GROUND WATER AND THE LAW — SOME SELECTED ANNOTATED REFERENCES

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The strictly "legal" literature of ground-water use and control—except for a few essays in certain of the law reviews — is quite limited. A larger and more pointful source of information and analysis is the legal-scientific writings of the geologists, hydrologists, meteorologists, engineers and others. When new statutes are to be drafted by legislatures, and new decisions are to be made by courts on this subject, such literature may well be of far greater importance than legal precedents unfounded on scientific fact. This may be demonstrated by the character and scope of the legal-scientific literature of ground water, just one branch of water science, but one which is of major importance to any thoughtful consideration of water use and control.

Ground water — the water beneath the water table and which supplies wells and springs — is one of our most valuable minerals. In the United States in 1950, 2,858 million gallons per day (mgd) of ground water was withdrawn from wells in rural areas, 3,584 mgd for municipal supply systems, and 5,525 mgd for industrial use. Further, the quantity of ground water used for irrigation was greater than the total of the three types of use cited 1/. Unlike minerals such as coal and iron ore, ground water is renewable. A part of the rain, infiltrating beneath the land surface, descends to and raises the water table. As it does, the infiltrating water replaces — in part, in whole, or even in excess, depending on the circumstances — ground water that has been lost by natural discharge to streams, evaporation, transpiration, and pumping from wells. Because these things happen out of sight below the land surface and because the geologic controls are so variable from place to place, ground water long has been but imperfectly understood. This lack of knowledge has made more difficult the writing of laws to control its development for man's use.

TREATISES

Descroix, Pierre

1943. Le regime juridique des eaux souterraines en France et à l'étranger: Paris, A. Pedone.

Compares the features of laws relating to ground water in France, Switzerland, United States, and ancient Rome. Mentions aspects of such law in several other countries. Discusses the legal aspects of underground dams to control ground-water flow and of artificial recharge to refill water-bearing beds.

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1/ MacKichan, K. A., 1951, Estimated use of water in the United States - 1950: U. S. Geol. Survey Circ. 115, p. 6.

Thomas, Harold E.

1951. The conservation of ground water; a survey of the present ground-water situation in the United States: New York, McGraw-Hill Book Co., Inc., 327 p.

Reviews over 70 areas in the United States where ground water has been investigated and classifies the types of problems encountered. In a section on "legal concepts", the author shows that many established concepts are now known to be scientifically untenable and that these concepts should be altered to encourage sound water-resource developments.

GOVERNMENT PUBLICATIONS

Fiedler, Albert G.

1950. Legal and economic aspects of underground water, in Proceedings of Minnesota conference on underground waters: Minn. Div. Waters Bull. 2, p. 48-55.

Reviews the concepts of ground-water hydrology that bear on legal control of ground water. Cites the New Mexico ground-water law, developed as a result of the need for regulation of the Roswell artesian basin, as a model of its kind.

Kansas Water Resources Fact-finding and Research Committee

1955. Water in Kansas, a report to the Kansas State Legislature.

Most water users are special pleaders for a particular type of use, or for a particular geographic region or river basin or part of a basin, or for a particular method of development. Because competition for the use of water exists among users, a State can and should have a vital role in the overall program of water development in its boundaries. Because of supporting the collection of basic data and research, the State should serve as arbiter between the conflicting interests of water users.

McGuinness, Charles L.

1951. Water law, with special reference to ground water: U. S. Geol. Survey Circ. 117, 30 p.

This report discusses some of the problems in the field of water law and summarizes briefly the laws providing for the acquiring of water rights in the different States. Hydrologically sound statutes would: (1) apply the same rule of law to all ground water rather than attempt to distinguish between supposedly different kinds of ground water which do not exist in nature; (2) apply the same rule of law to surface water, recognizing the widespread interconnection between ground and surface water and the necessity of treating the common supply as a whole where such interconnection exists; and (3) be as consistent as possible, both in principle and in major provisions, from State to State where interstate water sources and problems are involved, and provide machinery for facilitating settlement of interstate disputes by negotiation

and compact.

National Resources Planning Board

1943. State water law in the development of the West; a report submitted to the Water Resources Committee by its Subcommittee on State Water Law: Washington, Government Printing Office, 138 p.

In a chapter devoted to ground water, features needed in an adequate ground-water law based on the appropriation doctrine are listed and explained. Appendix C summarizes ground-water law in each of the 17 western States. Appendices D and F are suggested model ground-water statutes. Appendix E quotes the New Mexico ground-water statute, which is a pioneer of its kind.

Thomas, Harold E.

1955. Water rights in areas of ground-water mining: U. S. Geol. Survey Circ. 347, 16 p., 1 fig.

Of the several major phases involved in current attempts by several States to devise equitable yet hydrologically and legally feasible means of controlling the withdrawal and use of ground water, one of the most significant is the problem of ground-water mining -- the withdrawal of water from an aquifer at a rate greatly in excess of replenishment, and the gradual exhaustion of stored water. Both major doctrines of water law that are in common use -- riparian (landownership) and appropriative -- are based on the assumption that a perennial water supply is available. The States, principally in the West where large-scale ground-water mining is taking place, either are undecided as to a method of administering ground-water rights in such areas or are attempting to adapt the existing laws. The result in some "appropriation" States is likely to be a combination of the landownership and appropriative systems that takes into account the exhaustibility of the resource.

ARTICLES

McLaughlin, Thad G.

1955. Hydrologic aspects of ground-water law: Am. Water Works Assoc. Jour., v. 47, no. 5, p. 447-452; Reprinted in Johnson Natl. Drillers Jour., v. 27, no. 3, p. 4-6, 15.

The author develops the thesis that ground-water legislation is difficult to interpret and enforce because the legal classifications of ground-water are archaic, arbitrary, and scientifically unsound. Types of ground-water areas and problems are described to illustrate the difficulties in writing good laws.

Thompson, David G., and Albert G. Fiedler

1938. Some problems relating to legal control of use of ground waters: Am. Water Works Assoc. Jour., v. 30, no. 7, p. 1049-1091.

Reviews the occurrence of ground water and cites ground-water development to illustrate legal control problems arising as a result of use of ground water. Discusses general principles of law and rights relating to surface water in relation to their legal control of ground water. The doctrine of reasonalbe use and correlative rights does not appear to bring about desired ground-water control. The doctrine of appropriation, properly applied, offers a means of control which is being used successfully in several areas.

Tolman, C. F., and Amy C. Stipp

1941. Analysis of legal concepts of subflow and percolating waters, with discussions by 9 others; Am. Soc. Civil Engineers Trans., v. 106, Paper No. 2116, p. 882-933.

Some problems confronting the courts in attempting to determine types of ground-water occurrence result from erroneous hydrologic concepts involved in the legal classification of underground water. Elementary principles of ground-water hydrology are presented to explain fallacies in the legal concepts of "subsurface stream flow" and "percolating waters." The discussion is restricted to water-table or unconfined conditions and principles of artesian flow are not discussed.