

January 1983

Aquifers: The Porous Legal State of a Primary Water Resource

C. Scott Vanderhoef

Follow this and additional works at: <https://digitalcommons.pace.edu/pelr>

Recommended Citation

C. Scott Vanderhoef, *Aquifers: The Porous Legal State of a Primary Water Resource*, 1 Pace
Envtl. L. Rev. 81 (1983)

Available at: <https://digitalcommons.pace.edu/pelr/vol1/iss1/9>

This Article is brought to you for free and open access by the School of Law at DigitalCommons@Pace. It has been accepted for inclusion in Pace Environmental Law Review by an authorized administrator of DigitalCommons@Pace. For more information, please contact dheller2@law.pace.edu.

Aquifers: The Porous Legal State of a Primary Water Resource

I. Introduction

The 1980 drought experienced in the New York metropolitan area prompted serious concern about management of the area's precious water supplies. As New York's surface water supplies dwindled, increasing attention focused on the adequacy and allocation of underground water resources nearby. A large aquifer in the western part of Rockland County attracted considerable debate and raised questions concerning the current law that governs the use of aquifers in New York.

This Comment will discuss state management of water withdrawals from the Ramapo Aquifer by a private water purveyor, the potential impact of these withdrawals on water users downstream from the aquifer, and the protection afforded the downstream users under state statutory and common law.

II. Background

A. *Aquifers*

Within the earth's crust is a porous layer capable of capturing and holding water of drinking quality. Where these pores are filled with water, an area is created which is called a zone of saturation. The water in this zone is referred to as "groundwater." More than ninety-seven percent of the earth's available fresh water lies underground in geological formations within these saturated zones. Such water-bearing strata are known as aquifers.¹

1. 19 Encyclopaedia Britannica 649 (15th ed. 1974); W. Purdom & S. Anderson, *Environmental Science* 194-96 (2d ed. 1983).

In order to serve as a practical water supply, an aquifer must be able to yield water to wells or springs at a sufficient rate and be able to replenish itself.² The varying rate of replenishment of an aquifer is difficult to quantify. It depends upon a series of complex factors including the local pattern of precipitation, adjoining surface water supplies, surface runoff, stream flow, and soil porosity and permeability. These factors play a key role in the infiltration of water underground. As more water runs off into surface supplies, less can percolate through the soil to the saturated zone where it can be held. Consequently, moderate rainfall over an extended period of time, rather than heavy but infrequent rainfall, favors infiltration and replenishment.³

Water stored in aquifers may move in several directions at once. This movement depends on the particular geological characteristics of the aquifer. As a result of these characteristics and the relative precipitation in the area, aquifers can augment or deplete surface supplies. The movement of water is very slow, with measurements varying from feet per day to feet per year. An aquifer can be viewed, therefore, as retaining great volumes of water in transient storage.⁴

B. *The Ramapo Aquifer*

The Ramapo River begins in Harriman, Orange County, New York, runs southerly through western Rockland County and eventually into northern New Jersey. It receives drainage from a watershed area of ninety-five square miles in New York State alone.⁵ Beneath the river lies the large Ramapo Aquifer. In the early 1970's, the largest private drinking water purveyor in Rockland County, the Spring Valley Water

2. Johnson Division, Universal Oil Products Co., *Ground Water and Wells*, St. Paul, Minn. 18-21 (1972), available at the offices of Garfinkel & Garfinkel, Tappan, N.Y.

3. *Id.* at 24.

4. *Id.* at 35.

5. Leggette, Brasher & Graham, Inc., *Summary of Hydrogeologic Investigations in the Ramapo River Valley, Rockland County, N.Y.*, 1 (Nov. 1974) [hereinafter Leggette, *Summary Report*]. Available at the offices of Spring Valley Water Co., Rockland County, N.Y.

Company, Inc. (Spring Valley), a subsidiary of the New Jersey-based Hackensack Water Company, confirmed the existence of an aquifer in this valley. Spring Valley found a quantity of water stored in this aquifer of approximately two billion gallons. Its engineers advised that a properly spaced well field would allow Spring Valley to utilize as much as seventy percent of the storage, or approximately seven million gallons per day, over a 180-day season with no recharge of the aquifer by rainfall.⁶ However, the engineers' report also warned of a potential difficulty. "[D]uring certain low flow periods, the water available for recharge to the proposed well field could vary from marginal to deficient. . . . If the well field is pumping as much as 10 million gallons per day at a time when the river flow is less than 10 million gallons per day there is an apparent potential to dry up the river or decrease its flow below acceptable levels."⁷

1. *Spring Valley's Proposal*

On December 23, 1974, Spring Valley applied for approval to draw water from the Ramapo Aquifer as required by the New York Environmental Conservation Law.⁸ The statute provided that "no person or public corporation who is authorized and engaged in, or proposing to engage in, the acquisition, conservation, development, use and distribution of water for potable purposes" can do so unless he first obtains the approval of the Department of Environmental Conservation (DEC).⁹

During public hearings on Spring Valley's application, held from June 18, 1975, until March 2, 1976, approximately

6. Leggette, Brasher & Graham, Inc., Progress Report on 1973-74 Drilling and Testing Programs Ramapo Project Rockland County, N.Y., July 1974. (Prepared for Spring Valley Water Co. and available at its offices in Rockland County, N.Y.)

7. Leggette, Summary Report at 19, 21, 24.

8. *Rella v. Berle*, 59 A.D.2d 56, 57, 397 N.Y.S.2d 227, 228 (3d Dept. 1977).

9. N.Y. Env'tl. Conserv. Law § 15-1501(1) (McKinney 1973). The DEC is the agency responsible for conducting hearings and fact findings for decisions on use of the State's resources.

twelve objectors appeared to oppose the application.¹⁰ Two proceeded with formal opposition throughout the DEC's consideration. One, the Village of Suffern (Suffern), located south and downstream from the proposed well site, objected because of the potential impact of Spring Valley wells on its own water wells located in the same aquifer.¹¹ Suffern also was concerned about the unknown impact of water withdrawal on the Ramapo River. Suffern operates a sewage plant that discharges into the river and requires a minimum water flow in order to comply with the plant's operating certificate.¹² The other objector was the West Branch Conservation Association, Inc. (West Branch), which objected generally to the use of this particular aquifer for water. West Branch complained that the necessary studies to determine the full environmental impact of the withdrawal of water from the aquifer and its effect on the river had not been done.¹³

2. *Spring Valley's Permit*

Despite objections to Spring Valley's proposal to establish a well field in order to withdraw water from the Ramapo Aquifer, on September 15, 1976, the DEC conditionally approved the project. The DEC required that monitoring and measuring devices be installed on the river to measure its flow. The DEC also demanded that Spring Valley immediately develop a computer model to accurately measure the effect of the water withdrawal on the Ramapo River.¹⁴ More specifically, the DEC permit prohibited Spring Valley from pumping when the Ramapo River flow was under eight million gallons per day.¹⁵ This restriction was based on technically unconfirmed information provided by Spring Valley's

10. *In re Spring Valley Water Co., Inc.*, Decision, New York State Department of Environmental Conservation, Water Supply Application No. 6507, 1-2, Sept. 15, 1976.

11. *Id.* at 3.

12. *Id.* at 15-17.

13. *Id.* at 4.

14. *Id.* at 25.

15. *Id.* at 15, 25.

engineer. As part of the permit requirements, and in conformance with earlier stipulations made with some of the original objectors, Spring Valley had agreed either to supply or to compensate downstream water users for the loss of their water should that result from the company's well field operation.¹⁶

The DEC's approval was challenged in November 1976, under Article 78 of the New York CPLR, by Suffern and West Branch for being arbitrary and capricious and for not being supported by substantial evidence.¹⁷ The Appellate Division, Second Department, upheld the Agency:

A reading of the commissioner's decisions reveals that he clearly and concisely evaluated the issues presented and, upon conflicting testimony, came forth with well reasoned conclusions based upon specific and comprehensive findings in a rather technical area for which he and the hearing officer exhibited the experience and specialized knowledge necessary to make such determinations.¹⁸

....

The Commissioner recognized that there can be no guarantee that the well field he sanctioned will not affect the Village's water supply; however, it also appears that uncertainty is part of the nature of ground water hydrology.¹⁹

C. *The 1980-81 Drought*

Spring Valley, with the approval of the DEC and the Appellate Division, began to develop the Ramapo Valley well field in accordance with the conditions and requirements of its permit. In the summer and fall of 1980, however, the region began to suffer the effects of a major drought.

As surface water sources dwindled, the Ramapo wells became more critical to ensure an adequate water supply to much of the western part of Rockland County. Spring Valley

16. *Id.* at 14-15, 17-18, 25.

17. *Rella v. Berle*, 59 A.D.2d at 57-58, 397 N.Y.S.2d at 229.

18. *Id.* at 58, 397 N.Y.S.2d at 229.

19. *Id.* at 59, 397 N.Y.S.2d at 230.

applied for a variance from the permit conditions. It wanted to pump water from wells despite a river flow below eight million gallons per day.²⁰ State and local agency heads and politicians appeared along with Suffern and West Branch to oppose Spring Valley's request. Spring Valley's computer model had not been completed and officials admitted that they could not determine how pumping at low river levels might affect the flow conditions of the river. Spring Valley insisted that its pumping experience showed that continued pumping at reduced flow would not endanger downstream water users.²¹

With surface supplies in Rockland severely depleted, it was the view of the DEC Hearing Officer that the continued use of these wells was in the best interests of Spring Valley and its customers. The DEC Commissioner agreed.²² Spring Valley obtained a variance from the DEC permit conditions and was allowed to pump at river flows as low as three million gallons per day. If drought conditions persisted, and flow was reduced to less than three million gallons per day, the DEC report stated that the "river, for all practical purposes, would be reduced to a series of low pools . . . and all pumping by applicant would stop."²³ If this modification by the DEC had ultimately resulted in harm to downstream users of the river and aquifer, what legal recourse would have been available to them?

III. New York Law

A. *The Common Law*

In New York, rights to water resources categorized as "surface" are determined by the "reasonable use" doctrine.

20. In re Spring Valley Water Co., Inc., Relative to Summary Abatement Order and Notice, Oct. 17, 1980, and Temporary Modification of Water Supply Application No. 6507 and Water Supply Application No. 2189—Hearing Report, State of New York Department of Environmental Conservation at 16 (1980).

21. *Id.* at 5-6.

22. *Id.* at 34.

23. *Id.*

Each water proprietor has an equal though qualified right to use the water consistent with the rights of others to use it.²⁴

The reasonable use doctrine, however, does not apply to percolating waters. All underground water is presumed to be percolating unless it can be shown that the water flows in a distinct, permanent, and well-defined channel.²⁵ Rights to percolating waters have been determined by the "English" rule of absolute ownership, as set forth in *Acton v. Blundell*.²⁶ It is based on the principle that an owner of real property owns the soil and everything beneath it. In New York, the rule allows an overlying landowner, absent malice and contractual or statutory restrictions, to take as much water from the ground as he wants regardless of its effect on others through whose land the water naturally percolates or flows.²⁷

While New York courts have generally applied the English rule to resolve conflicts over rights to subsurface waters, a growing list of common law exceptions renders New York's application of the rule comparable to the reasonable use doctrine. In the landmark case *Smith v. City of Brooklyn*,²⁸ the City developed waterworks consisting of wells and powerful pumps which caused a fifty-year-old pond and brook to completely dry up. The Appellate Division, Second Department, held the City liable for damages because it had taken the well water off the premises for use by persons who had no right to it.²⁹

In summary, where water taken from wells and used off premises can be shown to harm another's use of a water resource or his land, liability is incurred and damages are

24. *Prentice v. Geiger*, 74 N.Y. 341, 345 (1878). Until the courts or legislature provide otherwise, the New York law of riparian rights is cited here as the law generally defining aquifer water rights.

25. *Flanigan v. State*, 113 Misc. 93, 183 N.Y.S. 934 (Ct. of Claims 1920).

26. 12 M. & W. 324, 152 Eng. Rep. 1223 (Ex. Ch. 1843).

27. *Pixley v. Clark*, 35 N.Y. 520 (1866); *Johnstown Cheese Mfg. Co. v. Veghte*, 69 N.Y. 16 (1877).

28. 18 A.D. 340, 46 N.Y.S. 141 (2d Dept. 1897).

29. *Id.* at 342-43, 46 N.Y.S. at 143-44.

awarded on the basis of diminution in property value.³⁰ Nevertheless, where well water taken by a proprietor is "reasonably related" to the use of his land, the courts apply the English rule, and actions under these circumstances are not maintainable.³¹

B. Remedies for Downstream Users

In the Spring Valley case, approval of the original permit application and, more dramatically, modification of it under drought conditions, present interesting questions as to what recourse downstream users of the aquifer and river could have pursued had they sustained injury to their water supply or land. Spring Valley provided hold harmless protection to downstream users against the interruption or loss of their water supply resulting from Spring Valley's withdrawals of water from the aquifer upstream. Had Spring Valley not done so, the downstream users would have been protected nevertheless by the *Smith* exception to the English rule because Spring Valley was pumping water from its wells for sale off the property. Although a court would probably look to Spring Valley's reasonable use of its wells, a litigant would still face substantial obstacles to realize relief. "Reasonableness" is a factual determination which presents sizable difficulties of evidence and proof. It is responsible for much uncertainty and confusion in water rights law throughout the country.

Finally, our lack of knowledge about aquifers makes proof of causation an uncertain task—one which relies primarily on circumstantial evidence. The complex character of aquifers and our limited ability to isolate the effect of any one

30. *Forbell v. City of New York*, 47 A.D. 371, 61 N.Y.S. 1005 (2d Dept. 1900); *Hathorn v. Natural Carbonic Gas Co.*, 194 N.Y. 326 (1909); *Stevens v. Spring Valley Water Works and Supply Co.*, 42 Misc.2d 86, 247 N.Y.S.2d 503 (App. Term 2d Dept. 1964).

31. *Victor A. Harder Realty & Construction Co. v. City of New York*, 64 N.Y.S.2d 310 (Sup. Ct. N.Y. County 1946); *Friedland v. State*, 35 A.D.2d 755, 314 N.Y.S.2d 935 (3d Dept. 1970); *Merrick Water Co. v. Brooklyn*, 32 A.D. 454 (2d Dept. 1898), 53 N.Y.S. 10, aff'd 160 N.Y. 657 (1899).

factor on their capacity to recharge, can make it difficult to prove that withdrawals by one user are the cause of diminished supply to another. In the present case, a court would not be likely to accept a litigant's claim that Spring Valley has been using the resources unreasonably because the DEC, the agency expert, approved withdrawals upon findings made during the statutory hearing process and rendered a decision as to what was reasonable under the circumstances. It would seem, therefore, that the best way to protect water rights to aquifers, and to water resources affected by aquifers, is to make timely objections during the administrative permit process and, in particular, during the hearing process. Unfortunately, the DEC permit program is not broadly applied.

C. *The Limitations of the Permit Process*

The Environmental Conservation Law regulations state that "any person or any water works or other corporation engaged in supplying or proposing to supply the inhabitants of any part of the State with water" must apply for a permit.³² Because of funding constraints and manpower shortages, the DEC has exempted everyone from this requirement except for a public water supplier who "regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year."³³ Therefore, all agricultural, commercial, and industrial users are exempt.³⁴ The DEC does require permits from developers of five or more homes (usually because other DEC permits are also required). This presents the anomalous situation wherein a subdivision using perhaps 22,000 gallons per day would be required to obtain a permit, whereas an industrial user, such as a paper mill using 5 million gallons per day, would not.³⁵

32. 6 Admin. Code Conservation § 601.1 (1972).

33. 10(A) Admin. Code Health § 5-1.1(y) (1981).

34. Interview with Stuart Dean, Senior Hydrolic Engineer and Chief Permit Administrator for Water Supply, New York State Department of Environmental Conservation, Apr. 8, 1981.

35. *Id.*

IV. Postscript

In November 1980, during the height of the drought, Triumph Dog Foods of Hillburn, New York, dug a well into the Ramapo Valley Aquifer close to Spring Valley wells. The new well was tested for a withdrawal rate of 86,000 gallons per day, but was only pumping approximately 50,000 gallons per day. No DEC permit was required or obtained.³⁶ The effect of the additional groundwater withdrawal is undetermined.

V. Conclusion

New York State law is archaic with respect to the protection of groundwater rights and largely deficient in the management and conservation of this important water resource. The law should be changed through statutory enactments. It would seem to be a simple measure to amend the Environmental Conservation Law to provide that permits be required for *all* groundwater withdrawals in excess of forty-five gallons per minute. This is the law applied to the Long Island counties of Kings, Queens, Nassau, and Suffolk and it should be statewide.³⁷ In addition, the New York State Legislature and the Governor should ensure adequate funding for such a program.

An expanded and functional permit program for groundwater withdrawals would inevitably lead to a greater understanding of aquifers while directly managing their use. An enhanced program would ultimately provide a broader factual basis upon which to resolve universal imposition of the reasonable use doctrine to groundwater withdrawals.

C. Scott Vanderhoef, Class of '81

36. Interview with Alan Garfinkel, Engineer, Garfinkel & Garfinkel, Tappan, N.Y., Apr. 1981.

37. N.Y. Env'tl. Conserv. Law § 15-1527 (McKinney 1973 & Supp. 1982-1983).