

1970

Agricultural Irrigation and Saline Quality of Water

W. R. Shelledy, Jr.

Follow this and additional works at: https://scholarship.law.uwyo.edu/land_water

Recommended Citation

Shelledy, Jr., W. R. (1970) "Agricultural Irrigation and Saline Quality of Water," *Land & Water Law Review*. Vol. 5 : Iss. 2 , pp. 491 - 499.

Available at: https://scholarship.law.uwyo.edu/land_water/vol5/iss2/10

This Comment is brought to you for free and open access by Law Archive of Wyoming Scholarship. It has been accepted for inclusion in Land & Water Law Review by an authorized editor of Law Archive of Wyoming Scholarship.

AGRICULTURAL IRRIGATION AND SALINE QUALITY OF WATER

In the United States in the last decade the problem of pollution of the nation's waters has been brought to the foreground by both action and inaction by government and private concerns. One small part of the large water pollution picture is the salinity problem—the concentration of dissolved salts in the water.¹ There are many causes for this problem but in the western states minerals leached from irrigated lands are a primary factor.²

Leaching is a result of irrigation where “more water is applied than is required for maximum plant growth so that the excess salts [are] carried away from the root zone.”³ Leaching itself is the process in which water by its movement through the soil picks up the minerals held therein.⁴ As irrigation water drains off, the dissolved minerals are carried into the water table and eventually join a stream. Leaching may not be a deliberate act by the irrigator, for he may not need to clear his soil of minerals, but he may cause leaching by the use of more water than is necessary for the plants. The excess water will drain through the soil, picking up minerals from below the root zone and placing them in the water table.⁵ The relation of salinity to agricultural leaching is shown by the fact that the highest dissolved-solids concentrations are reached during the peak of the irrigation season.⁶

A high salinity concentration adversely affects the use of water for domestic, industrial and irrigation purposes.⁷ The taste and hardness of salty water makes it unsuitable for domestic purposes. Some industrial processes cannot beneficially or economically use water which has a high concentra-

1. 38 WYO. STATE ENG'R REPORTS 101 (1965-1966).

2. KNEESE, *WATER POLLUTION—ECONOMIC ASPECTS & RESEARCH NEEDS*, at 76 (1962).

3. Gindler & Holburt, *Water Salinity Problems: Approaches to Legal and Engineering Solutions*, 9 NATURAL RESOURCES J. 329, 336 (1969).

4. *Id.* at 330.

5. Interview with Donald J. Brosz, Assistant Professor Agricultural Extension at the University of Wyoming, Laramie, Wyoming, Mar. 13, 1970.

6. 39 WYO. STATE ENG'R REPORTS 110 (1967-1968).

7. Gindler & Holburt, *supra* note 3, at 334.

tion of dissolved minerals. In order to irrigate with salty water "sufficient water (must be used) to meet the water requirements of (the) crops and also to provide additional water to leach from (the) soil the salts deposited there by . . . irrigation water."⁸ The water can be so salty that it is useless for any agricultural irrigation no matter how much of it is used.⁹

All levels of government have enacted legislation and standards to deal with the problems of pollution. In the federal programs the philosophy is to give the states, which have the primary responsibilities in the control of pollution, the financial and administrative help they need. "It is only when the States refuse to accept this primary responsibility that Congress has been willing to give it to the Federal Government."¹⁰

The latest action taken by Congress concerning water pollution is the Water Quality Act of 1965,¹¹ an amendment to the Federal Water Pollution Control Act. By this Act the Secretary of Interior is to develop programs for eliminating or reducing the pollution of interstate streams and their tributaries in cooperation with the people and groups most affected by the pollution: state pollution boards, municipalities and industry. While the act states a plan for federal action, its essential provisions recognize that the states have the primary responsibilities and rights to the prevention and control of water pollution.¹² The federal government is to give assistance in technical and financial matters, while the "standards of water quality . . . should be established by the State and local agencies, which are most familiar with all aspects of the matter in a given locality, including the economic impact of establishing and enforcing stringent standards of water quality."¹³

8. *Id.* at 331.

9. Meyer & Noble, *The Colorado River: The Treaty With Mexico*, 19 STAN. L. REV. 367 (1967).

10. Edwards, *The Legislative Approach to Air & Water Quality*, 1 NATURAL RESOURCE J. 58, 59 (1968).

11. Water Quality Act, 33 U.S.C. § 466a (Supp. IV, 1965-68).

12. Edwards, *supra* note 10, at 60.

13. 2 U.S. CODE CONG. & ADMIN. NEWS 3322 (1965).

By the act each state was required to submit to the Secretary of Interior before 1967 water quality criteria applicable to the interstate waters with that state's own boundaries. A plan for implementation and enforcement was to accompany these standards.¹⁴ The Secretary acts upon the submitted programs according to guidelines set down by statute;¹⁵ if and when the Secretary accepts them, the standards become the water quality standards of the state applicable to the interstate waters.¹⁶

The guidelines call for state programs to enhance water quality,¹⁷ which could create a special problem for states already having and maintaining high quality water. Wyoming streams fit into this category because they are free from the pollution caused by large populations and heavy industrial operations. To enhance the quality of Wyoming water or water of similar quality would call for the halting of all uses or, at the very least, it would eliminate any expansion of present uses. But when Wyoming submitted its standards, the basic theory throughout was not enhancement of already high quality water but a theory which would allow the present uses to remain and to be expanded upon by setting down minimum standards.¹⁸

Wyoming's minimum standards were submitted to the Secretary of the Interior and approved as the water quality standards for the state without exception.¹⁹ These standards recognize the problem of salinity which is illustrated by the limitations which are placed upon the amount of dissolved solids to be carried in the water. For each of the general areas requiring a certain quality of water for its efficient use (public water supply, fish and aquatic life, agriculture and industry), the standards specify the acceptable amount of solids which can be dissolved in the water. Since toler-

14. Water Quality Act, 33 U.S.C. § 466g (Supp. IV, 1965-68).

15. Water Quality Act, 33 U.S.C. § 466c(1) (f) (Supp. IV, 1965-68).

16. Water Quality Act, 33 U.S.C. § 466g (Supp. IV, 1965-68).

17. Water Quality Act, 18 U.S.C. § 466g(c) (3) (Supp. IV, 1965-68).

18. WATER QUALITY CRITERIA FOR WYOMING INTERSTATE WATERS adopted by administrative procedure under the authority of the State Sanitary Engineer, accepted by the Secretary of the Interior Udall in 1966.

19. Interview with Arthur E. Williamson, Director, Sanitary Engineering, Wyoming State Department of Public Health, Cheyenne, Wyoming, March 16, 1970.

ance for salts in the water varies with its intended use, each use has a limit set for an acceptable salinity load in the water used.²⁰

But while the standards recognize the problem and set limits for salinity, they do not allow for control of its principal cause: agricultural irrigation. The minimum requirements call for the water of the state to be essentially free from polluting material "attributable to municipal, industrial or other controllable sources."²¹ There has been no judicial interpretation or "other controllable sources;" however, the chief enforcement officer of the standards has stated that agricultural irrigation does not come under "other controllable sources" in the area of salinity.²² It is not that agriculture has a privileged position to pollute, for the farmers and ranchers would be stopped from any action that could cause pollution if there was a point source of their pollution. But when agriculture adds to the salinity of the water of the state, it does so without a recognizable point source. Irrigation water seeping through the soil adds to the salinity of the underground water table in an indirect manner. Where the underground water will come to the surface and will affect a water supply is not readily ascertainable; thus it is not a controllable source within the water quality standards.

The implementation plan submitted at the same time as the water quality criteria was simply a reference to Wyoming laws enacted in 1923²³ dealing with pollution and its control. The attorney general's office has ruled that the existing laws are adequate for state enactment and enforcement of water quality standard.²⁴ As were the standards, the plan of implementation was accepted by the Secretary of the Interior.

The plan for enforcement, like the standards themselves, deals lightly with the control of water salination by agricul-

20. *Supra* note 18.

21. *Id.*

22. Arthur E. Williamson, *supra* note 19.

23. WYO. STAT. § 35-188 (1957).

24. OPS. WYO. ATT'Y GEN., Nov. 10, 1966.

tural irrigation. The statutes provide for committees to run the programs and for enforcement against the common polluters such as the city or industry which discharges its waste directly in a stream. The existing statute does not reach the problems of salinity or other pollution which enters a stream in an indirect manner because the statute only makes it unlawful to:

discharge into any such stream, spring, lake, pond or upon their banks or into any feeders of such spring, lake, pond or stream unless such sewage, drainage, refuse or polluting water shall have been purified, so as to render it harmless in such a manner and under such conditions and restrictions as the state board of health may direct. . . .²⁵

The meaning of the word "discharge" as was true of "other controllable sources" in the water quality standards has not been adjudicated in the courts nor given an administrative interpretation. This would leave the word to its common meaning in the statute which would, without a tremendous stretching of the meaning, leave irrigation in the area of salinity out of the state's control. This is the present picture of pollution control in Wyoming: the major source of dissolved salts is free from direct control by the state statutes and water quality standards.

While agricultural irrigation in Wyoming tends to be protected from legal control by the state, other western states have moved away from the Wyoming position.²⁶ When these other states submitted their standards for acceptance, they also submitted new laws for their implementation. The laws were not drafted in a society concerned with early 1900 pollution but a society concerned with varying polluters of today. With this new awareness the western legislatures enacted more complex and comprehensive statutes than the existing Wyoming statutes.

In the new western statutes some take a very broad base from which to bring pollution under their jurisdiction. In

25. WYO. STAT. § 35-188 (1957).

26. Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Washington.

this type of control the statute simply states that it is unlawful to cause pollution and defines pollution as alteration of the properties of the water which is detrimental to its beneficial use.²⁷ In this type of statute it would only have to be shown that agricultural irrigation was causing pollution to have that source come under a legal sanction.

While other western states do not expressly cover salination caused by leaching the soil, they do make easier a court interpretation that would bring agricultural irrigation under legal control of the pollution laws. One such statute uses the words "introducing" or "permitting the introduction."²⁸ The court could more easily interpret that irrigation *introduced* some contaminants into the water rather than that it *discharged* the contaminants into the water. An easy interpretation which would include agricultural irrigation could be obtained from a statute that makes it unlawful to "cause to be washed or infiltrated into any . . . waters."²⁹ The two previous statutes would need some interpretation by the court to get the leaching process under the statute's control, but the statutes are moving in a direction which would allow an interpretation unfavorable to agriculture.

The State of Washington has gone farther than the previous states with its statute on prohibiting pollution.³⁰ The statute uses the idea of discharge but the idea is greatly expanded. Agriculture pollution may fall into the specific category of the statute which controls organic and inorganic materials that has drained or seeped in the waters of the state. The statute could possibly leave the way clear for court action against irrigation which is polluting the waters of the state.

The salinity caused by the Welton-Mohawk Irrigation District in Arizona has made that state aware of the problem and thus it is the only western state that deals directly in its statutes with irrigation and pollution. In Arizona "to discharge any irrigation and drainage waters into any water of the state which reduce the quality of such waters below

27. MONT. REV. CODES ANN. § 69-4806 (Supp. Vol. 4, 1969).

28. N.M. STAT. ANN. § 75-39-2 (1953).

29. 14 NEV. REV. STAT. § 445.010.

30. WASH. REV. CODE ANN. § 90.48.080 (1962).

the water quality standards established therefor by the council"³¹ shall be unlawful. But even with the strong wording of the statute, Arizona has still protected agricultural irrigation by the guidelines set down in statute for the quality standards of the state:

In formulating any applicable standard pertaining to agricultural irrigation and drainage water, the council shall be guided by the principle that such waters are put to beneficial use within the state for the irrigation of lands or become return flows to the waters of the state and subsequently reused, and that such standards shall not diminish the water available for such uses nor deprive the state of such water.³²

Now that legislatures have applied old laws or adopted new ones dealing with pollution, it is up to the enforcement agencies and the courts to determine how far the standards shall go towards abating pollution caused by agricultural leaching. But abating pollution is not exclusively left to the state or federal agencies; a private citizen can still bring an action based on a nuisance theory, notwithstanding the pollution statutes.³³

A private citizen has not brought a nuisance action specifically against agriculturally caused salinity, but salinity itself has been recognized as a nuisance, especially in the field of oil production. It has been held that "to permit salt water . . . to escape upon the lands of another creates a nuisance for which a landowner is entitled to at least nominal damages. . . ."³⁴ The salt water which seeped from an oil field pond into a creek was considered a nuisance when the seepage caused harm to the plants along the bank and to animals drinking therefrom. The landowner recovered damages from the party causing the salination of the creek.

Also it has been held that a landowner has the right to recover damages for the depreciation of his water supply by salt water seeping into the well.³⁵ But if a landowner is en-

31. ARIZ. REV. STAT. ANN. § 36-1858 (Supp. 1969-70).

32. ARIZ. REV. STAT. ANN. § 36-1857 (Supp. 1969-70).

33. *Urie v. Franconia Paper Corp.*, 107 N.H. 131, 218 A.2d 360 (1966).

34. *Love Petroleum Co. v. Jones*, 205 So. 2d 274, 275 (Miss. 1967).

35. *Duhon v. Buckley*, 161 So. 2d 301 (La. App. 1964).

titled to damages for harm caused when another pollutes his stream and if damages would not be an adequate remedy for the harm done, he would be entitled to an adequate equitable remedy—an injunction against the polluter.³⁶

In legal action based on either nuisance or statute, though statutes vary from state to state, the courts have the final say as to whether pollution caused by irrigation will come under legal sanctions. Since most causes of action are based upon statute, the enforcement agency of the state will determine whether or not an irrigation program will be brought to the court. As a result the political and economic philosophies of the state will play a predominant role in the enforcement of the laws dealing with pollution.

The western states have large financial investments in agricultural irrigation and derive a significant amount of state revenue from it. It would, therefore, not be politically or economically sound to enforce strict water quality standards nor pollution laws against the agricultural industry without an economical solution for the salinity problem.

The solution that agricultural engineers have to offer is not economically feasible for the common irrigator of the western states unless he is dealing with a good cash crop. It is cheaper for the irrigator to let the water flood on to the fields without control than it is to pay a man to control it or to purchase a machine which would put on only the needed amount. It is also cheaper to run the water through open unlined ditches, which causes a large amount of water loss through seepage and tends to increase salinity when this water re-enters the water table, than to take preventive operations such as lined or covered ditches.

What agricultural experts have to offer as a solution for pollution caused by the cheaper operations followed by the irrigators is a controlled water supply. The ultimate in control would be to have pressurized water piped to the fields which would be applied directly to the plants through sprin-

36. *Stanton v. Trustees of St. Joseph's College*, 233 A.2d 718 (Me. 1967); *Game & Fish Comm'n v. Farmer's Irrigation Co.*, 162 Colo. 301, 426 P.2d 562 (1967).

plers in a controlled amount which would eliminate run-off and seepage, the principal causes of salination in western states.³⁷ The practice is not now economically feasible for irrigators, but they are coming to see that water scarcity will soon compel it.

This paper tends to promote the idea that little legal action will be taken against agricultural pollution caused by irrigation; at least, as long as the only solution is economically impossible for the ordinary irrigator. Therefore it may appear that the quality standards and the pollution laws are of no value for control of saline water produced by agricultural irrigation, but this is incorrect. In the agricultural area the standards can serve a very important role in educating the irrigator and the preventing of future pollution.³⁸ The irrigator first has to know that he is a polluter; this can be shown by applying the standards and comparing the water he uses with that which he returns to the water supply down stream. When the polluter is aware of his pollution, then the process of correcting it can begin. If a new project goes in, it will take into consideration the standards and their possible enforcement. Thus the standards in time will correct present pollution and will work to prevent new pollution sources in the future, which is the hope of the people who drafted them.

W. R. SHELLEDY, JR.

37. Donald J. Brosz, *supra* note 5.

38. *Id.*