearing was published in eight newspapers across the State of Nebraska. Press releases were sent to every newspaper and radio station in the state.

HEARING PROCEDURE

This hearing was held simultaneously with hearings on two other *Selected Water Rights Issues Policy Study* reports and on the *Municipal Water Needs Policy Issue Study*. Robert W. Bell and Henry P. Reifschneider presided jointly over the hearing and James R. Cook conducted the hearing. A brief summary of each report was presented prior to the receipt of testimony. Those present were given an opportunity to testify on all of the reports. An informal question and answer period was then conducted, and an opportunity for additional testimony was offered prior to the conclusion of the hearing.

TESTIMONY OFFERED

1. **Mr. Richard Slama, Lincoln, Nebraska.**
Mr. Slama offered testimony on two major issues addressed in the report on *Interstate Water Uses and Conflicts*: weather modification and recognition of instream uses. He was concerned that more research should be directed towards examining the impact that irrigation may be having on weather and not just on the technical aspects of cloud seeding. He expressed his opinion that the recognition of instream uses was a bad philosophy and that the state would do better to keep as much water in the state as possible and to use it on the land. This could be accomplished, he suggested, by a network of small dams across the state holding up water on streams near the source, and which could also be used to maintain a base streamflow.

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Appendix B

SUMMARY OF HEARING REPORT #6, INTERSTATE WATER USES AND CONFLICTS

2:00 p.m., 7:00 p.m.
SEPTEMBER 29, 1982
Ogallala, Nebraska
Holiday Inn

PUBLIC NOTICE

Legal notice of this hearing was published in nine newspapers across the State of Nebraska. Press releases were sent to every newspaper and radio station in the state.

HEARING PROCEDURE

This hearing was held simultaneously with hearings on two other *Selected Water Rights Issues Policy Study* reports and on the *Municipal Water Needs Policy Issue Study*. Commission members Wayne Johnson, Maureen Monen, and Henry Reifschneider presided jointly over the hearing and James R. Cook conducted the hearing. A brief summary of each report was presented prior to the receipt of testimony. Those present were given an opportunity to testify on all of the reports. An informal discussion with questions and answers was then conducted. An opportunity for additional testimony was offered prior to the conclusion of the hearing.

TESTIMONY OFFERED

1. **Ron Milner, Upper Republican Natural Resources District.** Mr. Milner offered testimony in favor of *Alternative #6*. It was his opinion that Nebraska could not compete with Colorado in preventing the exportation of groundwater out of the State. He cautioned, however, on placing the same restrictions on citizens of Nebraska as on out-of-state citizens. He was not sure he wanted to place this kind of hardship on our own citizens. Distance, he felt, was not a good measure of conservation and might even in-

crease the amount of water pumped out of the state. He reacted favorably to a suggestion that perhaps a law could be framed so that Nebraska won't allow a groundwater permit to be issued if it is not allowed in Colorado.

Further comment was given in support of *Alternative #8* which would seek funding for additional water retention structures. Mr. Milner believed we need more retention dams to increase water supplies in times of shortage. He also made a reference to laws in the States of Montana and Wyoming which provides for a severance tax on coal to be used for water development.

In response to a question concerning the amount and availability of Missouri River water, the Commission's Executive Secretary, Dayle Williamson, pointed out to the group that the Missouri Basin Commission's Hydrology Study, when completed, would provide an accounting system for the actual amount of water in the Missouri River. It will be a better tool in making progress towards a determination of the actual supply of water available in the river.

2. **John Williams, Upper Niobrara-White Natural Resources District.** Mr. Williams testified that consideration of *Alternative #6* needs to go hand in hand with consideration of *Alternative #3*. The latter alternative, in his opinion, deserved a lot of attention. In response to a question as to whether enough information was available to make a compact on an interstate groundwater basin, Mr. Williams replied that if the right kind of geologic information was available and hydrologic computer models were developed, it could be done. He further stated that

while it is not as easy as measuring flow in a stream, we should still be able to get as good a handle on it.

The comment was expressed from the hearing audience that we could go on a percentage basis such as in the North Platte River court decree without specifying a total amount each year.

Mr. Williams questioned whether a compact would be pursued on interstate streams where there are no currently perceived problems. In a reference to the White River, he suggested that this was a special situation with the Pine Ridge Indian Reservation located to the north across the border and that no attempts should be made to interfere with it.

3. Wayne Heathers, Middle Republican Natural Resources District. Mr. Heathers favored recommending *Alternative #8* provided we do not limit our thinking to large structures only. He felt there was a potential for smaller projects such as dams, terraces, and retaining structures to conserve precipitation.

4. Phyllis Lyons, McCook, Nebraska. Mrs. Lyons testified that favorable consideration ought to be given to *Alternative #10* which would authorize a Nebraska agency to participate in the Construction of water projects in other states, particularly with respect to Enders Dam and the Narrows Project in Colorado.

5. Clayton Lukow, Holstein, Nebraska. Mr. Lukow spoke out against the polarization of attitudes that appears to be taking place in states that continue to develop their resources in isolation. He urged that collectively, the citizens of this state should make it known that suing in court is not the best way to go.
