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Florida's Ground Water: Legal Problems in Managing a Precious Resource

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Sheldon J. Plager

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FLORIDA'S GROUND WATER: LEGAL PROBLEMS IN MANAGING A PRECIOUS RESOURCE†

FRANK E. MALONEY* AND SHELDON J. PLAGER**

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* B.A., 1938, University of Toronto; LL.B. 1942, University of Florida; Chairman, Water Law Subcommittee of the Florida Bar, 1956-63; Counsel to the Florida Water Resources Study Commission, 1957; Principal Investigator, Florida Water Law Study Project of the University of Florida Water Resources Research Center, 1965-67; Dean and Professor of Law, University of Florida.

** A.B. 1952, University of North Carolina; LL.B. 1958, University of Florida; LL.M. Columbia University, 1961; research associate, Florida Water Resources Study Commission, 1956-57; special counsel, Florida Department (now Division) of Water Resources, 1960-61; consultant, Florida Water Resources Research Center, 1965-67; Professor of Law, University of Illinois.

I. INTRODUCTION

Ground water is one of Florida's most important natural resources. It is her principal source of water supply for domestic, municipal, industrial, and agricultural uses.¹ At least eighty-seven percent of the population of Florida depends on ground water for domestic uses.² With the tremendous population expansion and industrial growth in Florida today, the proper conservation and utilization of this resource is becoming increasingly important.

In Florida at present the right to use ground water is determined largely by common law principles, rather than by legislation or administrative rules. This is still true of many eastern states, where, historically, there has been little or no water shortage. In 1957 the Florida Legislature provided a method for authorization of water use regulation including regulation of the use of ground water.³ This law, which provides a rather cumbersome procedure for establishing water regulatory districts,⁴ has not yet been implemented anywhere in Florida in its regulatory aspects. It will be covered fully in a forthcoming book on Florida Water Law, as will the problems arising from pollution of ground waters. These problems will not be discussed in this article.

No discussion of the law pertaining to ground water would be meaningful without some basic knowledge of hydrology and geology. Some of these basic scientific principles are discussed in Section II. The three main areas which give rise to legal problems are considered in Section III. Section IV deals with the significance of legal classifications of ground water, and Section V provides an analysis of legal rights with respect to both competing uses and obstructions. In Section VI the common law remedies available to one seeking relief against interference with ground water rights are discussed. Section VII highlights the provisions of the Florida artesian well-capping statute, an important exception to the dominance of common law principles in the area of ground water regulation in Florida.

II. HYDROLOGY AND GEOLOGY OF GROUND WATER

A. *Hydrology*⁵

Scientists have long recognized that water moves in what is known as the hydrologic cycle, the recurring period through which water passes

1. COOPER & STRINGFIELD, *GROUND WATER IN FLORIDA* (Fla. Geol. Survey Information Circular No. 3, at 1, 1950) (hereinafter cited as COOPER & STRINGFIELD).

2. FLORIDA WATER RESOURCES STUDY COMM'N, *FLORIDA'S WATER RESOURCES, REPORT TO THE GOVERNOR OF FLORIDA AND THE 1957 LEGISLATURE* 33 (1956) (hereinafter cited as FLORIDA'S WATER RESOURCES).

3. Fla. Laws, 1957 ch. 57-380, now FLA. STAT. §§ 373.071-241 (1965). See Maloney, *Florida's New Water Resources Law*, 10 U. FLA. L. REV. 119 (1957).

4. FLA. STAT. §§ 373.142-181 (1965).

5. See COOPER & STRINGFIELD, *supra* note 1; FLORIDA'S WATER RESOURCES, *supra* note 2. See generally MEINZER, *OUTLINE OF GROUND-WATER HYDROLOGY* (U.S. Geol. Survey Water-

from atmospheric water vapor into liquid and solid form as precipitation, thence along or into the ground, finally returning again to atmospheric water vapor by evaporation and transpiration.⁶ The law, however, has classified water as if the different physical stages of water were separate and distinct, rather than interrelated parts of the hydrologic cycle. As stated in an early Florida case, this classification has generally included the following four classes of water:⁷

(1) [S]urface streams which flow in a permanent, distinct, and well-defined channel from the lands of one owner to those of another; (2) surface waters, however originating, which, without any distinct or well-defined channel, by attraction, gravitation, or otherwise, are shed and pass from the lands of one proprietor to those of another; (3) subterranean streams which flow in a permanent, distinct, and well-defined channel from the lands of one to those of another proprietor; (4) subsurface waters which, without any permanent, distinct, or definite channel, percolate in veins or filter from the lands of one owner to those of another.

These are the familiar classifications of what are commonly known as watercourses, diffused surface waters, distinct underground streams, and percolating ground water. The latter two classes are the subject of this article.

The hydrologist is quick to point out that these classes are not distinct, but closely interrelated:⁸

The legal classes of water, as listed above, are now known not to be separate and distinct, but to be interrelated and interdependent. The minimum flow of water in watercourses comes chiefly from ground water, whether from "defined underground streams" or "percolating" water. The maximum flow of water in watercourses also comes in part from ground water, but is likely to include a large proportion of water that was temporarily "diffused surface water." "Diffused surface waters" may include water from precipitation which has not completed the process of infiltrating into the ground or which cannot enter the ground because of impermeability of the surface layer, or because the ground is temporarily full; overland flows which may either seep into the ground elsewhere or enter a watercourse or lake or pond;

Supply Paper 494, 1923) (hereinafter cited as MEINZER); TOLMAN, GROUND WATER (1937) (hereinafter cited as TOLMAN).

6. See Foley, *Water and the Laws of Nature*, 5 KAN. L. REV. 492, 496 (1957); Thompson & Fielder, *Some Problems Relating to Control of Use of Ground Waters*, 30 AM. WATER WORKS ASS'N J. 1049, 1052 (1938).

7. *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 593-94, 20 So. 780, 782 (1896), adopting the classes of water from *Frazier v. Brown*, 12 Ohio St. 294, 298 (1861).

8. Thomas, *Hydrology v. Water Allocation in the Eastern United States*, in *THE LAW OF WATER ALLOCATION IN THE EASTERN UNITED STATES* 164, 170 (Haber & Bergen eds. 1956).

the discharge from ground-water reservoirs at springs or seeps; water in sloughs or escaped floodwaters in "watercourses" that have been too narrowly limited in their definition; and marshes and bogs formed by ground water where the water table rises to the surface.

Ground water is but one phase of the hydrologic cycle and, at least in its fresh water forms, is derived from rainfall. Not all of the rainfall

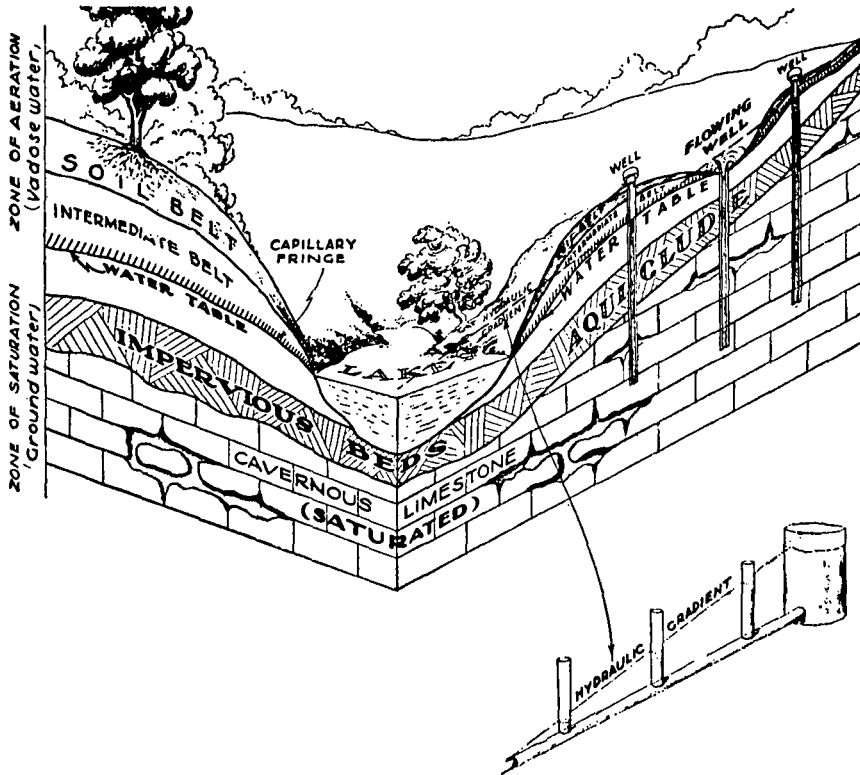


FIGURE 1. Subsurface water classification.

will become ground water, since of it will remain as surface water or return to the atmosphere through evaporation. It should be noted that, technically, ground water is a subclass of a larger subsurface water classification. Subsurface water occurs in two primary zones (Fig. 1).⁹ The water that seeps down to be available for plants is found in the zone of aeration. The voids in the rocks in this zone contain both water and air, and the water is held by capillarity. The remainder of the subsurface water percolates down to the zone of saturation, in which the water completely fills the voids in the rocks. Only the water that reaches this zone is available to supply springs and wells. The subsurface

9. The figure in the text is from FLORIDA'S WATER RESOURCES, *supra* note 2, at 36.

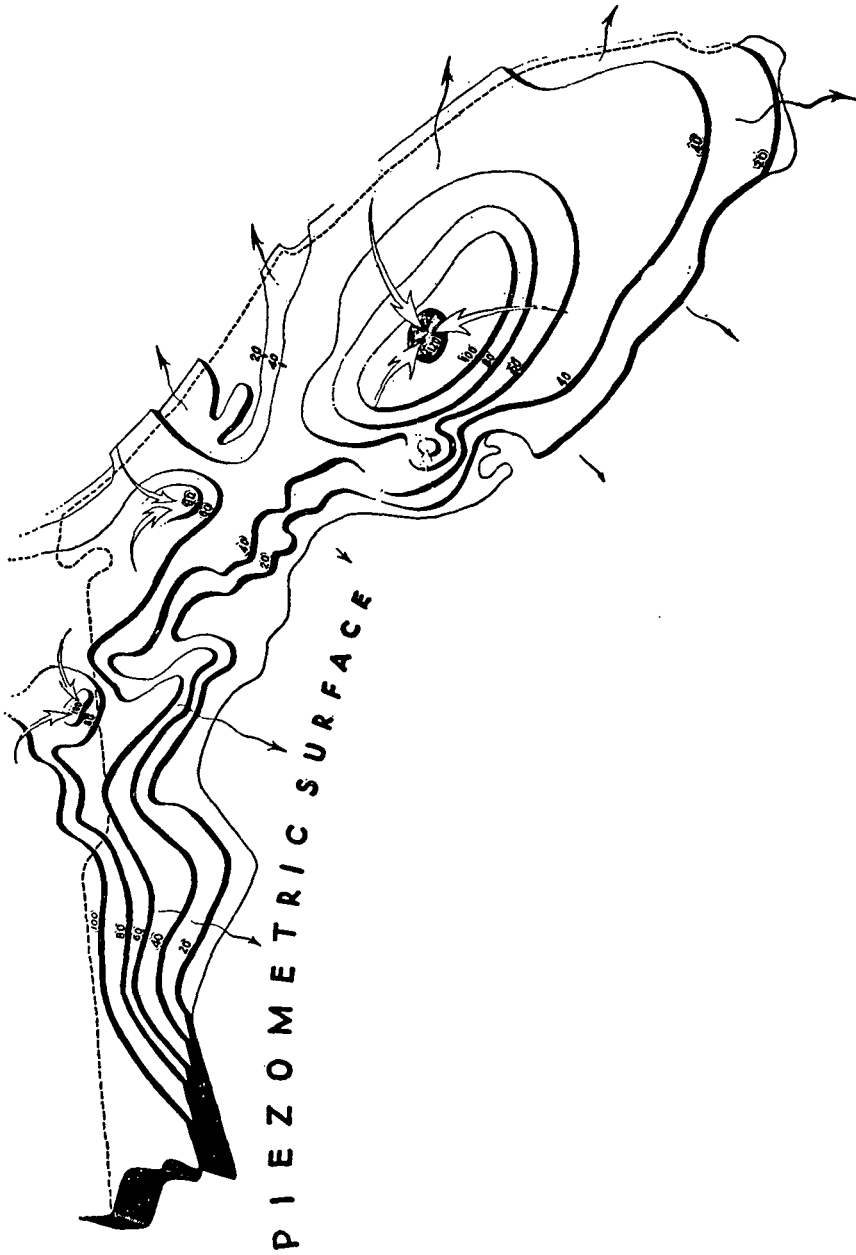


FIGURE 2. Map showing piezometric surface of the Floridan aquifer. The map is inaccurate to the extent that it shows recharge only in very limited areas of the aquifer. Recharge occurs throughout the system wherever the ground surface is higher than the piezometric surface.

water occurring in the zone of saturation is referred to as ground water, and it is primarily this water with which this chapter is concerned.

Ground water moves both by percolation, and by laminar flow through small and large openings. Such movement of the water, either by percolation or through the voids and pores of the rocks and soil, is in response to hydrostatic pressure and gravity. A bed of sediment that is porous and permeable enough to allow the movement of ground water to supply wells and springs is known as an aquifer water-bearing bed.

Ground water occurs under water-table or artesian conditions. The water is under water-table conditions when the ground water surface is free to rise and fall with the water supply. Water that has moved through a permeable bed and is confined under an impervious watertight bed, called an aquiclude, is said to be under artesian conditions. The artesian water is under pressure and will rise above the water-bearing bed if a well is sunk through the aquiclude or confining bed.

By measuring the height in many wells throughout the state to which the artesian water will rise in relation to sea level, a contour map of the imaginary pressure surface or piezometric surface can be prepared (Fig. 2).¹⁰ The piezometric surface reveals much information on the source and movement of water in the artesian aquifer. In areas where the piezometric surface is high but lies beneath the surface of the land, wells will not flow. Discharge areas, such as the areas where Florida's springs are found, occur where the piezometric surface is higher than the land surface and the wells will flow (Fig 3).¹¹

B. *Geology—The Aquifers in Florida*

The hydrology of ground water is but one aspect of an understanding of its characteristics. The geological formations of an area figure significantly in the availability of ground water.

Almost the entire state is underlaid with porous and permeable limestones that provide much of Florida's ground water supplies (Fig. 4).¹² These rock formations are called aquifers. In Florida the aquifers are under both water-table and artesian conditions.

The Florida aquifer, which is under artesian conditions, provides most of Florida's water supply, except where it is absent (Santa Rosa and Escambia Counties) or where it is too salty or mineralized for most purposes (along the east coast below St. Augustine and the peninsula below Lake Okeechobee). The Floridan aquifer is the source of most of the

10. The figure in the text is from HENDRY & LAVENDER, FINAL REPORT ON AN INVENTORY OF FLOWING ARTESIAN WELLS IN FLORIDA (Fla. Geol. Survey Info. Cir. No. 21, at 10, 1959) (hereinafter cited as HENDRY & LAVENDER).

11. *Id.* at 11.

12. The figure in the text is from HENDRY & LAVENDER, *supra* note 10, at 6.

large springs in Florida and thousands of wells. Seventeen of these springs rank in the first magnitude, with an average daily flow of 64.6 millions of gallons. The discharge from the largest of these springs, Silver Springs, has ranged from 419 to 756 million gallons a day.¹³

The other principal aquifer in Florida is the Biscayne aquifer of

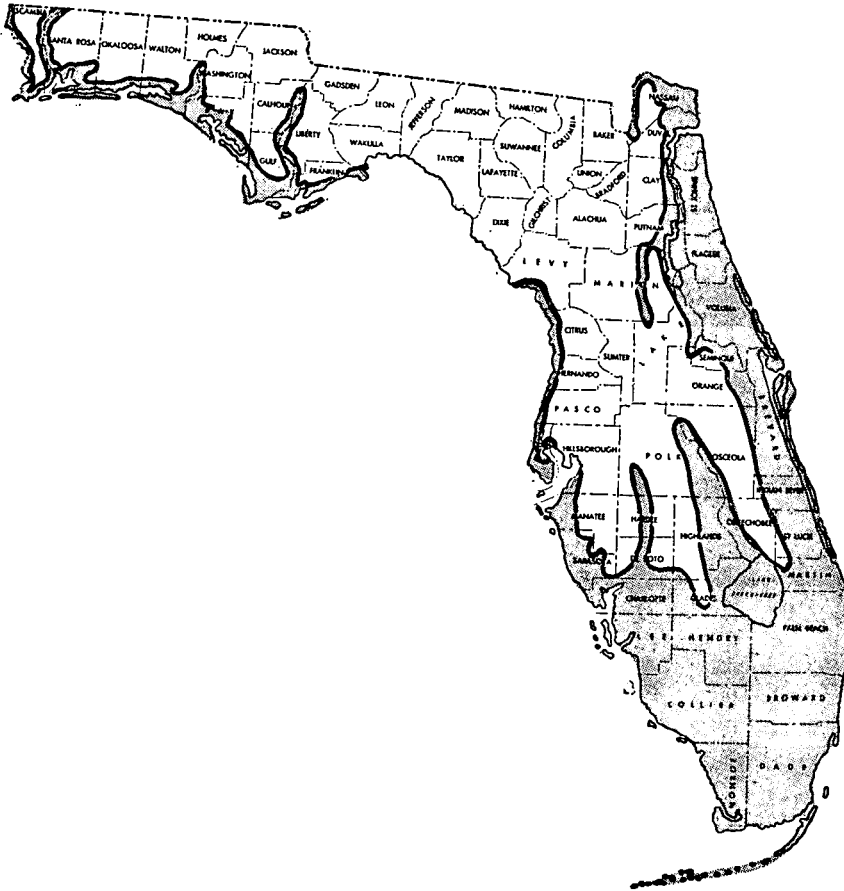


FIGURE 3. Approximate area of artesian flow.

Dade and Broward counties. It is very productive and consists of highly permeable limestone and sand. It is the sole source of ground water in the area and exists under water-table conditions. The other aquifers in the state are also limited in area and exist under both water-table and artesian conditions.

III. GROUND WATER PROBLEMS

The basic problems of ground water conservation and control fall under three general headings: (a) interference between wells; (b) over-

13. See FERGUSON, LINGHES, LOVE & VERNON, SPRINGS OF FLORIDA (Fla. Geol. Survey Geol. Bull. No. 31, at 32-33, 124-25, 1947).

draft of the water-bearing bed or aquifer; (c) contamination, which includes pollution and salt water intrusion.¹⁴ Though separable analytically, these problems are interrelated in terms of actual cause and effect; in a sense, all of them involve waste of the ground water supplies because the supplies are not utilized effectively.

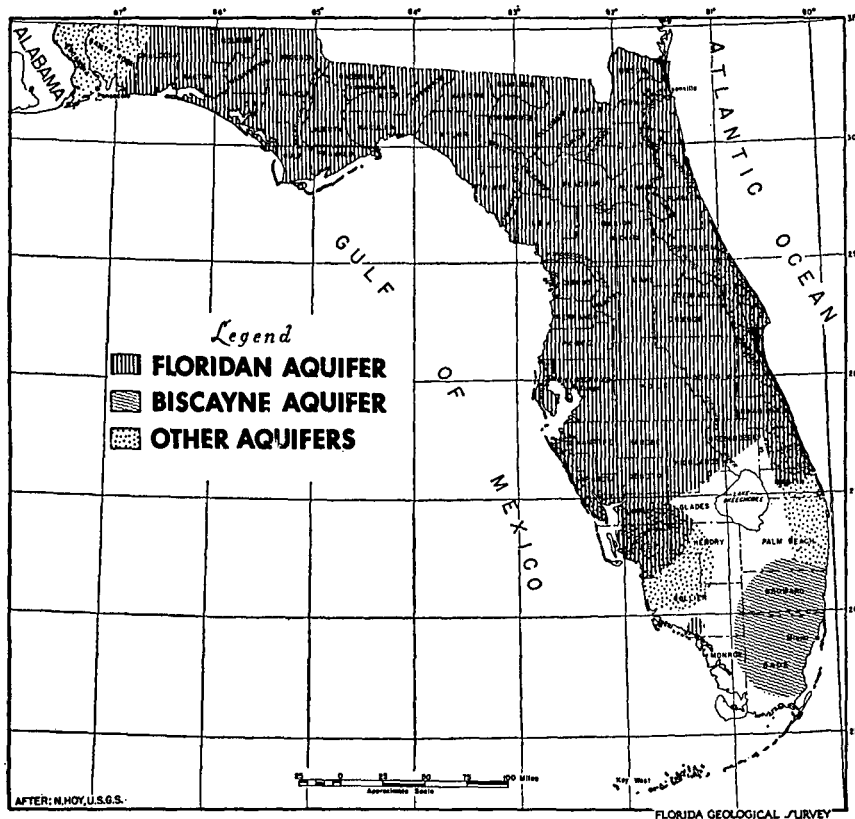


FIGURE 4. Map showing distribution of fresh-water aquifers.

A. Interference Between Wells¹⁵

When a well is pumped or allowed to flow, the water level (or the pressure [piezometric] surface in the case of an artesian aquifer) in the area around the well is lowered as a result of the withdrawal of the water. The water-table surface (or the piezometric surface) forms a depression in the shape of an inverted cone. The shape of the cone of depression or influence is governed by the size of the openings in the rocks forming

14. Critchlow, *Policies and Problems in Controlling Ground Water Resources*, 40 AM. WATER WORKS ASS'N J. 775 (1948).

15. See Critchlow, *id.*; MEINZER, *supra* note 5, at 60-62; TOLMAN, *supra* note 5, at 380; FLORIDA'S WATER RESOURCES, *supra* note 2, at 39, for a more detailed treatment of the material in this subsection.

the aquifer. The cone is flat if the openings are large; if they are small, the cone is steep because of the restricted flow. The cone of depression may extend a few feet from the well to a few miles. The amount of draw-down in the well depends on the rate of flow or pumping and the rate of release of the water from storage in the water-bearing bed.

Interference occurs between wells when the cones of depression overlap (Fig. 5).¹⁶ The interference may be caused by improper spacing in the well field, by excessive withdrawals, or what appears to be an

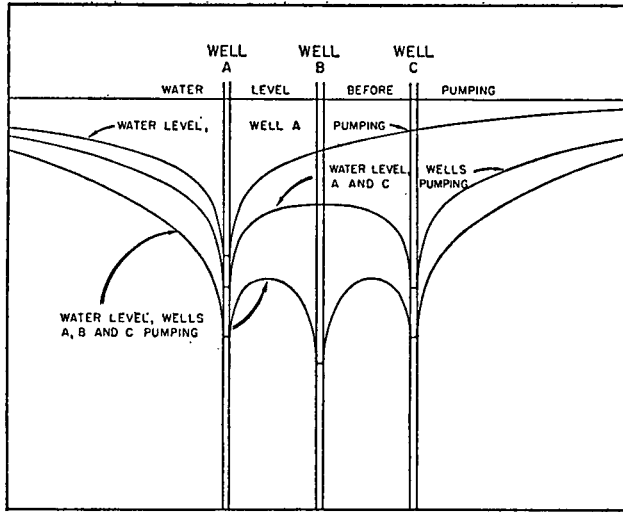


FIGURE 5. Cone of depression and interference wells.

interference may actually be caused by the lowering of the water table or pressure surface as a result of inadequate recharge of the aquifer because of drought conditions. When interference occurs, it can usually be remedied by deepening the well or lowering the pump. Interferences between private wells of equal use are normally not as serious as interference between the larger yield wells supplying cities and industries. The problem in Florida in this area will continue to increase as more industry comes into the state and the cities need more and more water to supply the increasing population.

B. Overdraft of the Water-Bearing Bed or Aquifer¹⁷

Overdraft of the water-bearing bed results from pumping at a greater rate than the intake of water from the recharge area. The water level is lowered and larger pumps have to be installed to withdraw the water. Artesian wells may cease flowing and pumping may be required

16. The figure in the text is from FLORIDA'S WATER RESOURCES, *supra* note 2, at 39.

17. See Critchlow, *supra* note 14; THOMAS, CONSERVATION OF GROUND WATER ch. 111 (1951); FLORIDA'S WATER RESOURCES, *supra* note 2, at 40, for more detailed treatment of the material in this subsection.

because of the lowered pressure surface. Overdraft occurs from a variety of reasons, but it is usually a result of excessive development of a well field by industries and municipalities. Wasteful flow of artesian wells and low rainfall will also contribute to overdraft.

Overdraft of an aquifer may lead to serious problems. In the first place the lowered water level will increase costs of obtaining the water. Larger pumps, deeper wells, and additional wells may be necessary to obtain the same yield. Secondly, the most serious problems occur in Florida in areas where the aquifer connects with the sea, or overlaps salty water. Excessive withdrawals of the fresh water may draw the salty water into the aquifer, resulting in contamination of the water supply.

C. Contamination

Contamination includes pollution of the ground water supplies by industrial, municipal or private wastes, and salt water encroachment into the aquifer.

1. Pollution

Pollution of ground water by industrial and municipal wastes and sewage does not seem to be widespread in Florida at the present time. In the past, considerable quantities of municipal sewage and industrial wastes were disposed of through discharge into drainage wells.¹⁸ The Florida State Board of Health has attempted to bring this problem under control by obtaining statutory authorization for a permit system for drainage wells.¹⁹ A great number of permits have been issued allowing discharge of heated water from industrial cooling systems because heat is not considered to be a pollutant.²⁰ The general area of pollution including ground water pollution will be treated in the forthcoming book on Florida Water Law.

2. Salt Water Intrusion

Salt water intrusion from the ocean or from underlying saline aquifers has been one of the major threats to the ground water supplies of many coastal areas of Florida, and is probably the greatest contamination problem with respect to Florida's ground water today. The State Board of Health considers 250 parts per million chlorides sufficient to make water unsuitable for human consumption.²¹ In most of the area of the state south of Lake Okeechobee, the Floridan aquifer has a salinity content that exceeds this standard. If an artesian well in this area is allowed to flow, the result will be contamination of the shallower water-table aquifer. Many artesian wells were drilled in the past and were left uncapped and

18. FLORIDA'S WATER RESOURCES, *supra* note 2, at 66.

19. FLA. STAT. § 387.02 (1965) (provides for permits).

20. FLORIDA'S WATER RESOURCES, *supra* note 2, at 66.

21. *Id.* at 40.

allowed to flow uncontrolled. In others, the casing has deteriorated, resulting in contamination of the surrounding ground water supplies.²² It is also known that salt water from the geological past underlies most of the artesian aquifers in Florida.²³ If the aquifer is excessively overdrawn, then this salt water may move up into the fresh water supplies.

The hydraulic principle applicable to the relation between salt and fresh water is illustrated in Figure 6.²⁴ This is the so-called Ghyben-Herzberg principle.²⁵ Fresh water is lighter than salt water and will float on it. According to the above principle, one foot of fresh water above sea level is necessary to support a column of salt water 40 feet high. In other

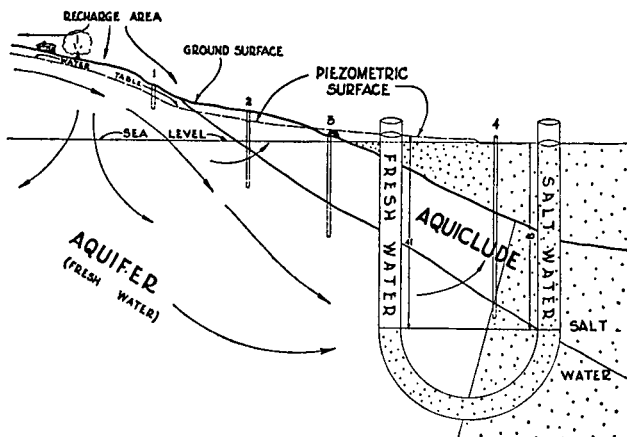


FIGURE 6. Ghyben-Herzberg principle of salt-fresh water association.

words, a column of fresh water 41 feet high will balance a column of salt water 40 feet high. When too much fresh water is removed from the aquifer, it no longer balances out the salt water, and the salt water moves into the fresh water supplies.

Several factors contributing to salt water encroachment were listed by the Florida Water Resources Study Commission in its report to the 1957 legislature:²⁶

1. Loss of head through increased demands by municipalities. The demands of agriculture, due largely to modern irrigation; and of industry with hydraulic mining, pulp and paper mills, and refrigeration are examples.
2. Excessive drainage. High water levels in the Everglades and

22. See HENDRY & LAVENDER, *supra* note 10, at 13.

23. *Id.* at 14, 17.

24. The figure in the text is from FLORIDA'S WATER RESOURCES, *supra* note 2, at 47.

25. See FLORIDA'S WATER RESOURCES, *supra* note 2, at 47; BLACK, BROWN AND PEARCE, SALT WATER INTRUSION IN FLORIDA—1953 (1953).

26. FLORIDA'S WATER RESOURCES, *supra* note 2, at 47, 48. See also BLACK, BROWN & PEARCE, *supra* note 25, at 15-17.

under the Atlantic coastal ridge were materially lowered by digging of the Everglades drainage canals during the first quarter of the current century. The result has been excessive drainage and a lower water table that no longer holds in check the salt water from the ocean.

3. Lack of protective works against tidewater in bayous, canals, and rivers. This factor is particularly prevalent in south Florida between Miami and Fort Lauderdale where numerous canals and old discharge channels cut the Atlantic coastal ridge.

4. Improper location of wells. Wells in an area subject to salt water intrusion should be located as far as economically feasible from the source of possible salt water intrusion and properly spaced with respect to each other to prevent interference.

5. Highly variable annual rainfall with insufficient surface storage during droughts. The most important single problem having to do with water conservation and control in Florida lies in the fact that the rainfall is highly variable, resulting in variations in the piezometric surface.

6. Uncapped wells and leakage. Uncapped artesian wells . . . represent a serious loss of ground water and inevitably result in lowered ground water levels. Even when capped, many old artesian wells have broken or corroded casings that permit highly saline water from salt residuals to contaminate the fresh water in overlying strata.

Florida's answers to these ground water conservation problems have been varied. The artesian well capping statute²⁷ was passed in order to control waste through wild flowing wells and salt water contamination from highly mineralized wells. The problems of salt water intrusion are being met by the multi-purpose water management districts²⁸ and by the setting of salt water barrier lines.²⁹ Pollution of the underground waters has been controlled to some extent by the State Board of Health.³⁰ Finally, the Water Resources Law³¹ provides for the establishment of water regulatory districts that could presumably regulate and control many of the problems of well interference, overdrafts, and to some extent salt water intrusion. To appreciate the reach and effect of these statutory controls they must be viewed against the background of the common law

27. FLA. STAT. §§ 373.021-.061 (1965). See HENDRY & LAVENDER, *supra* note 10, at 18.

28. The general flood control authority is given in FLA. STAT. ch. 378 (1965). The two large multi-purpose districts created to date are the Central and Southern Florida Flood Control District (Fla. Laws 1949, ch. 25270), and the Southwest Florida Water Management District (Fla. Laws 1961, ch. 61-691).

29. FLA. STAT. § 373.194 (1965).

30. FLA. STAT. ch. 387 (1965). This function will now be performed by the new Florida Air and Water Pollution Control Commission, established by the 1967 Florida Legislature.

31. FLA. STAT. §§ 373.141-.182 (1965).

rules governing ground water utilization. These rules are the subject of the next two sections.

IV. LEGAL CLASSIFICATION OF GROUND WATER

A. Introduction

Ground water has been divided into two separate legal categories—underground streams and percolating waters—and as thus classified is subject to two separate bodies of legal rules.³² Apparently a lack of hydrologic information led the early courts to make these artificial classifications.³³ A classic statement of the early judicial attitude toward percolating ground water is found in a statement made by the Ohio Supreme Court in 1861.³⁴

Because the existence, origin, movement and course of such waters, and the causes which govern and direct their movements, are so secret, occult, and concealed . . . an attempt to administer any set of legal rules in respect to them would be involved in hopeless uncertainty, and would be, therefore, practically impossible.

Today it is generally agreed that virtually all ground water is in constant movement under the land, either in watercourses or through the pores of the earth, and that the precise physical state is of no particular consequence to its utilization.

The Florida Supreme Court historically has followed the tradition of classifying ground water into underground streams and percolating waters.³⁵ However, recent scientific knowledge has changed many of the old ideas concerning percolating water, and the Florida court has indicated an awareness of the nature of ground water and its interrelationship to other waters.³⁶ Nevertheless, many of the old rules remain, and an understanding of the two legal classes of ground water is still important.

B. *Underground Streams and Percolating Waters—Definition*

Underground streams have been distinguished from percolating waters on the basis that they flow in fixed or definite channels; their existence may be known or ascertainable from surface indications or other methods without excavations for that purpose.³⁷ These subterranean streams are presumed to have the same characteristics as a surface stream: that is, a bed, banks, and a channel of water. By contrast, percolating waters are defined as those "subsurface waters which, without any

32. Tampa Waterworks Co. v. Cline, 37 Fla. 586, 20 So. 780 (1896).

33. THOMAS, CONSERVATION OF GROUND WATER 248 (1951).

34. Frazier v. Brown, 12 Ohio St. 294, 311 (1861).

35. Tampa Waterworks Co. v. Cline, 37 Fla. 586, 20 So. 780 (1896).

36. See Koch v. Wick, 87 So.2d 47 (Fla. 1956).

37. Tampa Waterworks Co. v. Cline, 37 Fla. 586, 20 So. 780 (1896).

permanent, distinct, or definite channel, percolate in veins or filter from the lands of one owner to those of another."³⁸

C. *Presumption that Ground Water Is Percolating*

Because of the difficulty of proof, it is well-settled in Florida, and in most other jurisdictions, that ground water is presumed to be percolating unless it is affirmatively shown that the water is flowing in an underground stream.³⁹ The burden of proof rests with the party alleging such fact. This limitation means that in most cases the water will be treated as if it were percolating, which greatly reduces the legal significance of the underground stream classification. In many jurisdictions, however, it may be advantageous to show that an underground stream exists, and it is important to know the various factors looked at by the courts.

D. *Evidence Allowable To Prove an Underground Stream*

An underground stream must have essentially the same characteristics as a surface stream, such as a bed and banks, a well-defined and distinct channel, and a current of water, although it need not flow continuously.⁴⁰ The evidence allowable to prove the existence of a subterranean stream includes surface indications such as a line of plant growth which would only occur over a wet area,⁴¹ waters disappearing into the ground and reappearing a short distance away,⁴² or a line of surface depressions or sinkholes.⁴³ Other proofs, such as the geological formation of the earth in the vicinity,⁴⁴ the sound of water passing underneath the earth,⁴⁵ and the interruption of flow of other wells or springs⁴⁶ may also be shown.

*In Tampa Waterworks Co. v. Cline*⁴⁷ the Florida Supreme Court

38. *Id.* at 594, 20 So. at 782.

39. *See, e.g.*, *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 20 So. 780 (1896); *Stoner v. Patten*, 132 Ga. 178, 63 S.E. 897 (1909); *Clinchfield Coal Corp. v. Compton*, 148 Va. 437, 139 S.E. 308 (1927). *See also* Annot., 55 A.L.R. 1385, 1386-88 (1928); 109 A.L.R. 395, 397 (1937).

40. *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 20 So. 780 (1896).

41. *Municipal Water Conservation Dist. v. Southwest Cotton Co.*, 39 Ariz. 65, 87, 4 P.2d 369, 377 (1931) (dictum); *Hale v. McLea*, 53 Cal. 578, 580 (1879) (line of brushes evidence of well-defined underground stream); *Department of Highways v. Sebastian*, 345 S.W.2d 46, 47 (Ky. 1961) (line of green grass growing on surface even in dry weather was sufficient to create a jury issue as to the existence of a well-defined underground stream).

42. *Board of Supervisors v. Mississippi Lumber Co.*, 80 Miss. 535, 544, 31 So. 905, 906 (1902) (dictum); *Stoner v. Patten*, 132 Ga. 178, 179, 63 S.E. 897 (1909) (appearance and reappearance properly received as evidence of an underground stream).

43. *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 604, 20 So. 780, 785 (1896) (underground stream found to exist).

44. *Ross Common Water Co. v. Blue Mountain Consol. Water Co.*, 228 Pa. 235, 240, 77 A. 446, 447 (1910) (underground streams found to exist on basis of evidence of geological formation).

45. *Municipal Water Conservation Dist. v. Southwest Cotton Co.*, 39 Ariz. 65, 87, 4 P.2d 369, 377 (1931) (dictum).

46. *Id.*

47. 37 Fla. 586, 20 So. 780 (1896).

found that a well-defined underground stream existed. The area in question was underlaid with limestone and the court noted that such evidence as a line of surface depressions or sinks over the lands of the parties indicated the course of a subsurface stream as found in limestone regions.⁴⁸ The court also took into account the presence of fish in both the plaintiff's downstream spring and an excavation made by the defendant, and the reappearance of dyes in the downstream spring shortly after being placed in the excavation as evidence of a well-defined underground stream.⁴⁹

The Florida Supreme Court has also indicated, however, that the knowledge that the area "is largely underlaid by a limestone strata, which is a water bearing strata that is commonly pierced and riddled with underground caverns and watercourses," is not sufficient evidence to establish the existence of a well-defined underground stream supplying another landowner's spring.⁵⁰

E. *Significance of the Classification*

The classification of ground water into underground streams and percolating water is significant because of the different legal rules governing each class. It is generally agreed that the riparian and prior appropriation doctrines governing surface watercourses are equally applicable to subterranean streams; whereas different doctrines may govern the rights of landowners in percolating waters. These differences are dealt with in some detail in the next section.

At least one court has completely done away with the legal distinctions and held all underground waters to be percolating waters, noting that "whether underground waters move in a well-defined channel, either in a generally confined direction as to the points of the compass or spread out laterally, is merely a question of difference or degree."⁵¹

F. *Statutory Modification*

While a few states, mostly in the west,⁵² have statutorily abolished the distinction between percolating waters and subterranean streams, Florida has not. However, in its declaration of policy, Florida's Water Resources Law⁵³ provides that:⁵⁴

The ownership, control of development and use of waters for

48. *Id.* at 603, 20 So. at 785.

49. *Id.*

50. *Labruzzo v. Atlantic Dredging & Const. Co.*, 54 So.2d 673, 677 (Fla. 1951); Annot., 29 A.L.R.2d 1346 (1953).

51. *Hinton v. Little*, 50 Idaho 371, 375, 296 P. 582, 583 (1931) (holding that the doctrine of prior appropriation applies to all subterranean waters); IDAHO CODE ANN. § 42-230 (1947).

52. *E.g.*, KAN. GEN. STAT. ANN., 82a-702, 703 (1949); ORE. REV. STAT. § 537.515(3) (1953); N.D. CODE ANN. § 61-01-01 (1960); WYO. STAT. § 341-121 (1957).

53. FLA. STAT. §§ 373.071-241 (1965).

54. FLA. STAT. §§ 373.072(2) (1965).

all beneficial purposes is within the jurisdiction of the state which in the exercise of its powers may establish measures to effectuate the proper and comprehensive utilization and protection of the waters.

The Water Resources Law gives the Board of Conservation the power to authorize the capture, storage and use of ground water, and no distinction is made in the statute between ground water considered as percolating water and ground water arising from subterranean streams.

V. RIGHTS WITH RESPECT TO COMPETING USE AND OBSTRUCTION OF GROUND WATER

A. *Underground Streams*

The rights of adjoining property owners to the use of water in underground streams have generally been held to be the same as those of a riparian owner in the waters of a surface watercourse.⁵⁵ The actual rule applicable depends on whether the particular jurisdiction follows the "natural flow" or "reasonable use" doctrine with respect to surface streams.⁵⁶ In those states following the prior appropriation doctrine, subterranean streams are subject to appropriation under the same rules governing surface streams.⁵⁷

A 1951 Florida case illustrates one application of the reasonable use rule to an underground stream, although the case involved alleged unreasonable use of defendant's land rather than unreasonable use or withdrawal of the water as such.⁵⁸ Plaintiff alleged that the defendant, in the process of excavating for construction of a yacht basin, caused the water from an underground stream to cease flowing. The trial court ruled for the defendant on demurrer, despite plaintiff's allegation that the defendant knew that the underground stream supplied plaintiff's spring, and that he proceeded with the excavation anyway. The Florida Supreme Court reversed, pointing out that, while the affirmative duty rested on the plaintiff to show the invasion was either an intentional one or that the conduct was "negligent, reckless, or ultra hazardous," the complaint stated a cause of action for an intentional invasion.⁵⁹

55. *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 20 So. 780 (1896); 56 AM. JUR. *Waters* § 109 (1947). As noted by the Florida Supreme Court in *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 600, 20 So. 780, 784 (1896): "[I]f subterranean water has assumed the proportions of a well-defined and constant stream, the owner of the land through which it flows will not be authorized to divert it or improperly use it, any more than if the stream ran upon the surface."

56. See Maloney, *Florida's New Water Resources Law*, 10. U. FLA. L. REV. 119, 125-6 (1957).

57. E.g., *Municipal Water Conservation Dist. v. Southwest Cotton Co.*, 39 Ariz. 65, 4 P.2d 369 (1931); *Chandler v. Utah Copper Co.*, 43 Utah 479, 135 P. 106 (1913).

58. *Labruzzo v. Atlantic Dredging & Const. Co.*, 54 So.2d 673 (Fla. 1951).

59. *Id.* at 676.

Three years later the case returned to the supreme court, this time on appeal from a jury verdict for defendant.⁶⁰ The evidence at trial had established that during the course of excavation the defendant's employees, in an attempt to "cap" the hole, poured four yards of ready-mix concrete into the crevice; the spring then ceased to flow. The jury found for the defendant. The supreme court reversed, holding that the only inference which reasonable men could draw from the evidence was that the concrete stopped the flow of the spring, and that defendant's attempt to cap the hole was not in accord with good engineering practices and was therefore unreasonable under the circumstances.

The Florida Supreme Court's decision was consistent with the rule of the Restatement of Torts.⁶¹ If the interference is *intentional*, the plaintiff must show the defendant's use of his land was unreasonable; the utility of the conduct is balanced against the harm to the plaintiff. If the interference is *unintentional*, the defendant's conduct must have been either negligent, reckless or ultra hazardous in order for the plaintiff to recover in damages.

B. Percolating Waters

1. ENGLISH OR COMMON LAW RULE

The English law governing percolating ground water was not developed until a comparatively late date. The doctrine was first stated in 1843 in the case of *Acton v. Blundell*.⁶² Under this doctrine, the landowner may extract an unlimited amount of percolating water from his land and use it on his own land or distant lands without taking into consideration the harmful effect that his use may have on the percolating water under neighboring lands. This doctrine, sometimes called the "absolute ownership doctrine," is followed by a few American jurisdictions.⁶³ The English rule is based on the maxim, *cujus est solum, ejus est usque ad coelum et ad inferos* (to whomsoever the soil belongs, he also owns to the sky and to the depths). As noted by one court, "The percolating water belongs to the owner of the land, as much as the land itself, or the rocks and stones in it."⁶⁴ It is a misnomer, however, to call the English rule the absolute

60. *Labruzzo v. Atlantic Dredging & Const. Co.*, 73 So.2d 228 (Fla. 1954).

61. RESTATEMENT OF TORTS §§ 822-49 (1939).

62. 12 M. & W. 324, 152 Eng. Rep. 1235 (1843). The first English case touching on the subject arose in 1840, *Hammond v. Hall*, 10 Sim. 551, 59 Eng. Rep. 729, but *Acton v. Blundell* was the first decision bearing directly on the rights governing percolating water. See 3 FARNHAM, WATERS & WATER RIGHTS § 935 (1904).

63. See, e.g., *Stoner v. Patten*, 132 Ga. 178, 63 S.E. 897 (1909); *Edwards v. Haeger*, 180 Ill. 99, 54 N.E. 176 (1899), questioned by *Behrens v. Scharringhausen*, 22 Ill. App. 326, 161 N.E.2d 44 (1959); *Buffum v. Harris*, 5 R.I. 243 (1858); *Houston & T.C. Ry. v. East*, 98 Tex. 146, 81 S.W. 279 (1904). See generally Cribbet, *Water As A Species of Private Property; The Illinois View*, 47 ILL. B.J. 448, 455-58 (1959), for a discussion of Illinois ground water law; Greenhill & Gee, *Ownership of Ground Water in Texas; The East Case Reconsidered*, 33 TEXAS L. REV. 620 (1955), for a discussion of Texas ground water law.

64. *In re Dist. No. 1 v. Graniteville Spring Water Co.*, 103 Vt. 89, 91, 152 A. 42, 43 (1930).

ownership doctrine. Since a landowner has no rights against an adjoining landowner who withdraws all of the water under his land and dries up his wells, it is inaccurate to say that he owns the percolating water under his land. Actually, under the English rule, the landowner does not "own" the percolating water until he has reduced it to actual possession.

The English rule is generally subject to two exceptions: (1) a landowner may not extract the percolating water with a malicious purpose; and (2) he may not waste the water to the detriment of his neighbor's supply.⁶⁵ Two states have stretched the "absolute ownership" concept to its limits and declared the presence of malice or waste irrelevant.⁶⁶

The English rule, with or without the exceptions, has been criticized by writers,⁶⁷ and repudiated by most American jurisdictions.⁶⁸ The problem with the rule is that it fails adequately to take into account the nature of ground water, and it favors those financially able to drill deep wells, such as municipalities and large industries, who may thereby cut off the supply of water to the shallow wells of others.

2. AMERICAN OR REASONABLE USE RULE

a. Development of the Rule

It is stretching a point to call the English-originated absolute ownership rule the "common law" rule. As noted above, the first English case dealing with percolating water was not decided until 1840,⁶⁹ and the English rule itself did not originate until the decision of *Acton v. Blundell*⁷⁰ in 1843. The English rule had not been pronounced when the common law was first adopted by most American states, and therefore there was no common law rule as such.⁷¹ When the American courts were called upon to adopt a rule governing percolating water usage, many rejected the English rule of *Acton v. Blundell*, and developed instead the "American" or "reasonable use" rule. New Hampshire led the way in developing the new rule,⁷² based on the maxim, *sic utere tuo alienum non laedas* (one must so use his own property so as not to injure another).

65. See, e.g., *St. Amand v. Lehman*, 120 Ga. 253, 47 S.E. 949 (1904); *Wheatley v. Baugh*, 25 Pa. 528 (1855); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 173 A. 627 (1934); Annot., 55 A.L.R. 1385, 1395-98 (1928), and cases cited therein.

66. *Wheelock v. Jacobs*, 70 Vt. 162, 40 A. 41 (1897); *Huber v. Merkel*, 117 Wis. 355, 94 N.W. 354 (1903).

67. E.g., 3 FARNHAM, WATERS & WATER RIGHTS 2717 (1904); McHendrie, *The Law of Underground Water*, 13 ROCKY MT. L. REV. 1, 5 (1940).

68. Annots., 55 A.L.R. 1385, 1398-1408 (1928); 109 A.L.R. 395, 399-403 (1937); 29 A.L.R.2d 1354, 1361-65 (1953), and cases cited therein.

69. *Hammond v. Hall*, 10 Sim. 551, 59 Eng. Rep. 729 (1840).

70. 12 M. & W. 324, 152 Eng. Rep. 1235 (1843).

71. 3 FARNHAM, WATERS & WATER RIGHTS 2718 (1904). Under FLA. STAT. § 2.01 (1965), only the common law of England of a general nature down to July 4, 1776, is declared to be in force in Florida.

72. *Bassett v. Salisbury Mfg. Co.*, 43 N.H. 569 (1862); *Swett v. Cutts*, 50 N.H. 439 (1870).

b. Statement and Application of the Rule

Under the reasonable use rule as applied to percolating waters, the landowner's use is limited to beneficial purposes having a reasonable relationship to the use of his overlying land. As long as the use meets these tests, the landowner may use the water even if such use interferes with or diverts his neighbor's supply. Use of the water on nonoverlying lands, however, is unreasonable and actionable if it injures the ground water supply of an adjoining landowner.⁷³ It should be noted that even though the use is wasteful or the water is used on nonoverlying land, the plaintiff must show an injury or threatened injury to his ground water supply in order to obtain an injunction or be awarded damages.⁷⁴ Mere theoretical "unreasonableness" is not enough to sustain an action. Thus, a city can supply its inhabitants with all the water that they need so long as neighboring landowners are not injured thereby.⁷⁵

c. Comparison with the Riparian Reasonable Use Rule

The reasonable use rule as applied to percolating waters should be contrasted with the reasonable use rule governing the rights of riparian owners in surface watercourses. While the former looks primarily to the relationship of the use to the overlying land in determining reasonableness, the latter looks also to the relationship of the use to the co-equal or correlative rights of the upper and lower riparian proprietors.⁷⁶ Under the riparian reasonable use rule each riparian owner has a right to make a reasonable use of the water subject to the equal right of other riparian owners to make a reasonable use.⁷⁷ Ordinarily, for example, under the riparian reasonable use rule no one riparian owner could withdraw all of the water for his own use, and thus deprive other riparians of uses they were making. This would be unreasonable because it would interfere with the equal rights of other riparians to use the water.

In contrast, under the reasonable use rule as applied to percolating waters, the courts seem to state that a use on overlying land for a beneficial

73. *E.g.*, *Schenk v. City of Ann Arbor*, 196 Mich. 75, 163 N.W. 109 (1917) (Plaintiff stated a cause of action for damages, but no injunction would be granted because of the public benefit); *Forbell v. City of New York*, 164 N.Y. 527, 58 N.E. 644 (1900) (decree which awarded an injunction and past damages was affirmed against city's use of water on nonoverlying land).

74. *Koch v. Wick*, 87 So.2d 47 (Fla. 1956) (city enjoined from depleting ground water supply).

75. *E.g.*, *Davison v. City of Ann Arbor*, 237 Mich. 453, 212 N.W. 81 (1927) (city was pumping water for purposes of supplying its inhabitants, but an injunction was refused because the plaintiffs could not show an injury to their adjoining lands). *See also* *Bernard v. City of St. Louis*, 220 Mich. 159, 189 N.W. 891 (1922).

76. *See Lugar, Water Law in West Virginia*, 66 W. Va. L.R. 191, 215 (1964); Comment, 11 VAND. L. REV. 945, 947 (1958).

77. *United States v. Willow River Power Co.*, 324 U.S. 499 (1945); *Harris v. Brooks*, 225 Ark. 436, 283 S.W.2d 129 (1955); *Maloney & Plager, Florida's Streams—Water Rights in a Water Wonderland*, 10 U. FLA. L. REV. 294, 305 (1957).

purpose, such as manufacturing or irrigation, is reasonable regardless of injury to a neighboring landowner.⁷⁸ To illustrate, suppose that both *A* and *B*, neighboring landowners, are using water from their wells to irrigate their crops growing on the overlying land. Suppose further that there has been a dry summer and the ground water supply is not sufficient to allow *A* and *B* to use all they need. Under the percolating water reasonable use rule as stated by the courts, *A* could use all that he needed if he had the deeper well and the larger pump. His use would be considered reasonable because it was beneficial to his overlying land, even though *B* would suffer and his wells would go dry. Under the riparian reasonable use rule, however, *A*'s use would presumably be unreasonable if his use completely drained *B*'s wells.

This distinction is largely taken from dictum, and it cannot be said with certainty that the courts would find such a use reasonable if it actually resulted in a substantial injury to a neighboring landowner's ground water supply. In nearly all of the cases applying the reasonable use rule the percolating water was extracted for sale or use at distant points. No case was found in which both parties were using the water on the overlying land for a beneficial purpose and the court applied the percolating water reasonable use rule in such a way that one party was allowed to use the water to the complete deprivation of another's supply. There are several cases in which the defendant was held not liable for diverting a neighbor's percolating water in connection with mining operations,⁷⁹ but these are distinguishable because they involved a use of the land rather than competing uses of the water itself. The courts in these cases looked to see whether the defendant's proprietary use of his land, rather than his use of the water, was reasonable and legitimate. If it was reasonable, then the injury to the plaintiff's ground water supply was not subject to redress.

A number of eastern courts have abandoned the special reasonable use rule for percolating water and have specifically adopted a reasonable use rule as to percolating waters that is similar to the reasonable use rule governing riparian rights in surface streams.⁸⁰ Under these decisions, reasonableness is a question of fact to be determined by considering both the use of the water and the similar rights of other landowners.⁸¹ This application of the riparian reasonable use rule to percolating waters has

78. See 3 FARNHAM, *WATERS & WATER RIGHTS* § 938 (1904).

79. *E.g.*, *Sloss-Sheffield Steel & Iron Co. v. Wilkes*, 231 Ala. 511, 165 So. 764 (1936); *Sycamore Coal Co. v. Stanley*, 292 Ky. 168, 166 S.W.2d 293 (1942).

80. *Jones v. Oz-Ark-Val Poultry Co.*, 228 Ark. 76, 306 S.W.2d 111 (1957); *MacArtor v. Graylyn Crest 111 Swim Club, Inc.*, 187 A.2d 417 (Del. Ch. 1963); *Erickson v. Crookston Waterworks Power & Light Co.*, 105 Minn. 182, 117 N.W. 435 (1908); *Nashville, C. & St. L. Ry. v. Rickert*, 19 Tenn. App. 446, 89 S.W.2d 889 (1935).

81. *MacArtor v. Graylyn Crest III Swim Club, Inc.*, 187 A.2d 417 (Del. Ch. 1963); *Erickson v. Crookston Waterworks Power & Light Co.*, 105 Minn. 182, 117 N.W. 435 (1908).

been called the "correlative rights" doctrine by some courts,⁸² but it should be distinguished from the California correlative rights doctrine, which limits consumption on a proportionate share basis, rather than a reasonable use basis.⁸³

d. Florida Position

In two cases the Florida Supreme Court has indicated it will invoke a reasonable use rule similar to that governing riparian rights.⁸⁴ In *Cason v. Florida Power Co.*⁸⁵ the defendant erected a dam which obstructed the natural subterranean drainage of plaintiff's land. In overruling the motion for a directed verdict in favor of the defendant, the court noted that the same principle of reasonable use applicable to a surface stream should be applicable to percolating water.⁸⁶ The court stated that: "The reasonableness of the use of property by its owner must of necessity be determined from the facts and circumstances of particular cases as they arise, by the application of appropriate provisions or principles of law and the dictates of mutual or reciprocal justice."⁸⁷

In *Koch v. Wick*,⁸⁸ a more recent holding, the Florida Supreme Court reaffirmed its application of reasonable use principles. In that case the Board of County Commissioners of Pinellas County sank wells on the road right-of-way adjacent to plaintiff's property and proceeded to pump water for individuals and municipalities in the county. The county was successfully enjoined in lower court action by the plaintiff. The County Board then leased a strip of land of 60 feet in width and 2,640 feet in length adjoining plaintiff's land. The plaintiff again sought an injunction and damages. The trial court granted the county's motion to dismiss. On appeal, the supreme court noted that *Cason* and *Labruzzo v. Atlantic Const. Co.*⁸⁹ had overruled the old rule that an owner had an unrestricted right to draw percolating water from his land and had adopted the rule that the right to draw percolating waters is "bounded by reasonableness and beneficial use of the land."⁹⁰ The court stated that the question must be resolved on the reasonableness of the use, and apparently extended this doctrine to municipalities as well as individuals. The lower court was reversed.

82. *Erickson v. Crookston Waterworks Power & Light Co.*, 105 Minn. 182, 117 N.W. 435 (1908); *Nashville, C. & St. L. Ry. v. Rickert*, 19 Tenn. App. 446, 89 S.W.2d (1935).

83. *Katz v. Walkinshaw*, 141 Cal. 116, 70 P. 663, 74 P. 766 (1902). See generally *McHendrie, The Law of Underground Water*, 13 ROCKY MT. L. REV. 1, 5 (1940).

84. *Koch v. Wick*, 87 So.2d 47 (Fla. 1956); *Cason v. Florida Power Co.*, 74 Fla. 1, 76 So. 535 (1917).

85. 74 Fla. 1, 76 So. 535 (1917).

86. *Id.* at 7, 76 So. at 536.

87. *Id.*

88. 87 So.2d 47 (Fla. 1956).

89. 54 So.2d 673 (Fla. 1951) (underground stream).

90. *Koch v. Wick*, 87 So.2d 47, 48 (1956).

Although the reasonable use rule as applied by the court does not give definite answers as to the actual amount of water that may be taken by overlying landowners, it does recognize that the relationship of overlying landowners is similar to that of riparian owners on a water body.⁹¹

VI. RELIEF FOR INTERFERENCE WITH GROUND WATER RIGHTS

A. *Injunction*

Assuming a cause of action exists under one of the theories mentioned above, the preferred type of relief against tortious interference with ground water rights is the injunction rather than the action for damages. Injunctive relief is preventive and can furnish relief before, instead of after, a threatened violation. Moreover, in many cases involving water rights, injunctive relief may be the only effective sanction because provable injury may be so small that a judgment for damages would be valuable only as a means of preventing the gaining of a prescriptive right by the defendant. In addition, if injunctive relief is available, damages for past harm can be obtained as an adjunct to the specific relief in the equity suit for the injunction.⁹²

However, an injunction will be issued only if the plaintiff establishes facts that would entitle him to this extraordinary remedy according to the usual rules governing such relief. Thus, the plaintiff must show not only that the defendant's use is unreasonable, but also that the threatened injury is irreparable, or one that cannot be adequately compensated by an action at law, or that if the injunction is denied a multiplicity of suits would result.⁹³ Although these factors are undoubtedly prerequisites, in theory at least, for an injunction against interference with ground waters, they are rarely considered in direct terms by the courts. Instead, it seems clear from the cases that an actionable interference with ground waters will give rise to an injunction if the plaintiff can show a definite threat of substantial, continuous, or future injury. The reason for this treatment lies in the traditional idea of the unique nature of real property and the fear that damages alone will force a person to give up some of his rights of ownership to the wrongdoers.⁹⁴

B. *Balance of Convenience Doctrine*

An important limitation on the obtaining of an injunction, even if the defendant's use is unreasonable, is the balance of convenience doctrine

91. *Cason v. Florida Power Co.*, 74 Fla. 1, 7, 76 So. 535, 536 (1917) "Property owned by one party may be so situated and conditioned with reference to the property of another as that the rights of ownership and the uses of such properties are interdependent or correlative. In such cases each owner should so reasonably use his property as not to injure the property rights of others."

92. *See Koch v. Wick*, 87 So.2d 47 (Fla. 1956) (plaintiff seeking injunction and damages against county).

93. *See generally* 56 AM. JUR., *Waters* § 421 (1947).

94. 56 AM. JUR., *Waters* § 362 (1947).

applied by some courts.⁹⁵ A court using this doctrine will consider the relative importance of the interests of each landowner and may deny the injunction on the ground that the public interest in permitting the withdrawal is of overriding importance, even though the plaintiff was clearly damaged, and the use was otherwise unreasonable. Thus some courts have balanced the equities in cases involving municipal water supplies on the ground of public interest.⁹⁶ The Florida Supreme Court has held that a municipality should be held to the same rule as an individual,⁹⁷ and, in the only ground water case on the subject, noted with approval the injunction granted by the lower court.⁹⁸

C. Damages

The common law measure of damages for interference with another's ground water supply depends upon both the nature and extent of the injury sustained. The identification of an injury as permanent or temporary determines the manner in which damages may be collected.

1. PERMANENT INJURY

Once an injury is classified as permanent, there can be only one action, and all damages, past, present, and future, are recoverable therein.⁹⁹ The normal recovery is the difference in market value of the land before and after the injury,¹⁰⁰ or the cost of restoring the land to substantially the same condition as before.¹⁰¹ The position of the Restatement is that the plaintiff should have his election between the two.¹⁰² This does not preclude recovery for diminution in the value of the use of the property when its market value is not materially affected by the damage.¹⁰³

2. TEMPORARY INJURY

If the injury is classified as temporary, recovery is allowed only until the time of suit and successive recoveries in subsequent actions are

95. For a discussion see Maloney, *The Balance of Convenience Doctrine*, 5 S.C.L.Q. 159 (1952); *Harrisonville v. W. S. Dickey Clay Mfg. Co.*, 289 U.S. 334, 337-38 (1933), Mr. Justice Brandeis, "For an injunction is not a remedy which issues as of course. Where substantial redress can be afforded by the payment of money and issuance of an injunction would subject the defendant to grossly disproportionate hardship, equitable relief may be denied although the nuisance is indisputable."

96. *Schenk v. City of Ann Arbor*, 196 Mich. 75, 163 N.W. 109 (1917); *Erickson v. Crookston Waterworks Power & Light Co.*, 105 Minn. 182, 117 N.W. 435 (1908).

97. *Koch v. Wick*, 87 So.2d 47, 48 (Fla. 1956), citing *Canada v. City of Shawnee*, 179 Okla. 53, 64 P.2d 694 (1937).

98. *Id.*

99. *Labruzzo v. Atlantic Dredging & Const. Co.*, 54 So.2d 673 (Fla. 1951) (damages allegedly permanent); *City of Harrisonville v. W. S. Dickey Clay Mfg. Co.*, 61 F.2d 210 (8th Cir. 1932).

100. *Rouse v. City of Kinston*, 188 N.C. 1, 123 S.E. 482 (1924) (damages held to be value of farm before and after the injury); 2 KINNEY, IRRIGATION AND WATER RIGHTS 2080 (2d ed. 1912).

101. *Blankenship v. Kansas Explorations, Inc.*, 325 Mo. 998, 1016, 30 S.W.2d 471, 479 (1930) (mining operation, plaintiff required to show cost of restoration); *Rabe v. Shoenberger Coal Co.*, 213 Pa. 252, 62 A. 854 (1906).

102. RESTATEMENT OF TORTS § 929 (1939).

103. *Labruzzo v. Atlantic Dredging & Const. Co.*, 54 So.2d 673, 675 (Fla. 1951).

permitted if the injury continues.¹⁰⁴ The general recovery for temporary damages to a ground water supply is the loss in rental value or the depreciation in the value of the use of the property if it is not rented.¹⁰⁵

3. DISTINGUISHING PERMANENT-TEMPORARY INJURIES

There are several approaches that the courts take in determining whether an injury is permanent or temporary. One approach is to look at the origin of the injury. If it can be presumed to continue indefinitely it will be classed as permanent; if abatement is reasonably feasible it will be held temporary.¹⁰⁶ The more restrictive view is that an injury the defendant can change or alter will not be viewed as permanent and the plaintiff may bring successive suits for damages.¹⁰⁷ The Restatement takes the position that an injurious situation is permanent only if it is physically permanent and is not abatable by injunction.¹⁰⁸ Another approach is to look at the type of harm caused by the defendant. The injury is considered permanent if, in addition to the origin of the injury being permanent, it was established that the harm—the loss—sustained by the plaintiff was also permanent.¹⁰⁹

The Florida courts have never squarely distinguished permanent from temporary injuries in the area of ground water. In some early cases dealing with railroad easements it appeared Florida would take what is now considered the liberal view and allow the plaintiff to choose whether the recovery should be permanent or not.¹¹⁰ More recent cases seem to indicate Florida would take the more restrictive view that any nuisance that can be abated by reasonable means is temporary in nature and the plaintiff must bring successive suits for damages.¹¹¹

4. SPECIAL DAMAGES

Special damages resulting from interference with ground water may also be recoverable in appropriate cases. For example, injury to growing crops may be recoverable if the wrongful withdrawal of a ground water

104. *City of Clanton v. Johnson*, 245 Ala. 270, 17 So.2d 669 (1944) (damages for pollution injury from city sewage flowing into plaintiff's creek).

105. *Cherry Bros. v. Christian County*, 146 Ky. 330, 142 S.W. 726 (1912) (reasonable value of use of spring temporarily impaired by blasting operations).

106. See 66 C.J.S. *Nuisances* § 5 (1950).

107. *Aldworth v. City of Lynn*, 153 Mass. 53, 26 N.E. 229 (1891).

108. RESTATEMENT OF TORTS § 930 (1939).

109. *Rabe v. Shoenberger Coal Co.*, 213 Pa. 252, 62 A. 854 (1906) (permanent loss of a spring could be supplied by piping water from another, held, the measure of damages to be only the cost of piping).

110. *Pensacola & Atlantic R.R. Co. v. Jackson*, 21 Fla. 146 (1884) (plaintiff allowed to recover permanent damages against trespassing railroad); *Savannah, F. & W. Ry. Co. v. Davis*, 25 Fla. 917, 7 So. 27 (1889) (plaintiff allowed to bring successive suits as long as trespass continued).

111. *Ford v. Dania Lumber & Supply Co.*, 150 Fla. 435, 7 So.2d 594 (1942) (court limited recovery to loss of use value of property during period of nuisance); *City of Lakeland v. Douglass*, 143 Fla. 771, 197 So. 467 (1940).

supply results in their loss.¹¹² If the interference is a continuing one, however, the landowner cannot plant crops knowing they will probably fail and expect to recover special damages, as the doctrine of avoidable consequences may be applied to bar recovery.¹¹³

VII. FLORIDA'S ARTESIAN WELL CAPPING STATUTE

An artesian well in Florida is statutorily defined as: "an artificial hole in the ground from which water supplies may be obtained and which penetrates any water bearing rock, the water in which is raised to the surface by natural flow or which rises to an elevation above the top of the water bearing bed."¹¹⁴

As discussed in the section on Ground Water Problems, if artesian wells are not properly capped or sealed, and are permitted to flow uncontrolled, there is in addition to the obvious waste of a natural resource the additional danger of contamination of other water supplies.¹¹⁵ In order to prevent this, several Eastern states have enacted statutes to control artesian wells.¹¹⁶ Some of the statutes are aimed particularly at preventing conditions resulting from abandonment.¹¹⁷

Under the Florida statute, the owner of a flowing artesian well must provide the well with a valve capable of controlling the discharge from the well, and the valve must be adjusted so as to prevent wasteful flow.¹¹⁸ Waste is defined under the act as permitting water from an artesian well to flow or to be pumped unless used for the beneficial purposes of irrigation, industrial purposes, domestic use, or the propagation of fish.¹¹⁹ The statute also provides for plugging if the water is of such poor quality that it is no longer a usable water supply.¹²⁰ Wasteful flow or pumping constitutes a misdemeanor.¹²¹ In order to enforce the act, agents of the State Board of Conservation are authorized to enter land to make water surveys and investigations, and such entry is not a trespass if the agent first made a reasonable effort to secure permission to go on the land.¹²² If any wasteful conditions are found, the owner is given notice and ten days

112. *Cason v. Florida Power Co.*, 74 Fla. 1, 76 So. 535 (1917).

113. *Reisert v. City of New York*, 35 Misc. 413, 71 N.Y.S. 965 (1901), *aff'd*, 69 App. Div. 302, 74 N.Y.S. 673 (1902), *rev'd other grounds*, 174 N.Y. 196, 66 N.E. 731 (1903).

114. FLA. STAT. § 373.021 (1965).

115. *See* pp. 757-60 *supra*.

116. *E.g.*, ARK. STAT. ANN. §§ 21-1101-1108 (1956); MD. ANN. CODE art. 96A, §§ 39-40 (1964); MINN. STAT. ANN. § 105.51 (Supp. 1965); N.J. STAT. ANN. §§ 58:4A-4.1-3 (1966); PA. STAT. ANN. tit. 32, § 645.5 (Supp. 1965).

117. *E.g.*, FLA. STAT. §§ 373.031-.051 (1965); MD. ANN. CODE art. 96A, § 39 (1964); N.J. STAT. ANN. §§ 58:4A-4.1-3 (1966); PA. STAT. ANN. tit. 32, § 645.5 (Supp. 1965).

118. FLA. STAT. § 373.031 (1965).

119. FLA. STAT. § 373.021 (1965).

120. FLA. STAT. § 373.031 (1965).

121. FLA. STAT. § 373.041 (1965).

122. FLA. STAT. § 373.051(1) (1965).

in which to correct the defect.¹²³ If it is not corrected by the owner, then the State Board has authority to install the necessary valve, plug, or cap¹²⁴ at the expense of the owner.¹²⁵

An early Wisconsin case,¹²⁶ which adopted the strict English rule governing ground water, including a right even to waste ground waters, seems to be the only case declaring unconstitutional an artesian well statute designed to prevent waste. That case held that percolating waters were the absolute property of the surface owner and that the statute constituted an unconstitutional taking of private property. In *Ex parte Elam*¹²⁷ a California appellate court held that a statute prohibiting the waste of artesian water, the violation of which constituted a misdemeanor, was not unconstitutional as a taking of property without due process. A New Mexico court upheld a similar artesian waste statute as a valid exercise of the state's police power.¹²⁸ There have been no Florida appellate court decisions on the point. Since Florida does not recognize the strict English rule as to ground water, it would appear that the Florida statute would be upheld were it attacked on constitutional grounds.

VIII. CONCLUSION

Florida, along with the other eastern states, has long been fortunate in possessing ample water resources in relation to her existing needs. But the grace period in Florida may be almost over. Surface water levels have been critically low in the Central and Southern Florida Flood Control District for the past several years. This has led to increased dependence on ground water supplies. These supplies are not inexhaustible. Concentrated demands for water in some areas are outstripping once plentiful ground water supplies. In these areas the older common law remedies must soon give way to water regulatory districts designed to protect the resource and assure its availability for everyone.

As the population and demand for water continue to grow, one outstanding authority on Florida's water resources foresees the eventual establishment of regulatory districts for the management of Florida's ground and surface waters on a statewide basis.¹²⁹ It will be many years, however, before this occurs. Meanwhile, the common law doctrines which have been examined in this article, refined in the crucible of the courts, will continue to serve as guides in the development of Florida's ground water supplies. It is hoped that this analysis of these doctrines may be of assistance to those working toward a sound ground water program designed to serve the best interests of the entire state.

123. FLA. STAT. § 373.051(2) (1965).

124. FLA. STAT. § 373.051(2) (1965).

125. FLA. STAT. § 373.051(3) (1965).

126. *Huber v. Merkel*, 117 Wis. 355, 94 N.W. 354 (1903).

127. 6 Cal. App. 233, 91 P. 811 (1907).

128. *Eccles v. Ditto*, 23 N.M. 235, 167 P. 726 (1917).

129. See Vol. V *In the Capitol* 1-2 (Official publication of the Florida Secretary of State, June & July, 1967).