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# Interbasin Water Transfers and Groundwater Regulation in Nebraska

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# INTERBASIN WATER TRANSFERS

# AND

# GROUNDWATER REGULATIONS

# IN NEBRASKA

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# PREFACE

On November 29, 1971, the Hamilton County Ground Water Conservation District sponsored a meeting on groundwater management and regulation. The meeting was held at Aurora, Nebraska, and was designed for irrigators from groundwater conservation districts and county irrigation associations. Various men from state and federal agencies spoke about a variety of problems that are related to groundwater management. Two of the talks that were presented at the meeting are reproduced here, as is a discussion of the rules and regulations that relate to the use of groundwater in the state of Nebraska.

The first talk reproduced here is one by Clarence A. Lewis, Jr., Supervisor of Civil Engineers in charge of planning, U. S. Bureau of Reclamation, Grand Island office. The talk is entitled, "A Realistic Look at Transfers." Deon Axthelm, Water Resources Specialist, Agricultural Extension Service, and Vincent Dreeszen, Director of the Conservation and Survey Division, University of Nebraska, presented some directions they felt groundwater conservation districts might take in developing regulations. Their paper is entitled, "Groundwater Regulation" and is the second one reproduced here. Also included here is some discussion of the rules and regulations of the state of Nebraska that pertain to the use of groundwater. Axthelm and Dreeszen had extracted this discussion from the "Report on the Framework Study, Appendix D, Survey of Water Law," State Water Plan Publication Number 101D, Nebraska Soil and Water Conservation Commission, June 1971.

# A REALISTIC LOOK AT TRANSFERS

Clarence A. Lewis, Jr.

When Deon called and asked if I would discuss this topic with you today and gave me an idea of the rest of the program, I must admit I had some misgivings. It seemed clear that those ahead of me would document the need for imported water and discuss schemes that would hold out the hope for obtaining it. Then we would move on to the realistic look at interbasin transfer and might decide it could not be done.

Well, it's not that bad. So today I am not going to tell you that what you need to assure yourselves of a firm water supply is completely out of reach. However, neither can I advise you to sit back and relax and everything will turn out all right, because it won't. If any of the concepts discussed here today are to bear fruit, it will happen only because dedicated people like you make it happen. And, if you care for your farms and your way of life as a heritage for your children, you will make it happen.

If I may, I would like to speak to you today, not just from the perspective of a water resource planning engineer, but also as a native Nebraskan with a farm background and an abiding concern for the social and economic well-being of the people of this State. I firmly believe in the need for well planned water resources development if Nebraska is to realize anything approaching her full social and economic potential.

Others before me today have discussed the problem of declining ground-water levels, the need for surface water to augment and stabilize the underground water supply, and some concepts for providing a surface water supply to some of the water-short areas of the State. But what are some of the problems to be solved and pitfalls to be avoided if this is to be accomplished?

It seems to me points for discussion fit roughly into two categories--technical requirements and social-political considerations.

From the technical standpoint, designing and building facilities for interbasin transfer of water is well within the capability of engineering skills available today. Required facilities would be extensive and some of them would be large, although probably no larger than some now existing in the State.

Considerable reservoir storage capacity would be required to regulate the remaining surface water flows and make them available for use. Existing private irrigation systems and irrigation projects with run-of-the-river type operation now have rights to most of the summer flows in many of Nebraska's streams. So storing of winter flows for summer use and flows during years of high

runoff for use during drouth years, will be necessary. Some storage near the ends of long canals would be needed to preclude dumping water already in canals in case of rain and to facilitate meeting summer peak demands with the most economically sized canals.

Because of the substantial storage requirements and extensive delivery systems needed, the cost of transfer schemes will be high. In most cases, only development for large areas will be economically feasible because of these costs. So the message from the engineers is--We can design and build the necessary works if they are economically justified and if the financial, social, and political problems can be solved.

Now, what are the social and political facts of life we must consider?

As you know, at the present time in Nebraska, there are legal constraints limiting or preventing diversion of surface water between river basins. Past court decisions have not made clear the exact legal status of diversion. Legislative action may eventually be needed to clearly define this issue and to reflect the needs and desires of the people of the State. Informed citizen participation in support of elected representatives will be needed when diversion legislation is considered if it is to be correctly drafted and finally approved. You must inform yourselves of the issues as they pertain to the whole State--not just your local area--and you must work with your legislators and interested people from other parts of the State to assure the best possible legislation.

Many times you have been told of the millions of acre-feet of water in ground-water storage and the millions of acre-feet of water flowing from the State annually. But would you believe that we don't have sufficient water to meet all of our potential needs? How can this be true?

It's true principally because of two factors. First, Nebraska has a potential for much additional irrigation development and hence a potentially high water use. It has been estimated we have over 11 million acres moderately to well suited to irrigation, and millions more acres of a more marginal nature.

Secondly, as you well know, the water isn't always available in sufficient quantities and where it is needed. Much of the surface outflow is generated in eastern Nebraska where irrigation needs are nominal. Water in ground-water storage in Hooker County is of little use to the irrigator in Hamilton County unless the two can be brought together. So, there is presently competition for the available water in some areas and this competition will grow ever keener.

Besides competition among the various areas with irrigable

land, other uses have needs. Lincoln and Omaha, as well as many smaller municipalities, have well fields that pump water for municipal and industrial uses from the sands and gravels of the Platte River Valley. These well fields are often situated to take advantage of recharge from the river itself. Any development upstream that would pose a threat of a dry Platte River for any great length of time will be resisted by those depending on the river for this well recharge. Including Lincoln and Omaha, this represents a considerable part of the population of the State. The social and political facts of life are clear. Water for municipal use must be assured.

Flows in our streams are needed also for maintaining water quality. Nothing we currently can afford in the way of municipal or on-farm waste treatment can completely eliminate the need for some stream flow for water quality purposes. So, in our plans for water use, this need also must be accommodated.

Several districts in the State have water rights for hydroelectric power production. Diversion of water upstream of these power plants, of course, reduces the amount of power which can be produced. Under Nebraska law, prior appropriations for a use may be interfered with by a junior appropriator for a superior use under exercise of the power of eminent domain. Such a taking requires payment of just compensation. Determination of what the compensation should be can be a long, difficult process and may even have to be settled in the courts. Most water which might be considered for inter-basin transfer falls in this category. Any of the schemes for development you have heard discussed here today adversely affect vested interests in other parts of the State, and if proposed for development, will generate active opposition.

Another important use that perhaps is receiving more than its deserved share of attention right now is water for environmental purposes. The rich, natural environment with which we are blessed here in Nebraska certainly is worth preserving. I'm sure no one here wants to see it degraded in any way. I'm also sure that most of you have worked hard for most of your lives trying to improve your local environment.

The natural environment, as an important part of the total human environment, deserves commensurate but not exclusive attention. The economic and social aspects of our environment are important too, and should be given proper weight in determining what form water resources developments should take. In spite of this, the preservationist elements in our country have been effective in halting or slowing many badly needed projects. If Nebraska is not to relinquish control of her water and her resource development to out-of-State preservationist organizations, we must develop and support firm policy standards for water and land use, that give balanced consideration to all needs. The development of the State Water Plan is an important

step in this direction. Your help will be needed to complete it, keep it up-to-date in years to come, and to implement the provisions of the plan as they are needed.

You can see that transbasin diversion at this time would involve many problems, all difficult of solution. Some of these problems can and should be disposed of before there is a critical need for interbasin transfers. For instance, needed inbasin development in water surplus basins must be completed or assured if cooperation from these areas is to be expected. If you have ever entertained the thought that what other parts of the State are doing in the way of water resource development is of little or no importance to you, then I suggest you reconsider. Probably no other one thing is more important to interbasin water transfer than antecedent implementation of feasible inbasin development. Also, municipal water can be assured where there is any question of the supply. This is a most important use, socially and politically, but requires relatively small quantities of water.

I know that you are well aware of the need to increase irrigation efficiences and husband your water resource in every way possible. If you leave any stone unturned in your search for improved irrigation efficiency, it will be that much more difficult to convince others of your real need for imported water. If each irrigated farm in this area has an irrigation water reuse pit, there will be little doubt that you have every intention of using your water efficiently. Your efforts along these lines will pay dividends both in your day-to-day operation and in reinforcing your credibility as you eventually present your case for imported water.

Implementation of any scheme for interbasin transfer of water will take years of work. Several irrigation and reclamation districts in the State can attest to the difficulty, frustration, and delay inherent in any attempt to move a project from planning through construction to the operational stage. So start early to develop firm plans for the works required to satisfy your needs. If you wait until your need is critical, you have waited too long. Your losses will be tremendous before help can be provided.

Development schemes will be costly. In the past, most projects of the scope we are discussing have been federally financed. Through the years, the Congress has laid down the rules and guidelines for justifying these expenditures. Investigations must be made and reports prepared, documenting the need for, and the engineering, financial, and economic feasibility of the proposed projects. Contracts with suitable organizations must be executed to assure return to the Treasury of the reimbursable parts of the cost. Finally, the Congress must be convinced that, not only is the proposal worthwhile, but that it is more worthwhile than perhaps hundreds of other proposals of all kinds competing for the same Federal dollar.

Water resources developments at this Congressional stage are often accused of every conceivable evil by those who for any reason would stop them. Claims of environmental and water quality degradation are the "in" thing, now. Many times these claims are more emotional than factual, but serve to throw doubt on the worthiness of the project under consideration.

"Contributing to crop surpluses" and "income redistribution" are phrases that have been used for some time to belittle the need for water resources development. There are many people in this country with no understanding of, or sympathy for, the rural viewpoint; people who think every bushel of corn in storage is surplus. They know nothing of the importance of a substantial reserve to meet emergency needs. Neither do they see increased production of feed grains in Nebraska as beef and pork on the tables of America. They see it only as production here, displacing production and lowering incomes in Iowa or Indiana. These ideas carried into the Congress make it difficult to obtain the funds and the authorizations necessary to maintain any progress in water resources development.

To win approval, any proposal for development must have a firm base of data and facts, and strong, unified local and State support. The "home work" must be completed before the proposal is sent to Congress. The efforts you are now making to build a record of ground-water use and water table fluctuations may be extremely important to your cause in later years. Better understanding of the economic and social impacts of water resources development is also needed. The Bureau of Reclamation is now negotiating a contract with the University of Nebraska to update and expand a previous study on the economic impact of irrigation in Nebraska. The State Water Plan Framework Study provides a good base upon which to build unified support for Statewide water resources development. Those recommendations which pertain to inbasin development are particularly important to the cause of interbasin diversion. The new Natural Resource Districts should provide an excellent vehicle for collection of data and unifying local efforts.

Because of the competition for the Federal dollar from such things as national defense and urban problems, the present outlook for Federal funds for substantial water resources development in general gives us little cause for optimism. If such development is to proceed in Nebraska, it may be necessary to give serious consideration to some form of State financing or cost sharing. Considering the economic impact of water resources development on the regional and State business community, there is good justification for financial support for such development from other than just the direct beneficiaries. The supplier of irrigation equipment, supplies and fertilizer, the food processor, the hunter, fisherman, and boater to name only a few, all benefit greatly from these developments. They should be willing to provide some financial support for them.

The kind of development we are discussing here today is a long-term proposition. There is no place in the leadership for the opportunist or the impatient. Delays and frustration are a part of the game.

To begin with, a careful investigation of any scheme and development of a detailed plan are most necessary. If Federal financing is to be used, the standards for the investigation and reporting are quite stringent. Meeting the requirements is time-consuming work. Clearance of reports through the several Departments and many interested agencies, likewise, is time consuming and often difficult. President Nixon has recommended creation of a Department of Natural Resources combining portions of several Departments in an effort to reduce duplication of effort and facilitate resource development work in many other ways. In Nebraska, Governor Exon has proposed changes along these lines in the State government. Certainly, much could be done to streamline the often cumbersome governmental procedures--or eliminate red tape if you prefer. Delays in obtaining Congressional authorization and appropriation of funds are the rule rather than the exception. Public opposition at almost any stage can mean delay or failure in obtaining approval. This is the reason I emphasize that development of strong public support for all actions is most important and a prerequisite for progress.

There are many ways to build public support, but basically it must be founded on factual information. First, you must inform yourselves not only on your immediate problem, but on practical solutions and the impact such solutions will have on others with vested interests in the resources you seek to use. Then when you are informed, miss no chance to meet with others and discuss the State's water resource needs and potentials. Explore areas of common interest with other groups. Identify areas of difference or conflict so that you can intelligently seek the needed compromises.

Preliminary figures for the 1970 census indicate 62 percent of Nebraska's citizens live in urban areas. Obviously then, State support means urban as well as rural support. We all need to do much more to improve communication and understanding between the city and the farm. For your part you need to convince Nebraska's city dwellers of the importance of water resource development to agriculture and the importance of agriculture to the State's economic stability.

You must be informed on and actively support all good development Statewide. I have pointed out there are developments that from a practical standpoint must precede any serious consideration of interbasin transfer of water. Identify them and lend your support to get them moving.

And last, but certainly not least, inform yourselves on what the Legislature and the State and Federal Government agencies are

doing in the water resources field and lend them your active support for all needed work. We in Government are employed to serve you. We can do only what you elected officials in the Executive and Legislative Branches direct us to do. So, work closely with your representatives so they are well informed on your needs. Don't ever forget that while good engineering and economic investigation can determine whether a project is possible and desirable, the determination as to whether it will be built is made entirely in the political arena. Adequate investigation is necessary for intelligent decision making, but, conversion of plans to useful facilities on the ground is made only when you, through your representatives in government, make it happen.

# GROUND WATER REGULATION

Deon Axthelm and Vincent Dreeszen

Earlier in the conference the idea was expressed that groundwater regulation was one of the tools of groundwater management that should be considered by pump irrigators. Regulation can take different forms and can be imposed for a variety of reasons. As an example, we now have laws on well spacing and registration. These laws are types of regulation which were imposed for the purpose of minimizing well interference and in the case of registration, for inventory and planning purposes. Each year brings the pump irrigator closer to the prospect of additional regulation related to groundwater use. Hopefully, new regulations that may be imposed will be based on the concept that regulation is a tool for orderly development, or as we suggested previously, one of several allied tools for groundwater management.

This paper presents some thoughts on the direction ground water districts might take in developing regulations. Attached to this paper is a copy of the section on Ground Water Use Law from Appendix D, Survey on Nebraska Water Law, Report on the Framework Study, Nebraska Soil and Water Conservation Commission.

We urge you to develop an understanding of present laws related to groundwater use as presented in that publication. The ideas presented to you today are for the purpose of stimulating discussion and possible action by Ground Water Conservation Districts or other groups. As you read the underlined recommendations contained in this paper, please keep those thoughts in mind. We also would like to remind you of the large responsibility and vital task that you are assuming. The ball has been tossed to you by the Legislature. They and others are awaiting your actions.

Nebraska statutes say: Ground Water Conservation Districts can "Promulgate and administer policies, rules and regulations as relate to groundwater except that responsibility as relates to land treatment shall be limited to making recommendations to the appropriate soil and water conservation districts..." (Chapter 46, Article 629).

None of the Ground Water Conservation Districts have developed any regulations to date. Although the law suggests that districts can impose regulations, the legislature has not provided guidelines for such action. Consequently, it is possible that some regulatory measures might not be upheld if challenged in the courts. The actual authority and powers that a district board has may not be known until regulations have been tested in court. Therefore, we recommend that legal counsel be obtained before a district board develops any rule or regulation related to groundwater use. Because of the uncertainty that exists in

regard to the extent of the powers of a district, we recommend that legal counsel be obtained before a district board develops any rule or regulation related to groundwater use. Because of the uncertainty that exists in regard to the extent of the powers of a district, we recommend that representatives of the boards of directors meet with the three state agencies defined in the statute (Department of Water Resources, the Conservation and Survey Division of the University of Nebraska, and the Nebraska Soil and Water Conservation Commission) to consider possible guidelines for legislative consideration.

One of the limitations to developing groundwater regulation is that Ground Water Conservation Districts do not have a staff nor is there an organization to spearhead unified action. Consequently, at best you probably can make only limited progress. What kind of organization do you need? The law provides that Ground Water Conservation Districts can merge. The Natural Resource District Law is related to unifying organizations and has some of the same powers. This law will be discussed later today. Keep this unity idea in mind. Our recommendation is that you seriously consider how best you can obtain regional unity.

Also, we have heard comments that local boards simply will not enforce a regulation aimed at themselves or their neighbors. Those comments imply that it will take state, or at a minimum, regional enforcement. Here again, it could be that a unit larger than a single county could do the job.

The Ground Water Conservation District Law developed as the result of a desire by pump irrigators for local control. We recommend that the question of local, regional and state responsibility for groundwater regulation be resolved through joint action of the districts and a policy statement be formulated.

We usually hear more talk about importing water to ease the groundwater decline problem than we hear talk of regulating or managing supplies already at hand. Before proceeding to some specific regulatory ideas you should be aware that importation of water from another area probably won't come about for at least 25 or 30 years, or perhaps longer. Take a look at the facts. Look how long it takes to get a project within a basin without tackling the gigantic problem of getting water from another source. The Mid-State Reclamation District at Grand Island was organized in 1948. They presently need to sign up landowners and do detailed planning. Construction itself would take 9 years or more. The Mid-State project idea is 23 years old; add 10 or 12 years and you quickly see that 35 years can easily pass before water moves anywhere--even within a river basin without the problems of interbasin transfer.

The O'Neill Reclamation District was organized in January, 1963, with a few years of prior ground work before that came

about. Now the project needs funding for detailed plans. Would a 20 to 25 year estimate be about right for project completion?

The Twin Loup Reclamation District was formed in 1954. This is a proposed North Loup project to serve lands in the Ord area--they are still waiting too. Would 25 to 30 years work be a reasonable estimate of time needed?

Furthermore, agriculture and crop production are presently in a disadvantageous position. Some people are not in favor of producing more grain. Besides that, the environmentalist have attempted and are often succeeding in slowing project development. You simply are not in a good position to expect to get supplemental water in the near future. This subject will be presented in more detail later in the afternoon.

We believe that you do need groundwater regulations and more intensive management on the farm starting now.

Groundwater regulation related to water waste and efficiency of use could provide for more orderly development and prolong the life of the resource. Certain regulatory measures could be considered rather soon. Let's take a look at some of these possibilities.

One measure that may have a degree of acceptance from irrigators relates to control of irrigation-water runoff. This could involve requiring irrigators in your district to install reuse pumps and systems. Each irrigator could be required to show the District Board a written plan with maps indicating how the irrigation runoff water is reused on his farm or how it is beneficially used by a neighbor.

The intent of such a regulation would be to conserve and extend the groundwater reservoir supply. We believe that many irrigators are still not fully aware that the irrigation water which runs off without benefits is lost to that area. Such waste is shortening the useful life of the groundwater supply. It is an actual physical loss. Those irrigators who are lavishly wasting water through runoff may be using up his own, his neighbors and <u>your</u> supply.

Reuse systems have gained acceptance. It may be time to act now. <u>We recommend that districts consider a regulation to control irrigation-water runoff</u>.

An indirect method of regulation which may have considerable potential is through taxation. Severance taxes sometimes are levied on a natural resource at the time it is removed or used.

We do not claim to be knowledgeable in this area but suspect that if the cost to the irrigator were sufficiently large, a measure of control would be effected. The amount of water pumped by each irrigator from each well would have to be measured and a

tax per unit of water, perhaps by the acre-foot or fractions thereof, imposed.

This kind of restraint would increase the cost to the irrigator who used the most water. It would be an incentive for the water-waster to conserve water by installing reuse systems and to increase his efficiency of use.

For the Districts, it would provide a fund for doing some of your own water research and importation studies. It would also provide "seed" money for attracting federal and/or state funding. The amount of money raised could be generous depending on tax rates and yearly water needs. Following is an example showing what a tax of $1.00 per acre foot of water would produce based on a study in Hamilton and York Counties by Eugene Steele of the U. S. Geological Survey in 1969:

| County | Water Pumped | Dollar Value |
|---|---|---|
| Hamilton | 188,352 acre feet | $188,352 |
| York | 166,872 acre feet | 166,872 |

Figured another way, for some counties in the Big Blue River Basin and based on Ag. Statistics, 1970, using corn and alfalfa acreages only:

| County | Corn (acres) | Alfalfa (acres) |
|---|---|---|
| Clay | 93,180 | 2,290 |
| Fillmore | 76,860 | 1,010 |
| Hamilton | 140,790 | 1,860 |
| Seward | 42,850 | 510 |
| York | 118,100 | 900 |
| Totals | 471,780 | 6,560 |

If the irrigator of these counties had pumped an average of 1.5 acre feet per acre and a severance tax of $1.00 was imposed, the tax yield would have been $717,510.

Calculated on the same tax basis, if the Chase-Dundy irrigators had pumped an average of 2 acre feet per acre the yield would have been $115.400:

| County | Corn (acres) | Alfalfa (acres) |
|---|---|---|
| Chase | 39,670 | 4,220 |
| Dundy (½ acreage) | 11,090 | 2,720 |
| Totals | 50,760 | 6,940 |

These totals are not large amounts when considering the cost of project development. For example, the O'Neill project, serving 77,000 acres had a 1965 anticipated cost of $72.5 million. Since federal funds are difficult to obtain, it would seem time to start putting money aside, budgeting for project planning and development.

We recommend a severance tax be considered. The State Water Plan indicates that slightly over 2 million acres of land can be classified as suitable for irrigation in the Big Blue area, a sizeable area for potential income.

Still another method of regulation may be to limit pumpage to a fixed amount of water per acre. The allocation could be based on predictions of crop water needs, rainfall, soil moisture, etc. This would be a very sophisticated and scientific approach. The amount of water allocated could vary seasonally and from place to place within a county. This regulation, limitation on amounts pumped, would also require monitoring of the cumulative amount of water withdrawn. A technically skilled staff would be required to develop the data and techniques to make this allocation system workable.

A less sophisticated allocation system could provide for the fixing of maximum limits on the amount of water pumped. For example, a limitation of 1 to 2 acre feet per acre could be imposed. This method would not necessarily assure the optimum efficiency in use of water but might reduce waste. We recommend that some system of allocation be considered as a possible means of regulating a depleting water supply.

Still another method of regulation could be a restriction on the drilling of new wells. This action would preserve, to an extent, the investment of those landowners with wells. It would have the effect of limiting development to a given level. We consider this an inequitable measure.

Your groundwater reservoirs could provide water for additional years by effective management through regulation. The nature of these regulations should be to encourage development and efficiency in use but discourage indiscriminate waste. You have the opportunity to develop guidelines for effective but equitable groundwater regulations. Choices for action are open if you are willing to accept the responsibility. Therefore, we recommend that a committee selected from legally organized ground water districts be formed and charged to prepare proposals for ground water regulation in conference with the state agencies designated by law. If this committee is formed, we further suggest that procedures be set up for review of the proposals by individual districts. Ultimately, some form of ratification of the proposals will be needed by all of the districts. When the proposals are accepted, then we suggest that they should be reviewed with the Interim Water Study Committee of the Legislature.

A DISCUSSION OF SOME RULES AND REGULATIONS PERTAINING TO THE USE OF GROUNDWATER IN NEBRASKA

Source: Nebraska Soil and Water Conservation Commission - State Water Plan Publication Number 101D - Report on the Framework Study, Appendix D, Survey of Water Law, June 1971.

At page 38:

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Ground Water Use Law[158/]

Generally. The three common law theories governing ground water in the United States are the English rule of absolute ownership, the American rule of reasonable use, and the California rule or correlative rights doctrine. When speaking of "ground water" in this section, reference is to "percolating" water rather than to "underground streams." The distinction between these two classes of water is discussed in the section entitled "Legal Classification of Water."

The English rule declares that a landowner has absolute ownership of underlying water as though it were a part of the soil.[159/] This rule has been rejected in Nebraska.[160/]

The American rule of reasonable use acknowledges the landowner's proprietary interest in ground water, but with the restriction of reasonable use. Use of the water is confined to the land overlying the source if diversions to outlying lands will injure other overlying landowners who have an interest in the water. As one authority on Nebraska ground water law has noted, "What is a reasonable use is judged solely in relationship to the purpose of the use on overlying land; it is not judged in relationship to the needs of other."[161/] Thus, under the American rule one landowner by taking all of the ground water for a reasonable use on his own land can effectively deprive other overlying landowners of a supply.

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158/ See generally, Olson v. City of Wahoo, 124 Neb. 802, 248 N.W. 304 (1933) and other cases and materials in Harnsberger, Nebraska Ground Water Problems, 42 NEB. L. REV. 721 (1963); Danielson, Ground Water in Nebraska, 35 NEB. L. REV. 17 (1955).

159/ 2 S. WIEL, WATER RIGHTS IN THE WESTERN STATES 970 (3rd ed. 1911).

160/ Luchsinger v. Loup River Pub. Power Dist., 140 Neb. 179, 181, 299 N.W. 549 (1941); Metropolitan Utilities District v. Merritt Beach Co., 179 Nebr. 783, 800, 140 N.W.2d 626 (1966).

161/ Harnsberger, Nebraska Ground Water Problems, 42 NEB. L. REV. 721, 728 (1963).

The California rule of correlative rights places an emphasis on recognition of the common rights of users withdrawing water from the same supply. According to the doctrine, when the recharge rate in an aquifer is insufficient to maintain a plentiful supply of water for all common users, then the available supply is apportioned among those having substantial rights to the water. When supply is plentiful, users operate as they would under the reasonable use rule[162] with no restrictions on taking amounts necessary for application to reasonable or beneficial use on their overlying land, nor on diverting withdrawals to outlying lands.

The above common law theories of ground water use rights are all predicated upon the ownership of land, e.g., the right to use water is an incident of land ownership. Some states have by statute adopted the doctrine of appropriation to apply to ground water. This doctrine is applied with comparative ease to waters in water-courses and lakes, but its application to ground water is not as simple because diversion by wells from an underground water supply makes it difficult to prove relative shortages and interference effects.

The Nebraska Legislature has not adopted or affirmed any system of rights to ground water; therefore, this state derives its ground water use rules from case law and the common law theories as discussed below.

Nebraska Rule. Ground water rights in Nebraska are determined by a combination of the American rule of reasonable use and the California doctrine of correlative sharing in time of shortage. Approval of this rule is first found in dictum by the Nebraska Supreme Court in Olson v. City of Wahoo.[163] In a subsequent case the court citing Olson said: "We are committed to the rule: 'The owner of land is entitled to appropriate subterranean waters found under his land, but his use thereof must be reasonable, and not injurious to others who have substantial rights in such waters.'" [164] The rule was again reaffirmed in Luchsinger v. Loup River Public Power District[165] and in Metropolitan Utilities District v. Merritt Beach Co.[166] The correlative rights, sharing in times of shortage, seems to have also been approved in Olson when at the end of the usual pronouncement of the American rule the court

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162/ Hutchins, Trends in the Statutory Law of Ground Water in the Western States, 34 TEX. L. REV. 157, 164 (1955)

163/ 124 Neb. 802, 811, 248 N.W. 304 (1933).

164/ Osterman v. Central Pub. Power & Irr. Dist., 131 Nebr. 356, 365, 268 N.W. 334 (1936).

165/ 140 Neb. 179, 181-183, 299 N.W. 549 (1941).

166/ 179 Neb., 783, 801, 140 N.W.2d 626, 637 (1966).

added: "...if the natural underground supply is insufficient for all owners, each is entitled to a reasonable proportion of the whole...." This was also affirmed in Luchsinger.

When supply is readily available, the present Nebraska rules allow landowners to withdraw and use the ground water on the overlying land for purposes which are reasonable. What constitutes a "reasonable use" has been explained and held to be a use which constitutes a beneficial purpose in relation to the legitimate use and enjoyment of the overlying land.167/

The Nebraska rules probably will not allow an owner to withdraw ground water and transport it for use on land outside the vicinity if another landowner above the same aquifer objects to the exportation on the basis that the availability of water for his use on land which overlays the aquifer would be impaired by the removal.168/

The correlative rights aspect of the Nebraska ground water rule recognizes that water moves through aquifers from under the land of one landowner to others and that the supply of a landowner is seldom static; rather, it is often dependent in part upon uses by others. With correlative rights, overlying landowners share proportionately in a dwindling supply.169/ This element of the Nebraska rules allows landowners situated over a common supply to prevent some of their number from depriving the rest of a share in the supply by making extraordinary withdrawals in times of shortage, even if for reasonable use on overlying land. The American rule of reasonable use applied alone would allow such deprivations to occur.170/

Water rights of land owners in Nebraska have been summarized as follows:

> Only a right to use may be acquired; and this right to use is affected and circumscribed by the rights of other persons and the interest which the state has in a resource which is so largely a public treasure.171/

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167/ Clark, Groundwater Management: Law and Local Response, 6 ARIZ. L. REV. 178, n. 36 at p. 184 (1965); Drummond v. White Oak Fuel Co., 104 W. Va. 368, 375, 104 S.E. 57, 60 (1927).

168/ See Harnsberger, Nebraska Ground Water Problems, 42 NEB. L. 721, 727-728 (1963).

169/ See Hutchins, Trends in the Statutory Law of Ground Water in the Western States, 34 TEX. L. REV. 157, 164 (1955)

170/ Clark, Groundwater Management: Law and Local Response, 6 ARIZ. L. REV. 178, n. 36 at p. 184 (1965).

171/ Danielson, Ground Water in Nebraska, 35 NEB. L. REV. 17, 21 (1955).

Legislation. At the present time Nebraska has only rudimentary beginnings of ground water use legislation. A pertinent comment on the adequacy of the existing legislation is found in Metropolitan Utilities District v. Merritt Beach Co.[172] where it is stated:

> While the rights of appropriators to the use of water from rivers and streams have been protected over the years, rights in the use of ground water have not been determined nor protected, nor the public policy with reference to the use of such undeground water legislatively declared. The difficulties in administering dual conflicting principles, and fixing the rights of users thereunder, are readily apparent.

(Protecting Municipal Water Supply Sources). Recent legislation in Nebraska has dealt with present and future supplies of ground water for cities and villages, and for municipal corporations supplying cities or villages.[173] This legislation has a very limited scope, and it is questionable whether much protection for municipal water supplies is provided. The statutes involve the issuance of permits to:

> ...locate, develop and maintain ground water supplies through wells or other means and to transport water into the area to be served...and...to continue existing use of ground water and the transportation of ground water into the area served...[174]

Permits are not required; rather, permits are available when an applicant desires one and his application is approved.[175] A permit receives a priority date of the time when the application is filed with the Director of the Department of Water Resources.[176] It is not clear whether future litigation of municipal water rights will place much significance on priority dates.

There is also a well spacing statute which affects municipal ground water wells.[177] Under this statute, no irrigation, industrial, or another municipality's well may be drilled within

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172/ 179 Neb. 783, 799, 140 N.W.2d 626, 636 (1966).

173/ City, Village and Municipal Corporation Ground Water Permit Act, NEB. REV. STAT., sections 46-638 to 46-650 (Reissue 1968).

174/ NEB. REV. STAT., section 46-638 (Reissue 1968).

175/ NEB. REV. STAT., section 46-639 (Reissue 1968).

176/ NEB. REV. STAT., section 46-642 (Reissue 1968).

177/ NEB. REV. STAT., section 46-651 (Reissue 1968).

one thousand feet of a municipal well, nor may a municipality drill a well within one thousand feet of an irrigation or industrial well. However, Nebraska Revised States section 46-653 (Reissue 1968) allows the Director of Water Resources to issue a special permit to drill a well not withstanding the spacing requirements when facts are shown which justify the request. Presumably, proof of noninterference with the municipal well would be required before such a permit would be issued.

(Irrigation Wells). Again, there is minimal legislative regulation of ground water use among irrigators. Section 46-651, discussed above, affects distance between an irrigation well and a municipal well. Also, there is a statute governing spacing between irrigation wells.[178/] Under this statute, no irrigation well is to be drilled within six hundred feet of another irrigation well. However, the statute does not apply to wells used to irrigate two acres or less, and wells for domestic, culinary, or stock use on a ranch or farm are also exempted. The spacing regulation does not apply to irrigation wells of a landowner on his own land, but each of these wells must be at least six hundred feet from any irrigation well on neighboring land.[179/] As with municipal well spacing regulation, the irrigation well spacing regulation need not be followed if an applicant can show facts which satisfy certain legislative requirements.[180/]

Some protection of ground water quality is provided by Nebraska Revised Statutes section 46-602 (3) which requires "capping" or "plugging" abandoned registered irrigation wells.

(Relationship of Ground Water and Watercourse Use Law). Relatively recent developments in hydrology have prompted widespread realization that the total water resource should be dealt with as one interrelated unit. However, prior to these developments legal principles had already been formulated to resolve disputes, so that today Nebraska is faced with three different sets of rules to apply to this unit. Two sets of rules, riparianism and appropriation, apply to rights in stream flows and a third set of rules

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178/ NEB. REV. STAT., section 46-609 (Reissue 1968).

179/ NEB. REV. STAT., section 46-611 (Reissue 1968).

180/ NEB. REV. STAT., section 46-610 (Reissue 1968). The user wanting a special permit to drill an irrigation well without regard to the spacing requirements of section 46-609 must make a detailed application. When considering the approval or objection of the application, the Director of the Department of Water Resources must consider the size, shape and irrigation needs of the property for which the permit is sought, the known ground water supply, and the effect on the ground water supply and the surrounding land. The application may be approved or disapproved in whole or in part.

applies to rights in ground water.[181] This legal dichotomy of ground and surface water law produces conflicting but equally valid, claims on the hydrologic unit in times of shortage.

> Water development in the United States has been mainly a laissez-faire process, in accord with the individualistic tradition inherited from the pioneers. Surface-water users commonly have been forced by the high cost of construction to join hands in development projects. Most ground-water users have gone independent ways. Each class of users tends to regard its source of water as distinct from the others. In many areas, however, overdevelopment is now forcing recognition of the unity of water as a single resource.[182]

Users in some areas of the United States are recognizing the unity of water, and changes in the legal rules are being made in some states in order to resolve conflicts. The changes proposed are usually concerned with ground water.[183] Following is the view of a well-known Colorado commentator on this problem:

> The need for legislation is apparent. Without clear cut rules, the relatively inexpensive drilling of wells continues apace, and surface water users may soon be faced with a facit accompli (sic) where courts will be reluctant to prohibit or curtail well users who have incurred large investments and brought large acreages under cultivation through the use of underground water.[184]

Only one legislative measure has been enacted in Nebraska to deal with the problems of interferences between users of ground water on the one hand and riparian owners or appropriators of surface water on the other. That statute reads as follows:

> The Legislature finds that the pumping of water for irrigation purposes from pits located within fifty feet of the bank of any natural stream may have a direct effect on the surface flow of such stream.[185]

A permit must be obtained from the Department of Water Resources before an irrigator may pump water in the situation described by the quotation above.[186]

The statute exhibits recognition of the problems presented by "connected" ground and surface waters, but the situations to which the statute applies are narrowly circumscribed.

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181/ For discussions of these different rules see "Basic Legal Approach to Conflicts Between Water Users" and "Watercourse Use Law" of this publication.

182/ Nace, Water Management, Agriculture, and Ground Water Supplies, U. S. Geological Survey, 8 (Cir. 415, 1958).

183/ See Harnsberger, Nebraska Ground Water Problems, 42 NEB. L. REV. 721, 741 (1963), regarding surveys of other states and suggestions for correlation of rights.

184/ Moses, The Correlation of Surface and Underground Water Rights, 27 OKLA. B. J. 2095, 2098 (1956).

185/ NEB. REV. STAT., section 46-636 (Reissue 1968).

186/ NEB. REV. STAT., section 46-637 (Reissue 1968).