7-1978

New Directions in Western Water Law Proceedings of The Sixth Annual Conference of the Utah Section of the American Water Resources Assoc.

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NEW DIRECTIONS IN WESTERN WATER LAW

Proceedings of

The Sixth Annual Conference of the Utah Section
of the American Water Resources Association

Held at the Ramada Inn, Salt Lake City, Utah

March 8, 1978

Sponsored in cooperation with
Utah Water Research Laboratory at Utah State University
and
Utah Division of Water Resources

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Utah Water Research Laboratory
Utah State University
Logan, Utah 84322

July 1978
NEW DIRECTIONS IN WESTERN WATER LAW

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The Sixth Annual Conference of the Utah Section of the American Water Resources Association

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ACKNOWLEDGMENT

The principal objective of the Utah section is: "To provide a common forum in which professionals in water resources and related areas can meet, discuss, and exchange ideas pertaining to all aspects of water resources research and management." The sixth annual conference of the Utah section was attended by approximately 100 participants. As reflected by the following list of participants, the conference was of interest to people from a wide range of disciplines and occupations including all levels of government and the private sector. It would appear, therefore, that this objective was met, and that gratitude should be expressed to those who planned and sponsored, and particularly to those who prepared and presented the many excellent papers contained in this publication.

The conference program chairman was Jerry Olds. Jerry did an outstanding job of organizing and helping to present the conference. Other members of the program committee were the section officers—Alden B. Davis, Immediate Past President; Trevor C. Hughes, President; Lloyd Austin, Vice President; and Sheldon Talbot, Secretary/Treasurer.

Sincere appreciation is expressed to the Directors of the sponsoring agencies for the financial and other resources which they continue to provide both for the conference and the publishing of these proceedings—Dr. L. Douglas James, Director of the Utah Water Research Laboratory, and Daniel F. Lawrence, Director of the Utah Division of Water Resources.

Gratitude is expressed to all those who participated on the program at the conference. The comprehensive nature and high quality of the papers which follow reflect the very substantial effort which was expended on this program. Special thanks is given to Governor Matheson for his very active support of water resource development in general and his contribution to this program in the form of the opening address. Keith Higginson, the Commissioner of the U.S. Bureau of Reclamation who understands so well the water problems of the Intermountain West, added a great deal to the conference by his provocative luncheon address.

Finally, gratitude is expressed to Donna Falkenborg, UWRL Editor, and her staff for assistance in publishing these proceedings.
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INTRODUCTION

Trevor C. Hughes*

Several factors combined to make western water law a very appropriate and timely general theme for the 1978 conference of the Utah section. First, President Carter's comprehensive review of national water policy was still in process during the conference. A document representing the position of the states which was developed under the leadership of Utah's Governor Matheson by the National Governor's Association had been completed just prior to the conference. Many water resource managers and planners were very concerned about the potential infringements on the traditional state administered system of western water which were being discussed in relation to the review of National Water Policy.

Another factor which produced intense current interest in water law was the 1977 drought. Many people who had become accustomed to the above average water supply of the last decade were reminded very forcefully during 1977 of the crucial role the appropriation doctrine plays in determining how we share the shortages.

The third factor which produced interest in the conference was the growing importance of federal reserved water rights and particularly Indian water rights. If one examines the papers included here with the objective of identifying the most frequently repeated concept it would clearly be the idea that there is a need to quantify Indian and other federal reserved water rights.

A final factor which added to the interest in water law during 1978 was the continuing growth in water demand in general and particularly in energy related water demands. The current and anticipated future difficulties in changes of use of such large quantities of water to energy purposes without disrupting supplies to irrigated agriculture is causing substantial concern.

The morning session of the conference covered a wide range of western water law topics such as impact of the drought and energy related transfers culminating with the luncheon address by the new commissioner of the Bureau of Reclamation. Commissioner Higginson reassured conference participants that Bureau policy will continue to be sensitive to the unique water related problems of the western states; but also reminded them (as did several other speakers) that federal reserved rights do exist and that our attention should be directed to quantifying them through the state administered system of water law rather than ignoring them in the hope that they will go away.

The afternoon session of the conference was devoted entirely to areas of conflict between state, federal, and Indian water rights. The National Water Policy-Federal View discussed by Eliot Cutler was followed by a similar discussion representing the "state view" by both Jack Barnett,

*Associate Professor of Civil and Environmental Engineering at Utah State University, Logan, Utah.
the Executive Director of the Western States Water Council and by Kent Briggs, Administrative Assistant to Governor Matheson. The "state view" portion of this topic is not included in this proceedings since a formal paper was not written and unfortunately the oral presentation was not recorded. Considerable interest was shown by conference attendees in this subject and an extensive informal discussion followed the presentation of the "federal view" paper by Eliot Cutler.

It is hoped that this collection of thoughtful and timely papers which are related under the general rubric of "New Directions in Western Water Law" will provide a useful reference for water managers and planners both in Utah and in the western U.S. generally.
Thank you. I am pleased to be here. I am also more than pleased to look out over an audience that fills the room. That must mean something when you’re talking about water in Utah these days. I think the drought did us a service. It reminded us that we have precious little water in Utah and that our state is the second most arid state in the United States. It directed our attention and pointed our appetite to get into good management of that particular resource; water being the one finite resource that we have in our state and the one which will determine how far we go and what kind of lives we will actually live.

The tradition in Utah with respect to water has been one of reverence, care, and the appropriation system, and I hope that the federal brethren who are here today will remember that we really don’t want to change that system too much, but we are in the midst of a very interesting change in our attitude and our approach to water management and water allocation. Some of the traditional ways that we’ve looked at water use are changing. We are practically, I believe, on the beginning of a new course in the west and particularly in our own state, and we’ve made a real commitment, I believe, as a result of some events which have occurred recently. I think that we basically are at the beginning of a better way to do the job in our state regarding water.

You know when President Carter put together the "hit list" and included the Central Utah Project on it, he didn’t know it at the time, but he may have done us a favor; because at that particular time we were waltzing down the daisy path asking for appropriations for trying to keep the project alive, do a few things here and there, move it along at a pace that wasn’t considered as urgent. But suddenly when we found out that the President was interested in striking a line through the piece of paper and basically said that the CUP was not a viable project, that sparked the interest of the people in the state of Utah from one generation back—the ones that remembered the CUP in its first planning stages. But interestingly enough there was a whole new generation that wasn’t even acquainted with that project. It gave us an opportunity to go out and re-educate those who knew something about it and to newly educate those who knew nothing about it and to put together the resources of this state in back of that project. I can’t remember the exact percentage in the poll supporting the Central Utah Project, but it was something around 85 percent in favor.

Now an interesting thing is happening with respect to that project. We need it desperately in this state for the future of our development and the future of our growth and the future of the management of our resources. When the administration came out recently with a recommendation for 37.5

*Governor of Utah.
million dollars, I think my first reaction and comment was—and it turned out it was a good analysis—a "caretaker" budget that simply will not get the job done. If you realize how much it costs to complete the project and look at the rate of inflation, you'll find that at that rate we'll never complete it. That's just poor management, and we have got to find a way to do a more efficient job. We have got to get the capability level for the Bureau of Reclamation up higher and we have got to do a better job of getting funds.

I was back in Washington a couple of times in February and had meetings with our congressional delegation. All four of them and I sat down and on both occasions we arrived, amazingly enough, at unanimity on the Central Utah Project. We all feel exactly the same way about it. We want to see it built. We want to see it built properly and we want it to do the job that it is intended to do. So, we examined the capability which the Denver office of the Bureau of Reclamation had indicated was available this year—between 52 and 53 million dollars. That is the sum we are going for this year with respect to the Central Utah Project. It will allow us to begin four new projects—the Upper Stillwater, the Jordanelle, the Uintah, and the Upalco units. We are ready to move; we need that support; and we have done our homework. We need the help of everybody in our state to do it. I am happy that some of our federal friends are here today and maybe they will be willing to take a message back to the administration for us.

I was pleased that Dr. Hughes mentioned in my introduction the commitment which Utah has made of its own resources to develop and protect the water that we have left. For the first time in the history of our state, in the last budget session, we've bonded for medium-size water projects with state dollars. That has never happened in the history of the state of Utah. I proposed four bonding proposals to our last session of the Legislature. I found mixed success; but the one which was the grand champion in terms of uniform support, almost without exception, was the proposal to bond for medium-size water projects. That piece of legislation sailed through; it wasn't a partisan matter. It was a statewide public policy commitment matter, and I am very proud of the Legislature for favoring it. It indicates that Utah is willing to put its money out in front and be partially responsible for the development of our limited resources.

I have had a great experience working on the national water policy review. Many people in this room have spent a great amount of their time and have invested a great amount of their resources into that project and I am pleased that it is on your program today. It is a matter of great public concern—not just for the west. This is a national water policy review. I have had the opportunity of working with 18 governors throughout the United States who are on the subcommittee on water management. They come from Massachusetts and they come from the south and they come from the west and they come from the midwest and it's a potpourri of interests and concerns and approaches and backgrounds and traditions. We came up with a unified, uniform set of principles from the states' point of view.

When I was in Washington last week for the National Governors' Association, I had the opportunity to present those principles to the entire 50 governors. That water policy position paper was adopted by the entire 50
governors without a dissenting vote. I think it is an indication of the resurgence of the interest of the states in being a full working partner in the concept of federalism, and I can't think of a better place to do it than with water management. Water jurisdiction has traditionally been in the states where it ought to remain, and here is an opportunity for us to step out and show some leadership.

An interesting event is happening in the national water policy review as of yesterday at noon. The federal judge in North Dakota has handed down a restraining order preventing the federal government, the President, Cecil Andrus and the federal system, from proceeding with the national water policy review until an EIS has been completed. (Sorry about that, Keith.) What it means is that the matter will now be delayed for several months; but that does not necessarily mean that the states should sit idly by for that period of time and not do anything. I'll get a copy of the court's order and see what it specifically does. But it appears that the federal government will have to go through the EIS route or take an appeal and see if they can set aside the court's order. In the meantime, I don't think the states should sit by and do nothing. I think we should proceed with the policy, the implementation of those policies as best we can. Because I do believe we are on the right track.

I think the meeting that you have scheduled here today in your conference is important. You are talking about important matters of policy not only for the state of Utah but for the states in the west; and if you talk about the national water policy review we pick up everybody. When it gets right down to it, no matter what we do in this state—no matter how far we go and how fast we develop our resources and how large our population becomes and how many industries we bring in and what we protect environmentally—whatever measurement you want to get into, you will find that one of the ingredients, one of the integral, essential ingredients will be water. And that it is a very finite resource in this state. We need to nurture it, protect it, use it, reuse it and do whatever we can to make certain that it is carefully, carefully protected. I have an idea from the people with whom I deal that they look upon it in that sense. The people that represent us in state government and the people who manage our water conservancy districts throughout our state and the people who are in the water business basically share that same concern. So we're talking on the same wavelength.

I am pleased that you are here today. I am sure you'll have a very successful conference and I'm sorry that I will not be able to remain with you because, after examining the agenda today, it looks a whole lot more interesting than the one that I've got for the rest of the day. But I guess I made my commitments earlier and will have to abide by them. I wish you well, and I hope everything meets your highest expectations. Thank you.
All of you will agree that the subject I have been asked to discuss is indeed very broad in view of the allotted time. I will not, therefore, attempt to give you a detailed description of the way western water law has developed. Instead, I will merely try to set the stage for the two basic themes of this conference: New directions and problems in contemporary western water law (the morning session) and federal-state conflicts in water rights administration (the afternoon session).

With reference to the afternoon session, I would like at the outset to offer a word of caution about the phrase "conflicts between the federal and state governments" over water. Where Congress has exercised its broad powers under the federal constitution over water resources in this country, there can in fact be no conflict with state law because of the supremacy clause of the federal constitution. It is true that the legislative powers of the federal government under the commerce clause, the spending power, the property clause, the treaty power, the war power, etc., are, as one writer put it, "embarrassingly broad." No matter how much you may disagree with some of the decisions of the United States Supreme Court on these legislative powers, the fact remains that they are the supreme law of the land. Occasionally some of the western states must be reminded that they are indeed part of the United States. With these so-called legislative powers must be contrasted certain "proprietary" claims of the federal government which do often conflict with rights which western states have asserted with respect to water. Some at least of these proprietary rights could be relinquished to the states if Congress chooses to do so. Perhaps some of the speakers will wish to comment on this in the afternoon session.

In the United States at the present time, there are three systems of water law. The first—a system we are not much concerned about—is found primarily in the eastern states and is commonly referred to as the riparian system. Actually, many of these states are finding the doctrine to be incompatible with current water conditions and are abandoning it for a more carefully supervised administrative-permit system. But, initially at least the riparian system was geared to ownership of land riparian to a stream. Water could be used only on riparian land, and, more important perhaps, riparian privileges were unquantified and could not be lost by non-user.

In our part of the country, the appropriation system has been judicially administered from as early as 1855. Lawyers who have had some experience with the law of property in general have not found it remarkable in its ramifications. And I, at any rate, do not find it particularly "sacred." Let me explain these observations. The doctrine of prior appropriation had its origin in the days of the California gold rush. The mining camps developed their own rules which gave the prospector who first
marked off his mining claim priority over those who came later. This was simply the application of the time-honored property concept that one who is peaceably in possession is entitled to have his possession protected against late-comers who cannot show a better right. As you know, water was essential in early gold mining, and since it was rarely located near a mining claim, it was logical to extend the mining camp rules by protecting the first person who diverted the water and carried it to his claim. Thus, western water law followed very closely upon the development of mining law on the federal public domain.

The appropriation system gave priority to the first to divert the water. He was not required, as under the riparian system, to use the water on land adjacent to the stream. Nor was he inhibited in diminishing the flow of the stream. The appropriation theory went further, however. The early cases implied a rule which became the cornerstone of western water law, viz., that in times of scarcity, the first appropriator was entitled to all the water he had originally appropriated before a subsequent user was entitled to anything at all. Not all writers have found this aspect of the rule entirely exemplary. In fact, it is difficult to understand how a pioneer society could afford such an incentive to economic development.

Over the years, the appropriation system in the west came to have these features: (1) An actual diversion of the water was required in many states. At an early time, this might have been justified as a method of putting later users on notice. Modern record systems in the state offices make this something of an anachronism, however. (2) Water rights could be acquired only for "beneficial" uses. Most of us now agree that the scope of this concept cannot be limited to uses which were, for example, thought to be desirable in 1896. (3) Any requirement of riparian ownership was eliminated, as I have indicated above. (4) When the appropriator completed his diversion works, the appropriation right was said to relate back to the commencement of the work. In retrospect, it seems clear that the relation back theory was not very encouraging to the private investor because he could never be sure whether he had proceeded with due diligence until some court so found.

In the above analysis of the origin of prior appropriation, I have not meant to suggest that the system was adopted by all western states. As you perhaps know, many states embraced the riparian system at one stage or another, and one of the most vexing problems in western water law today is the array of constitutional issues which are encountered in switching from the riparian system to prior appropriation.

Even in states which have always had the appropriation system, it became evident around the turn of the century that an administratively supervised permit system would avoid many of the defects of the old system. Without going into too much detail, it will perhaps suffice to say that the permit system made it possible to have a central recording office for all claims to the use of water. Moreover, the permit system encouraged state regulation of new water projects. The early approach had suffered from the fact that it was judicially administered on an ad hoc basis. After the establishment of the permit system as the exclusive method of acquiring a water right, legislation relating to abandonment and forfeiture of water rights was enacted in most states. Statutes of this type have not worked particularly well because they seem to encourage wasteful use of water in order to avoid forfeiture.
A third system of water rights is superimposed upon the state riparian or appropriation systems in this country. It is the system of reserved water rights owned by the United States government. I want to touch upon this area only briefly because the topic will be covered by two of the speakers this afternoon. But, I think it is important at this point to realize that the federal reserved water rights are proprietary claims. Their origin is not particularly complicated. It is somewhat more difficult to justify their existence.

In 1935, the Supreme Court was asked to rule upon the question whether federal riparian rights attached to lands patented by the United States under the general public land statutes. The question was answered in the negative, and, by way of dictum, the court relied primarily upon the Desert Land Act of 1877 as constituting a grant to the western states of the right to establish their own systems of water law. Twenty years later, the court found, however, that this grant to the states was capable of being revoked and that when the federal government reserved or withdrew federal land from the operation of the general public land statutes, it did in fact revoke the grant. By 1963, it was well-established that federal water rights attached to all federal reserved land. Parenthetically, it might be noted that reserved water rights for Indian reservations were recognized as early as 1908. Reserved water rights for other federal installations have a comparatively recent history, as I have indicated above.

It is an understatement to say that the recognition of federal reserved water rights came as something of a shock to the western states. The adverse reaction stemmed in part from the nature of these water rights. Like riparian rights, they exist regardless of whether the water has ever been used by the federal government. Moreover, they include as much water as the federal government may find reasonably necessary for the future needs of the particular federal installation. In other words, they are unquantified. Like appropriation rights, their priority dates from the time of the federal withdrawal or reservation. It was thought by many in the west that this priority would endanger private appropriation rights acquired under state law after the federal withdrawal. Quite recently the Supreme Court has indicated that the scope of these federal water rights cannot be narrowed by balancing federal and state interests in the resources.

The fact that these federal water rights are unquantified has caused the most difficulty. The Supreme Court has recently held that they may be quantified in suits in either federal or state courts and that, in most cases, the federal courts must decline jurisdiction if there is a contemporaneous proceeding in a state court. Even if the suit is in a state court, the scope of these rights remains a question of federal law, of course.

I have only one further observation. The western states have become somewhat paranoid about the federal reserved water rights doctrine. Eventually these water rights will be quantified with the cooperation of federal officials, and I do not think they will represent as much of a threat to state water systems as most people seem to imagine. As far as I can see, there has been no indication that the federal government is prepared to make unreasonable demands on water resources in the western states.
Footnotes

1. For a more complete discussion, see R. Swenson, Legal Aspects of Mineral Resources Exploitation, in P. Gates, History of Public Land Law Development 708-10 (1968).


CURRENT WATER RIGHT PROBLEMS FACING UTAH

by

Dee C. Hansen*

There are currently a number of problems which Utah is facing concerning the administration of its water resources and while we can solve many of these problems through proper planning, they are and will continue to be of importance to the state. The items which I will address are irrigation efficiency, future appropriations of water, Indian and federal reserved water rights, and water for energy development in Utah.

Irrigation Efficiency

Within recent years many of the irrigation water users in Utah, as well as other western states, have converted from flood type irrigation to sprinkler irrigation systems or have greatly improved their flood irrigation systems. In Utah the amount of acreage irrigated by sprinkler irrigation has increased from about 51,000 acres in 1970 to over 525,000 acres in 1977.1

The reasons for the irrigators changing their method of irrigation from flood to sprinkler are: (1) increased application efficiency; (2) elimination or greatly reduced conveyance losses; (3) increased crop production; (4) ability to irrigate rolling or sloping land; and (5) reduced labor costs. Although there are several advantages to the irrigators to convert from flood irrigation to sprinkler irrigation, there are also problems with the administration of water rights associated with this. I will address the problems that Utah is experiencing with respect to irrigators increasing their irrigation efficiency.

In Utah a water right is limited by the beneficial use requirements provided for under the right. Beneficial use (such as irrigated acreage) is the basis, the measure, and the limit to all rights to the use of water in Utah and this is true throughout much of the west.2

In the case of irrigated acreage a duty of water in acre feet is established for the water right and takes into account the following elements: (1) consumptive use; (2) conveyance losses; and (3) application losses. It is the intent in recommending this acre foot duty to give the water user a reasonable amount of water to fully meet the consumptive water needs of the crops, give reasonable allowances for conveyance losses from the point of diversion to the point of application and to allow for necessary losses incurred in applying the water to the field.

The diversion water requirements for land irrigated by flood irrigation compared to sprinkler irrigation differ significantly. With flood irrigation efficiencies of about 50 percent are common, and with sprinkler irrigation efficiencies of about 80 percent are typical. It should be noted that these are general figures and the conveyance and application

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losses vary greatly from farm to farm depending upon the type of soils, rate of water application, length of run, slope, and amount of water applied and the type of irrigation system.

The diversion requirement for flood irrigated land in Utah varies from about 3.00 to 6.00 acre feet per acre. Of this about 20 percent is lost in conveying the water from the point of diversion to the place of use and about 30 percent is lost in applying the water to the field. The water lost, in conveying the water to the field, is a result of seepage from unlined canals and ditches, and though some of this water may be consumed by phreatophytes, much of it is return flow to surface streams or by deep percolation to underground water aquifers. Application losses with flood irrigation are generally quite high because more water is applied to the top of the field than the root zone can hold and that excess is lost through deep percolation. Also, runoff water at the bottom of the field is classified as application loss.

With sprinkler irrigation systems conveyance losses are eliminated and application losses are greatly reduced (some deep percolation is desired to leach salts from the root zone). One loss associated with sprinkler systems not found with flood irrigation is spray losses. However, spray losses are generally less than 5 percent. Thus, by reducing or eliminating many of the losses incurred with flood irrigation, sprinkler irrigators can get by with a diversion requirement of about 30-40 percent less than that needed for flood irrigation.

During the late 1950s and early 1960s the State Engineer compiled Proposed Determination of Water Rights in several groundwater basins in Utah under an adjudication order of the court. At this time, flood irrigation was the method of irrigation and in these Proposed Determinations the State Engineer, after some extensive investigation, recommended to the court a duty of water needed to irrigate crops in these areas. The investigation regarding the duty of water necessary to irrigate an acre of land was very thorough and field tests were conducted over several irrigation seasons on numerous farms. It was only after this investigation that the State Engineer recommended a duty of water to satisfy the irrigation demands of the crops based on the flood irrigation practice.

Because of the control available to the State Engineer by the use of totalizing meters, the rate of discharge was often neglected and in many cases the amount specified in the original application is being exceeded. The State Engineer does not have any great concern over this practice since it permits the water user to pump more water over a shorter period of time and in many cases improves his application efficiency.

The total annual acre feet diversion requirement was specified based on the beneficial use covered under the right. For example, if a water user had a right to irrigate 100 acres then at a diversion requirement of 4.0 acre feet per acre they would be allowed to divert up to 400 acre feet during the irrigation season or annually.

To insure an equitable distribution of water and to prevent waste the State Engineer appointed a commissioner and the water users were required to install totalizing meters on the wells. The water commissioner
reads the meters on a monthly basis and keeps records regarding the amount of water diverted so that the State Engineer can enforce the acre feet limitation. Over the years many water users have come to associate this annual acre feet diversion limitation as the measure of their water right. When in fact, the measure of the water right is the beneficial use (such as irrigated acreage) covered by the original right and the acre feet limitation is only the diversion requirement needed to satisfy the uses covered under their water right.

Then during the late 1960s irrigators began to change from flood irrigation to sprinkler irrigation and they found that they were able to irrigate their land with a diversion of about 2.60 acre feet per acre rather than the 4.0 acre feet per acre required with flood irrigation, they were however, supplying the irrigation requirements of the original acreage. Since they were not diverting the entire amount of water which they had been allotted, many began to break up new land so they could use this so-called "extra water."

By installing a sprinkler system the farmer who originally was irrigating 100 acres by flood irrigation and allowed to divert up to 400 acre feet annually, could now irrigate about 150 acres. Many farmers used this to help justify the expense of the sprinkler system. The State Engineer was not aware of the increased acreage and permission was not given to enlarge the acreage.

At about the same time the acreage enlargement began to occur, groundwater levels started to decrease at a more rapid rate than had been experienced in the past. This rapid decline in water levels concerned the State Engineer, prompting a review of those areas to determine, if possible, the cause for the increased declines. The State Engineer conducted acreage surveys of some of the areas and found numerous farmers had enlarged their acreage, when they installed sprinkler systems. As a result those losses associated with flood irrigation were no longer percolating through the soil mantle to the groundwater basin as return flow but rather through the increased irrigation efficiencies and the acreage enlargement, much of this water was now being consumptively used. Thus, the net depletion to the groundwater basins had increased proportional to the increase in acreage.

On many of the surface streams in Utah the water users in the lower reaches of the streams depend on seepage and return flow from the upper users to supply their water needs. Those farmers on the lower reaches have built reservoirs, irrigation works, and made other investments to utilize these return flows. On those streams which are fully appropriated any increase in depletion will have an effect on other water rights.

There are two basic types of developments regarding sprinkler irrigation systems (or greatly improved flood type irrigation systems) which are occurring on surface streams in Utah that are having an effect on return flow. They are: (1) the enlargement of acreage as a result of installing a sprinkler irrigation system; (2) and the water user who had an inadequate water supply to meet his irrigation needs, except during high flow years, but now with a sprinkler system he is able to irrigate his entire acreage each year. In both of these cases if the development is in the upstream reaches then it could result in a decrease in return flow.
which has perhaps historically went to satisfy lower uses. In these cases one water user's inefficiency is the next water user's right.

Under the water laws of Utah the water user who increases his acreage in this manner is in violation of the law, but the policing and enforcement is very difficult. For a water user to increase his acreage he would need to file a new application to appropriate with the State Engineer and be granted approval before the new acreage is developed. Two of the considerations of the State Engineer are: (1) whether there is unappropriated water in the source; and (2) if the proposed use will impair existing rights.

In Utah as in most of the western states, the doctrine of prior appropriation applies, which means that first in time is first in right. In other words the first person to file is generally given approval first, etc. On many surface streams (and groundwater basins) in Utah the State Engineer has held approval on a large number of applications to permit the collection of sufficient data to determine the availability of unappropriated water.

On the other hand when a water user installs a sprinkler system, and then without any authority increases his acreage, he is consumptively using additional water. If there is additional water in a source that is not fully appropriated, then those users who filed applications to appropriate that have been held without approval should be given first opportunity to develop new lands. On those streams which have already been determined to be fully appropriated no such application could be approved and any increase in depletion will have a detrimental affect on other users.

The case where the water user had an inadequate supply of water for his acreage, except during high flow years, but as a result of installing a sprinkler system he is now able to meet the irrigation requirements of his entire acreage nearly every year is a very complicated problem. The water user is only irrigating land covered by the original water right but the compound effect that this type of development could have on downstream water rights could be significant. The downstream users investment needs to be protected because in the future other water users would be reluctant to build irrigation projects to utilize return flows if they knew that an upstream appropriator could install sprinkler systems which could greatly impair their water supply.

The Sevier River Basin in Utah is one of the most completely developed rivers in the United States. The Sevier River headwaters are in the south-central part of the state and it flows northward for approximately 170 miles and then goes westerly and terminates in Sevier Lake. Sevier Lake is a remnant of Lake Bonneville, as is the Great Salt Lake. Sevier Lake is a saline body of water and since the extensive development upstream, it has just about dried up.

The total annual streamflow of the Sevier River is about 750,000 acre feet. Of this only 13,690 acre feet is discharged into Sevier Lake, mostly as highly saline groundwater and surface water. Only occasional flood flows reach Sevier Lake. The water reaching Sevier Lake is less than 2 percent of the total streamflow of the Sevier River. Therefore, the total efficiency of this river system is nearly 100 percent.
Within the Sevier River Basin irrigation efficiencies of 20 to 50 percent are common in the upstream reaches, with the return flow being diverted by successive downstream appropriators, it has been estimated that the same water is diverted four or five times, because of this it is possible to obtain the high efficiency for the total system.

The relationship between the direct diversion and return flow for one portion of the Sevier River (Sevier to Sigurd Gage) was studied. The calculated average return flow along this portion, for the 1945-54 period was about 76,000 acre feet annually. Return flows are important in the Sevier River Basin and this study illustrates that river diversions through deep percolation do reappear as surface water for rediscussion downstream.

Many sprinkler irrigation projects have been constructed or planned to improve the irrigation efficiency of individual users. As a result, a large portion of the water which has been return flow to the stream is now consumptively used and the downstream water supply reduced. If irrigators were to reduce their diversions and allow an amount of water to pass their diversion point to compensate for return flow there is a problem of timing. The lag time for return flow to reappear to the river is generally about two to four months. Thus, those projects which propose to increase irrigation efficiency may be a benefit to some users, but would impair the rights of others.

This problem is not limited to the Sevier River Basin, but is occurring on nearly every stream in Utah. The question facing the State Engineer is should the water user be forced to continue his inefficient application of water to prevent the possible interference of rights supplied in part from return flow, or in other words is the water user limited to the actual consumptive use that has occurred over the years or does he have some incentive to improve his efficiency by obtaining more consumptive use and better crop production. You can envision the problems this could and is creating for the administrative agency.

The problem of increasing irrigation efficiency is a very important area of concern in Utah as well as throughout the western United States. While it is essential that we use our limited water resources to the fullest extent possible, it is also necessary to examine what the effects of increasing one water user’s irrigation efficiency has on other water rights in the system.

Future Appropriations of Water

Of the major drainage basins in Utah there are only two in which sufficient quantities of water remain to be appropriated. These two are the Bear River and Upper Colorado River Basins.

Within recent years the Upper Colorado River Basin of Utah has been an area of considerable interest for its potential energy resources. Although a number of projects proposed in this region of Utah have not materialized, the availability of water has not been an obstacle to energy development, but rather, other constraints have been the problem.
The State of Utah is apportioned 23 percent of the water available to the Upper Basin states. Based on the assumption that 6.3 million acre feet is available to the Upper Basin states, Utah would be entitled to about 1.4 million acre feet of depletion from the Colorado River. Taking into account Utah's present depletions, main stem reservoir losses and that water which has been committed to various projects, i.e. Central Utah Project, Utah has about 100,000 acre feet of water remaining to be appropriated in the Upper Colorado River Basin.

The State Engineer currently has unapproved applications on file which total in excess of 6,100 cubic feet per second and/or 5.4 million acre feet of diversion from the system.

While it may be possible to reallocate a portion of the water which has already been committed, but as yet undeveloped, to other uses such as energy development, we are now at a point where future appropriations of water need to be examined carefully. It is imperative that those projects which offer the greatest benefit to the state be considered so that Utah may realize the full potential of both water and mineral resources.

No longer can applications to appropriate water be approved solely on the basis of the doctrine of prior appropriations, which means that first in time is first in right with the first person to file generally being given approval first. In future appropriation of water the public interest aspect will need to be considered.

The question of coal slurry pipelines and the exportation of water across state boundaries through these pipelines is and will continue to be an area of debate. The future will undoubtedly see a number of projects which propose to export Utah's coal resources by means of coal slurry pipelines.

There may be a number of cases where coal slurry pipelines are the best alternative, not only from the standpoint of a feasible project but also to the public welfare of the citizens of the State. Thus we should not exclude the possibility of coal slurry pipelines, but should explore all possible alternatives for the development of the coal resource.

Reserved Water Rights

Another area of real concern to the State of Utah is that of the reserved water rights covered by the reservation doctrine on federal lands and the Winters Doctrine (Winters v. United States, 207 U.S. 564 (1908)) on Indian lands. In the west the method for acquiring a water right has been through the permit system with beneficial use being the limit and measure of the right. The permits in an appropriative right state have traditionally been issued on a first in time first in right basis, until all of the water has been appropriated. Federal reserved water rights and Indian water rights are created outside of this system of state law and exist independently of it. Both of these types of rights originate under federal law.
Some of the important features of federal reserved rights and Indian water rights are: (1) No diversion and application of the water to beneficial use is necessary for the establishment of a water right; (2) no rules of forfeiture apply; and (3) the traditional priority rules of appropriative law do not apply to federal reserved and Indian water rights, because under the traditional system the date of filing for the date when the water right was placed to beneficial use is the priority date.

In both the case of federal reserved and Indian water rights it is not clear, nor has it been completely determined the extent of the uses that these rights cover. In addition, many of these rights have not been placed to beneficial use. Several drainage basins in Utah are fully appropriated, where no surplus or unappropriated water is available. As a result, when the federal government and the Indian tribes begin to actually place their rights to beneficial use, existing water rights established under state law, will be impaired. In these areas it would appear appropriate that some type of compensation be made. These people involved have developed their rights in good faith under state law, while in many cases the federal government and Indian tribes have only claimed a right and have not used it, identified it, or quantified it.

I believe that the federal reserved water rights and Indian water rights can and should be adjudicated in the state courts under existing authority, wherever possible. Once these rights have been identified, quantified and adjudicated, the states should administer and distribute the rights (based on priority) along with those rights established under state law.

The claims for reserved water rights may be acceptable to the state for those uses relating to the original purposes of the reservation at the time the reservation was taken. The potential effects of reserved rights remains an unknown quantity in water resource planning and they need to be defined and inventoried so that proper planning and evaluation can take place.

Summary

While Utah is currently facing several problems concerning the administration of our water resources, we can solve these problems through proper planning.

Utah, as many of the western states, is arid with a limited water supply and much of our present water supply has been developed. It is imperative that we use our remaining supplies in the most beneficial areas so as to enable the state to develop its natural resources.

On many rivers and streams water users in the lower reaches depend on irrigation return flow from the upper users to supply much of their water needs. As irrigators increase their irrigation efficiency, the effects on other water rights needs to be examined.

Indian water rights and federal reserved water rights will impact future water right decisions. Both of these rights are created outside of state water laws and many of these rights are not currently in use. When
these rights are exercised, they could have a significant impact on existing water rights.

References

ACQUIRING WATER FOR ENERGY DEVELOPMENT

by

Frank N. Davis

Introduction

Utah Power & Light Company is acquiring water for steam electric plant developments through several means: by proving up water right applications, by purchase of irrigation rights, by direct water purchase from irrigators and by the purchase of water rights in existing federal irrigation projects. Our objective, of course, is to acquire a long-range water supply to provide reliable electric energy at the lowest cost, taking into consideration environmental factors. The following examples of water acquired are given.

Existing Plants

Gadsby Plant

The water supply for the 230 megawatt Gadsby Plant west of Salt Lake City is acquired from the Jordan River and from Salt Lake City. UP&L Co's right to Jordan River water is covered by virtue of a water right in the amount of 7.78 cfs with a priority of March 30, 1949. Whenever Jordan River water is not available for diversion or becomes too contaminated for use, treated water is purchased from Salt Lake City. About 3500 acre feet of water is used in the Gadsby Plant each year.

Carbon Plant

The average diversion at the 170 megawatt Carbon Plant at Castle Gate, Utah is about 2400 acre feet per year. The water supply is obtained from various water rights, such as natural flow, Scofield storage, leases and wells.

Naughton Plant

At the present time the Naughton steam plant in Wyoming consists of three units with a total generating capacity of about 700 megawatts. The water for plant operation was obtained by acquiring a right to store surplus flows and construction of a 42,000 acre feet reservoir located on the Hams Fork River. Surplus flows are stored in the reservoir from the runoff period for use during the remainder of the year. No irrigation rights were required for the development and water is stored only after irrigation demands have been satisfied.

Huntington & Emery Plant

Two 400 megawatt units were recently constructed near Huntington, Utah (Figure 1 (a)). The first 400 megawatt unit of the Emery Plant near Castle

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Figure 1(a). Huntington.

Figure 1(b). Emery.

Figure 1(c). Naughton.

Figure 1(d). Wellington.
Dale, Utah, will be in service this summer and the second 400 megawatt unit now under construction will be in service in 1980 (Figure 1 (b)). A firm 30,000 acre feet per year of water were acquired for these four 400 megawatt units by construction of a reservoir, Electric Lake and by purchase of irrigation water and water rights. By purchasing approximately 20 percent of the irrigation rights in the Huntington River and construction of a 30,000 acre feet reservoir about 20 miles upstream in Huntington Canyon a firm supply of 12,000 acre feet per year was acquired for use at the Huntington Plant. By purchasing approximately 20 percent of the irrigation rights in the Cottonwood River and 6,000 acre feet of water from Joes Valley Reservoir, an additional firm 11,000 acre feet can be utilized at either the Huntington Plant or the Emery Plant. (Water from Cottonwood and Joes Valley can be utilized at Huntington by exchange.) An additional 7,000 acre feet per year is provided for the Emery Plant by purchase of water supply from the Millsite Reservoir on Ferron Creek. This is a direct purchase at a specified cost per acre foot. In addition, as a part of the purchase agreement, the Company retired approximately 2,200 acres of irrigated land and is constructing 15,000 acre feet of storage capacity at the plant site.

The water supply for the Huntington and Emery units existing or under construction is a blend of providing new reservoir capacity and the acquisition of water formerly used in agriculture. The acquisition of irrigation water was successful by paying a price that was attractive to the irrigators but still allowed a power development which was economical in comparison with other alternatives because of the proximity of coal.

Future Water Supply

General

Figure 2 shows prospective future water development by the Company for power developments through the year 2010. This is based on an estimated load growth of 7.6 percent from 1977 to 1986 and 5.2 percent to 6 percent from 1986 to 2010 (Figure 3). A thirty-two year planning time frame may seem excessive to some. However, by estimating probable long-range electrical energy needs, power plant siting and water development can proceed in an orderly manner with a minimum of conflicts and delay. It is probable that some changes will be necessary in any long-range plan for one reason or another, but, hopefully, as plans change the total water requirement will be kept in mind by all concerned.

The following is intended to outline the water sources and methods of acquisition for seven possible future plant sites. We are making an attempt to prequalify these sites so that water requirements and other needs can be identified and hopefully reserved for future use. Figure 4 identifies the proposed sites:

Emery Plant Units No. 3 and No. 4

Three alternatives exist for a water supply for proposed expansion of the Emery Plant by an additional 800 megawatts (Figure 5). One alternative
Figure 2.
Figure 3.

UTAH POWER & LIGHT COMPANY
CAPACITY REQUIREMENTS
1970-2010

6.0% GROWTH RATE

5.2% GROWTH RATE
Figure 5.
is to purchase water rights from irrigation to provide an additional
firm 14,000 acre feet per year in the area. The tried and true free
enterprise system will be practiced in purchasing these water rights. In
Emery County, farm land has little value without water. The earning value
of irrigated land depends on the water right. Also, an irrigator must
have a sufficient inducement in selling his water rights to compensate for
reduced production of his land. In some cases the farmer may desire to
purchase another farm at some other location. He, of course, must realize
a reasonable margin to change his present situation.

If we are successful in purchasing the additional 14,000 acre feet
some 44,000 acre feet per year will be utilized for power production
out of an average flow in the Ferron, Cottonwood and Huntington Creeks
of 170,000 acre feet per year. Thus, on an average, some 26 percent
of this basic water source would be utilized for power production and
74 percent for agricultural production.

We have tried to minimize the acquisitions of water from irrigators
and the corresponding impact on agricultural productivity. However,
if in the public interest, we have and will endeavor to convert some
agricultural water to power production.

We also have been negotiating with the Muddy Creek Irrigation Company
to fund the construction of a reservoir on Muddy Creek which would provide
a water source for power and to firm up the irrigation supply. A cost
disadvantage in this plan is a 21 mile pipeline to the Emery Plant to
deliver the water.

A third alternative is the construction of a 58 mile pipeline from
Green River to the Emery Plant utilizing prior UP&L Co. filings on the
Green River. A fourth alternative is dry cooling. Of course, if the cost
of water supply for the Emery Plant expansion causes that site to be
overall more costly than constructing at an alternate site, the Emery
Plant expansion would be delayed or even cancelled.

Naughton Plant Units 4 and 5

Increasing the generating capacity of the Naughton Plant (Figure 1
c) by some 800 to 1000 megawatts is a possibility. A water supply would
be provided by enlargement of Lake Viva Naughton Reservoir from the present
capacity of 42,000 to 83,100 acre feet. No irrigation rights will be
acquired by UP&L Co. However, about 10,000 acre-feet of additional storage
capacity will be available for agricultural use during the irrigation
season provided that the reservoir has sufficient water for power require-
ments. The storage capacity for irrigation is to provide a sustained flow
throughout the irrigation season as an incentive for reducing high irriga-
tion diversions in excess of actual needs during the spring runoff period.
A letter agreement with the irrigators has been signed to define the
operating conditions for irrigation and for power use.

Wellington Plant

The most probable water supply for the Wellington Plant Site (Figure 1
d), appears to be the construction of a sixty-five mile pipeline from the
Green River proving up an early filing (Figure 6). A planned 1,000 megawatt plant would utilize some 36,000 acre feet of water annually. Hopefully, the Utah State Engineer would grant a water right based on the priority of the filing and other considerations.

Green River Plant

The Green River Site, Figure 7 (a), is suitable, we believe, for a 1,000 megawatt coal fired capacity and at least 2,600 megawatts of nuclear capacity. This would require a pipeline of some four miles from Green River (Figure 8) and as in the case of the Wellington Site we are hopeful that the State Engineer will grant water rights based on applications previously made by the Company for this water.

Nephi and Delta Plants

Approximately 1,000 megawatts of capacity can be installed west of Nephi (Figure 7 (b)) and 2,000 megawatts north of Delta (Figure 7 (c)). These regions are suitable for construction of coal fired steam electric plants from an environmental standpoint and will be economical in utilization of Kaiparowits coal. UP&L Co. intends to purchase an annual 40,000 acre feet from the Central Utah Project for these sites (Figures 9 and 10). The water supply cost will be high as compared to what would be economic for agricultural purposes.

We are also investigating the possibility of deep wells in the Delta Area which could conceivably supplement the Central Utah water supply. We have indicated this interest to the State Engineer. We understand test wells will be drilled by the State in the Delta Area to establish better data with regard to groundwater potential.

Soda Springs

A possible site for a 1,000 megawatt coal fired plant is located between Soda Springs and Bancroft, Idaho (Figure 7 (d)). Coal for this plant would be transported by rail from Wyoming coal fields. Some years ago UP&L Co. purchased an Idaho filing providing for construction of a 40,000 acre feet storage reservoir near Soda Springs (Figure 11). This filing has been assigned to the State of Idaho Department of Water Resources with provision that the Company retains a priority right in the reservoir if constructed. Water filing is being held in escrow by the State for the Power Company without reducing the priority. However, if another party files to build the reservoir, the filing will be assigned to them if the Power Company doesn't begin the development within one year of the new filing.

West Desert Region

Utah Power & Light Company has optioned 36,000 acre feet of treated sewage effluent from Salt Lake City for use in a steam electric plant. This water would be utilized at a site near Salt Lake City. However, at the present time it appears a coal fired plant could not be located in the heavily populated Wasatch Front because of environmental reasons. Therefore, the water may have to be pumped some 82 miles to the desert region.
Figure 6.

Figure 7(a). Green River.

Figure 7(b). Neph1.

Figure 7(c). Delta

Figure 7(d). Soda Springs.
Figure 8.

GREEN RIVER PLANT SITE

DIVERSION STRUCTURE
Figure 10.
water would be utilized at a site near Salt Lake City. However, at the present time it appears a coal fired plant could not be located in the heavily populated Wasatch Front because of environmental reasons. Therefore, the water may have to be pumped some 82 miles to the desert region west of the Great Salt Lake (Figure 12). Because of the scarcity of power plant sites, due to environmental factors, the west desert region could be eventually utilized in spite of higher costs.

**Summary**

Some 30 years from now, we are projecting a system generating capacity of some 13,000 megawatts utilizing over 200,000 acre feet of water per year in the production of electric energy. We are endeavoring to reduce water use at our steam electric plants in every way possible and hopefully our projections for water use may be on the high side. Eventually economics may also dictate the use of dry cooling towers for the production of electrical energy. The overall objective in developing water for electrical power projects to provide reliable electric energy at the lowest total cost, taking into consideration environmental factors. The company will continue to notify governmental agencies and the public of our long-range projections and water requirements so that these needs will be taken into account in developing plans and policies relative to water.

We believe it is imperative that a long-range view be taken of water needs in our region by both private and public agencies. We have been talking about UP&L Co. needs for just the next 30 years. In my view 30 years is a minimum planning time frame when you consider the critical nature of water to the future of Utah and the Intermountain Region. We certainly should be looking forward the best we can to 50 and 100 years, or more.

To illustrate, let me take one specific case which you may have heard about through the news or television media. The Department of Energy is proposing a study for a 10,000 megawatt nuclear park at Green River, Utah. If such plans eventuate the plant would furnish power to such large metropolitan areas as Salt Lake City, Denver, Phoenix, Los Angeles, and San Francisco. The only available source of water for such a facility would be from Utah’s share of the Colorado River Compact. Figure 13 shows the 1922 Compact percentage and the United States Bureau of Reclamation’s estimate of the acre feet per year allocated to the Upper Basin states from the Colorado River.

Since 1922 Utah water officials have vigorously opposed modifying that Compact to allow a reduction in Utah’s share of the Colorado. They know that to do so would eventually limit the growth of Utah. It will be noted that Utah’s share of the Colorado is 23 percent of the Upper Basin states allocation which on an average year is estimated by the USBR to be 1,322,000 acre feet. I might also note that during periods of drought the Lower Basin states will continue to receive an estimated 5,800,000 acre feet while the Upper Basin states must suffer any shortages. This, of course, makes it imperative that sufficient storage be constructed by the Upper Basin states to firm up their average supply insofar as economically feasible.
Colorado River Water for Upper Basin States

- Wyoming: 14%
- Utah: 23%
- Colorado: 51.75%
- New Mexico: 11.25%
- Arizona: 50,000 a.f.

Utah 1,322,000 a.f. (U.S.B.R.)

Lee Ferry 1949

Figure 13.
Figure 14 shows in detail the committed and uncommitted water of Utah's 23 percent of the Upper Basin states. There is a slight variation between what I understand is the state's estimate and the Bureau's estimate. For all practical purposes and long-range planning such differences could be ignored. The conclusion is the same. There is limited water remaining which should, of course, be beneficial to Utah if the spirit of the Compact is to be maintained. Hopefully, the State Engineer and others will also consider proposed UP&L Co. water filings as a tentative commitment to electric energy production. If this is a reasonable assumption then some 117,000 to 220,000 acre feet/year remains for oil shale development, coal gasification, power, other industry and agriculture.

Now back to the specific illustration, the Department of Energy is suggesting that a 10,000 megawatt nuclear plant at Green River be studied, and the state must decide whether such a study is in the best interests of the state. The million dollars proposed for the study is a waste of public resources unless the state is serious in allocating sufficient water from its share of the Colorado. I have recommended to Reed Searle, Executive Secretary, Energy Conservation and Development Council, that the state not approve the study and that no further plans be made for shipping Utah's share of Colorado River water to California or other large metropolitan areas by wire. I made this recommendation not because we want to be provincial, for if there were no foreseeable limits to water (or possibly air space) we could, of course, accommodate the needs of other regions. That limit, however, is alarmingly close in the case of Colorado River water.

It is evident that the Colorado River and its tributaries provide the main undeveloped water resource in Utah. Utah has only 1 1/2 percent of the water of that large Colorado River, and, in my view, the State should use that small share in the full intent of the 1922 Compact. To do otherwise will in time increase the cost of energy to our Region and limit development of the State's resources.

It is interesting to note that if the plant sites previously discussed are developed in the next 30 years some 70 percent to 80 percent of the water would come from Utah's allocation of the Colorado River. This is just one reason why my Company has strongly supported the development of all units of the Central Utah Project and other water developments which provide a firm source of water to our region. I will repeat again that the basic limit to our region's potential whether it be 30, 50, or 100 years, is water.
### UTAH'S COLORADO RIVER WATER PICTURE

(Average Acre-Feet/Year)

<table>
<thead>
<tr>
<th>Description</th>
<th>Utah Division of Water Resources</th>
<th>Bureau of Reclamation</th>
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<tr>
<td>Utah's Allotment of Colorado River</td>
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<tr>
<td>Jensen Unit</td>
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<td>Additional Proposals</td>
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<td>UP&amp;L Co. Emery Plant (800 mw coal)</td>
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<tr>
<td>UP&amp;L Co. Wellington Plant (2000 mw coal)</td>
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<td>UP&amp;L Co. Green River Plant (2600 mw nuclear)</td>
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</tr>
<tr>
<td>*Alternate for Muddy or Joes Valley</td>
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Figure 14.
STATE REGULATION OF WEATHER MODIFICATION

by

Richard L. Dewsnup*

The purpose of my presentation today is to explain the actions that many of the states have taken to regulate weather modification activities. I first will discuss the basic legislative approaches on a nationwide basis, and then will examine more closely the laws of eight selected western states.

I. General Survey of the Fifty States

There is wide variation among the states in their positions on weather modification. Some states—in fact, about half—have no legislation on the subject at all. Some of these are in geographic areas with adequate water supplies. In many quarters there has been strong public support for weather modification programs, but there has also been some opposition to "tampering with nature." Despite such opposition, 27 states have weather modification laws presently in effect. They range in character from simple enabling acts which allow government agencies to engage in feasibility studies to complex regulatory programs.

Because of the changes made in each legislative session, it is difficult to keep an accurate and current status report on the states which have enacted weather modification legislation. For example, Massachusetts authorized the formation of a Weather Amendment Board in 1951 but repealed the authorization in 1974, leaving the state with no applicable statute. Maryland passed an Act in 1965 which prohibited all weather modification activities in the state. This ban was lifted in 1973, but no positive provision was enacted at that time or since. Weather modification in Maryland is no longer a crime, but it does not have the legislative seal of approval.

No state presently prohibits weather modification, but some come close to it. Pennsylvania had such a ban until it enacted a new statute in 1971, which contains a provision that any weather modifier who causes a drought must compensate all farmers for their proven losses, and must further compensate all property owners for losses caused by severe storm or flood. This deliberate allocation of liability is followed in the West Virginia Statute. The imposition of strict liability makes weather experimentation a risky business in these states.


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While the other states do not have specific weather modification legislation, it is possible that other state laws would, if construed broadly, allow state agencies to engage in studies and perhaps even some experimentation. The Georgia Water Resources Development Act could have this effect. The states which do not have weather modification laws in effect, because of inaction or repeal, are Alabama, Alaska, Delaware, Georgia, Indiana, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Jersey, North Carolina, Ohio, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, and Wisconsin.

While a detailed analysis of each statute might be interesting, a detailed look at a representative few will be adequate. Of particular interest are the western states, but it should be noted that these statutes are typical of those in the rest of the nation. A look at the statutes of eight selected states—Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming—will give a fair idea of what the states in general are doing to solve the problems presented by weather modification operations.

2. Basic Nature of Legislation in Eight Selected States

All of the statutes in the eight selected states were enacted within the last 25 years, but many have been changed frequently and often substantially in recent years. Because of the scope and frequency of the amendments, it is difficult to identify which, if any, of these statutes were copied by others, but a strong similarity between various provisions indicates that there was a degree of sharing in the drafting process.

The statutes may be identified as follows:

a. Arizona Weather Control and Modification Act, Arizona Revised Statutes (A.R.S.) §§45-2401 through 45-2407. The statute was first enacted in 1951, and was amended in 1971 to change the administrative agency which supervises modification projects in the state.

b. Colorado Weather Modification Act of 1972, Colorado Revised Statutes 1973 (C.R.S.) §§36-20-101 through 36-20-126. The statute was first enacted in 1963, and, according to the compiler’s note, was repealed, rearranged, and re-enacted in 1972 with some substantial additions and deletions. It appears to have been a major overhaul. There have been no further amendments.

c. Idaho Weather Modification Districts Act, coupled with an act requiring registration of contractors, Idaho Code §§22-4301 and 4302, 3201 and 3202. The District’s Act was adopted in 1975 and has not been amended. It is greatly different in approach from the other seven states now under review, but it is not unique, since similar provisions have been used in other states.

d. Montana Weather Modification Activities Act, Revised Code of Montana 1947 Annotated (R.C.M.A.) §§89-310 through 331. The statute was first enacted in 1967. There were amendments in 1973 and 1974, and a minor change in 1975 relating to handling permit monies.
e. Nevada Weather Modification Research Law and Regulation of Weather Modification Operations, Nevada Revised Statutes (N.R.S.) §§544.010 through 544.240. First enacted in 1961, the statute has undergone frequent remodeling, with amendments in 1965, 1967, 1969, 1973, and 1975. The frequency of amendment is deceptive. Most of the changes have been minor, and the act appears in much the same form as it did in 1961.

f. New Mexico Weather Control Act, New Mexico Statutes Annotated 1953 (N.M.S.A.), §§75-37-1 through 75-37-15. The statute was enacted in 1965, and there have been no amendments.

g. Utah Weather Modification Act, Utah Code Annotated 1953 (U.C.A.), §§73-15-3 through 73-15-8. The first Utah act on weather modification was passed in 1953. The original act was repealed and replaced by the present law in 1973. There have been no further amendments.

h. Wyoming Weather Modification Board, Wyoming Statutes 1957 (W.S.), §§267 through 276. The first Wyoming weather modification statute appeared in 1951, making it one of the oldest in the west. A minor change in the penalty provision was enacted in 1955, and more substantial changes in the permit system were enacted in 1971 and 1973. One section was repealed in 1965. Despite the changes, the act is very much like the original act. There have been no amendments since 1973.

For reasons which will be seen in the discussion to follow, the eight statutes fall naturally into three groups. Two of the groups are identified by consistency in the approach and provisions within the statutes. The third group is the miscellaneous category, but there are even some similarities here. It is difficult, because of the amendments, to determine which statute was a pattern for another. For this reason, the groups will be labeled by the statute which seems most representative of the basic provisions of the others in the group. No two of the statutes are identical, so the unusual features of each will be noted in the discussion.

The first group is called the Wyoming Group. It consists of three states—Wyoming, Arizona, and New Mexico.

The second group is the Montana Group. It consists of Montana, Nevada, and Colorado. While the Nevada and Colorado acts are somewhat unusual, their basic provisions are like those of Montana.

The third group consists of the states which do not fit within either the Wyoming or Montana Group. These are Utah and Idaho. These states seem to make some government agency the only weather modifier in the state, unlike the other statutes which encourage private enterprise in weather modification. While there is some similarity in the philosophy behind the acts of the two states, the approaches are so different that comparison is not a worthwhile effort. The Utah act will be treated as a "group" of its own and will be discussed along with the statutes in the Wyoming and Montana Groups. The Idaho statute, which is far afield from the others, is dealt with alone in Section 13.
It will be seen that each state has its own administrative structure over weather modification, as discussed in Section 3. To avoid confusion in the remainder of this Chapter, the term "administrative agency" will be used to denote the state agency which has administrative jurisdiction over weather modification in the state—whether the agency is the State Engineer, a Water Control Board, or otherwise. This will offer a consistency in terminology which is not present in the statutes themselves.

3. Administrative Agency Over Weather Modification

There are several different approaches in the administration of weather modification activities, and it perhaps will be simplest to note the administrative structure of each state separately.

The Arizona statute, A.R.S. §45-2401, places the responsibility for licensing weather modification activities on the Arizona Water Commission. The 1971 amendment transferred the administration from the Land Commission. All regulations are drafted and enforced by the Water Commission.

The Colorado statute sets forth the administration structure in C.R.S. §§36-20-105 through 108. All licenses must be issued by the Executive Director of the State Department of Natural Resources. The director is empowered to prepare such rules and regulations as he feels necessary to implement the act. The Governor is directed to appoint an Advisory Committee to assist the director in the preparation of forms, rules and regulations, and to provide technical information. The committee is to consist of ten persons—five of whom are to have appropriate scientific backgrounds and the other five to be representative of each of the five major river basins in the state. The committee members serve for staggered three-year terms. The committee is also empowered to hear damage claims and rule on liability when the claims arise from weather modification activities carried out with a valid permit. The director is empowered to conduct a full range of management chores, including hiring of personnel, contracting for research, holding hearings and so on, and, of course, issuing the licenses and permits.

The administration of the Idaho weather modification program is like that of any other improvement district in the state. There is a board of trustees working under the County Commission which manages the affairs of the district. The Idaho statute is discussed in some detail in Section 5.13. The reports required by the Registration Act are filed with the State Department of Agriculture.

Montana has placed weather modification control activities within the jurisdiction of the Department of Natural Resources and Conservation, R.C.M.A. §§89-314 and 315. The Board of Natural Resources and Conservation supervises the department. License and permit applications are approved by the board, but the rules and regulations come from the department.

Under the Nevada statute, N.R.S. §§544.080 and 544.120, the Director of the State Department of Natural Resources is empowered to establish advisory committees, rules, regulations, and guidelines for research and controls which pertain to weather modification within the state. He may also make studies, hire staff, hold hearings and issue licenses and permits under state law.
New Mexico has a rather unusual administrative structure in that the permits required are issued by a Weather Control and Cloud Modification Commission created under N.M.S.A. 75-37-2 and 75-37-13. The commission is to be appointed and supervised by the Board of Regents of the New Mexico Institute of Mining and Technology. The regents are also charged with the responsibility of enforcing the act through the commission.

The Utah statute is also somewhat unusual in that it appears to place all weather modification activity in the state or state agencies. Under U.C.A. 75-15-3, the supervisory agency is the Division of Water Resources.

Section 9-268 of the Wyoming statute creates a Weather Modification Board which consists of the State Engineer, the Commissioner of Agriculture, and the President of the University of Wyoming or their designees. They serve without pay, but are reimbursed for expenses.

The principal function of each of the administrative agencies is the issuance of licenses and permits so that weather modification can legally take place in the state.

A. Licenses and Permits Required

A. Wyoming Group

The statutes in the Wyoming Group all provide that weather modification operations can only be undertaken with a proper permit from the administrative agency. A separate permit is required for each operation, and permits must be renewed annually. The administrative agency has the authority to renew or revoke permits.

The Wyoming statute leaves the criteria for permit issuance up to the administrative agency, but sets a fee of $25.00 for each permit application.

The Arizona and New Mexico statutes—in essentially identical provisions—give the basic criteria for the application. Each application shall contain the name and address of the applicant, names of all operating personnel, the scientific qualifications of the operating personnel, a listing of all other weather modification contracts either completed or in progress, and the names of the hiring parties. The application must also describe the time and place the operation will take place, and the methods to be used to evaluate the effectiveness of the operation. The administrative agency may require any other information it deems necessary.

The Arizona and New Mexico statutes use the term "license" where Wyoming uses "permit." The function of the two forms of approval is the same, and the application achieves the same result. Because the states in the Montana Group require both a license and a permit (two approvals for each operation) it will avoid confusion to speak of the approval in the Wyoming Group as a "permit."

There is a permit fee of $25.00 in Wyoming. Arizona and New Mexico require $100.00. While the administration of the money is different, it appears to be used to cover the costs of the administrative program. 
B. Utah Provision

Under the Utah statute, a literal reading would suggest that all weather modification is to be done either by the state itself, or through contract with the state. The only express statutory exception is a provision allowing for fog suppression—a provision apparently made for the Salt Lake City Airport. Other exceptions have been provided by regulation. Private contractors wishing to take part in the state-sponsored projects must register with the administrative agency and meet its requirements.9

C. Montana Group

The procedure for obtaining approval for weather modification operations in these states is more involved, since both a license and a permit is required for each operation. The license and permit are required for each weather modification organization and each operation unless there is an exception made by the statute or administrator for research activities by government, universities, or non-profit private organizations, or for emergency situations such as fog, frost, or fire. The exceptions are discretionary, not mandatory, under most of the statutes.10

The licenses are valid for a period of one year, and a fee of $100.00 must be paid before the license will be issued. Licensees must have appropriate scientific backgrounds, and must comply with all regulations issued by the administrative agency. Colorado goes much further than the other states in its requirement for scientific experience. The statute requires either eight years of practical experience in weather modification or a degree in meteorology plus a minimum of two years’ experience. If the bachelor’s degree is not in meteorology, three years’ experience is required.11 In addition to the license, which allows persons or organizations to attempt weather modification, a permit must be issued for each operation undertaken by a licensee. Like the license, the permit is valid for only one year and can be renewed. The statutes required that each applicant for a permit have a valid license, pay the permit fee, furnish proof of financial responsibility (discussed in Section 5.5), and submit plans for the proposed operation. Each of these states requires that a notice of intention be published (discussed in Section 5.6). The administrative agency may make additional rules and regulations as it deems necessary.12

The permit fee in each state is different, but each is a percentage of the contract price of the operation. In addition, Colorado starts with a base charge of $100.00. The Montana fee is 1 percent, Nevada 1 1/2 percent, and Colorado $100+2 percent.13

The Colorado statute leaves less to the discretion of the administrative agency than do the others. It also adds some additional requirements for permit applications. Commercial permit applications must demonstrate that the operation is scientifically feasible and economically beneficial. Research operations must show that there is a potential for expanded knowledge without creating unreasonable risks to life, health, safety, or property.14

The basic criteria for permit issuance in the Montana and Wyoming Groups are similar, and will be examined together in Section 6.
5. Financial Responsibility and Limitations on Liability

A. Wyoming Group

Neither the Wyoming nor Arizona statutes make reference to the financial responsibility of permit applications, but New Mexico requires that the administrative agency be convinced of the applicant's financial ability to meet reasonable obligations which are likely to result from the operation of a weather modification project.\(^\text{15}\)

While the doctrine of sovereign immunity would likely protect the states from liability stemming from the issuance of permits, the Wyoming statute provides that the state will not be liable for injuries caused by private weather modification activities, and the issuance of a permit is not intended to have any effect on the rights and liabilities between individuals. No other state in this group has similar provisions.\(^\text{16}\)

B. Montana Group

In general, all of the states in this group require the applicant to show his ability to respond in damages for injuries resulting from his weather modification activities. Nevada makes an exception, not as an exemption from liability, but as an exemption from the need to insure against the risk. The Colorado statute follows the same pattern, but it specifically allows insurance or bonding to be used to demonstrate financial responsibility.\(^\text{17}\)

Each statute provides that neither the state nor its employees will be liable for the acts of private parties acting under a properly-issued permit.\(^\text{18}\) Colorado adds other limitations on liability. For example, cloud seeding—including the casting of seeding materials as well as the precipitation which is intended to result—is not presumed to be a trespass or nuisance which is actionable or enjoinable. Further, cloud seeding without a permit is considered negligence per se under the Colorado Act, which makes liability absolute for all injuries caused. In other words, the plaintiff would not have to show any faulty conduct on the modifier other than the failure to obtain a license.\(^\text{19}\)

C. Utah Provision

The Utah statute requires contractors registering with the administrative agency to be financially able to answer in damages for negligence in weather modification activities. The statute also provides that the dissemination of materials or the precipitation resulting therefrom is not presumed to be either a trespass or nuisance. This is much like the Colorado provision.\(^\text{20}\)

6. Issuance and Revocation of Licenses and Permits

A. Wyoming Group

There is no requirement for a hearing on the issuance of a permit under any of the statutes in this group, although it would be lawful
to create this requirement by regulation. None of these states require modifiers to publish notice of intention before beginning a weather modification operation. Only New Mexico requires that permit holders be given a reasonable opportunity to be heard before the permit can be revoked.21

B. Montana Group

The Montana statute provides that the administrative agency may hold a hearing on the issuance of permits (not licenses) if it determines that a hearing is necessary. Any hearing on a permit must be held in the area affected by the project. Colorado makes the permit hearing mandatory on all permits.22 Nevada makes no requirement in the statute, but could require a hearing by regulation.

Each of these states requires that applicants for permits publish a notice of intention before applying for the permit. Proof of publication is a requirement of the application. All of these states provide that this notice must identify the project target area, and give the date and location of any hearings. Nevada also requires the notice to include the name of the applicant, the area affected, materials used, and the period of operation.23

A hearing is required by all of these states prior to revocation, refusal to renew, or termination of a permit or license.24

C. Utah Provision

There is no statutory requirement for hearings in Utah, probably because the statute does not expressly provide for "private" permits, or permits issued to private parties. The state, or state agency sponsoring a weather modification project, must give notice of intention to the State Division of Water Rights before a project begins. The statute does not require hearings in the area affected by a project.25

7. Judicial Review of Administrative Actions

A. Wyoming Group

Of the three states in this group, only New Mexico specifically provides that the decisions of the administrative agency are reviewable. These decisions are to be reviewed in the District Court of Santa Fe County and the State Supreme Court. While the other states do not make a specific provision in their statutes, it seems clear that the basic statutes governing administrative procedure would be applicable to provide the method and procedure for judicial review.26

B. Montana Group

Colorado is the only state to make an express provision in this group. The statute provides that the decision of the administrative agency is reviewable according to other state laws on administrative procedure.27 This would also be the case with the other statutes in this Group, even without express provision.
8. Requirements for Reporting and Recording Weather Modification Projects

A. Wyoming Group

The Wyoming statute requires permit holders to submit to the administrative agency a report of each project or operation undertaken. There are no other requirements in the statute. Both Arizona and New Mexico go into more detail in their statutes. Each requires a full report of the project within 90 days of completion. This report is an evaluation of the success of the project. Interim reports are required by both states—every three months in New Mexico, every six months in Arizona. Failure to submit the reports as required is grounds for immediate revocation of the permit.28

B. Montana Group

All three statutes in this group follow the general pattern of the Montana statute. A record of each operation is required, and at the minimum it must contain descriptions of the method employed, the equipment used, kinds and amounts of materials used; times and places of operation, and the names and addresses of all participants in the operation. This report is required of all weather modification organizations—even those research groups exempt from the permit and license requirements. All records are to be open to the public, and failure to submit the reports is grounds for immediate termination of the license, permit, or both.29

The only real difference in the statutes is the timing of the reports. Colorado requires a biweekly report during the operation, a preliminary report within 30 days after completion, and a final scientific evaluation within 100 days of completion.30

C. Utah Provision

The Utah statute declares that cloud seeding projects, by definition, include evaluations of the meteorological conditions before the operation, and an evaluation of the results achieved. The administrative agency is directed to keep records and evaluations of all cloud seeding projects in the state. There is no express provision for public access to this collection of information.

D. Promotion of Research

All of the statutes recognize the need for continued research into the processes of cloud formation and weather modification. Little is known about the field now, and the states are trying to generate more reliable knowledge. The required reports of projects aid in the gathering of practical information. Provisions which exempt research organizations from the permit and/or license fees make research projects less costly. Of the Wyoming Group, only Arizona lacks a statement to the effect that the purpose of the act is at least partly to encourage worthwhile research.31
In the Montana Group, the policy is consistent, but the provisions differ. Montana requires the administrative agency to evaluate the social, ecological, environmental, and agricultural impact of weather modification projects. The agency is also empowered to set minimum standards for research within the state to protect the health and safety of persons and property, but at the same time encourage research.32

The Utah statute directs the administrative agency to sponsor and develop projects. The agency is to keep reports on the projects and also on any research which it conducts or sponsors. The services and facilities of the State Water Resource Laboratory are to be available as needed.33

Nevada has done more than most other states to foster research—perhaps a reflection of its position as the driest state in the union. It has a special act called the Weather Modification Research Law which allows the state to conduct research programs on its own, and makes the facilities of the University of Nevada Desert Research Institute available to the fullest possible extent. The director of the administrative agency is instructed to exercise his powers in a manner that will encourage research and development of technology by public or private organizations.34

9. Penalties for Attempting Weather Modification Without Permit or License

A. Wyoming Group

All of the states in this group make it a crime to attempt to modify the weather without first obtaining a permit from the state. The penalties are quite different. Under the Wyoming statute, failure to obtain a permit is a felony with a fine of $1000.00 or a prison sentence of from one to five years. In New Mexico and Arizona it is a misdemeanor to operate without a permit, make a false statement in a permit application, continue to operate after termination or revocation of the permit, fail to make the required reports, or commit any other violation of the act. New Mexico does not provide for a penalty. Arizona calls for a $1000.00 fine for individuals or corporations, and, alternatively, a 60-day jail term for individuals.35

B. Montana Group

There is more consistence in this group. Under the laws of each of these states, operation without a permit or license is a misdemeanor. Each state has some interesting features of its own. Montana provides that continuing violations constitute a separate offense for each day the violation occurs. Nevada imposes the same criminal sanction for violations of the administrative regulations promulgated under the statute as for violations of the statute itself. Colorado spells out the violations in a list similar to that in the New Mexico statute. Colorado also spells out the penalty: $5000.00 or six months in jail. Despite the high fine, the crime is only a misdemeanor.
C. Utah Provision

The Utah statute makes no penalty provision for persons who violate this most basic element of the statute.


The purpose of weather modification in the west is to increase the quantity of water available for use at critical times of the year, either by snowpack augmentation or cloud seeding to produce summer rainfall. With this purpose in mind, and a knowledge of the complex administrative structure that has been developed in each state for the allocation of natural water, it would seem that the question of ownership of this "artificial water" would be foremost in the minds of the legislators. Does the party sponsoring the modification project own the water? Or is it a contribution to the basic supply of the state? If it is the latter, the new water would go to satisfy the earlier rights, and those with more recent appropriations might not be benefited. With the apparent importance of this issue, it is surprising how little attention it received in these state laws.

Wyoming and New Mexico have general provisions which might be expected to answer the question of ownership. Wyoming declares its "sovereign right to use for its residents and best interests the moisture contained in the clouds and atmosphere within its sovereign borders." New Mexico claims ownership to all the "moisture in the atmosphere which would fall so as to become a part of the natural stream or percolated water of New Mexico, for use in accordance with its laws." These provisions are not clear, but they seem to place the "artificial water" in the same class as the natural water for allocation by the state. They do not even address the issue of the right to use water.

The Colorado provision is essentially the same as New Mexico's. Utah provides that artificial rainfall:

... shall be considered as a part of Utah's basic water supply the same as all natural precipitation water supplies have been heretofore, and all statutory provisions that apply to water from natural precipitation shall also apply to water derived from cloud seeding.

This Utah provision does not define the method of allocation, or answer the question of whether new water rights will be established in the augmented water supply.

11. Provisions Affecting the Rights of Other States and Interstate Projects

A. Wyoming Group

Both Wyoming and New Mexico have provisions which declare their "sovereign rights" to the water in the sky above the states. The New Mexico statute goes further, and provides that no project for the
benefit of another state can be carried out in New Mexico if that project will interfere with a project for the benefit of New Mexico, whether the New Mexico project is operating in that state or in some other state. In constitutionality of these provisions is doubtful. Arizona does not regulate interstate operations any differently from intrastate operations. Presumably an Arizona permit would be required for Arizona-based projects with target areas outside of Arizona. 39

B. Montana Group

Of the Montana Group, only Colorado has a provision which affects operations for the benefit of other states. Colorado provides that no operation for the benefit of another state can be carried out in Colorado unless the other state will allow Colorado to operate in that state. This is a basic reciprocity provision between states. 40

Montana and Nevada have no provision which either declares their rights against their neighbors or controls projects within those states with target areas outside the state.

C. Utah Provision

The Utah statute provides that any operation carried out in Utah for the benefit of any other state must comply with the laws of both states. This would mean obtaining the necessary permits from both states, including the registration with the Utah administrative agency. 41


The Arizona statute—though incomplete in many other ways—is the only one to address the problem of the sale and manufacture of weather modification equipment and supplies. Any person or corporation who is engaged in the sale or manufacture of such equipment must have a license from the state. In addition to a fee of $10.00, the license applicant must list his name and address, the kind of material he will be selling or manufacturing, and a description of the operating technique of the equipment. All advertising material must be submitted to the administrative agency semi-annually. Within ten days of any sale, the administrative agency must be notified of the material sold and the name of the buyer. Failure to comply with this requirement is grounds for cancellation of the license. 42

Another interesting Arizona provision is the exemption of farmers from the requirements of the entire act. Farmers engaged in weather modification for the sole benefit of their own land are not required to register or obtain permits. This was probably aimed at heating orchards and similar small projects, but may not be so limited in the final analysis.

Colorado, which has the most comprehensive of the statutes, has several unique provisions. Some were mentioned above, such as the reciprocal agreements for interstate operations, and the declaration that a license or permit will not be a defense to tort actions. Another unusual
provision in the Colorado statute is the requirement that all damage claims resulting from weather modification activities with an alleged violation of permit terms or of the statute must be brought before the administrative agency first. The agency, through the Advisory Committee or a specially-appointed hearing officer, will make a determination of liability. The damages, if there is liability, are determined by a regular trial court. The decision on liability is reviewable at trial. The Colorado statute also provides much more detail on the criteria for licenses and permits. Unlike the other states, it leaves little room for administrative rulemaking. The Wyoming statute goes the other route, and lets the administrator fill in the details with only a brief outline of the legislative intent in the statute.43

The Nevada statute stands out because of its unusual emphasis on research. Colorado summarizes the philosophy that weather modification is "properly a commercial activity which the law should encourage to be carried out, whenever practicable, by private enterprize."44

13. Idaho Weather Modification Acts

The Idaho approach to weather modification is so different that it cannot be compared in a side-by-side analysis with the other statutes. Rather than set up a system of state regulation, the Idaho Act turns the entire matter over to the counties.

The act is called the Idaho Weather Modification Districts Act, and that fairly well describes it. It outlines the procedure for forming a district in the state. The district will carry out the weather modification activities within the county or counties. The act only describes the formation of the district.

The first step is to get a petition signed by at least 50 landowners in the area. The petition is presented to the county clerk, and if the signatures are certified, the clerk gives notice of special election. The notice of election must state the purpose of the district, the affected area, the mill levy it will assess, and of course, the times and places of polling. The election will determine two things. First, whether the district will be formed at all, and second, if the district is to be formed, the officers of the district.

If the formation is approved by a majority of the voters, the county commission will declare the district formed, and swear the officers in. The officers form the board of trustees, and manage the day-to-day affairs of the district. They serve for staggered three-year terms, with an election each January. Hearings are required on the budget in the same manner as with any other county budget. The county can assess a levy—not to exceed four mills—which is placed in an earmarked fund in the county treasury. This fund is to be used "for the gathering of information upon, aiding in, or conducting programs for weather control or modification..."45

The Idaho statute does not deal with some problems the other states recognize, such as ownership of water and rights to its use, interstate operations, rights against other states, and judicial review.
of decisions. Also, there is no provision limiting the state's liability for damages, but this may not be necessary depending on the posture of the doctrine of governmental immunity in Idaho. On the other hand, the Idaho statute lets the people in the affected area have a greater say in what is done than any other state, particularly through the public election.

There is a further Idaho provision which deserves brief mention. Any private party wishing to be a contractor with a weather modification district must register with the state. The Department of Agriculture is the administrative agency in charge, and it sets the criteria for granting licenses.

In brief conclusion, let me say that the legislative reforms of tomorrow—at least in the field of weather modification—will be governed in large measure by the nature and reliability of improvements in the technology.

Footnotes

1. This paper is adopted from a part of a report that the author and Dallin W. Jensen prepared for the Utah Division of Water Resources, entitled "Legal Aspects of Weather Modification in Utah."


3. Massachusetts Code, Ch. 6A, §15. The repeal was passed in 1974 and became effective in July of 1975.

4. Maryland Statutes, Art. 66C, §110A. The repeal was passed in 1973 and became effective in January of 1974.


7. Code of Georgia Ann., §17-4 et seq.


10. See R.C.M.A., §§89-314; N.R.S., §544.130; and C.R.S., §36-20-109.

11. See C.R.S., §36-20-107; N.R.S. §544.140; and R.C.M.A. §89-315.


17. R.C.M.A., §89-323; C.R.S., §36-20-112(c); and N.R.S., §544.190.
19. C.R.S., §§36-20-123 and 124.
22. R.C.M.A., §89-318(2); and C.R.S., §36-20-121.
23. R.C.M.A., §89-320; C.R.S., §36-20-112(e); and N.R.S., §§544.170 and .180.
24. R.C.M.A., §89-329; C.R.S., §36-20-121; and N.R.S., §544.220(2).
27. C.R.S., §36-20-125.
29. R.C.M.A., §§89-326, 327, 328, 329; N.R.S., §544.210; and C.R.S., §36-20-117.
30. C.R.S., §36-20-117.
32. R.C.M.A., §89-312(8) (a); C.R.S., §36-20-109; see also, R.C.M.A., §89-312.1.
34. N.R.S., §§544.010 through .060, and .090.
37. N.M.S.A., §75-37-4.
40. C.R.S., §§36-20-103, 118.
42. A.R.S., §§45-2405 and 2406.
43. C.R.S., §36-20-106(2).
44. C.R.S., §36-20-102.
45. Idaho Code, §§22-4301, 4302.
46. Ibid.
WATER RIGHT TRANSFERS AND CHANGING WATER USE

by

R. Michael Turnipseed*

Demands

New sources of water for the arid and semiarid west are becoming scarce. As the science of geology and hydrology become more sophisticated, so does the science of agricultural production and it is a well known fact that irrigated agriculture consumes nearly all of the available water in the west. K. A. Mackichan1 states that the 17 western states account for 90 percent of the consumptive use in the United States while they have but 25 percent of the supply. The west not only has a smaller portion of the water supply but consumes a larger fraction of what it has. This is a great tribute to the western farmer in that he is a good water manager. He continues to produce more with less water and in some cases produces more with water of poor quality. The western farmer is nearly twice as efficient as farmers in the eastern water plentiful states.

The Senate Select Committee on National Water Resources2 published estimates of consumptive use for the year 2,000 at 175 million acre feet. Irrigation consumptive use was projected to increase but decrease in relative importance compared to the consumption of manufacturing and industrial uses.

If consumptive use increases in irrigated agriculture and an even greater consumptive use is made in manufacturing and industrial use, this very simply means a tremendous increase in demand. And as long as we remain in a market system, increases in demand can only lead to increases in cost, since the supply seems relatively fixed.

Municipal

Municipal uses are predicted to remain on the increase through the year 2,000. As we become a more affluent society we use more water consuming appliances, buy more air conditioners, and build homes in the suburbs with large lawns and gardens. The per capita increase in the consumptive use of water is estimated to increase by 10 percent between 1975 and the year 2,000. Part of this is due to more manufacturing and industrial uses made on municipal water systems, however, a large portion of the increase will be in the culinary and domestic use.

We have just undergone one of the worst, if not the worst, drought on record. This is no doubt mother nature’s way of educating us as to just how valuable a resource water is. Many people have learned through water rationing that maybe there is a limit to how much water is available.

*Area Engineer, Utah State Division of Water Rights, Logan, Utah.
and we must manage it for its best use. The use of water meters on all services and the adjustments of water rates to affect the economic demand can modify the trend in per capita use significantly.

Demands made by municipalities have risen at an alarming rate. Figure 1 shows that as we de-centralize our cities and develop the urban areas, we greatly increase the per capita municipal use of water. The per capita use for a residential area density of 10 persons per residential acre is over twice that of a density of 20 persons per residential acre. Even though a decrease is projected in irrigated acreage in Salt Lake County, the increase in municipal use projected over shadows it. A net increase in water consumption of 2 percent or 12,000 acre feet per year is predicted by 1995. That will make the total yearly diversion to residential and municipal use 210,000 af/yr or 71,000 af/yr more than in 1975.

Even though a decrease is projected in irrigated acreage in Salt Lake County, the increase in municipal use projected over shadows it. A net increase in water consumption of 2 percent or 12,000 acre feet per year is predicted by 1995. That will make the total yearly diversion to residential and municipal use 210,000 af/yr or 71,000 af/yr more than in 1975.

Table 1. Per capita water use in major western cities (gpcd).

<table>
<thead>
<tr>
<th>City</th>
<th>1954</th>
<th>1980</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denver</td>
<td>152</td>
<td>152</td>
<td>165</td>
</tr>
<tr>
<td>Grand Junction</td>
<td>250</td>
<td>200</td>
<td>233</td>
</tr>
<tr>
<td>Phoenix</td>
<td>130</td>
<td>114</td>
<td>113</td>
</tr>
<tr>
<td>Spokane</td>
<td>242</td>
<td>245</td>
<td>247</td>
</tr>
<tr>
<td>Salt Lake City</td>
<td>225</td>
<td>216</td>
<td>212</td>
</tr>
<tr>
<td>San Francisco</td>
<td>125</td>
<td>119</td>
<td>116</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>173</td>
<td>163</td>
<td>161</td>
</tr>
</tbody>
</table>

Mining

Mining in the arid west will have to play an increasing role in the relative consumptive use of water in many of the western basins. The President of the United States has directed us to turn our attention toward the development of coal. Due to the energy interest, more money is being spent on research for the development of fossil fuels from oil shale and tar sands. And as agricultural technology increases and more production is demanded per acre of farm land, phosphate mining will surely increase. The arid west was blessed with an abundance of these resources but is lacking in water. Economics will dictate whether we export the mined product, or import the water for development of these resources.

Industrial

The Senate Select Committee Print No. 8 indicates an increase in the national average industrial intake of water from 18,940 gallons per employee in 1980 to 23,641 gallons per employee by the year 2,000. This
1.0 Acre-Feet/Capita/Year = 893 Gallons/Capita/Day

B. Glenne, Civil Engineering Department, University of Utah, April 1977

Water Use (AF/Cap/Yr) = \frac{2.73}{\text{Pop. Density}} - 0.0184 \quad \text{(Correlation Coeff. = 0.94)}

(The equation above is valid for a Pop. Density less than 20 per acre)

\[
\frac{1}{\text{POPULATION DENSITY}}
\]

\[
\begin{array}{ccccccccc}
0.15 & 0.10 & 0.05 & 0 \\
\end{array}
\]

\(\bigcirc\) Arch. Stds. Division, FHA
Johns Hopkins University (Clark, Viessman, Hammer)
\(\bigtriangleup\) Engineering-Science, Inc.
San Francisco, 1967

Figure 1. Average per capita residential water use in Salt Lake City.
coupled with the increase in industrial employees places an even greater importance on the total consumptive use of industries in the west.

Table 2.

<table>
<thead>
<tr>
<th>REGION</th>
<th>1980</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Missouri</td>
<td>373</td>
<td>1,614</td>
</tr>
<tr>
<td>Rio Grande</td>
<td>63</td>
<td>655</td>
</tr>
<tr>
<td>Colorado</td>
<td>37</td>
<td>481</td>
</tr>
<tr>
<td>Pacific Northwest</td>
<td>8,190</td>
<td>18,800</td>
</tr>
<tr>
<td>Great Basin</td>
<td>184</td>
<td>571</td>
</tr>
<tr>
<td>Central Pacific</td>
<td>870</td>
<td>2,280</td>
</tr>
<tr>
<td>South Pacific</td>
<td>334</td>
<td>919</td>
</tr>
</tbody>
</table>

The Pacific Northwest may not be considered part of the arid west with its semi-humid climate, but the figures show the tremendous increase in water consumption due to increases in the paper, wood pulp, and aluminum industries.

Salt Lake County 208 water quality report shows that between 1970 and 1975 diversions for industrial uses accounted for 25.6 percent of the total water diverted in that county.

Reallocation of Water

Unlike our other natural resources, water is extremely flexible. Water is storable, mobile, cleansible, and transportable. The reallocation of water in the western states will become increasingly important in the future as unappropriated water becomes more scarce. Expanding the water requirements for irrigation, municipal, mining, and industrial uses has heretofore been met by developing surplus water. Most readily available sources for surplus water have been exhausted and additional sources are becoming too expensive to build. It is now evident that it is necessary to consider the re-allocation of water or the transfer of water from lower to higher economic uses. It seems to be in the economic interest of the State of Utah to try to eliminate the third-party and water law constraints to these transfers.

Storability

The storability of water is the potential to store surplus water in surface or underground reservoirs during wet periods for use in dry periods. Storability makes possible a transfer of water over time. In Utah we presently have the statutory authority to administer and permit changes in the points of diversion, place and/or nature of use. However, the statutory law is silent with regards to changes over time. Recommendations to this effect will be treated in a later section.

Mobility

Mobility of water is the spatial transfer of water from areas of surplus to areas of deficiency. The existing statutory and case law
Table 3. 1975 - 1995 water use in Salt Lake County.

<table>
<thead>
<tr>
<th>Municipal &amp; Industrial Use</th>
<th>Irrigation Diversions</th>
<th>Stock Watering</th>
<th>Grand 1975-1995 Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt Lake City</td>
<td>Other Cities</td>
<td>Unincorp. Areas</td>
<td>Total</td>
</tr>
<tr>
<td>1970-1975 Measured Water Diversions (AF/Yr)</td>
<td>84,500(^a)</td>
<td>22,100</td>
<td>28,600</td>
</tr>
<tr>
<td>Pers/Acre</td>
<td>23.0</td>
<td>15.8</td>
<td>14.6</td>
</tr>
<tr>
<td>Gall/Cap/Day</td>
<td>236</td>
<td>236</td>
<td>236</td>
</tr>
<tr>
<td>AF/Yr/Cap</td>
<td>0.264</td>
<td>0.264</td>
<td>0.264</td>
</tr>
<tr>
<td>AF/Yr Per Acre</td>
<td>6.07</td>
<td>4.17</td>
<td>3.85</td>
</tr>
<tr>
<td>Population</td>
<td>175,580</td>
<td>99,600</td>
<td>251,800</td>
</tr>
<tr>
<td>Acreage</td>
<td>7,589</td>
<td>6,320</td>
<td>17,210</td>
</tr>
<tr>
<td>1975 Calculated Water Use (AF/Yr)</td>
<td>46,400</td>
<td>26,300</td>
<td>66,500</td>
</tr>
<tr>
<td>1995:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pers/Acre</td>
<td>22.6</td>
<td>17.5</td>
<td>10.7</td>
</tr>
<tr>
<td>Gall/Cap/Day</td>
<td>236</td>
<td>236</td>
<td>236</td>
</tr>
<tr>
<td>AF/Yr/Cap</td>
<td>0.264</td>
<td>0.264</td>
<td>0.264</td>
</tr>
<tr>
<td>AF/Yr Per Acre</td>
<td>5.97</td>
<td>4.62</td>
<td>2.82</td>
</tr>
<tr>
<td>Population</td>
<td>181,043</td>
<td>270,545</td>
<td>344,066</td>
</tr>
<tr>
<td>Acreage</td>
<td>8,000</td>
<td>15,504</td>
<td>32,007</td>
</tr>
<tr>
<td>Calculated Water Use (AF/Yr)</td>
<td>47,800</td>
<td>71,400</td>
<td>90,800</td>
</tr>
</tbody>
</table>

\(^a\)Water deliveries from Salt Lake City Water Department to a population of 320,000.
\(^b\)Includes approx. 10,000 AF/Yr of industrial water use.
\(^c\)Includes approx. 143,000 AF/Yr to Kennecott Copper Corporation.
\(^d\)Assumes approx: 13,000 of developed acreage added in 1975-1995 to come from irrigated acreage.
\(^e\)Assumes an increase of 10,000 AF/Yr in special industrial use in 1975-1995.
permits this but usually spatial transfers are limited to the same hydrologic basin. At least the transfer of water rights has this limitation. Intermountain transfers of water alone have been permitted under the existing law but that opens up a whole new area to litigation when the historic return flows make up a part or all of another party's water rights. Also it seems a little unclear as to who has the rights to the return flows or inefficiencies in the new place of use as a result of a transmountain diversion. Recommendations in this area will also be treated in a later section.

Economics have been the driving force toward the spatial changes in water and water rights. It should probably continue to be the driving force in spatial transfers and third parties should take a careful look at subsidizing spatial transfers and look at the economic and sociological effects of transbasin and transmountain water or water rights transfers.

There is a philosophy that industry will seek out the water in plentiful areas and establish their businesses in them. A lot of dollars are spent in transportation, housing, and the general welfare in population impacted areas. To spend more dollars to bring more water to promote more industry to further impact populated areas should be questioned from a planning point of view. Certainly the rural areas, where water might be at one of the lower economic uses and is sought by industry, could use the economic growth caused by the industry moving to them.

Water Quality

A lot has been said about water quality in recent years, but surely the quality makes up part of the value of water and water rights. In a lot of cases industry can tolerate a poorer water quality or has the economic base to treat the water before use. The water rights administrators and the engineering planners will have to be careful in allowing or seeking the right to transfer class I water when class III or IV would be more practical. Here again economics should be the major deciding factor.

Water Law and Transfers

In Utah and in most of the western states water rights are property rights and should be susceptible to use, sale, and transfer much the same as other property. Water rights have been classified as usufructuary meaning the owner of a water right has the right to use the water but not a right to the water itself.

Water administrators have guidelines from which to work. These are a set of statutory laws as well as the entire history of decrees and case law. Utah's statutory authority to administer changes and transfers lies in Section 72-2-1 Utah Code Annotated 1953. The right to make these changes under the condition of non-injury has long been recognized by the Utah Supreme Court. Utah has been known to have excellent water law, but for the most part it was developed prior to the more sophisticated engineering methods for water measurement of flow, consumptive use, and groundwater hydraulics. The more exact water measuring devices were not developed nor generally used until about 1920 while measurements of consumptive use began
in the 1930s and 1940s and are becoming more exact every day. Methods of measuring groundwater hydraulics have been developed even later.

Since water law can be characterized by precedent, water rights are often based on measurements of use and methods of use which were not subject to exact definition at the time the rights were perfected. Such terms as beneficial use, reasonable use, equitable apportionment and surplus are inexact terms and we should all admit, their meanings change from time to time.

Present and future water administrators are going to have to use the more quantifiable terms such as consumptive use and carriage water when defining the substance of water rights. Engineers will have to communicate well to judges and attorneys about why basins are closed to appropriations, about well hydraulics and interference, about overdraft, and about hydrologic certainty. The courts and the legislature will have to be well informed in order to act and legislate in the best public interest.

In New Mexico for example, the courts held that the city of Roswell could pump their wells to capacity even though the total capacity would sustain a population of about 100,000 people. This would be nearly eight times what the population of Roswell had been when the basin was closed. This could cause severe over draft problems if other water rights were not transferred to municipal use. I know not upon what precedent or law the New Mexico court acted but I think it shows a clear misunderstanding by the court of why the basin was closed and a lack of communication of the New Mexico State Engineer. In this particular case I don't think the court retained the flexibility to act in the best public interest.

Water Rights Value

In the free market system, water rights as property rights have a certain value. They have a value to the existing user or owner based on the capital investment and economic return from them. They also have a value to the prospective buyer or the person seeking to make a new use of the water.

This value is largely based on the hydrologic certainty, legal certainty, the quality certainty and one that is not as important to the present user as the buyer is the transferability.

Hydrologic Certainty

As much as man has tried, he has little if any effect on the hydrologic cycle. Under the appropriation doctrine the older or prior rights have a greater hydrologic certainty because the law provides that those rights will be filled at the expense of the junior appropriator. Prospective water right buyers can by statistical methods count on that water right being filled according to the priority and hydrograph and can plan on whether to store water for water short times or whether to buy other rights during the water short times. Utah Power and Light Company had to purchase or lease prior water rights during this past drought year of 1977 because of storage restrictions on their reservoir and the hydrologic cycle did not permit the filling of their right as a junior appropriator.
Legal Certainty

The older water rights not only have a greater likelihood of being filled because of hydrologic constraints, they are more likely to have been adjudicated or have been defended in court before and as a result are decreed rights. The State Engineer has a certain role to play in that he can enhance the value of these rights by his adjudication work.

Quality Certainty

The State Engineer at least in Utah has little administrative control over the pollution of water, however, his administration of water right changes and transfers can have a great deal to do with the quality from the standpoint of return flows and depletions.

Transferability

Though the existing water right holder does not directly realize the value of the right from the aspect of its transferability he would realize the benefits as it is purchased and transferred by a prospective buyer. The water administrator can greatly enhance the value of the water rights transferability by being as flexible as possible in allowing changes and transfers and by eliminating some of the legal constraints.

Conclusions and Recommendations

Changes and transfers with respect to changing the season of use should be critically reviewed. Historically the State Engineer has taken the acre foot limitation of the past use and allowed that volume to be changed to the new use provided it appeared that existing rights would not be effected. But if accomplishing this change requires a lengthening of the season by decreasing the flow rate, it has to have an effect on the source. Possibly someone enjoyed the return flows in the shorter season at the higher diversion rate or perhaps increasing the season may have an effect on someone else's winter storage right. At any rate, the State Engineer in Utah does not have the statutory authority to allow changes in season and that very issue will no doubt be litigated and/or legislated and the guidelines will be forthcoming.

Return flows from transmountain diversions would seem to lose their identity when co-mingled with another water course and therefore would become somebody else's water right or would be subject to appropriation as a new source of water. But suppose efficiencies are increased in the primary uses of the transported water or suppose discharge constraints force this water to be evaporated. What recourse do the other appropriations have? Changes in management practices, over which the State Engineer has no control, can just as easily cause injury to other vested rights as one over which he does have control. These questions will also no doubt be litigated and the resultant guidelines will come forth.

What about changes in the duty of water set by court decree? Does the State Engineer have the authority to change that duty when evaluating a change application if he feels the resultant change will impair other vested rights? Only the courts and/or legislators can tell us.
Changes of direct flow rights to storage have historically been allowed in Utah under Section 73-3-20 Utah Code Annotated 1953 which allows the storage of appropriated water, and withdrawal is permitted at any quantity that may be required. But just because an appropriator was decreed a certain flow from April to October 31, does that mean that he is allowed to store the water any time during that period if he chooses not to use it? Even if he historically diverted his entire right beginning April 1 every year, the evapotranspiration in those first couple of months is practically nil. And the diverted water either returned directly to the stream or entered the groundwater and returned to the stream as underflow. Can these types of changes really be made without the impairment of other rights?

Many pertinent questions regarding changes and transfers are coming before the water administrators and courts today, i.e., what are the rights of shareholders in irrigation companies? What is the real legal meaning of the preferential use statute 73-3-21? Many questions are now before the courts and more will come before the courts in the future, and as a result, water administrators will make judgments and policy based on the court’s rulings.

The major conclusion of this study is to partially describe the critical role of the engineer in facilitating water rights transfers and changes in water use. The engineer must be able to determine the primary as well as the secondary effects of changes in water rights. He must be able to evaluate the existing rights both hydrologically as well as economically and then try to anticipate what effects the new uses will have on the flow regime and if injury is likely to result.

Although the State Engineer is required to exercise discretion, determine facts, and approve or reject change applications accordingly, his duties are administrative in nature and the courts judgment on appeal covers only the issues subject to determination by him. This puts him in the unenviable position of supposedly knowing all of the effects of a proposed change before the change is accomplished. Even though the case of Tanner vs. Humphreys places the burden of proof or at least the burden of establishing the necessary facts to present a prima facie case and showing that no impairment of vested rights would result from the change, it would appear that the State Engineer has the responsibility to act in the interest of the vested right owners.

Non-injury is the most important criterion upon which approval of changes is based, therefore, it seems practical or even imperative that relative consumptions must also be the most important numbers upon which to base the change. Adjustment could be considered on an individual basis to allow for carriage water rights, return flows, water quality, and many other forms that water rights take on. Since it has been upheld many times that beneficial use is the limit and extent of rights, that should be the baseline for the amount that can be changed.

I recommend that water administrators proceed in the adjudication process and to do it diligently to firm up the legal certainty of existing water rights and to get a clear definition of the extent of use. Also water administrators will have to become familiar with and sponsor research in the areas of consumptive use especially for uses other than agriculture.
Water administrators will have to communicate to the legislators, the needs of the states in water administration and point out areas where the present statutes are unclear, silent, or contradictory. And we can all hope that judges will have public interest in mind and can become knowledgeable about water and make fair judgments accordingly.

Compensation for injury of course is an alternative to rejection of changes and the water administrators will have to become economists to determine when compensation is fair and just.

**Literature Cited**


5. Figure 1 for the Salt Lake County 208 Water Quality report.


WATER FOR RECREATION, FISH & WILDLIFE: STRATEGIES
AVAILABLE UNDER STATE WATER LAW

by
Dallin W. Jensen*

I. Recognition and Evolution of Need for Water
For Instream Values

In order to understand the problems which have attended efforts by the western states to recognize and protect instream values, it is necessary to have some appreciation of the nature of the appropriation doctrine. This is so because efforts to preserve instream values are taking place in competition with a doctrine which does not lend itself to keeping water in the natural channel. The appropriation doctrine was developed at a time when the public interest favored the economic utilization of our natural resources. In order to facilitate this development, it was necessary to divert the water and apply it to the land away from the natural watercourse. It was thought that the public interest was being best served when the water in our streams was being diverted and placed to some economic use—whether this use was for irrigation, mineral development or domestic use. The appropriation doctrine is basically a doctrine for the acquisition and administration of private water rights, and is not geared to the recognition of water for a public purpose such as the preservation of instream values. Other aspects of the appropriation doctrine presented problems when efforts were made to adapt it to protect instream values. For example, one of the basic tenets of an appropriation right is the diversion of the water from the natural watercourse. This requirement, of course, is diametrically opposed to the protection of an instream use which keeps the water in the watercourse. Also, in many states, water could only be utilized for a recognized beneficial purpose, and some states had historically taken the position that water for recreation, fish, and wildlife purposes did not constitute a beneficial use of water. This, of course, presented a problem in any subsequent effort to recognize a valid appropriation for this purpose.

Nevertheless, a number of western states have recognized that there is a general public interest in protecting and preserving certain instream values and have adopted certain programs to implement this recognition. The programs which have been adopted in the various states vary widely and there is no uniformity in how the states have addressed this problem. Consequently, it is necessary to evaluate the water code in each state to determine what opportunities exist to protect instream values. Time will not permit such an evaluation here, but an effort will be made to identify, in general terms, certain methods which have been utilized by various western states in addressing this subject. Those of you who are interested in a detailed evaluation of this subject may wish to review two recent

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II. Identification of Programs to Protect Instream Flows Among the Western States

A. Direct Legislative Action

In a few instances, state legislatures have taken direct action to preserve the flow of certain streams in a state. For example, California has adopted a Wild and Scenic Rivers Act to protect portions of specific streams in that state from the type of development which could destroy the existing instream values. This approach is not a common one, but it can be effective in that it requires no further action by the administrative branch of government and accomplishes the protection in an immediate fashion. It is unlikely, however, that this type of approach will receive widespread support—at least in the southwest—because of serious water supply problems. The existing competition for the available water supply is too severe, and efforts to adopt legislation of this type would meet widespread opposition from organized water user groups.

B. Administrative or Agency Action

A more common approach in the west is for the legislature to delegate to an administrative agency the authority to take certain actions to protect instream values. Again, the procedures used will vary widely from state-to-state, but most of the western states have adopted some program in this area. For instance, in Colorado the Water Conservation Board has been authorized to appropriate water from such natural streams and lakes as may be necessary to preserve the natural stream environment. I understand that numerous applications have been filed to implement this legislation. Montana, in a slightly different approach, has authorized the state or its political subdivisions to reserve water to maintain minimum streamflows. Oregon, on the other hand, allows its Water Resources Board to withdraw unappropriated water from appropriation to insure compliance with the State Water Resources Policy, one facet of which is the protection of instream flow needs. Thus, even though the procedures vary from state to state, the common thread in this approach is for the legislature to delegate certain authority and responsibility to administrative agencies to evaluate instream values and to take steps to protect these values where necessary in the public interest.

C. Contractual Arrangements

This is probably one of the most common programs among the western states to protect reservoir fisheries. Under this program the State Fish & Game Department acquires (usually by purchase) a conservation pool in newly-constructed irrigation reservoirs. This insures that water will be maintained on a year-around basis and from year-to-year to sustain the reservoir as an active fishery. If this were not done, the irrigators would be entitled to drain the reservoir each and every year as their needs for irrigation water dictated. This would, of course, totally defeat the maintenance of such a reservoir as a public fishery. In some states,
the Fish and Game Department also acquires water in storage which may be subsequently released to maintain the flow of the stream below the reservoir and thus serve to preserve the stream as a fishery resource.

D. Planning Programs

Virtually all of the western states have some sort of water planning program. However, the degree to which this program is implemented varies widely from state to state. In some states the water plan—once it is prepared—is elevated to a regulatory status, while in some states it simply serves as an information base for other state agencies. In those states where the water plan serves a regulatory role, it can and does offer an opportunity to protect instream values. Oregon, for example, in 1955 implemented a comprehensive planning program when the Oregon Legislature directed the Oregon Water Resources Board to formulate an integrated and coordinated program for the use and control of all of the state’s water resources.12 In giving this direction, the legislature enumerated certain policies which should be considered in the formulation of this plan. One of the criteria set forth is the maintenance of minimum stream flows for the protection of fish and wildlife.13 Once the water plan is formulated, it becomes binding upon state and local agencies.14 Thus, it can be assumed that the water plan would be utilized by the Water Policy Review Board and the Water Resources Director, which entities make water allocation decisions in Oregon.15

E. Judicial Decisions

From historic times the public has had a paramount interest in navigable waters and the use of these waters for navigation and fishing as a matter of right. This public interest in navigable waters is protected under a concept known as the public trust.16 All of the states have a right by virtue of their sovereignty to regulate the public trust in the navigable waters of the states.17 A few states have elected to implement this trust through legislation and some states have accomplished this by judicial pronouncements. The public trust in the navigable waters of a state can encompass the use of water for a wide variety of purposes, including fish and recreation. Thus, the preservation of stream flows to support navigation and to protect the public trust in these waters could also satisfy other instream values. Some caution must be used when evaluating this doctrine as a potential means of protecting instream values because it may be that the judicial proceedings—if implemented—would result in a restricted definition of the public trust, and may not provide significant benefits by way of satisfying instream flows.

F. Other State Programs

There are a number of other state programs which may be of some benefit in helping to protect instream values. For example, the states of Washington18 and Oregon19 have adopted legislation which requires fish ladders in connection with major dams in an effort to insure the movement of fish above and below the dam.
A number of states have adopted Stream Relocation Acts. Such acts normally require a permit from the state administrator before any extensive work can be done by way of modification or relocation of a stream channel. Such legislation is designed to protect the existing stream habitat.

G. Water Quality

Water quality regulation seems to offer only a limited opportunity for providing direct water supply benefits for instream values. However, water quality standards which result in protecting and preserving water quality at higher levels will be of benefit to fish and wildlife within the stream. Thus the existing programs which seek to preserve existing quality or to improve quality of certain streams will be of some help in this area.

III. Summary of the Situation in Utah

There are certain procedures available in Utah which offer potential for protecting and preserving water for fish, wildlife, and recreational purposes. Some of these include:

A. Administrative Moratorium on New Appropriation

The Governor, upon recommendation of the State Engineer, may suspend the right to appropriate the unappropriated water in any stream and preserve it for future use. When the purpose of the moratorium is satisfied, the water may be restored to public appropriation. It appears that this legislation was designed to preserve water primarily for future economic uses, while a moratorium is in effect it would have the effect of protecting and preserving water for instream values.

B. Statutory Criteria to Protect Instream Values

In 1971 the Utah Legislature amended the statutory provisions governing the approval and rejection of applications to appropriate water to allow the State Engineer to consider whether a proposed appropriation would unreasonably affect public recreation or the natural stream environment. If these values are unreasonably affected, the application to appropriate may be rejected.

C. Permits for Limited Periods of Time

In 1976 the Utah Legislature again amended the section relating to the approval and rejection of applications to appropriate. This latter amendment allows the State Engineer to approve applications for industrial power, mining development, or manufacturing purposes for a specific and limited period of time. Once the application expires, the water reverts to the state for reallocation. It may be that at the time the water reverts to the state, protection of instream values would be its better use.
D. Demanding Greater Diligence in Completing Appropriations

In 1975, the Utah Legislature imposed a higher and more demanding standard on appropriators holding approved, but unperfected, applications. The water which reverts to the state through denial of further extensions of time to applicants is part of the public water supply which is considered by the State Engineer in the allocation process, and would come under the statutory provision which allows him to consider the natural stream environment when acting on new appropriations.

E. Instream Flow Protection Implied from Broad Statutory Criteria

The State Engineer's authority under his rule-making power would seem to be broad enough to allow him to adopt rules governing the allocation of water consistent with the terms and provisions of Section 73-3-8, Utah Code Annotated 1953, as amended. It may be possible that the public interest criteria which are set forth in this section would allow the adoption of rules which would give consideration to recreational and environmental values when evaluating new applications.

F. Contractual Arrangements

The Utah Division of Wildlife Resources has for many years purchased conservation pools in irrigation reservoirs and has used these pools to develop a fishery resource which would otherwise not be developed. This procedure has been utilized in virtually every area of Utah, and is often a part of those projects constructed by the Utah Board of Water Resources.

G. State Water Plan

The Utah Division of Water Resources has the responsibility of preparing an overall state water plan. While it is unfortunate that the legislature has not delegated to the agency the authority to implement such a plan once it is prepared, nevertheless this planning program does offer some opportunity for protecting instream values. For example, the Board, in its planning report to the legislature in 1975, identified a portion of the Escalante River as having instream values which should be considered and protected in any future development program. This report received wide distribution among other state agencies, and consequently this information has been taken into consideration in future development plans and programs by both state and local governmental agencies.

H. Little NEPA's (SEPA's)

Utah's former Governor--by executive order--implemented a "Little NEPA" program in this state. This order is patterned somewhat after NEPA, but is much more streamlined. There may be some question as to the legality of this order, but it has served to implement a degree of environmental evaluation where major state actions are involved which would not otherwise exist.
I. Protection of Streambeds

Utah has adopted legislation requiring that a permit be secured from the State Engineer prior to the modification or alteration of a streambed. The State Engineer must determine whether the proposal will impair vested rights, unreasonably affect recreational use or the natural stream environment, or endanger wildlife. Unfortunately, this legislation has three broad exemptions which have substantially reduced its effectiveness. No permit is required if the proposed project is for flood control, soil erosion or water development purposes.

J. Water Quality Control Programs

In the water quality area, stream classifications and water quality standards have been adopted by the Utah Committee on Water Pollution on virtually all streams in the state, and this should result in the protection of water quality in many waters of the state.

Notes

1. For discussion of the development of the appropriation doctrine in the west, see Clark, Waters and Water Rights, Volume 1, Chapter 2 (Allen Smith Co., 1972).

2. The elements involved in appropriating water under the various systems in the Western United States are discussed in Hutchins, Water Rights in the Nineteen Western States, Volume 1, Chapters 6 and 7 (Misc. Pub. No. 1206, U.S. Dept. of Agriculture, 1971).


10. The authority of the Utah Division of Wildlife Resources to purchase water for this purpose is contained in Utah Code Ann., §23-21-1.

27. Utah Code Ann., §73-3-8
32. Utah Code Ann., §73-3-29(3).
33. Utah Code Ann., §73-3-29(1).
34. The authority of the Utah Committee on Water Pollution to classify the waters of the state and set standards of purity and quality is set forth in Utah Code Ann., §73-14-6.
"IS YOU IS OR IS YOU AIN'T"

(Luncheon Address)

by

R. Keith Higginson*

It seems like old home week for me. I'm back where my professional career began 21 years ago. I'm speaking to a conference which has as its theme "New Directions in Western Water Law"--a subject I feel comfortable with. I'm among people whom I respect and admire--who have taught me more than I wanted to know about the subject. I learned water law in this state from Ed Clyde, Dalin Jensen, Ed Skeen, Joe Novak, Thorpe Waddingham, and Sam Cline. Jay Bagley was my professor and employer at Utah State and Trevor Hughes was a fellow student. I grew up in this business with Jack Barnett and hired him away from the State of Utah--when he decided to go into consulting, I tried to hire Dee Hansen as his replacement. I did hire Mike Turnipseed but after I got him trained, Dee Hansen stole him from me. And, I know the other speakers on your program, including your great governor, either personally or by reputation. In fact Roland Robison is hired by the federal government just to keep me out of jail.

One would think that this situation would automatically generate an atmosphere of "love and kisses" except for one thing. While most everything else has remained the same, one thing has changed. You see from my former fun-loving, good humor, state water right advocacy position of one year ago, I have now become a "dirty Fed."

When my appointment was announced by President Carter last April 4th I suspect that many of my friends (after the initial shock over how the President could make such an error in judgment) secretly felt good that I was now in Washington to "protect your interests."

As the months have gone by and you have been confronted with what you would take to be challenge after challenge to western water law and institutions, you might well want to ask me "Is you is or is you ain't baby?" Now that's a fair question and I hope today to give you at least a partial answer.

I believe firmly in the right to each state to determine the system and procedures it wishes to follow in the conservation, protection and development of its water resources. Western water law has served us well for over a hundred years and I see no reason it can't serve us as well in the future. Some have the mistaken idea that our western systems and procedures are inflexible and unable to accommodate social, environmental, and economic concerns of today. I am familiar with the "Sacred Cow" theory and have personally faced it in the Idaho Legislature where every proposed amendment to law was met with challenges or radicalism or czarism and loud debate.

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But we were successful in getting the legislature to adopt new laws on:

- Mandatory Water Right Permits
- Dam Safety
- Water Rights Adjudication
- Water Right Transfer Procedures
- Stream Channel Protection
- Underground Waste Injection
- Geothermal Resource Development

and many more.

After nearly 12 years of study, the State Water Board adopted a water plan, which, if the legislature now agrees, will make a good many more changes in state water policy.

These have all been necessary and beneficial. The major regret I have is that despite our efforts of more than 7 years, the state still has not recognized the need for instream resource maintenance flows. Idaho is not alone in this. Few states have so far provided for protection of fish, wildlife, and the aesthetic quality of our streams. That's not too surprising since water law generally is written by representatives of the special economic interest groups of agriculture, municipal, and power uses. But reaches of many western streams are local, state, and national treasures which should not be allowed to be disturbed and destroyed by construction activity or diversion. Such protection should be given, but with full recognition of prior vested water rights. Without that, I could not support an instream flow law. For years I have encouraged the Idaho water users to endorse a law with the necessary protection while expressing a fear that if it doesn't come soon, they may have a law imposed on them which could do violence to existing rights. I hope instream flows is a concept whose time has come. All western states need to give it some attention.

Another favorite subject of mine is federal reserved and Indian water rights. I have been disappointed over the years at a number of my colleagues who have seemingly adopted the "ostrich" approach to such rights, being unwilling to recognize that they exist; hoping, I suppose, that they will go away. The fact is they do exist and must be accommodated in our planning and management of the available resources. The problem is one of identification of the rights and providing for some finality to them.

Having now joined the federal team, my point of view on this subject has not changed. Although several months ago I was told by a Justice Department attorney that anyone who felt as I did about federal reserved water rights had no business working for the federal government.

I advocate a federal act which would call for all federal agencies to inventory and identify their present and foreseeable future uses of water on reserved lands. Such identified water uses should then be adjudicated by watershed and be finalized. I don't see why it should take us so long to recognize that the problem with such rights is not the fact that they exist at all but instead that we don't know what they are. All states need to adopt a program of aggressive water rights adjudication. The
leader among the western states has always been the State of Utah. You have a good program and as a result will have fewer future problems than your neighbors. A similar adjudication effort ought to be underway in all states.

Dam safety is a major area of national concern. Failures in recent years, including the Bureau's own Teton Dam, have focused the public's attention on this issue. Thus far, Congress has responded by providing the Corps of Engineers with some $15 million to undertake inspections of non-federal dams. They are currently seeking trespass authority to enter private land to make such inspections. In my view it would be a mistake to grant any federal agency such authority, particularly since it would duplicate and conflict with already established state programs. If a greater effort is needed, let the federal government provide funding and guidelines for state dam safety programs.

I understand from Dee Hansen that the Utah Legislature recently gave him additional authority in this area. It also included jurisdiction over the safety of federal projects. In 1969 the Idaho Legislature did the same thing—but I was happy they had changed such language when Teton Dam later failed. I don't believe an act of the legislature can give a state official authority over a project authorized by Congress. But I don't intend to argue the point with Dee. We have offered him and all other State Engineers the opportunity to enter into agreements to assure state knowledge of and involvement in our dam safety program. Through this mechanism we will request state participation in our periodic field reviews of existing dams and will invite comment on plans for new structures. We are also available to consult with and provide training courses for state dam inspection forces as requested.

The Bureau is committed to safety. We have moved to improve our internal capability and will utilize outside consultants to assure that all matters bearing on safety are being considered. But ultimately the safety of our 370 dams and dikes which create 280 reservoirs rests with the Bureau. I would like Dee Hansen to share that responsibility with me but I don't really believe he can.

One of the more controversial water right issues surrounding federal water projects continues to be the question of indirect beneficiaries. I used to argue with a water district which contended that the groundwater underlying the district lands belonged to them because the water table had been raised significantly from pre-project conditions. They wanted me to refuse issuance of a state permit for a well within their district and intended to license use themselves, with a fee to enhance district revenues. I told them that what they didn't understand was that the project water was dirtier and therefore heavier than the clean state groundwater and that it sank thereby raising the state water to the surface making it the water available for appropriation. Eventually they gave up.

I now find however a couple of federal policies which could affect my opinion. We are going into court this week to avoid shutting off the water to districts on the Columbia Basin Project in Washington. At stake is a dispute over the distribution of fees paid by groundwater pumpers who benefit from deep percolation of Columbia River water diverted to the
project. To assert the district's claims to share such revenues, they have withheld payment of operation and maintenance on project facilities. If we can't reach a stipulated agreement with them while the matter is litigated by March 15, we will shut off the water.

On the Missouri River mainstem a memorandum of understanding between the Secretary of Interior and Secretary of Army provides for marketing of water drawn from mainstream reservoirs by private entries. The basin states have been offered the opportunity to issue state permits for water uses but with ultimate control of the total volume in the federal government. A similar plan was begun on the Columbia River but was successfully blocked by the states.

It is my feeling that neither of these last two situations would have occurred had the states aggressively asserted themselves. But they now exist and we will have to deal with them. There is also the question as to whether any such beneficiary would be subject to the acreage limitation provisions of reclamation law. In the Sacramento-San Joaquin River Delta area of California federal project waters are transported from upstream reservoirs to the Central Valley service area. Such deliveries provide water of better quality and quantity to those natural flow right holders in the delta. That benefit may bring such users under the acreage limitation provisions of the law.

In the President's recommendations to the Congress on the "hit list" water projects last year, he touched a sensitive nerve in the states with regard to water law. In his recommendation on the Central Arizona Project he proposed to "make further funding contingent upon further study of groundwater supplies and institutions of groundwater regulation and management by the State of Arizona." A recent report by the congressional task force investigating the 650,000 acre San Luis Unit of the Central Valley Project in California called for integration of surface and groundwater supplies and recommended that the state adopt laws to adequately regulate groundwater withdrawals.

In both cases billions are being expended in public tax dollars to bring water into an area where economics have been established relying heavily on groundwater supplies which are seriously over appropriated. And there seems to be little or no effort within the states to correct the situation. I remember a wise member of Congress who said several years ago: "Must the federal government forever use the public resources to bring water to every fool no matter into what inhospitable place he may choose to wander?"

I used to be amazed in visiting Phoenix to arrive at Sky Harbor airport and upon leaving the terminal see a large billboard of the local water agency saying "Welcome to Phoenix" and advertising all the desirable features of the area attempting to attract more growth and business. As a representative of an upper basin state at the time I thought they ought to replace it with one which would read "Warning to all visitors--don't consider locating permanently in this area--we are out of water."

A visit to the State Land Department in which groundwater management was located revealed a program with little or no regulation of new development and the fact that groundwater levels were falling at a rapid rate resulting in closure of many farming areas.
I recognize that "mining" of groundwater is a useful concept for areas with long-term recharge problems—it's simply not a concept to which I subscribe.

There must be fuller integration of use of surface and groundwater supplies. Many states developed independent surface and groundwater codes. In dealing with connected inter resources—rights ought to be exchangeable.

For example, economic growth in the Big Lost River drainage in Idaho is stagnant due in part to the fact that the waters of the river sink and appear again five different times from its headwaters to the Lost River sinks. Yet 300,000 acre feet of groundwater annually flow out of the valley untapped because any major development of it will affect surface water rights. What is needed is a basin-wide conservancy-type district with authority to integrate surface and groundwater uses. Water shortages could be met and the local economy considerably enhanced.

The "bottom line" of this discussion is that states need to assure that their water laws and procedures provide adequate controls to avoid over commitment of the available resources while at the same time making it possible to fully consider and integrate use of all local water supplies.

Finally, I am committed to Bureau of Reclamation compliance with state water law. As an example, in a recent memorandum to all regions approving the form of temporary water sales contracts of surplus project water I added a new requirement. In the past I was bypassed as State Engineer when the Bureau "rented" or otherwise made water available for temporary uses—some of which were outside of the state right issued for the project. Approval of such uses is now contingent upon their being "in accordance with the water right held by the United States or have the approval of the State Engineer."

Is I Is or Is I Ain't Your Baby------------------------

I is--but I ain't—My state water rights law background will never leave me and will continue to affect my thinking. But I recognize it is imperfect law and needs to be constantly updated. No State Engineer enjoys the luxury of working in a state with a "perfect" system. Indeed there is no such thing—but you can expect the federal government to continue to encourage modifications to assure considerations found to be in the public interest.
In the beginning, the United States owned most of the land and the water appurtenant to it in the western states. As the west opened to settlement, some of the land passed into private ownership, by various means. Title to the water appurtenant to such land, however, did not automatically pass with it. Water for irrigation, for extraction and processing of minerals and for other beneficial purposes, was generally obtained under state or territorial water right laws based upon local customs and practices. These rights later were expressly recognized by the Congress in the Acts of 1866 and 1870. For example, the former act provided:

Whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes, have vested and accrued, and the same are recognized and acknowledged by the local customs, laws, and decisions of courts, the possessors and owners of such vested rights shall be maintained and protected in the same manner; Act of July 26, 1866, 14 Stat. 253.

By subsequent act, the Desert Land Act of 1877 (act of March 3, 1877, 19 Stat. 377), the Congress provided, as a legal concept, for actual severance of water from the land to which it was appurtenant and thus allowed for their independent acquisition and transfer. The act generally was interpreted as recognition by the United States of the practically exclusive jurisdiction of states and territories in the area of water rights, at least as related to non-navigable streams.

For a considerable period of time thereafter, it was generally presumed that water right matters in the arid states of the west were principally of state and territorial concern, as opposed to federal concern. With the advent of the so-called Winters Doctrine, initially enunciated by the Supreme Court in a 1908 case, however, recognition was given to Indian water rights that are acquired pursuant to federal initiative and independent of state laws. In that case, Winters v. United States, 207 U.S. 564, 28 Sup. Ct. 207, the Supreme Court held that in establishing the Fort Belknap Indian Reservation in Montana, the United States impliedly reserved water from the adjacent Milk River in sufficient quantity to irrigate reservation lands. The Court, in its opinion, said: "The power of the Government to reserve the waters and exempt them from appropriation under the state laws is not denied, and could not be.*** That the Government did reserve them, we have decided." Thus in Winters there was recognition of an Indian water right which came into being as of the date of the establishment of the reservation and was superior to subsequent appropriated rights secured under state law. What the court said, in effect, was that by the Act of 1877 the United States did not surrender to the states

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all of the severed water, but only that part which had not been reserved, if not for all purposes, at least for Indian reservations.

It would have appeared, with the coming into being of the Winters Doctrine, that only a short step would be necessary to the recognition of water rights for other federally-created reservations not associated with Indians. That short step, however, was not actually made for 55 years. While there were a number of Supreme Court cases bearing upon federal proprietary rights in water in the western states, most notably the Pelton Dam case (Federal Power Commission v. Oregon, 349 U.S. 435, 75 Sup.Ct. 832 (1955), which held that the Federal Power Commission had authority over the licensing of a dam on reserved lands of the United States) it was not until 1963 in Arizona v. California, 373 U.S. 546, 83 Sup.Ct. 1468, that the principle enunciated in Winters was applied to non-Indian federal reservations.

In that case, the Supreme Court specifically upheld Winters as it related to Indian Reservations and then expanded the Winters Doctrine to cover over federally-created reservations such as national forests, wildlife refuges, and recreation areas. The court gave no explanation for its decision in this regard except to say:

The Master ruled that the principle underlying the reservation of water rights for Indian Reservations was equally applicable to other federal establishments such as National Recreation Areas and National Forests. We agree...that the United States intended to reserve water sufficient for the future requirements of the Lake Mead National Recreation Area, the Havasu Lake National Wildlife Refuge, the Imperial National Wildlife Refuge and the Gila National Forest.

Arizona v. California, unlike Winters, dealt with waters of a navigable stream, the Colorado River. In deciding that the United States could reserve waters of the Colorado for federal purposes, the court drew no distinction between federal rights in navigable as opposed to non-navigable streams. It has long been recognized that the federal government, at least at one time, held proprietary rights in non-navigable waters appurtenant to its land. The Acts of 1866, 1870, and 1877, discussed above, impliedly made such recognition. But it was generally presumed that the United States held no such proprietary rights in navigable streams. In Arizona v. California, the court simply extended the proprietary concept to include navigable waters, but without explanation as to why.

The recent case of Cappaert v. United States, 426 U.S. 128, 96 Sup.Ct. 2062 (1976), the so-called pup fish case, provides additional guidance for applying the bare-bones reservation doctrine set forth in Arizona v. California. Cappaert involved the question of whether, in creating the Devil's Hole National Monument in Nevada, the federal government reserved water rights in unappropriated waters for use in connection with the movement. Devil's Hole contains a "remarkable underground pool" in which a unique species of desert fish (the pup fish) are found. The pumping of groundwater by Cappaert, owner of land near Devil's Hole, resulted in lowering the level of the pool in the monument, threatening the existence
of the pup fish. The Supreme Court ruled that the United States, in establishing the monument, intended to conserve the scenery and wildlife therein, and that it reserved sufficient groundwater to carry out this purpose. Cappaert was thus enjoined from pumping activities to the extent they interfered with the enjoyment by the United States of this reserved right.

Cappaert summarizes the Federal Reservation Doctrine succinctly as follows:

This court has long held that when the Federal Government withdraws its land from the public domain and reserves it for a federal purpose, the Government, by implication, reserves appurtenant water then unappropriated to the extent needed to accomplish the purpose of the reservation. In so doing, the United States acquires a reserved right in unappropriated water which vests on the date of the reservation and is superior to the rights of future appropriators. Reservation of water rights is empowered by the Commerce Clause, Art. I., §8, which permits federal regulation of navigable streams, and the Property Clause, Art. IV, §3, which permits federal regulation of federal lands. The doctrine applies to Indian reservations and other federal enclaves, encompassing water rights in navigable and non-navigable streams.

Cappaert stressed two points: (1) That the intent to appropriate previously unappropriated water in connection with the creation of a federal reservation will be inferred if the water is necessary to accomplish the purposes for which the reservation was created, and (2) the reservation of water is limited only to that amount necessary to fulfill the purposes of the reservation.

As is obvious, the reservation doctrine has emerged rather late in the history of water use and development in the west. It wasn't an established part of the law until 1908, as regards Indian Reservations, and not until 1963 was it fully recognized with respect to other federal reservations. But although its advent was late, its application for priority purposes usually is early, with resultant detriment to rights already established under state law. Thus, for example, state water rights acquired long ago and enjoyed for many years may have to give way to competing but superior federal reserved rights which, as it turns out, antedate them, even though existence of the reserved rights is only recently established.

At the present time, few federal reserved rights have been finally adjudicated. At the numerous federal reservations in the west—the national parks, forests, military reservations, reclamation withdrawals, fish and wildlife reserves—may have water rights that spring from the fact of their creation is now evident. But the rights of a given reservation probably cannot be known with finality until they are determined by a court of competent jurisdiction. For the most part, such final determinations have yet to be made. This creates an uncertainty about which the states
and water right holders under state law have justifiably complained. Up until now, the United States has been slow to move in the direction of establishing and quantifying the reserved rights it may have. Where it has done so, it generally has acted in response to actions of others who threaten its water needs, as in Cappaert. And up until recent times, the United States' immunity from lawsuits hindered state action to determine federal reserved rights.

In 1971, the Supreme Court decided two cases, United States v. District Court, County of Eagle, 401 U.S. 520, 91 Sup.Ct. 998, and United States v. District Court, Water Division No. 5, 401 U.S. 527, 91 Sup.Ct. 1003, in which it held that under the McCarran Amendment, 43 U.S.C. 666, which provides for waiver of immunity by the federal government in state water right proceedings where certain conditions prevail, federal reserved water rights may be adjudicated. This has opened the way for state initiative to require the United States to declare and defend its reserved right claims. Pursuant to the McCarran Amendment, the State of Colorado has been engaged in general adjudication proceedings in a number of its various water divisions for some years now, and in at least one jurisdiction the proceedings have advanced to the point where a final adjudication by the trial court is expected at any time. Of course, appeals may and likely will be taken from some of the lower court decisions to the Colorado Supreme Court, and the United States may wish ultimately to seek review by the United States Supreme Court. To date in the Colorado proceedings the United States has claimed reservation doctrine rights for lands under the jurisdiction of the Bureau of Land Management, the Forest Service, the National Park Service, the Fish and Wildlife Service, Indian Reservations, and the armed forces. In most cases, aside from the Indian Reservations, the quantities of water claimed for consumptive use are relatively small, although that judgment may depend on whether the matter is viewed from a federal or non-federal perspective. Larger amounts of water are claimed for instream value purposes in connection with National Parks and Forests, and scenic and general recreation uses. This latter area would appear to be the most difficult to decide and a likely subject for appellate review. An interesting aspect of the federal posture in the Colorado proceedings thus far is that the United States has not yet claimed rights for water necessary to develop the rather vast areas set aside as Naval Oil Shale reserves in western Colorado. If it were to do so, it could involve a significant quantity of water.

In its final report to the President and the Congress, the National Water Commission in 1973 recommended the enactment of a National Water Rights Procedures Act that, among other things, would provide for compensation by the United States to holders of state water rights whose rights are adversely affected by exercise of the federal reserved right doctrine. To date, Congress has not taken favorable action on this recommendation. There seems to be no discernible ground swell of support for it at this time, although this could change if adjudications such as those presently underway in Colorado result in widespread hardship to holders of state water rights.

Another proposal for helping resolve the problems created by the federal reservation doctrine was suggested by the water resources council in conjunction with the Department of Justice in 1974. Under this plan,
Congress would require that all federal claims be identified and quantified within a 5-year period. Provision would be made for the claims to be subject to challenge in Federal Court. Nothing has really come of this proposal, either.

While the principal effort by the states to adjudicate federal reserved rights is presently found in Colorado, there has been some activity in this regard in other states since the Eagle County and Water Division No. 5 cases. Of particular interest is the case of Mimbres Valley Irrigation Co. v. Salopek, New Mexico 564 P.2d 615, A New Mexico Supreme Court case involving a general adjudication of the waters of the Rio Mimbres. The court held that the United States is not entitled to a water right under the reservation doctrine for recreation and minimum instream flows in connection with the Gila National Forest on the ground that such purposes were not contemplated in creation of the forest. If upheld, the decision would appear to limit considerably the quantity of water the United States can rightfully claim for the forest under the reservation doctrine. The United States Supreme Court has agreed to review the case.

In summary, the reservation doctrine is firmly established as a water law principle and it is not likely to disappear, much though that might be hoped for by state and private interests. There is, however, much that remains to be settled as regards uses that may be recognized in connection with individual federal reservations and the total amount of water that may be required for such recognized uses. Obviously, each reservation will have to be separately considered. Colorado, after some eight or nine years of effort, is finally getting to the point of decision as regards these questions, but it probably will take several more years in appellate review before they are finally resolved. Other western states appear not to be as far along as Colorado in their determination processes, so it is evident that we are still a long way from finally determining the extent of federal reserved water rights. Probably, we, both the federal and state interests, may just as well get on with it.
INDIAN WATER RIGHTS

by
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I. Introduction

Many Indian reservations are located in the arid portion of the western United States where water shortages are commonplace, hence, the physical availability of water for development of resources is all too often inadequate. As a general rule, most Indian tribes do not have all of their water rights either quantified or adjudicated so as to be in a position to effectively deal with third parties over the lease or sale of their water without inviting lawsuits from competitive users. To further complicate the matter, many Indian tribes have no desire to deal with industry or develop reservation resources, due primarily to their desire to preserve tribal cultural values which may be threatened by an influx of non-Indians to the reservation, the imposition of strange business ethics, and physical changes in the environment. An understanding of the nature of the Indians' legal right to the use of water, as well as a working knowledge of tribal government and the federal trustee relationship as they pertain to the particular reservation from which water is sought, is vital.

II. Nature of Indian Water Rights

Most Indian tribes subscribe to the doctrine of tribal sovereignty which is based upon the historical fact that tribal government antedated the creation of the federal government or individual states. The right to use and regulate water for Indian purposes, therefore, is an aboriginal right which has not been abrogated by assimilation into the federal system. While many may wish to quibble with the "sovereignty" or "aboriginal right" theories, the cornerstone of Indian water law is the decision of the United States Supreme Court in Winters v. United States in which the Supreme Court held that at the time of the treaty between the government and the Indians, there was an implied reservation by the Indians of enough water to meet the purpose of the treaty, namely to enable the Indians to "become a pastoral and civilized people." The court found that the Indians, in ceding vast areas of land to the United States, retained sufficient water on the remaining land (reservation) to make it inhabitable for themselves. Thus, it appears, the court based its decision upon the treaty rights of the tribe, which, though not explicit as to water, were nonetheless construed so as to include such water as was a prerequisite to civilized life. Later cases held that the amount of water required to be reserved for Indian tribes was directly tied to the purpose of the reservation even though water rights were never mentioned in the treaty. The Winters doctrine, as this line of cases has come to be

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known, was further amplified by U.S. v. Hibner\textsuperscript{7} wherein it was held that the reserved water rights could not be lost by abandonment or non-use.\textsuperscript{8} Later, in 1938, the Supreme Court protected the alienability of tribal water rights to non-Indian purchasers of tribal land.\textsuperscript{9} Finally, the court took the final step by recognizing Indian water rights which were not evidenced by treaty or agreement, but rather by Executive Order,\textsuperscript{10} thereby creating a federal right which vested at the time of the creation of any Indian reservation by the federal government. The distinction between this judicially recognized federal right and the tribal sovereign or aboriginal right to water seems no longer to be of practical significance except in establishing a priority date vis-à-vis other water users or in interpreting the intent of Congress in establishing the reservation.

Contrasting the water rights acquired by Indians under Winters Doctrine to those water rights acquired pursuant to state "prior appropriation" laws, the following three differences are significant:

1. **Priority** under Winters exists merely to establish the time when waters were withdrawn from the public domain—either aboriginally or at the time of the creation of the reservation. Priority under the "law of prior appropriation" signifies the time in which an applicant complies with the statutory requirements of filing and diverts water for an approved beneficial use.

2. **Appropriation** under state law requires that an actual diversion of the water be made before the right may be perfected. Conversely, no such requirement is necessary under Winters:

   Manifestly the Indians cannot be expected to acquire water rights to any considerable extent through prior appropriation, because they are not far enough advanced in the art of agriculture to reduce the water to a continuous use, and the water of the public streams that they shall finally need depends largely upon their progress in this art. The government, however, being their guardian, has a most important trust to perform in this relation; that is, so to conserve the waters of such streams as traverse or border the reserve as to supply the Indians fully in their probable, or, I may say, even possible future needs.\textsuperscript{11}

3. **Abandonment or forfeiture** of water rights under state law is designed to prevent waste and reward the diligent. The courts have precluded application of the doctrine to Indian Winters rights.\textsuperscript{12}

### III. Quantity of Indian Water Reserved

The Winters case itself approached the question of quantification by stating that sufficient waters were reserved for:

.. all their beneficial use, whether kept for hunting, "and grazing roving herds of stock," or turned to agriculture and the arts of civilization.\textsuperscript{13}

Subsequently, Conrad Investment left the decree open to modification to accommodate future needs\textsuperscript{14} while the Walker River Case used population to determine the quantity of water.\textsuperscript{15} Ahtanum reserved for the
tribe the remaining water in the creek "to the extent that the said water can be put to a beneficial use." \(^{16}\)

In *Arizona v. California*, \(^{17}\) the Supreme Court set a standard for the Colorado River Basin after receiving the previously mentioned cases. The court rejected the population criterion and opted for irrigable acreage in the following language:

>(T)he only feasible and fair way by which reserved water for the reservations can be measured is irrigable acreage. \(^{18}\)

The court then decreed a fixed amount of water for each tribe in the adjudication based upon the total acreage susceptible to irrigation. \(^{19}\) Relying strictly upon *Arizona v. California*, any tribe could readily quantify its entire water entitlement by inventorying lands which can be irrigated and then applying the appropriate duty to adequately irrigate such acreage. The application of such a formula will yield a set figure or fixed water entitlement, which many non-Indians deem essential so as to be able to allocate the balance of the water in the particular reservation drainage area.

The "National Indian Water Policy Review," \(^{20}\) dated January 23, 1978 announced that one of the objectives of the present administration of the Department of the Interior is:

To develop appropriate methods to determine the present and future water requirements of the Indian people. \(^{21}\)

An elaborate process is detailed for the inventorying of surface and groundwater resources located on and adjacent to Indian reservations, evaluation of storage potentials, calculation of present water requirements for all uses, and a determination of projected water needs utilizing potential resources on the reservation. \(^{22}\) Interestingly enough, the process of quantification of Indian water rights was opposed by the Joint Committee on Indian Water Rights \(^{23}\) in the belief that

Quantification of Indian Winter's Rights is neither necessary nor desirable at this time. A final determination, made at any given date, is inconsistent with the open-endedness of the right itself. \(^{24}\)

Resistance of many tribes to quantification may be bottomed in the conviction that a strict standard of irrigable acreage as set out in *Arizona v. California* is inadequate to serve all the projected needs of reservations which must support a birthrate many times the national average and develop large stores of mineral and energy resources. It has been effectively argued that mineral development is embraced within the beneficial use contemplated by the Winters Doctrine. To deny the use of water for mineral development would "constitute a taking of Indian property rights which would be subject to the payment of just compensation by the United States." \(^{25}\)

Notwithstanding *Arizona v. California*, most tribes and the federal government tenaciously hold to the position that Winters Rights
include all potential uses of water including "irrigation; domestic use; livestock; municipal; industrial and public services; fish and wildlife; outdoor recreation; mineral production; aesthetic and religious needs; instream flow requirements and water quality." Obviously, more extensive use of water claimed by the Indians will require a sophisticated and time-consuming procedure to fully quantify such rights, which begs the expedient legislative solution. However, courts no doubt will be injected into the matter, sooner or later, to rule specifically on quantification issues, which leaves "negotiated settlements between the tribes and competing parties" as one of the most promising alternatives to determine water entitlement or quantification.

IV. Availability of Indian Water

Indian water under the Winters Doctrine is susceptible to quantification when an agreeable formula is finally fashioned. Then, once the water has been quantified, it becomes a vested property right which should be available for full utilization by the owner for all uses, including lease or assignment, as is in the best interests of the owners and consistent with the terms of the trust (federal guardianship). Since the right is not subject to or dependent upon state water laws with appropriation and utilization requirements, Indian water is divorced from many of the traditional western water law concepts and considered instead as an item of Indian property. Unfortunately, very little has been done to incorporate federal water requirements into the state system, thereby holding up or giving a tentative nature to state river adjudications. The U.S. Supreme Court has recognized the problems and responded by allowing state courts to incorporate federal water rights into state water right adjudications. See Colorado River Water Conservation Dist. v. U.S. There must come a time when anyone can readily ascertain all water uses on a particular stream, whether they be federal or state in origin.

The logic of permitting present non-agricultural use of the reserved water is apparent. Most competitive users view the basis of the quantification resting on the apparent agriculturally premised intent at the time the reservations were created. That intent, and indeed federal Indian policy in general, has undergone several radical shifts since most reservations were created. Present federal policy is that of Indian Self Determination, a policy far removed from the "give them dirt and make them farmers" policy of the allotment era when many reservations were created. The current policy encourages individual responsibility and tribal diversity consistent with the needs and wants of the particular Indian people involved. Indeed, in the Congressional declaration of policy accompanying the 1975 Indian Self Determination Act, states:

The Congress declares that a major national goal of the United States is to provide the quantity and quality of educational services and opportunities which will permit Indian children to compete and excel in the life areas of their choice, and to achieve the measure of self-determination essential to their social and economic well-being. (Emphasis added.)
Congress is no longer obsessed with creating Indian farmers; it would be anomalous indeed if the one Indian resource necessary to all life activities were declared unavailable to help the Indians effectuate the present federal policy. From a historical perspective, it is clear that decades of federal attempts to make farmers of the Indians have been only marginally successful. The potential economic well being which is essential to meaningful self-determination, lies, for many Indian reservations, in the development of their natural resources. Such development requires that the Indian water be available for commercial, mining, or other uses incident to the development of the other resources.

By similar logic, the meaningful utilization of the Indian's vested property right in water for the benefit of the Tribe may require that the water be used off of the reservation for a period of time. Viewing Indian water as the property of the tribes, those tribes should, with the consent of their guardian, be able to utilize that water however they wish. Surely where, as on many reservations, there are no present funds available for development of on-reservation uses for Indian water, the denial of the Indians' right to lease or assign water rights to off reservation users has a multiple adverse effect. It denies the tribe of any use whatsoever of an acknowledged property interest; it denies income to the tribes which could be used for governmental and economic enrichment programs for the reservation and its residents; and it may prevent the water from being put to any beneficial use by anyone.

Plainly, the oil, coal, and uranium resources found on many Indian reservations need not be utilized for Indian agricultural pursuits only on the Indian reservations. They may be developed by non-Indians and processed and utilized off of the Indian reservations where appropriate. Water resources became the property of the Indian tribes upon the creation of the reservations just as surely as did the oil, coal, and uranium. It may safely be said that the creators of the reservations no more intended for there to be coal mines and oil wells on them, than they did for there to be other non-agricultural pursuits by the Indians. Any attempt to limit Indian water utilization to on-reservation uses would be as short sighted and ill conceived as requiring the Indians to utilize their energy resources for personal use only. The creating intent of another era should not be perpetuated to impede the economic development of the Indians in this more enlightened era.

V. Jurisdiction to Administer Indian Water

Any agreement affecting the use of Winters Doctrine Indian water rights is subject to the approval of both the Indian tribe involved and the Secretary of the Interior. See 25 U.S.C. §2:

The Commissioner of Indian Affairs shall, under the direction of the Secretary of the Interior, and agreeably to such regulations as the President may prescribe, have the management of all Indian affairs and all matters arising out of Indian relations.

See also Armstrong v. United States: 33
The management of water and water projects on a reservation is clearly within the scope of the general statutory authority granted to the Commissioner of Indian Affairs... Congress, however, has confirmed in (or at least delegated to) Indian tribes organized under the Indian Reorganization Act the right and power... to prevent the sale, disposition, lease, or encumbrance of tribal lands, interests in lands, or other tribal assets without the consent of the tribe... The authority to invoke judicial process to assert and protect Indian water rights exists concurrently in the federal government and the Indian tribes themselves.

It should be presumed that any proposal which calls for the use of Indian water either on or off an Indian reservation will receive close scrutiny by both the Indian tribe involved as well as the BIA as the supervising trustee. After decades of acceptance of shifting federal policies of extermination, isolation, assimilation and termination, we are now in the era of Indian Self-Determination, an emerging current of tribal awareness which has received formal Congressional approval and support. Years of dissatisfaction with federal supervision and "protection" have resulted in a re-emergence of what has been referred to as "tribal nationalism." This ideal expresses itself in many ways, including increased active tribal participation in Indian resource utilization plans and projects, and the insertion of traditional Indian cultural ideals into the decision-making process.

The results of the emergence of this tribal revitalization include, in many cases, tribal water, planning, and resource development codes which provide a body of tribal substantive and procedural rules, regulations, and policies which must be considered in addition to federal laws, rules, regulations and policies. Even tribes lacking such formal codes will likely conduct their own evaluations based upon tribal, social, cultural, economic and historical values on a case by case basis.

VI. Federal Restrictions on Leasing Tribal Water

There are currently no specific federal laws or regulations dealing with the subject of leasing Indian water rights. 25 U.S.C. §177 provides that, No purchase, grant, lease, or other conveyance of lands, or of any title or claim thereto, from any Indian nation or tribe of Indians, shall be of any validity in law or equity, unless the same be made by treaty or convention entered into pursuant to the constitution.

Though not clearly applicable, this statute casts doubt upon any transaction which does not depend upon some act of Congress for authority.
A reasonably sound basis of inferential statutory authority can be found. 25 U.S.C. §2 gives the Commissioner of Indian Affairs "management of all Indian affairs and of all matters arising out of Indian relations." The scope of this authority has been held to include "the management of water and water projects on a reservation," though in a context which casts some doubt on the broad applicability of the assertion.\textsuperscript{38}

In light of the fact that Congress has legislated specifically on the leasing of various specific types of Indian lands for various purposes, a more specific source of the statutory authority seems desirable. 25 U.S.C. 81, dealing with "contracts with Indian Tribes or Indians," has been argued to apply to Indian water agreements. It provides that:

\begin{quote}
No agreement shall be made by any person with any tribe. for the payment or delivery of any money or other thing of value. or for the granting or procuring any privilege to him. unless such contract or agreement be executed and approved as follows:
\end{quote}

Thereafter follows certain procedural formalities, including obtaining the approval of the Secretary of the Interior and the Commissioner of Indian Affairs.

A further possible source of statutory authority for the leasing of Indian water may be found in 25 U.S.C. §476 dealing with the "Organization of Indian Tribes;" This section, a part of the Indian Reorganization Act of 1934, provides that Tribes organized thereunder shall continue to possess "all powers vested in any Indian tribe or tribal council by existing law" and confirms in such tribes other powers, including the power "to prevent the sale, disposition, lease, or encumbrance of tribal lands." The Department of the Interior\textsuperscript{39} in interpreting these provisions has recognized broad powers over tribal property, subject only to the approval of the Secretary of the Interior.\textsuperscript{40}

It should also be noted that Congress has specifically authorized the leasing of Indian lands for mining and oil and gas development, and it is reasonable to infer therefrom that Indian water rights essential to that development could be leased in connection therewith.\textsuperscript{41}

Assuming that the right to lease Indian water rights can be adequately supported under existing law, then prospective lessees should look to the existing BIA leasing regulations for procedures to follow. These regulations are found at 25 C.F.R. §131.1 et seq. The definition of "Tribal land" in these regulations includes "any interest" in land, a phrase which can arguably include water interests.\textsuperscript{42}

Under the present somewhat uncertain status of the law, a safer approach to the utilization of Indian water rights would involve entering into joint-venture-type arrangements for mineral development directly with the Indian tribes involved. Such an approach should eliminate the question of leasing or otherwise conveying the Indian water, since the tribe would then be using its own water on its own project. Such an approach is also likely to be more favorably received by tribes who are increasingly interested in direct participation in their mineral resource and other reservation development programs.
Conclusion

Indian water rights are firmly established, yet remain difficult to utilize for the benefit of the tribe. The application of non-Indian commercial and industrial resources to Indian natural resources should, if intelligently handled, yield substantial benefits for both groups. The challenge for the future lies with the interested parties to either work together in an imaginative and creative fashion, or forfeit development of Indian Reservations and resources.

Footnotes

4. Id. 207 U.S. at 576.
7. 27 F.2d 909 (1928).
13. 207 U.S. at 576.
14. See note 11 supra.
15. See note 10 supra.
16. See note 8 supra.
17. Supra note 12.
18. 373 U.S. at 601.
19. See note 6 supra.
21. Transmittal memorandum of Forrest J. Gerard to the Assistant Secretary—

22. See note 20 supra, pp. 35-37.

23. National Congress of American Indians and National Tribal Chairman's
Association.


25. Wilkinson, Glen A., "Indian Control and Use of Water for Mineral
Development." RMMLF Institute on Indian Land Development, April
1976, citing Shoshone Tribe v. U.S., 299 U.S. 476 (1973) and Memoninée

26. See note 20 p. 36, paragraph 3.

27. Id. at p. 6, paragraph 5.


30. 25 U.S.C. §450a(c).


33. 306 F.2d 520, 522 (10th Cir. 1962).


37. See note 29 supra.

38. See Armstrong v. U.S.; note 33, supra.


41. See note 31 supra.

42. 25 C.F.R. §131-1(c).

43. 13 Stat. 63.
PL 92-500: AN IMPORUNTATE ENCROACHMENT 
ON WATER RIGHTS ADMINISTRATION

by

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Public Law 92-500, comprising the 1972 amendments to the Federal Water Pollution Control Act, introduced many significant philosophic and strategic departures from earlier approaches toward solving water pollution problems. Conceptually, the act purports to "restore the chemical, physical, and biologic integrity of the nation's waters" by regulating all effluents by permits. The periodic reissuance of these permits entails progressively tighter restrictions until by 1985 discharge of any pollutants in effluent discharges is to be totally eliminated. Pollutants are broadly identified in the act and include the material of dredged spoil and fill. For a number of reasons (related to jurisdictional responsibility, legal basis or authority, etc.) the Army Corps of Engineers was given responsibility for operating the permit system for dredge and fill activities. Broadening the Corps authority under Section 404 to make it as geographically encompassing as EPA authority under Section 402, and orienting the regulation of dredge and fill activities to accomplish environmental purposes (apart from water quality objectives), has led to a totally new interaction with traditional state administration of water.

NPDES and Water Rights Administration

As has been previously noted, the conceptual basis of PL 92-500 was to provide regulatory control over the quality of effluents from all water-using activities and enterprises, and then proceed, to the extent technologically possible, to steadily decrease permitted levels of pollutants in effluents until eventually such discharges of pollutants are eliminated altogether. The enforcement mechanism is through the requirement of effluent discharge permits which specify pollutant levels to be tolerated and penalties to be applied for any violation thereof.

The permit program (referred to as the National Pollutant Discharge Elimination System, NPDES) is established by Section 402 of the act. The specific pollutants to be regulated are identified in the act and all point source dischargers into navigable waters must comply with Section 402. From the language of the act, NPDES was intended to terminate the Corps of Engineers permit program under the 1899 Refuse Act (which had been discovered as a surprisingly powerful regulatory tool by EPA) and establish in its place an expanded and all-inclusive program to be administered exclusively by EPA. However, the identification of dredged spoil and fill material as pollutants and the EPA control of dredged spoil sites introduced questions about the relationship and impact on the Corps' authority and

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responsibility in the construction of dikes, the maintenance of navigable channels, ports, etc. This led to the insertion of Section 404 as a jurisdictional concession which allowed the Army Corps of Engineers to operate a separate permit system for the discharge of dredged and fill material. Some extremely important ramifications emerge from this section. In fact, it is largely the ramifications of Section 404 which trigger the most significant impacts of PL 92-500 on the administration of state water rights.

Regulation and Control of Dredging and Filling Activities

The NPDES as envisioned in Section 402 was intended to apply broadly in controlling water pollution everywhere. It is reasonable to assume that permits handled under Section 404 should also have the broadest possible geographic coverage. But the historically accepted definitions of navigable waters in Corps regulations and the traditionally restricted authority and purpose of the Corps programs presented some compatibility problems with respect to geographic coverage between the permitting authorities of the two sections. Making the Corps responsibility under Section 404 as geographically broad as the EPA authority under 402 required the Corps to make quantum expansions of its jurisdictional authority leading to a totally new interaction with state administered waters not previously experienced.

State regulatory programs over water use and water pollution apply universally to all rivers, streams, lakes, ponds, reservoirs, canals, and marshlands and pertains to all uses and users—irrigation, municipal, domestic, industrial, recreational, etc. The State Engineer must authorize original uses and change in use which inevitably involve such things as construction and repair of dams, diversion and regulatory works, dikes, pipelines, canals, etc. State law provides for public inputs to all water rights decisions through advertising all applications, receiving protests and holding public hearings. Any applications which involve a relocation or alteration of natural streams or which involve potential pollution problems are routinely sent to other state and federal agencies for comment before any action is taken.

However, aside from the agency and geographic jurisdictional problem, the regulation and control of dredge and fill materials, and hence, dredge and fill activities introduces a different dimension to accepted objectives of water quality control.

The obtainable justification for including dredged spoil and fill materials as pollutants in the PL 92-500 legislation was that the control of land was deemed necessary to preserve environmental quality of which water is a key element. The obvious objective here is to safeguard the "integrity" of water in the environmental sense. Certainly the placing of a numerical effluent standard on earth materials which might be borrowed from one location and placed in another hardly fits in the construct of NPDES in connection with water pollution concerns in a health context. The real environmental issue involving dredge and fill is the protection of wetlands. The conversion of wetlands to terrestrial environments through dredging/filling is achieved at the sacrifice of an aquatic habitat. This is really a land use issue or an environmental issue with a somewhat
tenuous connection to control of water pollution in the normal sense. The generally held justification for water pollution control is in the protection of health and in increasing the utility of the resource by keeping its quality characteristics suitable for a larger variety of users. However, fortified by some notable court decisions, federal jurisdiction over dredging and filling activities under Section 404 extends to all waters, whether navigable or not under traditional legal tests. And it further reinforces the basis for protecting "lands" that are "wet" but are not wetlands in the ordinary and accepted sense of the word.

Dredge and fill are synonymous with (or special cases of) a variety of excavating and filling activities that are commonplace in the site preparation for the construction of buildings, the cut and fill employed in construction of highways, dams, bridge abutments, dikes, canals, pipelines, and even marinas, boat harbors and man-made marshlands. These are typical of the kinds of activities generating "dredged spoil" and "fill" subject to prohibition except by permit under PL 92-500. Thus, when navigable waters are defined as "all waters of the United States" and earth materials and earth-moving activities come under the definition of "pollutants" for which NPDES applies, one can see the potential impact on state water rights administration.

State administration of water uses and protection of water rights entails a surveillance of any activities that may have detrimental impact on user entitlements. So far as protection of aquatic environments are concerned, Utah law prohibits the alteration of the bed or banks of any stream without permission. This would not include wetlands which are fee simple. Neither would it include normal construction activity and routine maintenance and cleaning of company-owned canals. Utah law provides protection for the primary environmental values which are also the major concern of PL 92-500. However, it does not include some of the infrequent earth-moving activities having remote potential for any significant or long lasting degradation of water quality.

Problems of Preparation and Implementation of Regulations

One can appreciate the dubious task of writing regulations to implement PL 92-500. It is an extremely complicated law whose separate elements are purposely interlocked but which lacks clarity both in concept and in language. There is much disagreement over the interpretation of important sections. The law applies to all waters of the U. S. in an almost limitless variety of hydrologic, geographic, topographic and geologic settings. Regulations must apply to the whole spectrum of water users and uses taking place within these uniquely different geophysical settings and constituting a wide variety of economic, demographic and social situations. And, most importantly, the application of the regulations are expected to result in meaningful improvements in water quality. Presumably, the congressional directives in Section 101 of the act were to be observed in preparing the implementing regulations wherein procedures used should:

..."encourage the drastic minimization of paperwork and interagency decision procedures, and the best use of
available manpower and funds, so as to prevent needless duplication and unnecessary delays at all levels of government" and that they incorporate the "policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources, and to consult with the administrator in the exercise of his authority under this Act."

Regulations must give heed to the notion of "elimination of pollutant discharges," which is a cornerstone of the act itself, even though this requires repudiation of some time-tested concepts of economic trade-offs and equity which are basic to most economic and legal thought. Further, there is the matter of reconciling regulations under the new law with physical reality. Mother Nature has shown little inclination to alter the laws of gravity and thermodynamics even though duly mandated under the "elimination of discharges" philosophy.

Then, there is the whole set of contradictory factors relating to the "navigable waters" definition which regulations must try to reconcile or make plausible; i.e., the expanded geographic scope which must apply to intrastate waters neither potentially involved in commerce by water transportation nor connected to waterways so involved; the application of a point discharge permit system to regulation of non-point source pollutants and activities involving conventional fill materials that are not pollutants in the normal sense; extending regulatory control over lands that are wet using water regulation as the medium to do so; and perhaps many other such difficult reconciliations. Much of the problems and controversy arises from the fact that PL 92-500 is being used as a means of accomplishing environmental objectives outside the stated water pollution control objective of the act itself. Hence, regulations must be couched in language and descriptions that try not to violate the ostensible purpose of the law yet which permit regulation of situations not coincident with the stated water pollution control purpose of the act. Further, the regulations must be in sufficient detail and specificity that particular sites and activities can be definitely regulated (dredge and fill of wetlands) while applying in a rather uniform and non-site-specific way as a nationwide water quality improvement program.

Thus, when dredge and fill interpretations begin to show up in regulations, almost any earth-moving activity such as upland farming, forestry, and normal developmental activity requiring earth moving may be included. While such things as plowing were certainly not targeted for regulation, such activity has some conceptual parallels with dredging and filling in that materials come under the definition of pollutants and the activity takes material in one location and shifts it to another. Because of the diffuse and interconnected nature of water systems (natural or man-made), many land-shaping activities can be characterized so as to fall into the regulatory framework of PL 92-500. Thus, many environmentally unimportant activities end up bearing a huge and counterproductive regulatory burden from a concern to regulate activities which may destroy wetlands. Attaching land use objectives to water pollution control legislation may be politically clever but society pays heavily in terms of useless
and ill-advised federal regulative overrides in non-wetland related activity which should not and indeed cannot be regulated by the federal government.

Not only is there a real problem in writing regulations to accomplish purposes that are peripheral or exotic to the avowed purpose of the act but these regulations must be subject to interpretation by bureaucrats in the field. Problems seen as related to excavation and fill activities in coastal regions are not the problems that issue from excavation and fill activities in Utah. As different regions read the regulations and try to apply them to local situations many absurdities surface. The justification for a federal regulation governing the "creation, cleaning out, or changing the pattern of canals and other artificial waterways" is not the same in the Marcos Island setting of Florida as in an arid, irrigated agricultural setting in Utah. The same regulations which are used to control canal and ditch systems for mosquito control or residential development enhancement in a coastal setting certainly have a much different social impact when applied to canal and ditch systems in inland states. Regulations which seem reasonable for regulating an "artificial canal" used for "recreational navigation" in Florida may be patently absurd as applied to "artificial canals" in Utah serving a vital economic function but where tubing, canoeing, and wading may also take place. It is difficult to vary the regulation or apply it selectively according to importance toward achieving a water quality objective. Hence, federal permits may be required under NPDES to clean or maintain irrigation canals and diversion works with no prospect of achieving a worthwhile water quality objective. The complicated and time consuming process of obtaining the permit is certainly not commensurate with the social gain associated with the normal activity caught up in the regulatory system. Regulations which apply nationwide in the name of water quality and yet only result in significant improvement in localized or regionalized situations are counterproductive. Attempts to make exclusions or apply the regulations selectively to minimize absurdities are vulnerable to challenge. Courts inevitably find that the intentions of PL 92-500 was to include everything and everybody. Hence, Section 404 imposes enormous time, energy, and dollar costs for the regulation of environmentally insignificant situations.

Sound Principle and Water Quality Enhancement Sacrificed in Counterproductive Federal Override

That the implementation of Section 404 permits constitutes a duplication or override of a state program is lamentable, but the real setback is that the system applies to situations with little meaningful application toward reducing water pollution. It upsets and interferes with a proven system of regulation and administration. In the initiation of the Section 404 program of PL 92-500, there is no evidence of a recognition of a need or resolve to make a complementary fit with the institutional, organizational, and administrative structure and programs of the states already in place. Hence, with little to offer in the way of water quality enhancement, initiation of a system of regulation fraught with inconsistency and duplicity creates far more problems than it could ever hope to resolve. The potential for delay, confusion, and unnecessary economic burden overshadow any prospect of a purposeful result from Section
so far as Utah is concerned. The 404 program is so obviously over-reaching in Utah that it doesn’t make sense.

If PL 92-500 was a Congressional expression of a need for a unified system of water management, absolutely no provision was made in PL 92-500 for the institutional adjustments that both the Corps of Engineers and the states would have to make in implementing the Section 404 permit system. The Corps normally carries out its planning and development activities through its district and division offices acting on specific authorizations from Congress. It is not very realistic to expect that the many localized situations requiring a permit under Section 404 could be handled very expeditiously without a very substantial enlargement of staff and a much greater familiarity with hydrologic settings and water utilization patterns as currently possessed by state water administrators.

The federal government, both through courts and through Congress, has accepted state control and regulation over water. This acceptance resulted from practical considerations which suggested a system of law compatible with local and regional peculiarities and embodying principles that fostered prudent development and use of water while prohibiting wasteful practices and protecting investments from capricious loss without due process. The general impression originally was that it was local, not national, that was likely to best provide for general water resource use and management. The collective wisdom of individual state legislatures was believed to be the desired way of tailoring administrative systems to the local peculiarities of water within state boundaries. Hence, the states shouldered the responsibility for developing the body of law and institutions for dealing with the allocation and use of water among a large variety of competing uses.

PL 92-500 ignores the wealth of experience and institutional capital available and in operation at the state level. The three-phase plan of the Corps of Engineers to extend its jurisdiction through the permitting functions of the act to practically all areas currently under the control of state authority is a counterproductive override which would add greatly to the overhead costs of water quality management while contributing essentially nothing to the mission itself. To replace or duplicate state institutionalization at the federal level would be costly and cumbersome. It would require a complete reorientation in administrative approach.

It would permit a much more orderly administration if federal agencies were to work within state systems that have evolved under a need to recognize all uses and must operate with a keen sensitivity of how they relate to one another. If there is a facet of water resources activities with which states hold a clear superiority to the federal government, it is in water rights administration. This is understandable since the federal government has had no experience at the operating level. For example, where is the federal counterpart to the office of state engineer? The sovereignty question should not be the focus of concern in water matters. Rather, concern for sound policy and principle should determine institutional arrangements and jurisdictions. Where is the evidence that systems already in operation under state initiation are failing? The unnecessary proliferation of permit systems under Section 404 with the
resulting confusion to the individual permittee and with no clear evidence that the fusion to the individual permittee and with no clear evidence that the public is getting better water quality management would certainly suggest a reevaluation of that program.
Water is essential to the support of human life and to economic well-being. As a nation, we have been blessed with abundant supplies. We need rely on no other nation to supply our needs.

But our supplies are not uniformly distributed throughout our nation. Indeed, some regions of America—including the west in particular—face periodic water scarcities. And where water is available, we have found it necessary to provide for its use, to control its flow, and to protect ourselves from its excesses.

As a result, the federal government has spent billions of dollars in the last 200 years on water projects. We have made dry land productive. We have provided water for growing populations and made rivers and harbors navigable. We have harnessed great rivers to provide electric power, and we have protected cities and towns from the ravages of flooding.

The biggest problems we faced were engineering problems: how to make the best use of our water and energy resources and how to move those resources to areas of the nation which nature had left without. And we met those challenges in the great projects of the west.

Now we have new challenges to meet. Times have changed. We have more people and, yes, less water. Most of our opportunities for truly large-scale development may be behind us. And the policies of the past need to be reformed so that we can have water—when and where we need it—in the future.

When the Carter Administration took office in 1977, we discovered that the nation’s water resources policies—like our energy policies—were in dire need of reform.

Twenty-five separate federal agencies currently spend more than $10 billion per year on water resources projects and related programs. These projects often were planned on the basis of biased criteria, and we found no uniform, standard basis for estimating benefits and costs. We discovered 185 different cost-sharing rules and procedures, and a $34 billion backlog of authorized or uncompleted projects. Some of these projects were unsafe or environmentally unwise, and water conservation too often was ignored in the process of planning them. Finally, we faced a pattern of federal-state relations which seemed calculated to produce confrontation instead of cooperation.
Thus, one of President Carter's first initiatives after taking office was to direct the Chairman of the Water Resources Council, Secretary of Interior Cecil Andrus, the Office of Management and Budget and the Council of Environmental Quality to review existing water resources policies and to present him with recommendations for reform. Since that time, I have served as the OMB representative on the Policy Committee which has been responsible for conducting the study.

Since 1946, there have been eight different examinations of federal water resources policy, but in no case has any water policy study been more open than this one. Drafts and redrafts of issue papers have been published in the Federal Register. Public hearings were held last summer in every region of the country, and scores of meetings have been held with state and local government representatives, members of private organizations, and experts in specific policy areas. Governors and state legislators have been consulted on a continuous basis.

We will be sending the report to President Carter shortly, and I would like to discuss with you today one of the principal areas of his concern.

Four of the basic goals of this reform effort are: (1) to maximize the net economic benefits to the nation from water resource investments; (2) to protect environmental quality and insure safety in the planning and construction of water projects; (3) to improve federal agency planning and management of water resources; and (4) to increase the state role in water resources planning and implementation. The report to the President will ask that he consider a number of specific steps to accomplish these goals, and elements of these specific recommendations have been the focus of public attention for months.

But the area of the President's concern that I want to discuss with you today really must be the cornerstone of a reformed water resources policy, and that is water conservation. It will be a key element in implementing each of the four basic goals. It may be the focus of new programs. And it should be of critical concern to the people of this and other western states.

The importance of water conservation can be stated simply: we must make better, more efficient use of those water resources that we have developed in the past and that we develop in the future. Otherwise, in many areas of the country, we will face a diminishing resource without the means to replenish it. The economic and human consequences that could follow would be staggering.

During the course of the water policy study, we have spent many hours developing an understanding of how much water is consumed in each region and subregion of the United States, which sectors consume the water, and how efficiently water is consumed. Quick answers were not easy to come by, but we have been able to piece together a good deal of information. Let me share some of it with you.

The second national water assessment, soon to be published by the Water Resources Council, sheds some light on 1975 water use in the United States as a whole and in the western states in particular:
- 85 percent of all water consumed in the United States is consumed in the 16 western states (excluding Washington) were only 25 percent of the population resides.

- 90 percent of all the water consumed in these 16 states is for agricultural irrigation, and these states have 85 percent of the irrigated acreage in the United States.

- In many regions and subregions of these 16 states, annual stream flow depletion exceeds 100 percent in a dry year and 80 percent in a normal year.

- And in many of these same regions and subregions, the groundwater depletion rate is so high that stocks will be exhausted in 50-70 years.

There are also interesting trends apparent in overall water use and national per capita consumption.

- Between 1970 and 1975, aggregate consumption of public supplies increased 13 percent.

- Nationwide per capita consumption rose 5.5 percent from 36 gallons per day in 1970 to 38 gallons per day in 1975.

- But in the 16 water-short, western states, per capita consumption rose 7 percent during that same period from 67 gallons per day to 73.

In light of the vital importance of water to the 16 western states and the scarcity of additional supplies, consider the following facts:

- Recent reports by the General Accounting Office and the Soil Conservation Service indicate that irrigated farms generally operate at less than 50 percent water use efficiency, with substantial possibilities for improvement.

- A recent Department of the Interior audit of the Federal Central Valley Project in California showed that the average price of water for storage was $7.50 per acre foot, while state projects in the same area charged three times as much.

- Although 40 percent of all water consumed for urban and industrial purposes is consumed in the 16 western states, water tends to be cheaper. The cost for 1,000 gallons of water is $1.60 in Boston and $0.97 in Washington. In Los Angeles, it is $0.69; in Phoenix, it is $0.34; and here in Salt Lake City, it is $0.23.

The west is not alone in facing potential water scarcities. Many cities in the urban east and midwest depend upon ancient water supply systems with inadequate capacities. Some areas of Florida are headed toward problems in the future.

The federal government will not abandon states that need help in coping with water supply problems. The government must continue to help finance water projects that are economically and environmentally sound.
But all of us, at all levels of government and in the private sector, must face up to the fact that our water resources are not infinite. Our ability to provide water will not be unconstrained.

So as we examine new water supply opportunities, we must also begin to conserve what we have.

- Department of Agriculture research in Idaho indicates that more efficient gravity systems could improve irrigation efficiency by as much as 30 percent; sprinkler irrigation could increase efficiency by 60 percent.

- Household consumption can be reduced by 9-12 percent with shower restrictors and 10-18 percent by more efficient toilets or even a brick in existing toilets.

- States can implement water exchanges, so that water which cannot efficiently be used can be sold instead of wasted.

These are just some of the ways that have come to our attention by which we can together move towards wiser and more prudent use of our valuable water resources. Conservation will be a principal focus of our recommendations to the President, and it must be the cornerstone of a new water resources policy...just as it must be the cornerstone of our energy policy.

And just as in energy, the conservation job must be undertaken at the state and local levels of government and in the private sector. The federal government will not preempt state water law and water rights. The states are and must continue to be the principal focal point for water policy. But with those rights come responsibilities—including the urgent responsibility to conserve water.

A big federal regulatory presence should not be necessary. Where the federal government can help, it should—with planning and technical assistance and, perhaps, in other ways as well. But not even Uncle Sam can make more water.

We must all give some attention to the prices we pay for water. Water conservation makes sense economically. It makes sense in terms of growth. And it makes sense for future generations who should not be denied the chance to live and work in the great American west. Water is the lifeblood of America and the lifeblood of the west. We know that in Washington. Certainly you know that even better here in Utah where the survival of your earliest settlements was made possible only by your construction of irrigation works. Indeed, your development of irrigated agriculture marked a major milestone in the history of American agriculture and in the western movement. With leadership from your forebears, water was harnessed in the arid west and America developed a mighty agricultural economy. Today, your leadership is needed to insure that the future of the west is as secure and productive as the past has been.

Our interests are the same: to make the best use of the water we have, and to provide more where it is necessary and where it can be
provided in an economically and environmentally sound manner. I am confident that the President's new water resources policies will help us achieve those objectives with greater wisdom and increased cooperation.
FUTURE DIRECTIONS IN WATER LAW

by

Edward W. Clyde*

Perhaps to me the most significant development that I encountered in preparing for this speech is a decision from the Federal District Court in California and the Ninth Circuit Court of Appeals, essentially affirming that decision. It concerns the procedures to be followed by the Bureau of Reclamation in acquiring water rights for Bureau projects.

The Bureau of Reclamation basic program goes forward under National Reclamation Act of 1902. Sec. 8 of that act has always provided that the project should be implemented by having the Secretary of Interior and the Bureau comply with state law. Where the basic authorization for the project has been the National Reclamation Act, the almost uniform policy of the Bureau has been to file a water application for the project with the appropriate state agency where the project is to be built. The experience I think in the past has been to treat those water rights applications fairly much the same as if they had been filed by any other person or agency, and to approve them in accordance with applicable state law.

This line of cases that I have referred to in the Ninth Circuit has held that while Sec. 8 of the Reclamation Act does indeed require the Bureau to file the application, the State Engineer really cannot impose any conditions on the approval nor use the approval/rejection format to in any way implement state water plans or state water policies. If there is unappropriated water, he simply is required to approve the application. The Bureau filing of today will normally be for a very large amount of water--500,000 to 1,000,000 acre feet. In many cases I think any large multipurpose Bureau project is going to appropriate the rest of the water in a particular river system.

The Federal Reclamation Law is a well developed system of law, and it contains a lot of conditions that Congress in its wisdom has imposed. And the states are not entirely in agreement with them. One that has had a lot of publicity lately is the 160-acre limitation. There is a requirement of residency near the land to be irrigated. There have been times in the past when Congress has said that the water from a Reclamation project couldn't be used to raise surplus crops. The Bureau has a system of land classification and the water can't be used on substandard land, and so on.

The U.S. Supreme Court has granted certiorari in the case, and we will in due time get a U.S. Supreme Court opinion. If affirmed, and I think in its broad outlines it is likely to be, it is going to make an important change in the way we approach water law for Bureau projects, and maybe this is the only major point that in the allotted time I'll be able to deal with.

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Perhaps we need just a little bit of a backdrop. When the west was being settled the appropriations system that developed by custom, later was affirmed by the courts and by Congress. It simply required a diversion of the water from the stream and the application of it to beneficial use. No affirmative action of any state agency was required. It had the vice of making no public record, and the early statutes only addressed that problem. They provided for the filing of a notice of intent to appropriate, how much water you intended to take, and what you intended to do with it. It wasn't mandatory, it was permissive.

By about 1900 as the states began to adopt comprehensive appropriation statutes, I think neither the legislature nor the courts recognized that the states really had a control over the public water that permitted them to do something more than simply operate by issuing permits on a first come, first served basis. But they could have formulated water policies and state policies and implemented state plans, and they could have accepted an application for approval, even though it wasn't the first one, and rejected one, even though it was first, if the approval or rejection of the particular application would advance the public interest.

And so as the years have gone by and the states have dealt with their appropriation statutes, there has been built into the statutes now a great deal more than simply the concept of who filed first. The water is used for many things—it is used for land use regulation, among other things. It is used as a crutch for inadequate zoning. The federal government initially owned essentially all the land in the west. It owned it as a proprietor in the same sense it does the Post Office Building. Under the property clause of the Constitution, Congress fairly well has the unbridled discretion to determine what it will do with federal property. It can sell it or withhold it from sale. It can lease it or withhold it from lease.

In 1866 Congress adopted a statute of general application in the west, saying that Congress consented to private appropriations being made in accordance with state law. In the cases ensuing they have rather consistently said that this was tantamount to a grant by the federal government of a right to use the water.

The sovereign powers that the federal government has are not at all like its priority ownership interests. The sovereign power it cannot reconvey to the states. The court cases are clear on this. It simply can't do it. So we have developed a dual system of state water law, and of federal water law, much of the latter under the reserved rights doctrine. Some of the federal water rights have come into existence through the federal government making a filing with the states for its Bureau projects. And it became the owner of the right under the state permit system.

Part of the water projects have come into existence on the federal level to accomplish other federal goals. The Pick-Sloan Project authorized in the 1944 Flood Control Act was fairly much a proposal to help the transition between our wartime and peacetime economy. Some of the Pick-Sloan Project works were not constructed under state permits. They were constructed under the authority of the 1944 Flood Control Act, which did not require state filings. There are other specific authorizations for
construction, like the Boulder Canyon Project Act, which resulted in the construction of the Boulder Dam. There is no state water filing for that.

So this new holding by the Ninth Circuit is that when the Bureau makes a filing under state law, the state is obligated to approve the filing, if there is unappropriated water. The state can impose no conditions on the approval, and then the water right comes into existence in accordance with federal reclamation law. It is going to have one effect if it stands up, and that is it is going to transfer where the allocation process takes place. If the Bureau moves in and makes an 800,000 acre foot filing covering all the rest of the water in a river system, and the State Engineer is required to approve it, the carefully planned scheme of the state government to mold water policy and develop a state water plan, and so on, will simply go down the tube, because the State Engineer would be mandated to approve the application. The appropriated water in that river basin would go to the Bureau, and the Bureau would then, through its planning process, make an allocation under reclamation law with concurrence of the sponsoring agency. These sponsoring agencies used to be a mutual water company, but now more often than not are public districts like conservancy districts, which are state organizations. And then the water is allocated by contract rather than by state permit. The contracts that conservancy districts issue, of course, have to be federally approved and contain the excess land clause and the 160-acre limitation and other federal conditions, etc.

What I think this will all require is a very high degree of cooperation between the federal government and the states. The Bureau is not a water user itself. It develops water for use, generally within an area. It generally doesn’t go out and plan a water project that the state doesn’t want, because it has to have a sponsor that will agree to pay the reimbursable costs. It needs the help of the state to get the project authorized and funded. So I don’t view this with a great deal of alarm. I do view it as an absolute necessity for the states and the federal government to work closely together in the development of the project and the allocation of the water to the needs that are there for the state. Anybody that wants to develop a water right today is going to go on the stream and be confronted with about seven or eight situations, some of which are new.

Historically, the states of the west developed a water law along economic lines. The diversion of water to propagate wild ducks was not a beneficial use. A person living on a stream couldn’t make a filing to hold the water in the channel for aesthetic reasons. Fish and Game people couldn’t make filings on the stream for fisheries. Instream uses, aesthetic, and social values in water, environmental values, simply were not recognized. But in the cases today, they clearly are. I presume from your program those have already been discussed here.

The manner in which instream uses are provided for would be itself a subject matter for a paper longer than I could give you tonight. One way is to withdraw the water from public appropriation. Another way is to do what Idaho has done. It held that if the stream is navigable under state law, the public has an easement to fish and hunt and boat and swim, and make other recreation uses of the stream. There are other states that
permit agencies to make water filings. On the Yellowstone River in Montana, when one of the agencies was permitted to make a filing, it was determined that there was about 7 million acre feet of the Yellowstone River reaching the Missouri. They put a fish filing on the whole 7 million acre feet. If the State Engineer can reject that on the basis that it wouldn’t be in the public interest, I guess he could handle it. But there are a variety of ways under the law now where the water can be reserved for instream use—environmental considerations, fisheries, recreation. So the person who wants to appropriate the water has to face that problem. Utah, under a statute I drafted in 1971, has provided that an application can be rejected if its approval will be harmful to the natural stream environment.

Secondly, an appropriator today is going to have to face in almost every state in the west the fact that we have more pending water filings than there is water. If the law is going to require those applications to be approved in the order in which they have been filed, it is going to be difficult to reach out to a new project the state really needs and approve it without the cloud of the hundreds of pending applications that are ahead of it, with the threat that they will be approved with an earlier priority, and thus pre-empt the water. I think legislation in this area may be desirable because the states are in fact picking and choosing which to approve. One day we are going to be confronted with the question of what do you do with the unapproved filings on the same source that were filed first. It is my judgment that the state has the power not to approve them in order. It is also my judgment that many of the states have failed to exercise that power by adopting needed legislation.

We are going to be confronted with the reserved federal rights. The Indian reserved rights are one group of rights, and the Indians are rapidly changing the extent of their claims. The Indians are claiming not only that they have the right to all the water they need for their irrigable lands, which is what I think the law is, but they are also claiming that in addition to that they own the water they need for recreation, fisheries, municipal, industrial, and other uses. That, I have no doubt is going to be litigated and answered. I think the Arizona v. California case in 1963 held that Indian rights are measured by the needs of their lands which are susceptible of irrigation, but it is being raised again. If the use of the Indians were to stay on the reservation, this would not concern me so very much. The reservation location and boundaries are known. All the uses there will yield some return flow. I think we can adjust to whatever is awarded to the Indians, if it will be used on the reservation. It is a much more serious cloud if the Indians are awarded "X" number of acre feet for irrigation and more for other uses, and Congress or the courts determine that they can take that water off the reservation and sell it. The Indian rights do need to be quantified. We have got to determine what they are. The rights do exist. They are real. It is settled law that they have reserved rights, but the extent thereof needs to be determined.

There are other federal reserved rights that come into existence, whenever the federal government sets aside federal land for federal purposes. There is enough water set aside to accomplish these federal purposes. They differ from appropriations, in that the priority is not the date they put the water in use—the priority is the date the land is
withdrawn. In the appropriation states beneficial use is the measure and the limit of the right. The federal government doesn't have to put the water to use at all in order to hold it. They reserved it—they don't need to use it. In the states, if you don't use the water, you forfeit it. But the federal reserved rights are not forfeited. If you went into an area and tried to say how much water there is available, you can pretty well quantify the state rights. Presumably the people with perfected rights are using them. Those that don't have perfected rights have got to have an application, and you can read what they proposed to do. You can measure the stream and you can determine if there is a surplus. There is no way to do that with federal rights. They need to be quantified. But the appropriator does need to face the reserved rights of the Indians and other federal reserved rights.

Then we have the federal rights that come into existence that I described earlier by federal filings under the state permit system, over which the Ninth Circuit says the state has little control. Then you have the other federal projects that are built for other federal purposes to improve navigation, for the common welfare, or whatever. They are built with federal funds. They are built under Congressional authorization. They simply take the unappropriated water. There isn't a state filing—there isn't state priority. The water is simply taken for the project, and its use is under federal control.

Then, of course, you have to face the problem of developing law where the state statutes are emphasizing the public interests and the environmental and instream uses. I don't think this means that you can't put the water rights together. I think you can. I think you can do it reliably. I don't think that an industry trying to put a water right together for energy cares a great deal whether it must comply with a state law or a federal law. I don't think it cares whether it leases from an Indian tribe or contracts with the Bureau. I don't think it cares whether it gets another state permit. What they want is to be able to get a water right that is firm enough that it is "bankable." And the uncertainties that we are putting into our law after more than 100 years of experience, may place water rights more in jeopardy from uncertainty now than they have ever been. This is because of the conflicts between state rights and the federal rights, and the Indian rights and the newly developing uses, the environmental considerations, and things of that kind. So I think that we do have to have cooperation between the state and federal governments.

Let me just take the time to give you one more example, or two. Flood control can be handled in a number of ways. We can handle flood control by what we do on the watershed. Kaiser Steel and U. S. Steel, on Grassy Trail Creek at Sunnyside, were paying little attention to the watershed. The livestock absolutely denuded it. And the storms came out in a flash flood that was more mud than it was water. But in the spring of every year the stream would peak at about 70 c.f.s., and four or five small farms got one irrigation turn. They decided to build the Town of Draget-ton and build up the Town of Sunnyside. They retired the headwaters of that stream from grazing. They reseeded it, and instead of the stream flowing 70 feet at high water, it flowed about 20. Instead of going dry in August, it was a pretty good stream in August. The farmers lost their high water rights. The high water was taken by what they did on the upper
watershed. You can control floods by building flood control space in a big reservoir. You can handle flood control by building levees. You can address the flood control problem by zoning, and making people not build in the flood plain. If we use public money to protect land in the flood plain, there is a transfer of values from the projects to the lands. If the federal government is going down one track and the state government with the power of zoning and land use regulations is going down another, it could be frustrating. The same thing is true on pollution control. If you don't control the whole process through which water goes, it is pretty hard to do it all at the sewage treatment plant. So we need close state and federal cooperation.

I don't find, in the present administration at least, very much understanding of western water problems. I think what President Carter did with us on the "hit list" was outrageous. I think that the committee that he sent out here as a fact finding group did not come for that purpose. I don't think that they were looking for the facts. I think they were looking for our Achilles' heel. They didn't find it, but I think that is what they came here to find. And I think the climate is still hostile. I have worked very closely with the Bureau in trying to get the Central Utah Project constructed. The people we send to Congress are Utahns. The Bureau people are Utahns. There isn't any reason for federal and state employees getting at cross purposes. The problems must be worked out jointly. Some of the powers that Congress has, it has to have under the federal system. I do think the problems in western water development can be solved, but I think the climate hasn't been very good with this administration.