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## GROUNDWATER POLLUTION: CASE LAW THEORIES FOR RELIEF

PETER. N. DAVIS\*

One-quarter of the earth's supply of fresh water lies underground.<sup>1</sup> Traditionally over the centuries shallow wells have tapped this groundwater resource for domestic and livestock watering purposes. With the rise in industrial technology the uses of groundwater have multiplied, the depth of wells has increased, and the total withdrawals have increased. But the supply of groundwater is not inexhaustible. Groundwater already is in chronic shortage in many areas of the West where withdrawals exceed natural recharge by a significant amount; in effect, the groundwater is being "mined." Use of groundwater for various purposes, in the humid eastern states, also has been expanding rapidly in recent years, as local shortages of waters in rivers, streams and lakes and pollution of those watercourses proliferate. The East has experienced falling groundwater levels during droughts when withdrawals exceeded natural recharge.

This situation can only worsen as the demands for groundwater use increase. A congressional study in 1961 estimated that total daily water requirements would exceed 700 billion gallons per day by 1980 and 1,000 billion gallons per day by 2000. Our total available water supply is approximately 515 billion gallons per day.<sup>2</sup> At present 80 percent of the water used in the United States comes from surface sources and the remainder from underground sources. Because our usable groundwater supplies are three times the size of our surface supplies,<sup>3</sup> it is clear that much of the future growth in water use must depend on groundwater.

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1. 24.88 percent of the total estimated volume of 33,016,084 million acre-feet, or 8,213,000 million acre-feet. It is a far larger amount than is contained in fresh water lakes (101,000 million acre-feet—0.3 percent) and rivers (933 million acre-feet—0.003 percent). W. ACKERMANN & G. LOF, *TECHNOLOGY IN AMERICAN WATER DEVELOPMENT* 11-13 (1959). A complete breakdown from that work is presented in Davis, *Wells and Streams: Relationship at Law*, 37 Mo. L. Rev. 189, 194 (1972) [hereinafter cited as Davis, *Wells and Streams*].

2. J. WRIGHT, *THE COMING WATER FAMINE* 20 (1966).

3. F. MOSS, *THE WATER CRISIS* 33, 40 (1967).

Pollution has the effect of reducing available water supplies. The discharge of wastes into rivers, streams and lakes degrades their usability for various consumptive and nonconsumptive uses. Pollution of groundwater renders it less valuable for the same purposes. Pollution of groundwater has been caused for centuries by privies, manure piles and cemeteries. In modern times, privy-substitutes (cesspools and septic tanks) and industrial wastes and spills are the most significant sources of pollution.

Some have advocated underground disposal as one method of getting rid of industrial wastes. The earliest attempts to use this method involved shallow sewage wells. A host of deeper, salt water disposal wells in oil and gas fields have been developed over the past few decades. Such wells involve either reinjection of salt water into existing salt water aquifers or injection of it into oil and gas reservoirs as a secondary recovery technique. Recently, interest is developing in the use of deep well injection of industrial liquid wastes as an alternative to treatment and discharge of wastes into surface watercourses. Well disposal obviates the cost of treating the wastes. In 1969 there were 150 such industrial waste disposal wells in the United States.<sup>4</sup> This figure is expected to increase rapidly. At that time, refineries, chemical plants and steel mills owned 82 percent of industrial liquid waste disposal wells.<sup>5</sup>

Underground disposal of waste does not always prevent pollution. One problem is that wastes are capable of migrating under natural forces. While every attempt is usually made to discharge wastes into strata which are separated from fresh water strata,<sup>6</sup> that is not always effectively accomplished. Potable groundwater supplies have been polluted by waste injection operations.<sup>7</sup> Salt water leaking along oil well casings and plugs<sup>8</sup> and

4. Shipley, *Deep-Well Injection of Liquid Wastes*, in A. REITZE, JR., ENVIRONMENTAL LAW 4:143, 4:143 (2d ed. 1972), citing Evan & Bradford, *Under the Rug*, ENVIRONMENT, Oct. 1969, at 11.

5. Shipley, *supra* note 4, at 4:143, citing National Industrial Pollution Control Council, *Waste Disposal in Deep Wells* 9 (Feb. 1971).

6. Shipley, *supra* note 3, at 4:144, citing Winer, *The Disposal of Waste-water Underground*, INDUSTRIAL ENGINEERING, Mar. 1967, at 21.

7. See *Augustine v. Hinnen*, 201 Kan. 710, 443 P.2d 354 (1968); *Ballard v. Tomlinson*, 29 Ch. D. 115 (C.A. 1885), *rev'g* 26 Ch. D. 194 (1884). For a thorough factual description of deep well injection of oil well salt water, see *Alliston v. Shell Petroleum Corp.*, 143 Kan. 327, 55 P.2d 396 (1936).

8. See *H. W. Peerson Drilling Co. v. Scoggins*, 261 Ala. 284, 74 So. 2d 450 (1954); *Reiserer v. Murfin*, 183 Kan. 597, 331 P.2d 313 (1958); *Martin v. Shell Petroleum Corp.*, 133 Kan. 124, 299 P. 261 (1931); *Hall v. Galey*, 126 Kan. 699, 271 P. 319 (1928); *Wynn v. Wilson*, 252 Ky. 352, 67 S.W.2d 483 (1934); *Norman v. Greenland Drilling Co.*, 403 P.2d 507 (Okla. 1965); *Sunray Mid-Continent Oil Co. v. Tisdale*, 366 P.2d 614 (Okla. 1961); *Harper-Turner Oil Co. v. Bridge*, 311 P.2d 947 (Okla. 1957); *Shell Oil Co. v. Blubaugh*, 199 Okla. 353, 185 P.2d 959 (1947); *Sheridan Oil Co. v. Wall*, 187 Okla. 398, 103 P.2d 507 (1940); *Shell Petroleum Corp. v. Blubaugh*, 187 Okla. 198, 102 P.2d 163 (1940); *Schlichtkrull v. Mellon-Pollock Oil Co.* (No. 1), 301 Pa. 553, 152 A. 829 (1930); *Collins v. Chartiers Valley Gas Co.*, 139 Pa. 111, 21 A. 147 (1891); *Collins v. Chartiers Valley Gas Co.*, 131 Pa. 143, 18 A. 1012 (1890). For an excellent factual description of how an oil well is drilled and cased and the producing strata fractured, see *McCoy v. Cohen*, 149 W.Va. 197, 140 S.E.2d 427 (1965).

percolating from surface disposal pits<sup>9</sup> is a significant hazard to groundwater quality in many states.

This article will describe how the courts have utilized the common law to deal with the groundwater pollution problem. I have attempted to examine every groundwater pollution case reported in the United States, England, Ireland, Scotland, Canada, Australia and New Zealand.<sup>10</sup> All of them, a total of 203, are listed in the Appendices. The purpose of this article is to analyze those cases to determine what rule the courts tend to use in particular kinds of groundwater pollution cases.

### I. RULES APPLICABLE TO PERCOLATING GROUNDWATER POLLUTION

The courts have evolved a body of rules for allocating groundwater between conflicting users. Issues involving use, diversion and obstruction of water in identifiable underground streams<sup>11</sup> are governed by the rules which allocate water in surface watercourses: riparian rights in the East and prior appropriation in the West.<sup>12</sup> Conflicts involving use, diversion and obstruction of percolating groundwater are governed by one of several

9. See *O'Brien v. Primm*, 243 Ark. 186, 419 S.W.2d 323 (1967); *Phoenix v. Graham*, 349 Ill. App. 326, 110 N.E.2d 669 (1953); *Polzin v. National Co-op. Refinery Ass'n*, 175 Kan. 531, 266 P.2d 293 (1954); *Rusch v. Phillips Petroleum Co.*, 163 Kan. 11, 180 P.2d 270 (1947); *Magnolia Petroleum Co. v. Williams*, 222 Miss. 538, 76 So. 2d 365 (1954); *Crawford v. Yeatts*, 395 S.W.2d 413 (Tex. Civ. App. 1965); *General Crude Oil Co. v. Aiken*, 162 Tex. 104, 344 S.W.2d 668 (1961), *rev'g* 335 S.W.2d 229 (Tex. Civ. App. 1960); *Brown v. Lundell*, 162 Tex. 84, 344 S.W.2d 863 (1961), *aff'g* 334 S.W.2d 616 (Tex. Civ. App. 1960); *Geochemical Surveys v. Dietz*, 340 S.W.2d 114 (Tex. Civ. App. 1960); *Gulf Oil Corp. v. Alexander*, 291 S.W.2d 792 (Tex. Civ. App.), *aff'd per curiam*, 156 Tex. 455, 295 S.W.2d 901 (1956); *Swan v. Adams*, 23 Grant Ch. 220 (Ont. 1876). For an excellent factual description of the mechanism by which oil well salt water disposal pits pollute groundwater, see *Pickens v. Harrison*, 151 Tex. 562, 252 S.W.2d 575, *modifying* 246 S.W.2d 316 (Tex. Civ. App. 1952).

10. See Table 1 in Appendix C *infra*. There were no groundwater pollution cases in Ireland, Scotland, Australia, and New Zealand.

On the subject of this article, see also 3 R.E. CLARK, *WATER AND WATER RIGHTS* § 214 (1967); Knodell, *Liability for Pollution of Surface and Underground Waters*, 12 ROCKY MT. MINERAL L. INSTITUTE 33, 52-57 (1967); Comment, *Groundwater Pollution in the Western States—Private Remedies and Federal and State Legislation*, 8 LAND & WATER L. REV. 537 (1973); Comment, *Liability of Landowner for Pollution of Percolating Waters*, 39 MARQ. L. REV. 119 (1955); Annot., 38 A.L.R.2d 1265 (1954).

11. Identifiable underground streams are those which are ascertainable from the surface by ordinary men without making excavations for the purpose of locating it. Typically a line of different vegetation, a series of potholes, a linear wet area, etc., are considered evidence of an underground stream. See note 115 and accompanying text *infra*.

12. Those two bodies of surface watercourse allocation law are discussed in many works on water rights law. I have summarized them in Davis, *Wells and Streams* 199-200.

allocation rules. These are absolute ownership,<sup>13</sup> "reasonable use,"<sup>14</sup> eastern correlative rights,<sup>15</sup> western "correlative rights" (common pool),<sup>16</sup> and prior appropriation.<sup>17</sup>

One would expect that the same rules which govern use, diversion and obstruction would govern pollution of groundwater since the practical consequences of pollution are no different than those of diversion or obstruction. In both cases, the neighboring landowner is deprived of his use of the groundwater. But such is not the case. In the vast majority of cases involving pollution of percolating groundwater either the law of negligence or the law of private nuisance governs. Of the 203 cases involving pollution of percolating groundwater in the United States, England and Canada, 75 cases utilized negligence law, 3 utilized public nuisance law, 84 utilized private nuisance law, 4 cases adopted the *Restatement* rule, 20 cases adopted a strict liability standard, and 15 cases did not specify what rule was being followed. Only 2 cases followed one of the percolating groundwater alloca-

13. The landowner may make any use of the percolating groundwater he chooses on or off the land where the well is located or may make any use of his land which affects the movement of groundwater, without incurring liability for any resulting injury to his neighbor's percolating groundwater supply. *Id.* at 202.

14. The landowner is immune from liability if he uses the percolating groundwater on the land where the well is located and the use is reasonable per se. He is also immune if his use of the land affecting the percolating groundwater is per se reasonable. *Id.*

15. The landowner may make reasonable use of the percolating groundwater on the overlying land and may make reasonable use of the land which affects the movement of the groundwater. What is a reasonable use is determined by balancing the equities of the competing users for the purposes of determining both liability and relief. *Id.*

16. Where users over a common aquifer are taking out more groundwater than the annual natural recharge, all the users must proportionately cut back their use until withdrawal equals recharge. *Id.* at 203.

17. The first landowner to establish a right to divert water by posting or giving notice of intent to divert can use that water for beneficial uses, and he will be the last person cut off in times of scarcity. Later diverters are similarly cut off in inverse order of their priority dates. This rule for surface watercourses is applied to percolating groundwater when it is proven to be a tributary to a stream or part of its subflow or subsurface support. *Id.* at 204.

For a further discussion of the various rules for allocating groundwater see Thomas, *Water Law—Groundwater Rights in Missouri—A Need for Clarification*, 37 Mo. L. Rev. 357 (1972), which discussed the distinction between the so-called "reasonable use" rule and the eastern correlative rights rule.

States following the absolute ownership, "reasonable use," and eastern correlative rights rules are listed, with representative citations, in Davis, *Wells and Streams* 233-34.

See generally 6A AMERICAN LAW OF PROPERTY § 28.65 (A. J. Casner ed. 1954); W. HUTCHINS, *SELECTED PROBLEMS IN THE LAW OF WATER RIGHTS IN THE WEST* 151-66 (U.S. Dep't Agric. Misc. Pub. No. 418, 1942, reprint 1971); F. MALONEY, S. PLAGER & F. BALDWIN, *WATER LAW AND ADMINISTRATION: THE FLORIDA EXPERIENCE* 150-58 (1968); CROSS, *Ground Waters in the Southeastern States*, 5 S.C.L.Q. 149 (1952); Ellis, *Water Law in Eastern United States*, 18 J. SOIL & WATER CONSERV. 19 (1963); Hanks & Hanks, *The Law of Water in New*

tion rules.<sup>18</sup> This is true even though many of the cases expressly acknowledge that the allocation rules govern use, diversion and obstruction situations.<sup>19</sup> Of course, since a majority of eastern cases involving pollution of surface watercourses apply public and private nuisance law rather than riparian rights rules,<sup>20</sup> it is not surprising that courts utilize nuisance law in the percolating groundwater pollution situation as well.

One explanation of why the courts follow relatively strict negligence or nuisance theories rather than the percolating groundwater allocation rules in pollution situations is that the courts are less sympathetic to a landowner who pollutes percolating groundwater than they are to one who diverts it to the injury of his neighbor. This attitude is expressed by courts which have stated that a landowner has no right to poison percolating groundwater so that when it reaches his neighbor's land the neighbor cannot use it,<sup>21</sup> a well owner has the right to take percolating groundwater in its natural state and from its natural source,<sup>22</sup> and a landowner has no right to destroy the neighboring owner's rights to appropriate percolating groundwater by contaminating the source.<sup>23</sup> The application of negligence or nuisance law manifests this sympathy insofar as negligence law permits the granting of relief in many pollution situations and nuisance law permits the granting of relief in most pollution situations, whereas the two percolating groundwater allocation rules (the absolute ownership rule and the reasonable use rule) prevalent outside the western prior appropriation states deny relief in most pollution situations. For instance, the absolute ownership rules would give

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*Jersey: Groundwater*, 24 RUTGERS L. REV. 621 (1970); Maloney & Plager, *Florida's Ground Water: Legal Problems in Managing a Precious Resource*, 21 U. MIAMI L. REV. 751 (1967); Harnsberger, *Nebraska Ground Water Problems*, 42 NEB. L. REV. 721 (1963); Comment, *The Law of Underground Water; A Half-Century of Huber v. Merkel*, 1953 WIS. L. REV. 491; Annots. 29 A.L.R.2d 1354 (1953), 109 A.L.R. 395 (1937), 55 A.L.R. 1385 (1928).

18. See Table 1 in Appendix C *infra*.

The tentative revision to the RESTATEMENT OF TORTS is based on the supposition that percolating groundwater allocation rules will not be followed in pollution cases and that the liability will be imposed only on the basis of nuisance, trespass, negligence or abnormally dangerous conduct. RESTATEMENT (SECOND) OF TORTS § 849 (Tent. Draft No. 17, 1971).

19. See cases cited note 31 *infra*.

20. Out of 445 surface watercourse pollution cases in American jurisdictions recognizing riparian rights, 233 cases applied private nuisance law, 75 cases applied public nuisance law and 137 cases applied riparian rights law. Davis, *Theories of Water Pollution Litigation*, 1971 WIS. L. REV. 738, 742-43, (reprinted 1972 ENVIRON. L. REV. 237, 1972 CORPORATE COUNSEL'S ANNUAL 839) [hereinafter cited as Davis, *Water Pollution Litigation*]. A comparison was not made of surface watercourse pollution cases choosing between nuisance law and prior appropriation law in the western prior appropriation jurisdictions.

21. *Kinnaid v. Standard Oil Co.*, 89 Ky. 468, 474, 12 S.W. 937, 939 (1890); *Bassett v. Osborn*, 23 Ohio C.C.R. (n.s.) 342, 347, 34 Ohio C.C. Dec. 284 (1912).

22. *Cities Serv. Oil Co. v. Merritt*, 332 P.2d 677, 685 (Okla. 1958); *Danciger Oil & Ref. Co. v. Donahay*, 238 P.2d 308, 313 (Okla. 1951); *Cities Serv. Gas Co. v. Eggers*, 186 Okla. 466, 469, 98 P.2d 1114, 1117 (1940).

23. *Ballard v. Tomlinson*, 29 Ch. D. 115, 121 (C.A. 1885).

almost a complete immunity to polluters by permitting landowners to make any use or diversion of percolating groundwater or to make any use of land affecting or obstructing percolating groundwater, regardless of the consequences on his neighbor's percolating groundwater supply. One reason often given for this latter rule is that, since the landowner cannot ascertain in advance what the consequences of his activity will be because the movement of percolating groundwater is not apparent or readily ascertainable,<sup>24</sup> it is therefore not fair to impose a liability upon him.<sup>25</sup> It is argued that to impose a doctrine of correlative rights under those circumstances would deter economic development.<sup>26</sup>

The second main eastern groundwater rule, the "reasonable use" rule, immunizes the landowner from liability wherever he disturbs groundwater on that land.<sup>27</sup> The only major exceptions to the substantially unrestricted

24. See, e.g., *Swift & Co. v. Peoples Coal & Gas Co.*, 121 Conn. 579, 586, 186 A. 629, 632 (1936); *Brown & Bros. v. Illius*, 27 Conn. 84, 94 (1858); *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 600, 20 So. 780, 783-84 (1896); *Greencastle v. Hazelett*, 23 Ind. 186, 188-89 (1864); *Upjohn v. Board of Health of Richland*, 46 Mich. 542, 549, 9 N.W. 845, 848 (1881); *Beatrice Gas Co. v. Thomas*, 41 Neb. 662, 667-69, 59 N.W. 925, 927 (1894); *Phillips v. Sun Oil Co.*, 307 N.Y. 328, 330-31, 121 N.E.2d 249, 250 (1954); *Thompson v. Board of Educ.*, 124 Misc. 840, 842, 209 N.Y.S. 362, 364 (Sup. Ct. 1925); *Dillon v. Acme Oil Co.*, 49 Hun 565, 568-69, 2 N.Y.S. 289, 290-91 (Sup. Ct. 1888); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 417-18, 173 A. 627, 630 (1934); *Farb v. Theis*, 250 S.W. 290, 292 (Tex. Civ. App. 1923); *Texas Co. v. Giddings*, 148 S.W. 1142, 1144 (Tex. Civ. App. 1912); *Hodgkinson v. Ennor*, 4 B. & S. 229, 122 Eng. Rep. 446, 450 (Q.B. 1863) (per Cockburn, C.J.); *Ballard v. Tomlinson*, 29 Ch. D. 115, 120-21, 123, 125-26 (C.A. 1885).

See also 6A AMERICAN LAW OF PROPERTY § 28.65 (A.J. Casner ed. 1954); RESTATEMENT (SECOND) OF TORTS Explanatory Notes § 858A at 152-53 (Tent. Draft No. 17, 1971); RESTATEMENT OF TORTS § 832, comment *d* at 268, § 845, comment *b* at 333 (1939); *Davis, Wells and Streams* 201-02; *Ellis, supra* note 17, at 21; *Hanks & Hanks, supra* note 17, at 631-33; *Maloney, Plager & Baldwin, supra* note 17, at 154-55; *Maloney & Plager, supra* note 17, at 767-68; *Comment, supra* note 17, at 492-94; *Thomas, supra* note 17, at 359.

25. *Phillips v. Sun Oil Co.*, 307 N.Y. 328, 331, 121 N.E.2d 249, 251 (1954). See RESTATEMENT OF TORTS § 832, comment *d* at 268, § 845, comment *b* at 333 (1939).

26. *Farb v. Theis*, 250 S.W. 290, 292 (Tex. Civ. App. 1923).

27. In other words, the landowner cannot sell or transport the percolating groundwater he diverts for use elsewhere. Where his surface uses are legitimate he has as much protection under this rule as under the absolute ownership rule. See, e.g., *Gilmore v. Royal Salt Co.*, 84 Kan. 729, 731-32, 115 P. 541, 542 (1911); *United Fuel Gas Co. v. Sawyers*, 259 S.W.2d 466, 468 (Ky. 1953); *Bayer v. Nello L. Teer Co.*, 256 N.C. 509, 516-19, 124 S.E.2d 552, 556-58 (1962); *Bassett v. Osborn*, 23 Ohio C.C.R. (n.s.) 342, 345-46, 34 Ohio C.C. Dec. 284 (1912); *Collins v. Chartiers Valley Gas Co.*, 139 Pa. 111, 123-23, 21 A. 147, 148 (1891); *Reinhart v. Lancaster Area Refuse Authority*, 201 Pa. Super. 614, 621, 193 A.2d 670, 673 (1963).

See also 6A AMERICAN LAW OF PROPERTY § 28.65 (A.J. Casner ed. 1954); RESTATEMENT (SECOND) OF TORTS Explanatory Notes § 858A at 153-54 (Tent. Draft No. 17, 1971); *Davis, Wells and Streams* 202-03; *Ellis, supra* note 17, at 21; *Hanks & Hanks, supra* note 17, at 633-37; *Maloney, Plager & Baldwin, supra* note 17, at 155-58; *Maloney & Plager, supra* note 17, at 768-70; *Comment, supra* note 17, at 495-98; *Thomas, supra* note 17, at 360.

right of capture permitted by those two rules are negligent activities<sup>28</sup> and activities engaged in after the landowner acquires both knowledge of the movement of the percolating groundwater in question and of the probable consequences of his activity.<sup>29</sup> Recognizing that the groundwater allocation rules would deny relief in most situations, one court expressly rejected the application of the absolute ownership rule in pollution situations.<sup>30</sup> Many cases have effected an alternative approach to the same end by applying negligence or nuisance law in pollution situations despite their express reaffirmation of the general applicability of the allocation rules.<sup>31</sup> Thirteen such cases have granted relief and fourteen have denied relief.<sup>32</sup> By contrast, six cases have denied relief under absolute ownership<sup>33</sup> and three cases have denied relief under the so-called "reasonable use" rule.<sup>34</sup> No cases have granted relief under those two rules.

Insofar as the eastern correlative rights rule allows recovery in many pollution situations courts following that rule need not feel so compelled to follow negligence or nuisance law. The eastern correlative rights rule applies a comparative reasonableness test similar to that used in the modern reason-

28. See, e.g., *Swift & Co. v. Peoples Coal & Gas Co.*, 121 Conn. 579, 586, 186 A. 629, 632-33 (1936); *Upjohn v. Board of Health of Richland*, 46 Mich. 542, 549, 9 N.W. 845, 848 (1881); *Bayer v. Nello L. Teer Co.*, 256 N.C. 509, 519-20, 124 S.E.2d 552, 559 (1962); *Collins v. Chartiers Valley Gas Co.*, 131 Pa. 143, 159-69, 18 A. 1012, 1013-14 (1890); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 417-18, 173 A. 627, 630 (1934).

29. See cases cited note 58 *infra*.

30. *Beatrice Gas Co. v. Thomas*, 41 Neb. 662, 670-71, 59 N.W. 925, 928 (1894).

31. *Negligence*: See cases cited in Appendix B, Part B *infra*.

*Nuisance*: *Bellevue Cemetery Co. v. McEvers*, 169 Ala. 535, 53 So. 272 (1910) (Qle); *Gilmore v. Royal Salt Co.*, 84 Kan. 729, 115 P. 541 (1911) (R3c); *United Fuel Gas Co. v. Sawyers*, 259 S.W.2d 466 (Ky. 1953) (Gld); *Kinnaid v. Standard Oil Co.*, 89 Ky. 468, 12 S.W. 937 (1890) (Hl,3a); *Beatrice Gas Co. v. Thomas*, 41 Neb. 662, 59 N.W. 925 (1894) (Kl,3i<sup>\*</sup>); *Bassett v. Osborn*, 23 Ohio C.C.R. (n.s.) 342, 34 Ohio C.C. Dec. 284 (1912) (Alb); *Farb v. Theis*, 250 S.W. 290 (Tex. Civ. App. 1923) (Qli); *Texas Co. v. Giddings*, 148 S.W. 1142 (Tex. Civ. App. 1912) (Il,3a); *Paine & Co. Ltd. v. St. Neots Gas & Coke Co.*, [1939] 3 All E.R. 812 (C.A.), *aff'g* [1938] 4 All E.R. 592 (K,5a); *British Am. Oil Co. Ltd. v. Burrill*, [1942] Que. K.B. 218 (C.A.) (Jl,6a). Consult the Appendices for the case codings, *infra*.

32. For cases granting relief, see cases coded a-c,<sup>\*</sup> cited in note 31 *supra*. For cases denying relief, see cases coded d-k. *Id.*

33. *Brown & Bros. v. Illius*, 27 Conn. 84 (1858); *Greencastle v. Hazelett*, 23 Ind. 186 (1864); *Dillon v. Acme Oil Co.*, 49 Hun 565, 2 N.Y.S. 289 (Sup. Ct. 1888); *Easton v. State*, 153 Misc. 395, 275 N.Y.S. 119 (Ct. Cl. 1934), *modified*, 245 App. Div. 439, 283 N.Y.S. 809, *aff'd mem.*, 271 N.Y. 507, 2 N.E.2d 669 (1936); *Thompson v. Board of Educ.*, 124 Misc. 840, 209 N.Y.S. 362 (Sup. Ct. 1925); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 173 A. 627 (1934).

34. *United Fuel Gas Co. v. Sawyers*, 259 S.W.2d 466 (Ky. 1953); *Bayer v. Nello L. Teer Co.*, 256 N.C. 509, 124 S.E.2d 552 (1962); *Eidemiller v. Keystone Coal & Coke Co.*, 15 Pa. D. & C. 759, 17 West. 157 (C.P. 1930).



able use formulation of the riparian rights doctrine.<sup>35</sup> Negligence and the nuisance effects of groundwater pollution normally would be two of the several factors considered by the courts under that rule. Therefore, their application need not be considered exceptions to the general allocation rule. However, only a few jurisdictions have adopted the eastern correlative rights rule.<sup>36</sup> Accordingly, its application to pollution situations is limited at the present time. Only three cases have stated that the correlative rights rule would apply to pollution situations.<sup>37</sup> But the two cases which found pollution and granted or denied relief did not apply that rule. Instead, they treated negligence as an exception to the general rule rather than as one of the balancing factors.<sup>38</sup>

While courts have overwhelmingly preferred nuisance law to diversion allocation rules in percolating groundwater pollution cases, the preference for nuisance law over negligence law is slight.<sup>39</sup> Furthermore, there is little correlation between the courts which apply nuisance law to surface watercourse pollution and those which apply it to percolating groundwater pollution. Only eight states strongly prefer the use of private nuisance law in both surface watercourse and percolating groundwater pollution situations.<sup>40</sup> Indeed two states strongly prefer nuisance law for surface watercourse pollution, while rejecting it in favor of negligence law in percolating groundwater pollution situations.<sup>41</sup> Many courts are ambivalent about the choice between nuisance law and negligence law in groundwater pollution cases.<sup>42</sup> One explanation for a nuisance preference in groundwater cases might be that this approach allows for liability without any finding of culpability. This last requirement is not too onerous in surface water cases where the polluter can reasonably assess the consequences of his acts. However it creates problems in subsurface cases because he often cannot predict the results of his polluting activity. Use of negligence law permits the courts to take into account the ability of each particular polluter to predict

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35. *North-East Coal Co. v. Hayes*, 244 Ky. 639, 643-44, 51 S.W.2d 960, 962 (1932); *P. Ballantine & Sons v. Public Serv. Corp.*, 86 N.J.L. 331, 333-34, 91 A. 95, 96 (1914); *Panther Coal Co. v. Looney*, 185 Va. 758, 765-68, 40 S.E.2d 298, 302-03 (1946).

See also *Davis, Wells and Streams* 203-04; MALONEY, PLAGER & BALDWIN, *supra* note 17, at 157-58; Maloney & Plager, *supra* note 17, at 770-71; Thomas, *supra* note 17, at 360. Hanks & Hanks, *supra* note 17, at 643-44, incorrectly state the view that Arkansas, Delaware, Minnesota, and Tennessee have adopted the western correlative rights rule, which is a prorationing concept to be employed during shortages. See *Davis, Wells and Streams* 203.

36. The seven states are listed in note 137 *infra*.

37. See cases cited in note 35 *supra*.

38. See the *North-East Coal* (deny relief) and the *Ballantine* (grant relief) cases note 35 *supra*.

39. See text accompanying note 18 *supra*.

40. Arkansas, Illinois, Iowa, Kansas, Kentucky, Minnesota, Nebraska, and Wisconsin. See Table I in Appendix C *infra*.

41. Missouri and Oklahoma. *Id.*

42. *Id.*

the consequences of his activity.

Because most courts have refused to apply the diversion allocation rules to pollution of percolating groundwater, the real choices have been negligence law, nuisance law, their derivative the *Restatement* rule, and strict liability for escape of abnormally dangerous substances.

## II. DISTINCTION BETWEEN NEGLIGENCE AND NUISANCE LAW

The courts have utilized negligence law and nuisance law about equally in percolating groundwater pollution situations. There are 74 negligence law cases, 3 public nuisance, 83 private nuisance cases and 4 *Restatement* rule cases reported in the United States, England and Canada.<sup>43</sup> Of the 41 jurisdictions which have consistently followed one of these bodies of law, only 5 have clearly preferred negligence law,<sup>44</sup> while 10 have preferred nuisance law,<sup>45</sup> and 2 have adopted the *Restatement* rule.<sup>46</sup> The remaining 24 jurisdictions are ambivalent about the choice of law.<sup>47</sup> This section will discuss the various legal grounds for choosing one body of law or the other. It will also analyze the various types of fact situations where the courts have used one or the other, to determine if there are any clear legal or factual guideposts for making the choice.

### A. Negligence

The use of negligence law in deciding percolating groundwater pollution cases probably arises from the general proposition that the percolating groundwater diversion allocation rules should be followed when an injury to a neighboring landowner's water supply occurs under circumstances in which the injury is not to be expected, is not known, or would not have become known in the exercise of reasonable foresight. According to negligence theory, a groundwater user will be liable for his pollution if he knew or should have known that his activity would be likely to cause the injury which occurred.<sup>48</sup> The focus for determining liability under negligence theory is not directed at the care with which the groundwater user has conducted his business, but is instead directed at the predictability of injurious consequences arising from his activity, however carefully con-

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43. See cases cited in Appendix B *infra*. This contrasts with 2 diversion allocation rule cases, 20 strict liability cases and 15 cases which do not specify which theory is being utilized. *Id.*

44. Missouri, New Jersey, New York, Oklahoma, and Rhode Island. See Table 1 in Appendix C *infra*.

45. Arkansas, Iowa, Kansas, Kentucky, Massachusetts, Minnesota, Nebraska, Washington, Wisconsin and England. *Id.* Although Illinois apparently prefers nuisance law to negligence law, it has utilized the strict liability rule as often as nuisance law. Hence, its real preference is unclear. *Id.*

46. Montana and Pennsylvania. *Id.*

47. *Id.*

48. *Phillips v. Sun Oil Co.*, 307 N.Y. 328, 331, 121 N.E.2d 249, 251 (1954); *Collins v. Chartiers Valley Gas Co.*, 131 Pa. 143, 159, 18 A. 1012, 1013 (1890).

ducted.<sup>49</sup> This concept of negligence explains those cases which hold that negligence law, rather than nuisance law, should be utilized where percolating groundwater pollution is caused by an occurrence or activity involving, neither unavoidable consequences nor consequences naturally anticipated.<sup>50</sup> In other words, if, in the normal conduct of an activity, groundwater pollution will not occur, the court will follow negligence law when it does occur.

### B. Private Nuisance

Nuisance, by contrast, does not look at either the comparative reasonableness of a person's conduct or activity or at the predictability of the injurious consequences arising from it. Instead it addresses itself to the nature of those injurious consequences and the reasonableness of their impact on the injured landowner. Hence, a nuisance can be created both by negligent activities and non-negligent activities, as some percolating groundwater pollution cases have recognized.<sup>51</sup> A private nuisance is an interference with private property interests; Prosser defines it as:

[A]n unreasonable interference with the interest in the use and enjoyment of land . . . It is distinguished from trespass in that the interference is with use or enjoyment, rather than with the interest in exclusive possession.<sup>52</sup>

One case, dealing with pollution of a surface watercourse, comprehensively defined a private nuisance as one involving:

[S]uch impurities as substantially impair [the water's] value for the ordinary purposes of life, and render it measurably unfit for domestic purposes, or such as causes unwholesome or offensive vapors or odors to arise from the water, and thus impairs the comfortable or beneficial enjoyment of property in its vicinity . . . .<sup>53</sup>

Typical examples of nuisances created by water pollution are pollution of domestic, livestock, and public water supplies and creation of odors inter-

49. *Swift & Co. v. Peoples Coal & Oil Co.*, 121 Conn. 579, 588, 186 A. 629, 633 (1936).

50. *Long v. Louisville & N.R.R.*, 128 Ky. 26, 31-34, 107 S.W. 203, 205-06 (1908); *Collins v. Chartiers Valley Gas Co.*, 131 Pa. 143, 159-60, 18 A. 1012, 1013-14 (1890); *McNary v. Southwest Pa. Pipe Lines*, 34 Pa. County Ct. 441, 444-45, 17 Pa. Dist. 847, 849-50 (C.P. 1908); *Ressler v. Gerlach*, 189 Pa. Super. 192, 195, 149 A.2d 158, 160 (1959); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 420, 173 A. 627, 629 (1934). See also *Trillingham v. Alaska Housing Authority*, 109 F. Supp. 924, 924 (D. Alas. 1953); *Bollinger v. Mungle*, 175 S.W.2d 912, 915 (St. L. Mo. App. 1943).

51. *Swift & Co. v. Peoples Coal & Oil Co.*, 121 Conn. 579, 588, 186 A. 629, 633 (1936); *McNary v. Southwest Pa. Pipe Lines*, 34 Pa. County Ct. 441, 445, 17 Pa. Dist. 847, 849 (C.P. 1908); *Rose v. Standard Oil Co.*, 56 R.I. 272, 278, 185 A. 251, 254-55 (1936).

52. W. PROSSER, *TORTS* 405 (2d ed. 1955). See also *RESTATEMENT (SECOND) OF TORTS* § 821D (Tent. Draft No. 16, 1970).

53. *Trevett v. Prison Ass'n*, 98 Va. 332, 336, 36 S.E. 373, 374 (1900), quoting 1 H. WOOD, *NUISANCES* § 427 (3d ed. 1893). For a fuller discussion of the definition of private nuisance as it applies to water pollution, see *Davis, Water Pollution Litigation* 740-41, 749-50.

fering with places of habitation or employment.<sup>54</sup> Percolating groundwater cases expressly acknowledge that a nuisance is created when underground water is so contaminated that it cannot be used for a domestic or livestock water supply.<sup>55</sup>

Activities which are closely related to the user's land, or productive use of his particular land, are said not to constitute nuisances.<sup>56</sup> They do not fall within the general nuisance classification even though such activities may involve unavoidable or foreseeable interference with another's land.<sup>57</sup> Hence, pollution caused by mine drainage or oil well salt water would not constitute a nuisance and would be governed by negligence law, since those are uses specifically tied to particular locations. By contrast, pollution caused by gas manufacturing residues or oil refinery leaks would constitute a nuisance; they are not required to be located in a particular place, and such pollution is a probable consequence of the activity.

Many courts have stated that continuing a polluting activity once the pollution situation comes to the attention of the polluter also constitutes a nuisance.<sup>58</sup> This is true whether negligence or nuisance law would be applied to injuries occurring prior to the polluter becoming aware of it.

### C. *Statistical Analysis of the Cases*

It is interesting to test the aforementioned theoretical definitions of negligence and private nuisance against the results which the courts have reached in actual cases. In this regard, the following questions are particularly important:

(1) Do the courts follow nuisance law when the pollution is an unavoidable consequence of the activity, or at least a consequence naturally to be anticipated as they say they do? Stated conversely, do the courts follow negligence law when the actor could anticipate the pollution and when he knew that the pollution would occur?

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54. Davis, *Water Pollution Litigation* 750.

55. See, e.g., *Swift & Co. v. Peoples Coal & Oil Co.*, 121 Conn. 579, 590-92, 186 A. 629, 634 (1936); *Kinnaird v. Standard Oil Co.*, 89 Ky. 468, 474, 12 S.W. 937, 938 (1890); *Ballard v. Tomlinson*, 29 Ch. D. 115, 126 (C.A. 1885) (per Lindley, L.J.).

56. *Bayer v. Nello L. Teer Co.*, 256 N.C. 509, 517-18, 124 S.E.2d 552, 558 (1962); *Hauck v. Tide Water Pipe-Line Co.*, 153 Pa. 366, 375-77, 26 A. 645, 645-46 (1893); *Schroll v. George Brown's Sons, Inc.*, 41 Lanc. Law Rev. 297, 298-300 (Pa. C.P. 1928); *Rarick v. Smith*, 17 Pa. County Ct. 627, 631-32, 5 Pa. Dist. 530, (C.P. 1896). See also *Burr v. Adam Eidemiller, Inc.* 386 Pa. 416, 421-22, 126 A.2d 403, 408 (1956).

57. *Collins v. Chartiers Valley Gas Co.*, 131 Pa. 143, 159-60, 18 A. 1012, 1013-14 (1890); *McNary v. Southwest Pa. Pipe Lines*, 34 Pa. County Ct. 441, 445, 17 Pa. Dist. 847, 849 (C.P. 1908).

58. *Long v. Louisville & N.R.R.*, 128 Ky. 26, 34, 107 S.W. 203, 206 (1908); *Ball v. Nye*, 99 Mass. 582, 584 (1868); *Tolatti v. Enama*, 26 Luz. L. Reg. Rep. 344, 346 (Pa. C.P. 1931) (by implication); *Gagnon v. Landry*, 103 R.I. 45, 51, 234 A.2d 674, 677 (1967). See also *Burr v. Adam Eidemiller, Inc.*, 386 Pa. 416, 422-24, 126 A.2d 403, 407 (1956).

(2) Do the courts apply the above nuisance rule to all situations or only when the activity does not have a necessary relationship to the particular land where the activity is conducted as they indicate they will?

(3) Does continuation of the polluting activity without a good faith effort to abate after the polluter becomes aware of the injurious consequences of his activity cause the courts to shift the case from negligence law to private nuisance law as they indicate it will?

The answers can be ascertained by analyzing the factual and decisional theory relationships in the percolating groundwater pollution cases.

In referring to the first question above concerning predictability, these types of uses can be subdivided into two groups: those having a propensity for causing pollution, such as oil refineries, gas manufacturing plants, factories and cemeteries (at least before burial in vaults became mandatory), and those having little likelihood of causing pollution with normal operations, such as pipelines and service stations. Nuisance law, it is asserted, applies in the first subdivided group of situations, and negligence law applies in the second group. Theoretically negligence law also applies in situations where the activity has a necessary relationship to the land; certain uses of land must be conducted in particular places. These include uses such as mining and the recovery of oil and gas.

The cases seem to bear out the accuracy of such a classification of fact situations. The following table shows the law applied to the above described groups of cases.<sup>59</sup>

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59. See Table 2 in Appendix C *infra* and cases coded by the respective letters in Appendix B *infra*.

TABLE I

Case Group	Code Letter (See "Codings" in Appendices)	Law Applied	
		Negligence (no. of cases)	Private Nuisance (no. of cases)
1. Polluting activity does not have necessary relation to tract of land			
a. Pollution probable (nuisance law predicted)			
— oil refinery or distributor	H	4	4
— gas plant	K	6	9
— factory or other commercial activity	L	1	9
— cemetery	Q	1	24
	<u>Total</u>	<u>12</u>	<u>46</u>
b. Pollution unlikely (negligence law predicted)			
— pipeline	I	9	2
— service station	J	9	5
	<u>Total</u>	<u>18</u>	<u>7</u>
2. Polluting activity has necessary relation to tract of land (negligence law predicted)			
— mining	E	3	0
— oil well	G	26	3
	<u>Total</u>	<u>29</u>	<u>3</u>

This table shows that the courts tend to utilize nuisance and negligence law in the manner called for by the rules concerning the activity's relationship to the land and its propensity to cause pollution.<sup>60</sup>

The courts tend to regard human and animal waste products as being potentially polluting and, therefore, governed by nuisance law. The following table shows the law applied to human and animal waste situations.<sup>61</sup>

TABLE II

Case Group	Code Letter (See "Codings" in Appendices)	Law Applied	
		Negligence (no. of cases)	Private Nuisance (no. of cases)
Human or animal waste			
— domestic sewage	A	3	11
— city sewer	B	0	1
— city treatment plant	C	1	1
— collective source	D	3	5
— farm wastes	M	3	5
	<u>Total</u>	<u>10</u>	<u>23</u>

The tendency toward nuisance law in these cases, while not as pronounced as in the groups of cases in Table I, is significant. It can be regarded as

60. Because the great majority of these cases involved pollution of domestic and livestock water supplies, the nature of the consequences of the pollution did not influence the choice of theory, and therefore, the results reflect the source of the pollution.

61. See Table 2 in Appendix C *infra* and cases coded by the respective letters in Appendix B *infra*.

another illustration of the rule that activities having no necessary relation to particular tracts of land and being probable sources of pollution are governed by nuisance law.

The third question focuses on the effect which abatement, or on the other hand, failure to abate, will have on the choice of theory. It is said that nuisance law will be applied if a polluter fails to abate after being requested to do so by the injured landowner, whereas negligence law will be applied if a good faith effort is made to abate.<sup>62</sup> The following table classifies cases on the basis of abatement after notice. In all of them the causal connection between the activity and the pollution was established.

TABLE III  
(See Codings in Appendices for  
Meaning of letters and symbols in parentheses)

<i>Rule Followed</i>	<i>No. of Cases</i>	<i>Footnote No.</i>
Defendant abates or attempts to abate—negligence law applied		
Plaintiff wins (a-b, <sup>o</sup> )	10	63
Defendant wins on basis of rule (d)	6	64
Defendant refuses to abate—nuisance law applied		
Plaintiff wins (a-b, <sup>o</sup> )	8	65
Defendant wins (d)	—	—
Defendant fails to abate—nuisance law applied		
Plaintiff wins (a-b, <sup>o</sup> )	<u>19</u>	<u>66</u>
Total	<u>43</u>	
<i>Rule Not Followed</i>		
Defendant abates or attempts to abate—nuisance law applied		
Plaintiff wins (a-b, <sup>o</sup> )	4	67
Defendant win on basis of rule (d)	—	—
Defendant refuses to abate—negligence law applied		
Plaintiff wins (a-b, <sup>o</sup> )	2	68
Defendant wins (d)	—	—
Defendant fails to abate—negligence law applied		
Plaintiff wins (a-b, <sup>o</sup> )	16	69
Defendant wins (d)	9	70
Total	<u>31</u>	

This table indicates that the asserted rule was followed in 58 percent of the cases. Because attempt, refusal, or failure to abate a polluting

62. See cases cited note 56 *supra* stating such a rule.

63. Sinclair Ref. Co. v. Bennett, 123 F.2d 884 (6th Cir. 1941—Tenn.) (J1a); Sinclair Ref. Co. v. Keister, 64 F.2d 537 (6th Cir. 1933—Ohio) (J1a); Monroe "66" Oil Co. v. Hightower, 180 So. 2d 8 (La. App. 1965) (J5a); P. Ballantine & Sons. v. Public Serv. Corp., 76 N.J.L. 358, 70 A. 167 (1908) (K5a); Sheridan Oil Co. v. Wall, 187 Okla. 398, 103 P.2d 507 (1940) (G1,3a); Meddock v. National Transit Co., 105 Pa. Super. 553, 161 A. 628 (1932) (I1a); Brown v. Lundell, 162 Tex. 84, 344 S.W.2d 863 (1961), *aff'g* 334 S.W.2d 616 (Civ. App. 1960) (G4a); Geochemical Surveys v. Dietz, 340 S.W.2d 114 (Tex. Civ. App. 1960) (G1a); Texas Co. v. Giddings, 148 S.W. 1142 (Tex. Civ. App. 1912) (I1,3a); Bennett v. Imperial Oil Ltd., 46 Mar. Prov. 50, 28 D.L.R.2d 55 (Newf.

1961) (J1a). Consult the Appendices for the case codings.

64. *Gauvreau v. Gulf Ref. Co.*, 288 Mass. 54, 192 N.E. 200 (1934) (J1d); *Bollinger v. Mungle*, 175 S.W.2d 912 (St. L. Mo. App. 1943) (J1d); *Phillips v. Sun Oil Co.*, 307 N.Y. 328, 121 N.E.2d 249 (1954) (J1d); *Thompson v. Board of Educ.*, 124 Misc. 840, 209 N.Y.S. 362 (Sup. Ct. 1925) (D3d); *Ressler v. Gerlach*, 189 Pa. Super. 192, 149 A.2d 158 (1959) (D1d); *Humble Pipe Line Co. v. Anderson*, 339 S.W.2d 259 (Tex. Civ. App. 1960) (I1d).

65. *Brown v. Illius*, 25 Conn. 583 (1857) (K5a); *Atkinson v. Herington Cattle Co.*, 200 Kan. 298, 436 P.2d 816 (1968) (M3a); *Klassen v. Central Kan. Coop. Creamery Ass'n*, 160 Kan. 697, 165 P.2d 601 (1946) (L3a); *Czipott v. Fleigh*, 87 Nev. 496, 489 P.2d 681 (1971) (M1b); *Bassett v. Osborn*, 23 Ohio C.C.R. (n.s.) 342, 34 Ohio C.C. Dec. 284 (1912) (A1b); *Ulmen v. Mt. Angel*, 57 Ore. 547, 112 P. 529 (1911) (BF1b); *Hawk v. Davis*, 76 Pa. Super. 565 (1921) (A1b); *Paine & Co., Ltd. v. St. Neots Gas & Coke Co.* [1939] 3 All E.R. 812 (C.A.), *affg* [1938] 4 All E.R. 592 (K.B.) (K5a).

66. *Hall v. Galey*, 126 Kan. 699, 271 P. 319 (1928) (G1,3,4a); *Berry v. Shell Petroleum Co.*, 140 Kan. 94, 33 P.2d 953 (1934), *rehearing denied*, 141 Kan. 6, 40 P.2d 359 (1935) (G1a); *Louisville & N.R.R. v. Simpson*, 17 Ky. L.R. 989, 33 S.W. 395 (1895) (R1a); *Kinnaird v. Standard Oil Co.*, 89 Ky. 468, 12 S.W. 987 (1890) (H1,3a); *Mears v. Dole*, 185 Mass. 508 (1883) (R1ab); *Ball v. Nye*, 99 Mass. 582 (1868) (M1,6a); *Sherman v. Fall River Iron Works*, 87 Mass. (5 Allen) 213 (1862) (L3j\*); *Beatrice Gas Co. v. Thomas*, 41 Neb. 662, 59 N.W. 925 (1894) (K1,3i\*); *Cities Serv. Oil Co. v. Merritt*, 332 P.2d 677 (Okla. 1958) (G1a); *Danciger Oil & Ref. Co. v. Donahay*, 208 Okla. 390, 238 P.2d 308 (1951) (G1,3a); *Vandivort v. Hunter*, 265 Pa. 585, 109 A. 479 (1920) (A1i\*); *Haugh's Appeal*, 102 Pa. 42, 2 Walk. 376 (1882) (A1b); *Pottstown Gas Co. v. Murphy*, 39 Pa. 257 (1861) (K1a); *Shuter v. The City*, 3 Phila. Pa. 228 (Dist. Ct. 1858) (K1a); *Haveman v. Beulow*, 36 Wash. 2d 185, 217 P.2d 313 (1950) (L1ab); *Millington v. Griffiths*, 30 L.T.R. (n.s.) 65 (C.P. 1874) (K1a); *Turner v. Mirfield*, 34 Beav. 390, 55 Eng. Rep. 685 (Rolls 1865) (L7b); *Ballard v. Tomlinson*, 29 Ch. D. 115 (C.A. 1885), *rev'g* 26 Ch. D. 194 (1884) (D5ab); *Hubbs v. Prince Edward County*, 8 D.L.R.2d 394 (Ont. 1957) (R1,5ab).

67. *Shelley v. Ozark Pipe Line Corp.*, 327 Mo. 238, 37 S.W.2d 518 (1931) (I1a); *Continental Oil Co. v. Berry*, 52 S.W.2d 953 (Tex. Civ. App. 1932) (J1i\*); *Anstee v. Monroe Light & Fuel Co.*, 171 Wis. 291, 177 N.W. 26 (1920) (K1a); *British Am. Oil Co. Ltd. v. Burrill*, [1942] Que. K.B. 218 (C.A.) (J1,6a).

68. *Brown v. Illius*, 25 Conn. 583 (1857) (K5a); *Woodward v. Aborn*, 35 Me. 271 (1853) (M1a).

69. *O'Brien v. Primm*, 243 Ark. 186, 419 S.W.2d 323 (1967) (G1a); *Pensacola Gas Co. v. Pebley*, 25 Fla. 381, 5 So. 593 (1889) (K1a); *North Ga. Petroleum Co. v. Lewis*, 128 Ga. App. 653, 197 S.E.2d 437 (1973) (J1,3a); *Van Brocklin v. Gudema*, 50 Ill. App. 2d 20, 199 N.E.2d 457 (1964) (M1a); *Phoenix v. Graham*, 349 Ill. App. 326, 110 N.E.2d 669 (1953) (G1i\*); *Shelley v. Ozark Pipe Line Corp.*, 247 S.W. 472 (Spr. Mo. App. 1923); *P. Ballantine & Sons v. Public Serv. Corp.*, 86 N.J.L. 331, 91 A. 95 (1914) (K5a); *De Feo v. People's Gas Co.*, 6 N.J. Misc. 790, 142 A. 756 (Sup. Ct. 1928) (I1a); *Elsay v. Adirondack & St. L.R.R.*, 97 Misc. 273, 161 N.Y.S. 391 (Sup. Ct. 1916) (N1,3b); *Harper-Turner Oil Co. v. Bridge*, 311 P.2d 947 (Okla. 1957) (G1a); *Schlichtkrull v. Mellon-Pollock Oil Co. (No. 1)*, 301 Pa. 553, 152 A. 829 (1930) (G1a); *Collins v. Charters Valley Gas Co.*, 139 Pa. 111, 21 A. 147 (1891) (G1a); *General Crude Oil Co. v. Aiken*, 162 Tex. 104, 344 S.W.2d 668 (1961), *rev'g* 335 S.W.2d 229 (Tex. Civ. App. 1960) (G1,3a); *Gulf Oil Corp. v. Alexander*, 156 Tex. 455, 295 S.W.2d 901 (1956), *affg per curiam*, 291 S.W.2d 792 (Tex. Civ. App. 1956) (G4a); *Pickens v. Harrison*, 151 Tex. 562, 252 S.W.2d 575 (1952), *modifying* 246 S.W.2d 316 (Tex. Civ. App. 1952) (G4a); *Crawford v. Yeatts*, 395 S.W.2d 413 (Tex. Civ. App. 1965) (G1a).

70. *North-East Coal Co. v. Hayes*, 244 Ky. 639, 51 S.W.2d 960 (1932) (E1,3d); *United Fuel Gas Co. v. Sawyers*, 259 S.W.2d 466 (Ky. 1953) (G1d); *Dillon v. Acme Oil Co.*, 49 Hun 565, 2 N.Y.S. 289 (Sup. Ct. 1888) (H1d); *Easton v. State*, 153 Misc. 395, 275 N.Y.S. 119 (Ct. Cl. 1934), *modified*, 245 App. Div.



activity may influence the theory applied, those case totals may not represent any clear trend favoring the asserted rule. At best they only suggest that such a rule may exist.

#### D. *Other Suggested Rules for Choosing Between Negligence and Nuisance*

Two courts have suggested that, in mining and oil and gas well situations, the rule applying negligence law to pollution caused by activities having a necessary relation to the tract of land is applicable only as between the holder of the surface interest and the holder of the mineral interest in the same tract of land. As between the holder of the mineral interest and unrelated adjoining landowners the law of nuisance is said to apply.<sup>71</sup>

This rule is not supported by other cases. All 10 cases involving pollution of a surface owner's well by the activities of the underlying mineral owner utilized negligence law.<sup>72</sup> However, contrary to the suggested rule, 15 cases involving pollution of percolating groundwater which was caused by the activities of unrelated mineral owners on neighboring lands, have been decided on the basis of negligence law.<sup>73</sup> Only three cases were decided on the basis of nuisance law in conformance with the suggested rule.<sup>74</sup> Courts

439, 283 N.Y.S. 809, *affd mem.* 271 N.Y. 507, 2 N.E.2d 669 (1936) (P1d); Bayer v. Nello L. Teer Co., 256 N.C. 509, 124 S.E.2d 552 (1962) (E1d); Wheeler v. Fisher Oil Co., 6 Ohio N.P. 309, 9 Ohio Dec. 294 (1899) (G1d); Eidemiller v. Keystone Coal & Coke Co., 15 Pa. D. & C. 759, 17 West. 157 (C.P. 1930) (E1d); Rose v. Socony-Vacuum Corp., 54 R.I. 411, 173 A. 627 (1934) (H1,3d); Petersen v. Cache County Drainage Dist. No. 5, 77 Utah 256, 294 P. 289 (1930).

71. Phoenix v. Graham, 349 Ill. App. 326, 110 N.E.2d 669 (1953); Cities Serv. Oil Co. v. Merritt, 332 P.2d 677, 684 (Okla. 1958).

72. H.W. Peerson Drilling Co. v. Scoggins, 216 Ala. 284, 74 So. 2d 450 (1954); Phoenix v. Graham, 349 Ill. App. 326, 110 N.E.2d 669 (1953); Wynn v. Wilson, 252 Ky. 352, 67 S.W.2d 483 (1934); North-East Coal Co. v. Hayes, 244 Ky. 639, 51 S.W.2d 960 (1932); Sheridan Oil Co. v. Wall, 187 Okla. 398, 103 P.2d 507 (1940); Geochemical Surveys v. Dietz, 340 S.W.2d 114 (Tex. Civ. App. 1960); General Crude Oil Co. v. Aiken, 162 Tex. 104, 344 S.W.2d 668 (1961), *rev'g* 335 S.W.2d 229 (Tex. Civ. App. 1960); Brown v. Lundell, 162 Tex. 84, 344 S.W.2d 863 (1961), *aff'g* 334 S.W.2d 616 (Tex. Civ. App. 1960); Crawford v. Yeatts, 395 S.W.2d 413 (Tex. Civ. App. 1965); McCoy v. Cohen, 149 W.Va. 197, 140 S.E.2d 427 (1965).

73. Polzin v. National Co-op. Refinery Ass'n, 175 Kan. 531, 266 P.2d 293 (1954); United Fuel Gas Co. v. Sawyers, 259 S.W.2d 466 (Ky. 1953); Joldersma v. Muskegon Dev. Co., 286 Mich. 520, 282 N.W. 229 (1938); Magnolia Petroleum Co. v. Williams, 222 Miss. 538, 76 So. 2d 365 (1954); Bayer v. Nello L. Teer Co., 256 N.C. 509, 124 S.E.2d 552 (1962); Wheeler v. Fisher Oil Co., 6 Ohio N.P. 309, 9 Ohio Dec. 294 (1899); Norman v. Greenland Drilling Co., 403 P.2d 507 (Okla. 1965); Sunray Mid-Continent Oil Co. v. Tisdale, 366 P.2d 614 (Okla. 1961); Harper-Turner Oil Co. v. Bridge, 311 P.2d 947 (Okla. 1957); Shell Petroleum Corp. v. Blubaugh, 187 Okla. 198, 102 P.2d 163 (1940); Cities Serv. Gas Co. v. Eggers, 186 Okla. 466, 98 P.2d 1114 (1940); Schlichtkrull v. Mellon-Pollock Oil Co. (No. 1), 301 Pa. 553, 152 A. 829 (1930); Chartiers Valley Gas Co., 139 Pa. 111, 21 A. 147 (1891); Collins v. Chartiers Valley Gas Co., 131 Pa. 143, 18 A. 1012 (1890); Gulf Oil Corp. v. Alexander, 291 S.W.2d 792 (Tex. Civ. App.), *affd per curiam*, 156 Tex. 455, 295 S.W.2d 901 (1956).

74. Hall v. Galey, 126 Kan. 699, 271 P. 319 (1928); Cities Serv. Oil Co. v. Merritt, 332 P.2d 677 (Okla. 1958); Danciger Oil & Ref. Co. v. Donahey, 205 Okla. 390, 238 P.2d 308 (1951).

decide the vast majority of all mining and oil and gas well cases under negligence law regardless of the relationship between the polluter and the injured surface owner.<sup>75</sup> Therefore, it would appear the relationship between the two is irrelevant in the determination whether to utilize negligence or nuisance law.

Two courts have suggested that industrial states tend to utilize negligence law in percolating groundwater pollution situations, while agricultural states tend to utilize nuisance law or strict liability rules.<sup>76</sup> The cases do not substantiate that assertion. As noted before, most states are ambivalent about the choice between negligence and nuisance law. Both industrial and agricultural states are included in this group.<sup>77</sup> There are some states which seem to confirm the assertion; three industrial states follow negligence law<sup>78</sup> and seven agricultural states follow nuisance law.<sup>79</sup> But the assertion cannot be said to constitute a rule when industrial and mining jurisdictions such as Kentucky, Massachusetts and England utilize nuisance law, agricultural states such as Missouri and Oklahoma utilize negligence law,<sup>80</sup> and a large group of states utilize both in roughly equal amounts.<sup>81</sup> No state preferred strict liability rules.

I concluded in a previous article<sup>82</sup> that in surface watercourse pollution cases the courts will follow private nuisance law when traditional nuisance<sup>83</sup> types of pollution are treated and riparian rights law will be applied when non-nuisance types of pollution are created.<sup>84</sup> One might expect a similar pattern in percolating groundwater pollution cases; if traditional nuisances were involved, decisions would be based on private nuisance law, while non-nuisance types of pollution would be decided under negligence law. Such a pattern does not exist. Nearly all of the 180 cases involved traditional nuisance types of pollution (166 cases), and they are about evenly split on decisional theory between private nuisance law (97 cases) and

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75. See discussion and table accompanying note 59 *supra*.

76. *Trillingham v. Alaska Housing Authority*, 109 F. Supp. 924, 924 (D. Alas. 1953); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 421, 173 A. 627, 631 (1934).

77. Ambivalent industrial states include Connecticut, Illinois, Ohio and Pennsylvania. Ambivalent agricultural states include Alabama and Maine. See Table 1 in Appendix C *infra*.

78. New Jersey, New York and Rhode Island. *Id.*

79. Arkansas, Iowa, Kansas, Minnesota, Nebraska, Washington and Wisconsin. *Id.*

80. *Id.*

81. *Id.*

82. Davis, *Water Pollution Litigation* 738.

83. Traditional nuisances include such injuries as poisoning of a domestic or livestock water supply, degradation of soil fertility, and odors interfering with habitation and places of work.

84. Where traditional nuisances were created, 199 surface watercourse pollution cases applied private nuisance law while only 66 applied riparian rights law. Where non-nuisance types of pollution were created, only 34 applied private nuisance law while 70 applied riparian rights law. Davis, *Water Pollution Litigation* App. D, at 805-06.

negligence law (83 cases). There are only a few cases (14) involving non-nuisance types of pollution. They are also almost evenly split between private nuisance law (6 cases) and negligence law (8 cases).<sup>85</sup> The only conclusion is that the type of pollution injury suffered has no bearing on the choice between private nuisance law and negligence law as the basis for deciding the case.

### III. RESTATEMENT RULE

Two states have broken away from the common law rules of negligence and nuisance in percolating groundwater cases and have adopted the *Restatement* rule concerning interferences with the use of land.<sup>86</sup> Section 822 of the *Restatement of Torts* provides:

The actor is liable in an action for damages for a non-trespassory invasion of another's interest in the private use and enjoyment of land if,

- (a) the other has property rights and privileges in respect to the use or enjoyment interfered with; and
- (b) the invasion is substantial; and
- (c) the actor's conduct is a legal cause of the invasion; and
- (d) the invasion is either
  - (i) intentional and unreasonable; or
  - (ii) unintentional and otherwise actionable under the rules governing liability for negligent, reckless or ultrahazardous conduct.<sup>87</sup>

Whether this rule makes any basic changes in the law of nuisance depends on the *Restatement's* definition of "intentional" and "unreasonable". Under the *Restatement* an actor commits an intentional invasion when he does either of the following:

- (a) acts for the purpose of causing it; or
- (b) knows that it is resulting or is substantially certain to result from his conduct.<sup>88</sup>

This language makes common law nuisances unactionable when they are created by non-negligent activity where the actor either took every precaution to avoid the invasion or did not expect the particular invasion which occurred. An illustration in the *Restatement* makes this clear.

[A owns a parcel of land on which he erects and starts to operate a factory. B owns land 200 yards from A's factory on which he operates a poultry farm.] B gets water for his poultry business from a well on his land, and A dumps the waste matter in a depression on his land from which it seeps into the ground and is carried 300 yards underground to B's well by an unknown flow of percolating water. The water in B's well is contaminated so that it can-

85. See Table 3, in Appendix C *infra*.

86. Montana and Pennsylvania. See cases listed in App. B, Pt. D *infra*.

87. RESTATEMENT OF TORTS § 822 (1939).

88. RESTATEMENT OF TORTS § 825 (1939).

not be used in his poultry business for some time. The invasion of B's interest in the use and enjoyment of his land is not intentional.<sup>89</sup>

Professor Fleming James objected to Section 822's language because it improperly reflects the case law: there are many nuisance cases imposing liability where the actor intentionally conducted an activity which caused an unintended injury even though he was not negligent, reckless or conducting an ultrahazardous or abnormally dangerous activity. They impose liability because the injury suffered is too great to be borne without compensation.<sup>90</sup>

The percolating groundwater pollution cases support Professor James' objection. Eleven utilize nuisance law and impose liability where the *Restatement* rule would have made the invasion unactionable. These cases involved oil distributor storage leaks,<sup>91</sup> pipeline leaks,<sup>92</sup> service station gasoline leaks,<sup>93</sup> furnace oil tank leaks,<sup>94</sup> gas manufacturing residues,<sup>95</sup> gas main leaks,<sup>96</sup> manure pile drainage,<sup>97</sup> and buried animals.<sup>98</sup> In each, the lawsuit was brought relatively soon after the pollution was discovered, and the polluter did not refuse to abate the pollution: in most, abatement was effected.<sup>99</sup> However, there are eight cases, involving disposal of human wastes,<sup>100</sup> pipeline leaks,<sup>101</sup> and service station gasoline leaks,<sup>102</sup> which refused to impose liability under those circumstances. They invoked negligence law. The *Restatement* would find no liability in all these 19 fact situations, although the courts imposed liability in a majority of them under

89. RESTATEMENT OF TORTS § 825, illustration No. 3 (1939). Illustration 3 to RESTATEMENT OF TORTS § 832 (1939) also supports this view. The bracketed language is from illustration 2 in § 825.

90. See RESTATEMENT (SECOND) OF TORTS, App. A at 132-41 (Tent. Draft No. 16, 1970).

91. *Kinnaird v. Standard Oil Co.*, 89 Ky. 468, 12 S.W. 937 (1890).

92. *Shelley v. Ozark Pipe Line Corp.*, 327 Mo. 238, 37 S.W.2d 518 (1931); *Hauck v. Tide Water Pipe-Line Co.*, 153 Pa. 366, 26 A. 644 (1893).

93. *Continental Oil Co. v. Berry*, 52 S.W.2d 953 (Tex. Civ. App. 1932); *British Am. Oil Co. Ltd. v. Burrill*, [1942] Que. K.B. 218 (C.A.).

94. *Kostyal v. Cass*, 163 Conn. 92, 302 A.2d 121 (1972).

95. *Berger v. Minneapolis Gaslight Co.*, 60 Minn. 296, 62 N.W. 336 (1895); *Anstee v. Monroe Light & Fuel Co.*, 171 Wis. 291, 177 N.W. 26 (1920).

96. *Sherman v. Fall River Iron Works*, 87 Mass. (5 Allen) 213 (1862).

97. *Ball v. Nye*, 99 Mass. 582 (1868).

98. *Louisville & N.R.R. v. Simpson*, 17 Ky.L.R. 989, 33 S.W. 395 (1895).

99. The *Restatement* makes actionable pollution occurring after the polluter "knows" it is resulting. See text accompanying note 88 *supra*. The cases selected do not fall within that actionable category.

100. *Thompson v. Board of Educ.*, 124 Misc. 840, 209 N.Y.S. 362 (Sup. Ct. 1925); *Ressler v. Gerlach*, 189 Pa. Super. 192, 149 A.2d 158 (1959); *Tolatti v. Enama*, 26 Luz. L. Reg. Rep. 344 (Pa. C.P. 1931); *Gagnon v. Landry*, 103 R.I. 45, 234 A.2d 674 (1967).

101. *Humble Pipe Line Co. v. Anderson*, 339 S.W.2d 259 (Tex. Civ. App. 1960).

102. *Gauvreau v. Gulf Ref. Co.*, 288 Mass. 54, 192 N.E. 220 (1934); *Bollinger v. Mungle*, 175 S.W.2d 912 (St. L. Mo. App. 1943); *Phillips v. Sun Oil Co.*, 307 N.Y. 328, 121 N.E.2d 249 (1954).

nuisance law.<sup>103</sup> This is strong evidence that the *Restatement* rule runs counter to the predominant precedent. The tentative revisions of the *Restatement* have not altered this approach to private nuisance.<sup>104</sup> I agree with Professor James that the *Restatement* neither represents the existing law, at least with respect to percolating groundwater pollution, nor does it represent a desirable rule for the future.

#### IV. STRICT LIABILITY

Eleven jurisdictions have imposed strict liability for certain types of percolating groundwater pollution.<sup>105</sup> In several of these jurisdictions it was imposed by statute.<sup>106</sup> Two followed the abnormally dangerous conduct rule which is defined by a tentative revision of the *Restatement of Torts*.<sup>107</sup> It is significant that the courts have imposed strict liability only where activities of the oil and gas industry, mining industry and manufactured gas industry have caused the pollution.<sup>108</sup> Thus the courts have found pollution caused by salt water from oil and gas wells, acid mine wastes, oil pipeline leaks, and residues from gas manufacturing plants particularly obnoxious and subject to strict liability.<sup>109</sup> This is true in spite of the fact that the majority of other states have preferred negligence law to nuisance law for controlling the polluting activities of the mining and oil and gas industries,<sup>110</sup> and nuisance law is only preferred in cases dealing with pollution caused by the manufacture of gas.<sup>111</sup> These 11 jurisdictions apparently follow the abnormally dangerous conduct rule in the above

103. While many of the cases in the two groups are not distinguishable on the facts, eleven of the fifteen cases not involving disposal of human wastes imposed liability under nuisance law.

104. RESTATEMENT (SECOND) OF TORTS §822 (Tent. Draft No. 16, 1970), provides:

One is subject to liability for a private nuisance if, but only if, his conduct is a legal cause of the invasion of the interest in the private use and enjoyment of land, and such invasion is

- (a) intentional and unreasonable,
- (b) negligent or reckless, or
- (c) actionable under the rules governing liability for abnormally dangerous conditions or activities.

105. Alabama, Illinois, Kansas, Maryland, Massachusetts, Minnesota, Oklahoma, Pennsylvania, South Dakota, Texas and England. See cases listed in App. B, Pt. E *infra*.

106. Kansas, Pennsylvania and England. *Id.*

107. RESTATEMENT (SECOND) OF TORTS §§ 519-20 (Tent. Draft No. 10, 1964). Maryland and South Dakota follow this section which substitutes an "abnormally dangerous activity" test for the "ultrahazardous activity" of the original RESTATEMENT OF TORTS. *Yommer v. McKenzie*, 255 Md. 220, 223-26, 257 A.2d 138, 139-41 (1969); *Watson v. Great Lakes Pipeline Co.*, 85 S.D. 310, 319-20, 182 N.W.2d 314, 319 (1970).

108. See Table 2, in Appendix C *infra*.

109. See cases coded E, G, I, and K respectively in App. B, Pt. E *infra*.

110. See Table 2, in Appendix C *infra* and text accompanying note 75 *supra*. See also Pt. II, §A and B of this article.

111. See Table 2, in Appendix C *infra* and discussion at Pt. II, §§ A and B of this article.

situations because those activities are not entered into by the great mass of mankind, and they do result in extensive injury to percolating groundwater supplies if their waste products are uncontrolled.<sup>112</sup>

#### V. PUBLIC NUISANCE

The concept of public nuisance comprehends threats to the public health, safety, and welfare. Only three percolating groundwater cases have involved an application of public nuisance law. Two involved pollution of individual domestic wells. They were brought by private parties claiming a special damage different in kind and degree from that suffered by the public at large.<sup>113</sup> The third involved pollution of a public water supply. It was brought by a public official.<sup>114</sup> There are too few public nuisance cases involving percolating groundwater pollution to draw any conclusions from a factual analysis.

#### VI. RULES APPLICABLE TO UNDERGROUND STREAMS

It is a commonplace observation that underground streams<sup>115</sup> are subject to the same rules as surface watercourses.<sup>116</sup> Cases involving pollution of groundwater make the same general observation.<sup>117</sup> More to the point, five cases involving groundwater pollution state that riparian rights law is applicable to pollution of underground streams.<sup>118</sup> Three of them specifically apply surface watercourse diversion allocation rules to pollution of

112. *Yommer v. McKenzie*, 255 Md. 220, 224-26, 257 A.2d 138, 140-41 (1969).

113. *Berry v. Shell Petroleum Co.*, 140 Kan. 94, 33 P.2d 953 (1934), *rehearing denied*, 141 Kan. 6, 40 P.2d 359 (1935); *Watson v. Great Lakes Pipeline Co.*, 85 S.D. 310, 182 N.W.2d 314 (1970).

114. *Barclay v. Commonwealth*, 25 Pa. 503 (1855).

115. See note 123 and accompanying text *infra*.

116. See, e.g., *Hale v. McLea*, 53 Cal. 578 (1879); *Saddler v. Lee*, 66 Ga. 45 (1880); *Jones v. Home Bldg. & Loan Ass'n*, 252 N.C. 626, 114 S.E.2d 638 (1960); *Clinchfield Coal Corp. v. Compton*, 148 Va. 437, 139 S.E. 308 (1927). See also note 123 *infra*.

117. *Killian v. Killian*, 175 Ala. 224, 231, 57 So. 825, 828 (1912); *Brown v. Illius*, 25 Conn. 583, 594-95 (1857) (dissent); *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 600-01, 20 So. 780, 784 (1896); *Kevil v. Princeton*, 118 S.W. 363, 365 (Ky. 1909) (by implication); *Easton v. State*, 153 Misc. 395, 396, 275 N.Y.S. 119, 120 (Ct. Cl. 1934), *modified*, 245 App. Div. 439, 283 N.Y.S. 809 (1936); *aff'd mem.*, 271 N.Y. 507, 2 N.E.2d 669 (1936); *Thompson v. Board of Educ.*, 124 Misc. 840, 842, 209 N.Y.S. 362, 364 (Sup. Ct. 1925); *Dillon v. Acme Oil Co.*, 49 Hun 565, 569, 2 N.Y.S. 289, 291 (Sup. Ct. 1888); *Masten v. Texas Co.*, 194 N.C. 540, 542, 140 S.E. 89, 90 (1927); *Good v. Altoona*, 162 Pa. 493, 498, 29 A. 741, 742 (1894); *Collins v. Chartiers Valley Gas Co.*, 131 Pa. 143, 158, 18 A. 1012, 1013 (1890); *Eidemiller v. Keystone Coal & Coke Co.*, 15 Pa. D. & C. 759, 765, 17 West. 157, 169 (C.P. 1930); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 417, 173 A. 627, 630 (1934); *Atkinson v. Virginia Oil & Gas Co.*, 72 W. Va. 707, 709-10, 79 S.E. 647, 648 (1913) (dictum).

118. See cases listed in App. A, Pt. A *infra*.

acknowledged underground streams.<sup>119</sup>

A majority of surface watercourse pollution cases apply private nuisance law instead of riparian rights law.<sup>120</sup> Three groundwater pollution cases state that private nuisance law applies to pollution of underground streams.<sup>121</sup> However, none applied it to that situation.

With respect to pollution of surface watercourses, I concluded from an analysis of virutally all American, English and Irish pollution cases (445 cases) that "riparians have a legal right to discharge wastes into watercourses, provided the discharge is reasonable with respect to other riparian uses and provided a private or public nuisance is not created or maintained."<sup>122</sup> Because an underground stream is a concentration of moving groundwater either easily traceable or ascertainable from the surface or known to the user,<sup>123</sup> the problem of being unable to anticipate the effects of

119. *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 20 So. 780 (1896) (reasonable use formulation of riparian rights); *Kevil v. Princeton*, 118 S.W. 363 (Ky. 1909) (by implication); *Good v. Altoona*, 162 Pa. 493, 29 A. 741 (1894) (natural flow formulation).

120. See note 84 *supra*.

121. See cases listed in App. A, Pt. C *infra*.

There is also one case holding that negligence law is applicable to pollution of underground streams. See case listed in App. A, Pt. B *infra*.

122. Davis, *Water Pollution Litigation* 780.

123. The following groundwater pollution cases have defined an underground stream.

*Concentration of moving groundwater*: This is my own definition which reconstrues, in a modern hydrological concept, the old common-law definition of an underground stream as encompassing a regular and constant flow within a permanent defined channel.

*Regular and constant flow*: *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 600, 20 So. 780, 784 (1896); *Easton v. State*, 153 Misc. 395, 396, 275 N.Y.S. 119, 120 (Ct. Cl. 1934), *modified*, 245 App. Div. 439, 283 N.Y.S. 809 (1936), *aff'd mem.*, 271 N.Y. 507, 2 N.E.2d 669 (1936); *Thompson v. Board of Educ.*, 124 Misc. 840, 842, 209 N.Y.S. 362, 364 (Sup. Ct. 1925); *Dillon v. Acme Oil Co.*, 40 Hun 565, 569, 2 N.Y.S. 289, 291 (Sup. Ct. 1888).

*Permanent and defined channel*: *Killian v. Killian*, 175 Ala. 224, 231, 57 So. 825, 828 (1912); *Bellevue Cemetery Co. v. McEvers*, 168 Ala. 535, 544, 53 So. 272, 275 (1910); *Brown v. Illius*, 25 Conn. 583, 594 (1857) (dissent); *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 594, 600, 20 So. 780, 783, 784 (1896); *North Ga. Petroleum Co. v. Lewis*, 128 Ga. App. 653, —, 197 S.E.2d 437, 439 (1973) (dictum); *United Fuel Gas Co. v. Sawyers*, 259 S.W.2d 466, 467 (Ky. 1953); *Kinnaird v. Standard Oil Co.*, 89 Ky. 468, 471, 12 S.W. 937, 938 (1890); *Upjohn v. Board of Health of Richland*, 46 Mich. 542, 549, 9 N.W. 845, 848 (1881); *Easton v. State*, 153 Misc. 395, 396, 275 N.Y.S. 119, 120 (Ct. Cl. 1934), *modified*, 245 App. Div. 439, 283 N.Y.S. 809 (1936), *aff'd mem.*, 271 N.Y. 507, 2 N.E.2d 669 (1936); *Thompson v. Board of Educ.*, 124 Misc. 840, 842, 209 N.Y.S. 362, 364 (Sup. Ct. 1925); *Dillon v. Acme Oil Co.*, 49 Hun 565, 569, 2 N.Y.S. 289, 291 (Sup. Ct. 1888); *Bayer v. Nello L. Teer Co.*, 256 N.C. 509, 517, 124 S.E.2d 552, 558 (1962); *Good v. Altoona*, 162 Pa. 493, 498, 29 A. 741, 741 (1894); *Collins v. Chartiers Valley Gas Co.*, 131 Pa. 143, 158, 18 A. 1012, 1013 (1890); *Eidemiller v. Keystone Coal & Coke Co.*, 15 Pa. D. & C. 759, 765, 17 West. 157, 169 (C.P. 1930); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 417, 173 A. 627, 630 (1934); *Jones v. Highland Memorial Park*, 242 S.W.2d 250, 252 (Tex. Civ. App. 1951); *Ballard v. Tomlinson*, 29 Ch. D. 115, 125 (C.A. 1885) (per Lindley, L.J.).

discharging wastes into an underground stream does not face the riparian as it does the overlying landowner discharging wastes into percolating groundwater. Therefore, there is no reason why the surface watercourse pollution rule stated above should not apply with equal force to pollution of underground streams. The cases are too few to ascertain whether the courts have acted similarly in the two situations.

## VII. DEFENSES

### A. Comparative Convenience Doctrine

Courts frequently have applied the comparative convenience doctrine *de facto*<sup>124</sup> to surface watercourse pollution cases, regardless of whether they

*Easily traceable or ascertainable:* *Brown v. Illius*, 25 Conn. 583, 594 (1857) (dissent); *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 600, 20 So. 780, 784 (1896); *Good v. Altoona*, 162 Pa. 493, 498, 29 A. 741, 741 (1894); *Collins v. Chartiers Valley Gas Co.*, 131 Pa. 143, 158, 18 A. 1012, 1013 (1890); *Eidemiller v. Keystone Coal & Coke Co.*, 15 Pa. D. & C. 759, 765, 17 West. 157, 169, (C.P. 1930); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 417, 173 A. 627, 630 (1934).

*From the surface:* *United Fuel Gas Co. v. Sawyers* 259 S.W.2d 466, 467 (Ky. 1953).

*Known to the user:* *Killian v. Killian*, 175 Ala. 224, 231, 57 So. 825, 828 (1912); *Brown v. Illius*, 25 Conn. 583, 594 (1857) (dissent); *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 600, 20 So. 780, 784 (1896); *United Fuel Gas Co. v. Sawyers*, 259 S.W.2d 466, 467 (Ky. 1953); *Easton v. State*, 153 Misc. 395, 396, 275 N.Y.S. 119 (Ct. Cl. 1934), *modified*, 245 App. Div. 439, 283 N.Y.S. 809 (1936), *aff'd mem.*, 271 N.Y. 507, 2 N.E.2d 669 (1936); *Thompson v. Board of Educ.*, 124 Misc. 840, 842, 209 N.Y.S. 362, 364 (Sup. Ct. 1925); *Dillon v. Acme Oil Co.*, 49 Hun 565, 569, 2 N.Y.S. 289, 291 (Sup. Ct. 1888); *Bayer v. Nello L. Teer Co.*, 256 N.C. 509, 517, 124 S.E.2d 552, 558 (1962); *Collins v. Chartiers Valley Gas Co.*, 131 Pa. 143, 158, 18 A. 1012, 1013 (1890); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 417, 173 A. 627, 630 (1934).

On the definition of underground streams, see generally 6A AMERICAN LAW OF PROPERTY § 28.65 (A.J. Casner ed. 1954); RESTATEMENT (SECOND) OF TORTS Explanatory Notes § 858A at 154; § 858 A(b), comment e (Tent. Draft No. 17, 1971); MALONEY, PLAGER & BALDWIN, WATER LAW AND ADMINISTRATION: THE FLORIDA EXPERIENCE 150-54 (1968); W. HUTCHINS, SELECTED PROBLEMS IN THE LAW OF WATER RIGHTS IN THE WEST 152-55 (U.S. Dep't Agric. Misc. Pub. No. 418, 1942, reprint 1971); Hanks & Hanks, *The Law of Water in New Jersey: Groundwater*, 24 RUTGERS L. REV. 621, 626-27 (1970); Maloney & Plager, *Florida's Ground Water: Legal Problems in Managing a Precious Resource*, 21 U. MIAMI L. REV. 751, 763-67 (1967); Comment, *The Law of Underground Water; A Half-Century of Huber v. Merkel*, 1953 Wisc. L. REV. 491, 499; Thomas, *Water Law—Groundwater Rights in Missouri—A Need for Clarification*, 37 Mo. L. REV. 357, 358 (1972).

Several hydrologists have argued that there is no such things as an underground stream with a defined channel and definite direction except in rare instances. See e.g., Piper & Thomas, *Hydrology and Water Law: What is Their Future Common Ground?*, UNIVERSITY OF MICHIGAN LAW SCHOOL, WATER RESOURCES AND THE LAW 7, 10-11 (1958); Tolman & Stipp, *Analysis of Legal Concepts of Subflow and Percolating Waters*, 21 ORE. L. REV. 113, 121-24, 130-32 (1942). The correlation between the hydrologic understanding of groundwater movement and the legal concept of underground streams is an important matter which warrants investigation.

124. Davis, *Water Pollution Litigation* 762-68, 807-09.



formally accept or reject it. They have used it both for determining the reasonableness of a waste discharge under riparian rights law and for fashioning appropriate relief.<sup>125</sup>

For the most part the doctrine has not been considered by the courts in groundwater pollution cases. Only four percolating groundwater pollution cases have specifically mentioned the comparative convenience doctrine. Three expressly rejected it in favor of private nuisance theory (two of the three granted relief to plaintiff<sup>126</sup> and the third favored plaintiff<sup>127</sup>). These cases involved pollution of either domestic or industrial water supplies. The fourth case favorably recited the comparative convenience doctrine in jury instructions which were approved per curiam.<sup>128</sup>

### B. Prescription

A riparian can acquire a prescriptive right against downstream riparians to discharge wastes into a surface watercourse either in abrogation of riparian rights or to maintain a nuisance.<sup>129</sup> This ought to be true for discharging wastes into groundwater aquifers as against the rights of neighboring landowners.

One percolating groundwater pollution case expressly stated that such a prescriptive right can be acquired, although it did not find that the waste discharger had acquired it.<sup>130</sup> One other case expressly refused to rule on this question.<sup>131</sup>

### C. Custom of the Industry

Defendants in several negligence cases have asserted that their activities could not be considered negligent because they were following the custom of the industry. The percolating groundwater cases uniformly have rejected that asserted ground for nonliability. The courts point out that the custom itself may be negligent.<sup>132</sup> Also, in the case of mineral and oil lessees, they

125. See generally RESTATEMENT OF TORTS §§ 826-31 (1939).

126. *Elliott v. Ferguson*, 103 S.W. 453, 454 (Tex. Civ. App. 1907) (Q1b), *rev'd on other grounds* 101 Tex. 317, 107 S.W. 51 (1908) (Q1i<sup>o</sup>: cemetery allegedly would pollute domestic well); *Ballard v. Tomlinson*, 29 Ch. D. 115, 127 (C.A. 1885) (per Lindley, L.J.) (D5ab: factory privy wastes discharged into well polluted brewery well).

127. *Schroll v. George Brown's Sons, Inc.*, 41 *Lanc. Law Rev.* 297, 300 (Pa. C.P. 1928) (L1c: dye wastes from cesspool polluted domestic spring).

128. *Wheeler v. Fisher Oil Co.*, 6 Ohio N.P. 309, 311, 9 Ohio Dec. 294 (1899) (G1d: oil well salt water discharged into stream percolated to and polluted domestic well).

129. *Davis, Water Pollution Litigation* 758-59.

130. *Millington v. Griffiths*, 30 L.T.R.(n.s.) 65, 67-68 (C.P. 1874) (K1a: gas plant residues polluted domestic well).

131. *Hodge v. City of Marmaduke*, — Ark. —, 503 S.W.2d 174, 176 (1973).

132. *Iverson v. Vint*, 243 Iowa 949, 951, 54 N.W.2d 494, 495 (1952) (dictum); *Gulf Oil Corp. v. Alexander*, 156 Tex. 455, 455, 295 S.W.2d 901, 901 (1956), *rev'g on this point by implication* 291 S.W.2d 792, 794 (Tex. Civ. App. 1956); *Brown v. Lundell*, 162 Tex. 84, 90-91, 344 S.W.2d 863, 867-68 (1961), *aff'g* 334 S.W.2d 616, 619 (Tex. Civ. App. 1960).

have pointed out that the mineral owner's right only extends to making reasonable use of as much of the surface as is reasonably necessary to recover the mineral.<sup>133</sup> That interpretation of the mineral owner's right to use the surface does not allow the custom of the industry to be the sole criterion of negligence.

#### VIII. HYDROLOGIC CONNECTION BETWEEN GROUNDWATER AND SURFACE WATERCOURSE

Most eastern states follow either the absolute ownership or "reasonable use" rules in cases involving diversion of percolating groundwater.<sup>134</sup> Both permit non-malicious diversions of percolating groundwater for use on the overlying land without incurring liability.<sup>135</sup> In the general situation not involving streamside wells, those states generally do not recognize the hydrologic connection between percolating groundwater and surface watercourses. Where diversions from an ordinary well (not a high capacity well) reduce the amount of water flowing in a stream or where a stream diversion depletes the percolating groundwater supply, courts in those states tend to deny relief.<sup>136</sup> Only in the few eastern states following the eastern correlative rights rule, which employs a comparative reasonableness test,<sup>137</sup> are the courts likely to recognize the hydrologic connection between percolating groundwater and surface watercourses.<sup>138</sup>

By contrast, most western states utilize the prior appropriation doctrine in allocating percolating groundwater as well as water in surface watercourses.<sup>139</sup> Superimposed on prior appropriation in California and Utah is a so-called "correlative rights" rule which requires pro rata reductions in diversions to total amounts equal to annual recharge of the aquifer.<sup>140</sup> These western states generally recognize the hydrologic connection between percolating groundwater and surface watercourses and have evolved doctrines protecting watercourse subflow and tributary flow.<sup>141</sup>

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133. *General Crude Oil Co. v. Aiken*, 162 Tex. 104, 106, 344 S.W.2d 668, 669 (1961), *aff'g on this point by implication* 335 S.W.2d 229, 231 (Tex. Civ. App. 1960); *Brown v. Lundell*, 162 Tex. 84, 89, 344 S.W.2d 863, 866 (1961), *aff'g* 334 S.W.2d 616, 619 (Tex. Civ. App. 1960).

134. Ten jurisdictions follow the absolute ownership rule: Connecticut, the District of Columbia, Georgia, Illinois, Indiana, Massachusetts, Mississippi, Rhode Island, Vermont and Wisconsin. Twelve states follow the "reasonable use" rule: Alabama, Iowa, Kentucky, Maine, Maryland, Michigan, New Jersey, New York, North Carolina, Ohio, Pennsylvania and West Virginia. *See* representative citations in Davis, *Wells and Streams* 233-34 nn.140-41.

135. *Id.* at 201-03.

136. *Id.* at 233.

137. Seven states follow the eastern correlative rights rule: Arkansas, Delaware, Florida, Minnesota, Missouri, New Hampshire and Tennessee. *See* representative citations in *id.* at 234 n.142. The rule is described at *id.* at 203-04.

138. *Id.* at 234.

139. *Id.* at 204.

140. *Id.* at 203.

141. *Id.* at 222-27.

The eastern states would be expected to deny relief when waste discharged into one class of water pollutes a water supply drawn from another interconnected class of water, because they generally refuse to recognize the hydrologic connection. The western states would be expected to grant relief in the same situation because they generally do recognize the hydrologic connection. The eastern cases do not substantiate the expectation—relief is granted frequently—and the western cases do substantiate the expectation.

Two eastern cases do support the "expected" rule. They refused to grant relief for pollution of watercourses by wastes percolating into the watercourse. Both are Pennsylvania cases involving acid mine drainage, and are particularly favorable to the coal mining industry.<sup>142</sup> The earlier and precedent establishing one of the two has been thoroughly discredited in other jurisdictions.<sup>143</sup> Both were decided on the basis of riparian rights law and the comparative convenience doctrine; subsequent decisions have limited both to acid mine drainage by gravity flow.<sup>144</sup> Indeed two other Pennsylvania cases have granted relief for pollution of watercourses by polluted groundwater percolating to them. One granted relief for a public nuisance created by acid mine drainage polluting a public water supply.<sup>145</sup> The other granted relief to abate a private nuisance created by dynamite manufacturing wastes polluting a domestic and livestock well.<sup>146</sup>

Three eastern cases, which are not good precedent, have denied relief for pollution of wells by oil well salt water or acid mine drainage discharged into surface watercourses which percolated from it to the wells. One is a per curiam approval of a jury instruction and the basis for decision is not discussed.<sup>147</sup> In another relief was denied because it was unclear whether the plaintiff owned the land on which the polluted well was located.<sup>148</sup> In the third, relief was denied because proximate cause was not established.<sup>149</sup> However, it is not clear that relief would have been denied in these cases if an adequate factual case had been established. Much more important and better precedent is the one eastern case granting relief for wells polluted in the above described manner.<sup>150</sup> It involved oil well salt water and was based on private nuisance law.

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142. *Pennsylvania Coal Co. v. Sanderson*, 113 Pa. 126, 6 A. 453 (1886); *Mountain Water Supply Co. v. Sagamore Coal Co.*, 3 Pa. D. & C. 187 (C.P. 1922). See also *Eidemiller v. Keystone Coal & Coke Co.*, 15 Pa. D. & C. 759, 17 West. 157 (C.P. 1930), applying the *Sanderson* acid mine drainage rule to direct pollution of percolating groundwater.

143. See citations in Davis, *Wells and Streams* 221 n.107.

144. See principal cases cited note 113 *supra*, and *Di Giacinto v. New Jersey Zinc Co.*, 26 Leh. L.J. 247 (Pa. C. P. 1955).

145. *Pennsylvania R.R. v. Sagamore Coal Co.* 281 Pa. 233, 126 A. 386 (1924).

146. *Rarick v. Smith*, 17 Pa. County Ct. 627, 5 Pa. Dist. 530 (C.P. 1896).

147. *Wheeler v. Fisher Oil Co.*, 6 Ohio N.P. 309, 9 Ohio Dec. 294 (1899).

148. *Haynor v. Excelsior Springs Light, Power, Heat & Water Co.*, 129 Mo. App. 691, 108 S.W. 580 (K.C. Ct. App. 1908).

149. *Panther Coal Co. v. Looney*, 185 Va. 758, 40 S.E.2d 298 (1946).

150. *Cities Serv. Oil Co. v. Merritt*, 332 P.2d 677 (Okla. 1958).

The best that can be said about these eastern cases is that the eastern courts may be less reluctant to grant relief where polluted water crosses the boundary from one class of water to another than they are to grant relief for injurious diversions in the same situation.

Three western cases involving pollution of wells by water percolating from a stream into which the waste had been discharged recognized the hydrologic connection and granted relief. The source of pollution in each was different. Two were decided under nuisance law.<sup>151</sup> The other applied negligence law.<sup>152</sup> One such western case denied relief for failure of proof.<sup>153</sup> A western case involving pollution of tributary flow denied a temporary injunction pending trial.<sup>154</sup> Neither of them indicated any reluctance to recognize the hydrologic connection in appropriate pollution cases.

Three cases recognizing the hydrologic connection were decided under surface watercourse allocation law. One involved pollution of an underground stream tributary by a surface watercourse.<sup>155</sup> Another case involved pollution of an underground stream leading from a surface watercourse.<sup>156</sup> Both were decided on the basis of the natural flow theory which is utilized in a small minority of riparian rights states in pollution cases.<sup>157</sup> The third case involved pollution of a well by oil well salt water percolating from a dry creek where it had been discharged.<sup>158</sup> It was decided on the basis of the reasonable use theory which is utilized in the majority of those states.

#### IX. CONCLUSION

This article has explored the rules which the courts have used in cases involving pollution of groundwater. Factual and doctrinal analysis reveals several interpretations of the cases.

First, percolating groundwater allocation rules are virtually never used in pollution cases. Instead, courts usually confine their choice to negligence law or private nuisance law.

Second, negligence law usually is applied in two types of situations: (1) It is applied where the polluting activity must be conducted in the particular location because it involves exploitation of a resource located

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151. *Klassen v. Central Kan. Coop. Creamery Ass'n*, 160 Kan. 697, 165 P.2d 601 (1946) (creamery wastes overloading city treatment plant); *Atkinson v. Herington Cattle Co.*, 200 Kan. 298, 436 P.2d 816 (1968) (feedlot drainage).

152. *Cities Serv. Gas Co. v. Eggers*, 186 Okla. 466, 98 P.2d 1114 (1940) (oil well salt water).

153. *Martin v. Continental Oil Co.*, 141 Kan. 37, 39 P.2d 917 (1935) (oil well salt water).

154. *Farb v. Theis*, 240 S.W.2d 290 (Tex. Civ. App. 1923) (cemetery seepage).

155. *Hodgkinson v. Ennor*, 4 B. & S. 229, 122 Eng. Rep. 446 (Q.B. 1863).

156. *Good v. Altoona*, 162 Pa. 493, 29 A. 741 (1894).

157. *Davis, Water Pollution Litigation* 746.

158. *Sun Co. v. Gibson*, 295 F. 118 (5th Cir. 1923) (Tex.) Dry intermittent streams are considered to be watercourses in the western states.

there. Oil and gas and mineral recovery operations are typical examples. (2) Negligence law is also applied when the activity normally is not a source of pollution and the pollution which does occur may or may not have been the result of an unforeseeable event. Oil pipelines and gas mains are typical examples.

Third, nuisance law usually is applied in two situations: (1) It is applied when the activity need not be conducted in a particular location (and therefore has no necessary relationship to the land) and it normally is a source of pollution or has a propensity to cause pollution. Oil refineries, gas manufacturing plants and cemeteries are typical examples. (2) Private nuisance law is applied where the polluter refuses to abate a source of pollution once he is notified of its injurious consequences. Negligence law is applied if the polluter either abates the pollution at that time or makes a good faith attempt to abate. But the courts apply negligence and private nuisance law about equally if the polluter merely fails to abate the pollution once he becomes aware of its injurious consequences.

Fourth, the following factors do not affect the choice between negligence and private nuisance law: (1) the classification of plaintiff and defendant as surface owner and mineral interest owner on the one hand and as persons without privity on the other hand; (2) the predominant economic activity in the jurisdiction; and (3) the classification of the injury as being a traditional nuisance or not.

Fifth, strict liability has been imposed in some jurisdictions by case decision or statute, principally with respect to the pollution caused by the mining, oil and gas, and manufactured gas industries.

Sixth, the eastern courts, in percolating groundwater cases, tend to recognize the hydrologic relationship between surface watercourses and groundwater and to grant relief for pollution of one by an activity affecting the other, slightly more often than they do in diversion cases of that type. The western courts generally recognize the hydrologic connection and grant relief in most cases, both pollution and diversion.

These common law rules concerning groundwater pollution are no longer appropriate to the needs of the time. With the demand for use of groundwater growing rapidly, the liability imposed for its pollution should be broadened to the limits presently applied to pollution of surface watercourses. Under no circumstances should the courts continue to permit the creation and maintenance of some nuisances without liability. Today polluting activities which have a necessary relationship to the land, such as mines and oil wells, and activities which do not normally cause pollution, such as a pipeline, are permitted to create a nuisance without liability provided there is no negligence. This is no longer a viable rule. Also, there should be liability even when the polluter promptly abates the source of the pollution upon notice of the injurious consequences of his activity. In many such cases, the effects of the initial pollution may linger

for years.<sup>159</sup> Liability for nuisance should always be imposed regardless of the predictability of the pollution and regardless of the relationship of the polluting activity to its location. Such liability presently exists for polluting activities affecting surface watercourses and should exist for polluting activities affecting groundwater.

A polluter should not be absolved from liability just because he may not be able to anticipate the movement of the polluted groundwater he created. This defense should not be recognized for several reasons. First, the hydrology of groundwater movement is much better understood now than it was when many of the early groundwater pollution cases were decided.<sup>160</sup> Even though precise mapping of groundwater movement in any particular location is still expensive,<sup>161</sup> it is within the reach of any major waste producer which proposes to inject wastes underground. Disposal wells need porous formations for successful waste injection and the appropriate hydrologic tests would insure a successful injection well. Therefore, persons deliberately disposing of wastes underground ought to be required to act in accordance with the information gained by such testing regarding the movement of the injected wastes and their probable effects on neighboring groundwater uses. If they do not make such tests, they should be charged with the information they would have gained had they made them. Second, it is generally known now that liquids placed on the ground will seep into the soil and may enter the body of groundwater percolating beneath the surface. Persons causing groundwater pollution in ways, other than by deliberate underground disposal, should be charged with such knowledge and should not be insulated from liability for groundwater pollution by claiming that they know nothing more about groundwater movement than was known in 1843 when *Acton v. Blundell*<sup>162</sup> was decided. Although a

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159. Pollution lingered long after abatement of the polluting source in the following cases: *Sinclair Ref. Co. v. Bennett*, 123 F.2d 884 (6th Cir. 1941) (Tenn.) (service station gasoline leak); *Alliston v. Shell Petroleum Corp.*, 143 Kan. 327, 55 P.2d 396 (1936) (deep well injection of oil well salt water); *Spencer v. Derby Oil Co.*, 140 Kan. 657, 37 P.2d 991 (1934) (oil pipeline leak); *Nelson v. C & C Plywood Corp.*, 154 Mont. 414, 465 P.2d 314 (1970) (phenols in glue wastes discharged in drainage ditch); *Pickens v. Harrison*, 151 Tex. 562, 252 S.W.2d 575, *modifying* 246 S.W.2d 316 (Tex. Civ. App. 1952) (oil well salt water in disposal pit); *Geochemical Surveys v. Dietz*, 340 S.W.2d 114 (Tex. Civ. App. 1960) (oil well salt water in disposal pit); *Continental Oil Co. v. Berry*, 52 S.W.2d 953 (Tex. Civ. App. 1932) (service station gasoline leak).

160. The science of hydrology was formulated about 1923 and the current theory of groundwater movement was first studied extensively about 1940. O. MEINZER, *THE OCCURRENCE OF GROUND WATER IN THE UNITED STATES* (1923); O. MEINZER, *OUTLINE OF GROUND WATER HYDROLOGY, WITH DEFINITIONS* (1923); Hubbert, *The Theory of Ground-Water Motion*, 48 J. GEOL. 785 (1940).

161. The two major groundwater movement testing methods involve (1) drilling test wells and measuring change of water levels before, during and after pumping, and (2) injection of tracing dyes or radioactive materials. See Davis, *Wells and Streams* 235 n.144 and treatises cited therein.

162. 12 M. & W. 324, 152 Eng. Rep. 1223 (Ex. 1843). This was the first case to set forth the absolute ownership rule. It relied heavily on the landowner's inability to determine what happens to water after it seeps into the ground.

particular polluter might still legitimately claim he could not predict particular injurious consequences of his activity, he can no longer claim legitimately that the polluting material vanished from the earth once it seeped beneath the surface. He knows it will go somewhere. Such a defense to nuisance liability is not recognized in surface watercourse and air pollution cases. Groundwater pollution cases should not recognize it either.<sup>163</sup>

Pollution of a groundwater aquifer may have pervasive effects both in terms of territorial extent and duration. With reliance on our groundwater supplies increasing, the old court-made rules concerning groundwater pollution are no longer adequate. I propose the following basis for liability in groundwater pollution cases.

(1) No person should be permitted to create or maintain a nuisance without liability. A nuisance contemplates traditional types of nuisances, such as pollution of domestic and livestock water supplies, poisoning of the soil and creation of odors affecting habitation or places of work. A nuisance also contemplates a refusal to abate an activity polluting groundwater after notice of substantial injurious consequences has been given.

(2) No person should be permitted to pollute groundwater as a result of a negligent act without liability.

(3) Where groundwater pollution causes an injury which does not constitute a nuisance and is not the result of negligence, liability should be imposed on the basis of the eastern correlative rights rule. This rule employs a comparative reasonableness test. The courts should consider the ability of the polluter to predict the injurious consequences in advance, the degree and duration of the injury, the difficulty of abating the polluting source, the willingness of the polluter to abate to a reasonable extent, and the comparative social and economic utility of the litigants' activities. These factors should affect both liability in the first instance and the degree of liability in the same manner they affect the reasonable use test employed in riparian rights and surface watercourse pollution cases. The advantage of this test is that the calculations which it requires can be adjusted to reflect both improving knowledge about groundwater hydrology and pollution in general and also known local conditions concerning groundwater movement and pollution.<sup>164</sup>

(4) Strict liability for escape of abnormally dangerous substances should be imposed where considered appropriate under court-made law or by statute.

These rules would restrain pollution of our groundwater resources to a greater extent than the present court-made rules do. They should obviate

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163. The most recent tentative revision of the *Restatement of Torts* would deny liability for non-intentional discharges which create nuisances. *RESTATEMENT (SECOND) OF TORTS* § 822 (Tent. Draft No. 16, 1970), discussed in text accompanying notes 86-104 *supra*.

164. This rule is compatible with the rule I proposed for groundwater diversions in Davis, *Wells and Streams* 236-38.

the need for tight statutory regulation of groundwater use in areas of moderate demand. They would more accurately reflect hydrologic principles. Lastly, they would more nearly equate groundwater pollution law and surface watercourse pollution law and would provide a common standard of behavior for users of the two major sources of water.

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## APPENDICES

### CODINGS FOR CASE CLASSIFICATION APPENDICES

#### A. *Fact situation coding:*

##### 1. SOURCE OF POLLUTION

- A: domestic sewage, septic tank, or cesspool
- B: sewage from city sewers
- C: effluent from city treatment plant
- D: domestic waste discharge from industrial plant or other collective source
- E: mining or mine drainage
- F: mine tailings or process washings
- G: oil and brine from oil wells
- H: leaks from refinery, distributor or large user
- I: leaks from pipelines or gas mains
- J: leaks from service stations or small users
- K: gas plant residues
- L: other industrial or chemical wastes
- M: farm animal wastes or feedlot drainage
- N: landfill, dirt or sand
- P: storm drainage
- Q: cemetery
- R: other or not stated

##### 2. RESULTS OF POLLUTION

- 1: domestic water supply affected
- 2: public water supply affected
- 3: livestock water supply affected
- 4: irrigation water supply affected
- 5: industrial or commercial water supply affected
- 6: odors interfered with habitation
- 7: odors interfered with industrial or commercial establishment

#### B. *Decision Coding:*

##### 1. JUDGMENT FOR PLAINTIFF

- a: damages granted
- b: injunction granted
- c: demurrer, motion to dismiss, or motion for directed verdict overruled

##### 2. JUDGMENT FOR DEFENDANT

- d: not entitled to relief under rule
- e: allegations not proved or causal connection not proved
- f: no damage or abatement achieved
- g: prescriptive right acquired
- h: comparative convenience
- i: procedural error
- j: evidentiary error
- k: other
- \*: defendant caused pollution

The coding from the above listing is inserted after each case citation in the following appendices. *E.g.*, *Cities Serv. Gas Co. v. Eggers*, 186 Okla. 466, 98 P.2d 1114 (1940) (G1a). "G1a" means brine from an oil well polluted a domestic well and damages were granted to plaintiff.



## APPENDIX A

UNDERGROUND STREAM CASES  
(Cases preceded by an asterisk \* applied  
those rules to acknowledged underground streams.)

*A. Surface Watercourse Rule*

Cases holding that surface watercourse pollution rules govern pollution of underground streams are listed below.

FLORIDA: \*Tampa Waterworks Co. v. Cline, 37 Fla. 586, 20 So. 780 (1896) (R2e: bathing pit allegedly would pollute municipal well) (reasonable use).

KENTUCKY: \*Kevil v. Princeton, 118 S.W. 363 (Ky. 1909) (by implication) (B2a: city sewage polluted public water supply).

NORTH CAROLINA: Masten v. Texas Co., 194 N.C. 540, 140 S.E. 89 (1927) (J1c: service station gasoline leak polluted domestic well).

PENNSYLVANIA: \*Good v. Altoona, 162 Pa. 493, 29 A. 741 (1894) (B1,3a: city sewage discharged into river polluted domestic and livestock springs fed by underground stream leaving river) (natural flow).

RHODE ISLAND: Rose v. Socony-Vacuum Corp., 54 R.I. 411, 173 A. 627 (1934) (dictum) (H1,3d: gasoline from refinery polluted domestic and livestock well) (reasonable use).

*B. Negligence Rule*

Cases holding that negligence rules apply to pollution of underground streams are listed below.

CONNECTICUT: Brown & Bros. v. Illius, 27 Conn. 84 (1858) (K5i: gas plant residues polluted industrial well).

*C. Nuisance Rule*

Cases holding that nuisance rules apply to pollution of underground streams are listed below.

CONNECTICUT: Swift & Co. v. Peoples Coal & Gas Co., 121 Conn. 579, 186 A. 629 (1936) (H7c: fuel oil from dealership travelled through groundwater to basement warehouse).

NORTH CAROLINA: Masten v. Texas Co., 194 N.C. 540, 140 S.E. 89 (1927) (by implication) (J1c: service station gasoline leak polluted domestic well).

TENNESSEE: Love v. Nashville Agricultural & Normal Institute, 146 Tenn. 550, 243 S.W. 304 (1922) (D5b: school sewage discharged into underground channel polluted a medicinal bottling works spring).

## APPENDIX B

PERCOLATING GROUNDWATER CASES

*A. Percolating Groundwater Allocation Rules*

Listed below are cases holding that percolating groundwater allocation rules concerning diversions also govern pollution of percolating groundwater and negligence or nuisance are not mentioned as exceptions to the rule.

1. ABSOLUTE OWNERSHIP RULE

INDIANA: Greencastle v. Hazelett, 23 Ind. 186 (1864) (Q1i: cemetery seepage allegedly would pollute domestic well).

2. REASONABLE USE RULE

None.

3. EASTERN CORRELATIVE RIGHTS RULE

VIRGINIA: Panther Coal Co. v. Looney, 185 Va. 758, 40 S.E.2d 298 (1946) (E1e: acid mine wastes discharged into stream polluted its water and percolation from it polluted domestic well).

4. WESTERN "CORRELATIVE RIGHTS" RULE

None.

## 5. PRIOR APPROPRIATION RULE

None.

B. *Negligence Exception to Allocation Rules*

Listed below are cases holding that liability is imposed for negligent activities causing percolating groundwater pollution, and that in the absence of negligence, liability is determined on the basis of the percolating groundwater allocation rules.

## 1. ABSOLUTE OWNERSHIP RULE

CONNECTICUT: *Brown & Bros. v. Illius*, 27 Conn. 84 (1858) (K5i: gas plant residues polluted industrial well).

MICHIGAN: *Upjohn v. Board of Health of Richland*, 46 Mich. 542, 9 N.W. 845 (1881) (Q1e: cemetery seepage allegedly would pollute domestic well).

NEW YORK: *Dillon v. Acme Oil Co.*, 49 Hun 565, 2 N.Y.S. 289 (Sup. Ct. 1888) (H1d: refinery residues polluted domestic well); *Thompson v. Board of Educ.*, 124 Misc. 840, 209 N.Y.S. 362 (Sup. Ct. 1925) (D3d: school cesspool polluted livestock well); *Easton v. State*, 153 Misc. 395, 275 N.Y.S. 119 (Ct. Cl. 1934), *modified*, 245 App. Div. 439, 283 N.Y.S. 809, *aff'd mem.*, 271 N.Y. 507, 2 N.E.2d 669 (1936) (P1d: street storm drainage discharged onto land overlying aquifer polluted domestic spring); *Phillips v. Sun Oil Co.*, 307 N.Y. 328, 121 N.E.2d 249 (1954) (by implication) (J1e: service station gasoline leak allegedly polluted domestic well).

RHODE ISLAND: *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 173 A. 627 (1934) (H1,3d: gasoline from refinery polluted domestic and livestock well); *Rose v. Standard Oil Co.*, 56 R.I. 272, 185 A. 251 (1936) (H1,3c: same facts as above).

## 2. REASONABLE USE RULE

GEORGIA: *North Ga. Petroleum Co. v. Lewis*, 128 Ga. App. 653, 197 S.E.2d 437 (1973) (J1,3a: service station gasoline leak polluted domestic and livestock well).

KENTUCKY: *United Fuel Gas Co. v. Sawyers*, 259 S.W.2d 466 (Ky. 1953) (G1d: gas well leak polluted domestic well).

NORTH CAROLINA: *Bayer v. Nello L. Teer Co.*, 256 N.C. 509, 124 S.E.2d 552 (1962) (E1d: quarry dewatering lowered water table in and caused sea water to intrude by percolation into domestic well).

PENNSYLVANIA: *Collins v. Chartiers Valley Gas Co.*, 131 Pa. 143, 18 A. 1012 (1890) (G1c: gas well salt water polluted domestic well); *Collins v. Chartiers Valley Gas Co.*, 139 Pa. 111, 21 A. 147 (1891) (G1a: same facts as above); *Schlichtkrull v. Mellon-Pollock Oil Co. (No. 1)*, 301 Pa. 553, 152 A. 829 (1930) (G1a: oil well salt water polluted domestic well); *Eidemiller v. Keystone Coal & Coke Co.*, 15 Pa. D. & C. 759, 17 West. 157 (C.P. 1930) (E1d: mine drainage polluted domestic spring).

Pennsylvania abandoned the common law negligence rule in 1954 and since has followed the RESTATEMENT rule.

## 3. EASTERN CORRELATIVE RIGHTS RULE

KENTUCKY: *North-East Coal Co. v. Hayes*, 244 Ky. 639, 51 S.W.2d 960 (1932) (E1,3d: mining polluted domestic and livestock well) (*but see* *United Fuel Gas Co. v. Sawyers*, *supra.*).

NEW JERSEY: *P. Ballantine & Sons v. Public Serv. Corp.*, 86 N.J.L. 331, 91 A. 95 (1914) (K5a: gas plant residues polluted brewery well).

## 4. WESTERN "CORRELATIVE RIGHTS" RULE

None.

## 5. PRIOR APPROPRIATION

None.

C. *Negligence*

Listed below are cases applying negligence rules to pollution of percolating groundwater without mentioning application of percolating groundwater allocation rules in the absence of negligence.

- ALABAMA: *H.W. Peerson Drilling Co. v. Scoggins*, 261 Ala. 284, 74 So. 2d 450 (1954) (G1a: oil well casing leak polluted domestic well).
- ALASKA: *Trillingham v. Alaska Housing Authority*, 109 F. Supp. 924 (D. Alas. 1953) (D1i: housing development sewage polluted domestic well).
- ARKANSAS: *Magnolia Petroleum Co. v. Smith*, 152 Ark. 326, 238 S.W. 56 (1922) (H1i<sup>o</sup>: distributor gasoline leak polluted domestic well); *O'Brien v. Primm*, 243 Ark. 186, 419 S.W.2d 323 (1967) (G1a: oil well salt water in disposal pit polluted domestic well after hydraulic well fracturing operation disturbed intervening strata).
- CALIFORNIA: *Donahue v. Stockton Gas & Elec. Co.*, 6 Cal. App. 276, 92 P. 196 (1907) (K1c: gas plant residues and vapors polluted domestic well, poisoned soil and created noxious odors in house).
- COLORADO: *Adams v. Weingarten*, 156 Colo. 402, 399 P.2d 774 (1965) (M1e: farmland seepage allegedly polluted domestic well).
- CONNECTICUT: *Brown v. Illius*, 25 Conn. 583 (1857) (K5a: gas plant residues polluted industrial well); *Swift & Co. v. Peoples Coal & Gas Co.*, 121 Conn. 579, 186 A. 629 (1936) (dictum) (H7c: fuel oil from dealership travelled through groundwater to basement warehouse); *Kostyal v. Cass*, 163 Conn. 92, 302 A.2d 121 (1972) (J1a: heating oil storage tank leak polluted domestic well).
- FLORIDA: *Pensacola Gas Co. v. Pebley*, 25 Fla. 381, 5 So. 593 (1889) (K1a: gas plant residues polluted domestic well).
- ILLINOIS: *Phoenix v. Graham*, 349 Ill. App. 326, 110 N.E.2d 669 (1953) (as between holders of surface and mineral interests) (G1i<sup>o</sup>: salt water leak from plugged oil well polluted domestic well); *Van Brocklin v. Gudema*, 50 Ill. App. 2d 20, 199 N.E.2d 457 (1964) (M1a: manure pile seepage polluted domestic well).
- KANSAS: *Polzin v. National Co-op. Refinery Ass'n*, 175 Kan. 531, 266 P.2d 293 (1954) (G1c: salt water injected by disposal well leaked past improperly cased oil well and polluted domestic well).
- KENTUCKY: *Long v. Louisville & N.R.R.*, 128 Ky. 26, 107 S.W. 203 (1908) (R1c: buried cow polluted domestic well); *Wynn v. Wilson*, 252 Ky. 352, 67 S.W.2d 483 (1934) (G3e: salt water from plugged oil well allegedly polluted livestock well).
- LOUISIANA: *Monroe "66" Oil Co. v. Hightower*, 180 So. 2d 8 (La. App. 1965) (J5a: service station gasoline leak from storage tank installed by distributor polluted station owner's restaurant well).
- MAINE: *Woodward v. Aborn*, 35 Me. 271 (1853) (M1a: manure pile seepage polluted domestic well).
- MASSACHUSETTS: *Fiocciello v. Spencer Gas Co.*, 261 Mass. 77, 158 N.E. 263 (1927) (I1c: gas main leak killed trees and polluted domestic well); *Gauvreau v. Gulf Ref. Co.*, 288 Mass. 54, 192 N.E. 220 (1934) (J1d: service station gasoline leak polluted domestic well).
- MICHIGAN: *Joldersma v. Muskegon Dev. Co.*, 286 Mich. 520, 282 N.W. 229 (1938) (G1e: oil well salt water allegedly polluted domestic spring and poisoned soil).
- MISSISSIPPI: *Magnolia Petroleum Co. v. Williams*, 222 Miss. 538, 76 So. 2d 365 (1954) (G1,3e: oil well salt water discharged into disposal pit allegedly polluted domestic and livestock well).
- MISSOURI: *Haynor v. Excelsior Springs Light, Power, Heat & Water Co.*, 129 Mo. App. 691, 108 S.W. 580 (K.C. Ct. App. 1908) (dictum) (H1k: oil and grease escaping into creek polluted domestic well); *Shelley v. Ozark Pipe Line Corp.*, 247 S.W. 472 (Spr. Mo. App. 1923) (I1a: pipeline leak polluted domestic well); *Chapman v. American Creosoting Co.*, 220 Mo. App. 419, 286 S.W. 837 (Spr. Ct. App. 1926) (L1,3i: creosote escaping into ditch saturated ground and polluted domestic well); *Shelley v. Ozark Pipe Line Corp.*, 2 S.W.2d 115 (Spr. Mo. App. 1927), *rev'd on other grounds*, 327 Mo. 238, 37 S.W.2d 518 (1931) (I1k: same facts as above); *Ozark Pipe Line Corp. v. Decker*, 32 F.2d 66 (8th Cir. 1929) (I1,3j: oil pipeline leak polluted domestic and livestock well); *Bollinger v. Mungle*, 175 S.W.2d 912 (St. L. Mo. App. 1943) (J1d: service station gasoline

leak polluted domestic well); *Reddick v. Pippin*, 421 S.W.2d 225 (Mo. 1967) (C1e: sewage lagoon overflow allegedly polluted domestic well).

NEW JERSEY: *P. Ballantine & Sons v. Public Serv. Corp.*, 76 N.J.L. 358, 70 A. 167 (1908) (K5a: gas plant residues polluted brewery well); *De Feo v. People's Gas Co.*, 6 N.J. Misc. 790, 142 A. 756 (Sup. Ct. 1928) (I1a: gas main leak polluted domestic well).

NEW YORK: *Elsley v. Adirondack & St. L.R.R.*, 97 Misc. 273, 161 N.Y.S. 391 (Sup. Ct. 1916) (N1,3b: embankment of pyrite tailings polluted domestic and livestock spring); *Easton v. State*, 245 App. Div. 439, 283 N.Y.S. 809 (1936), *modifying* 153 Misc. 395, 275 N.Y.S. 119 (Ct. Cl. 1934), *aff'd mem.*, 271 N.Y. 507, 2 N.E.2d 669 (1936) (P1d: street storm drainage discharged onto land overlying aquifer polluted domestic spring).

OHIO: *Wheeler v. Fisher Oil Co.*, 6 Ohio N.P. 309, 9 Ohio Dec. 294 (1899) (jury instruction) (G1d: oil well salt water discharged into stream percolated to and polluted domestic well); *Sinclair Ref. Co. v. Keister*, 64 F.2d 537 (6th Cir. 1933) (J1a: service station gasoline leak polluted domestic well).

OKLAHOMA: *Pine v. Rizzo*, 186 Okla. 35, 96 P.2d 17 (1939) (G1i: oil well salt water polluted domestic well); *Cities Serv. Gas Co. v. Eggers*, 186 Okla. 466, 98 P.2d 1114 (1940) (G1a: oil well salt water discharged into creek percolated to and polluted domestic well); *Shell Petroleum Corp. v. Blubaugh*, 187 Okla. 198, 102 P.2d 163 (1940) (G3e: salt water from plugged oil well allegedly polluted livestock well); *Sheridan Oil Co. v. Wall*, 187 Okla. 398, 103 P.2d 507 (1940) (G1,3a: salt water from plugged oil well polluted domestic and livestock well); *Harper-Turner Oil Co. v. Bridge*, 311 P.2d 947 (Okla. 1957) (G1a: salt water from plugged oil well polluted domestic well); *Cities Serv. Oil Co. v. Merritt*, 332 P.2d 677 (Okla. 1958) (dictum: as between holders of surface and mineral interests) (G1a: oil well salt water discharged into stream percolated into and polluted domestic well); *Sunray Mid-Continent Oil Co. v. Tisdale*, 366 P.2d 614 (Okla. 1961) (G1a: salt water from improperly plugged exploratory well polluted domestic well); *Norman v. Greenland Drilling Co.*, 403 P.2d 507 (Okla. 1965) (G3c: salt water from improperly cemented oil well polluted livestock well and spring).

PENNSYLVANIA: *Steele v. Todd*, 158 Pa. 515, 27 A. 942 (1893) (dictum); *Denniston v. Philadelphia Co.*, 161 Pa. 41, 28 A. 1007 (1894) (I3j: gas main leak polluted livestock spring); *McNary v. Southwest Pa. Pipe Lines*, 34 Pa. County Ct. 441, 17 Pa. Dist. 847 (C.P. 1908) (I1e: pipeline leak allegedly polluted domestic well); *Vandivort v. Hunter*, 265 Pa. 585, 109 A. 479 (1920) (A1i\*: cesspool polluted domestic spring); *Tolatti v. Enama*, 26 Luz. L. Reg. Rep. 344 (Pa. C.P. 1931) (A1d: cesspool polluted domestic well); *Meddock v. National Transit Co.*, 105 Pa. Super. 553, 161 A. 628 (1932) (I1a: pipeline leak polluted domestic well); *Ressler v. Gerlach*, 189 Pa. Super. 192, 149 A.2d 158 (1959) (D1d: apartment building sewage polluted domestic well).

Pennsylvania abandoned the common law negligence rule in 1954 and since has followed the RESTATEMENT rule.

RHODE ISLAND: *Gagnon v. Landry*, 103 R.I. 45, 234 A.2d 674 (1967) (A1d: septic tank polluted domestic well).

TENNESSEE: *Sinclair Ref. Co. v. Bennett*, 123 F.2d 884 (6th Cir. 1941) (J1a: service station gasoline leak polluted domestic well).

TEXAS: *Pickens v. Harrison*, 151 Tex. 562, 252 S.W.2d 575, *modifying* 246 S.W.2d 316 (Tex. Civ. App. 1952) (G4a: oil well salt water in disposal pit polluted irrigation well); *Gulf Oil Corp. v. Alexander*, 291 S.W.2d 792 (Tex. Civ. App.) (dictum), *aff'd per curiam*, 156 Tex. 455, 295 S.W.2d 901 (1956) (direct holding) (G4a: oil well salt water in disposal pit polluted irrigation well); *Humble Pipe Line Co. v. Anderson*, 339 S.W.2d 259 (Tex. Civ. App. 1960) (I1d: pipeline leak polluted domestic well); *Geochemical Surveys v. Dietz*, 340 S.W.2d 114 (Tex. Civ. App. 1960) (G1a: oil well salt water in disposal pit polluted domestic well); *General Crude Oil Co. v. Aiken*, 162 Tex. 104, 344 S.W.2d 668 (1961) (G1,3a), *rev'g* 335 S.W.2d 229 (Tex. Civ. App. 1960) (G1,3k\*: oil well salt water in disposal pit polluted livestock spring); *Brown v. Lundell*, 162 Tex. 84, 344 S.W.2d 863 (1961), *aff'g* 334 S.W.2d 616 (Tex. Civ.

App. 1960) (G4a: oil well salt water in disposal pit polluted irrigation well); Crawford v. Yeatts, 395 S.W.2d 413 (Tex. Civ. App. 1965) (G1a: oil well salt water in disposal pit polluted domestic well and poisoned soil). UTAH: Petersen v. Cache County Drainage Dist. No. 5, 77 Utah 256, 294 P. 289 (1930) (R1d: irrigation canal water polluted domestic well). VERMONT: Randall v. Clifford, 119 Vt. 216, 122 A.2d 833 (1956) (R1,3c: buried cow polluted domestic and livestock spring). WEST VIRGINIA: Atkinson v. Virginia Oil & Gas Co., 72 W.Va. 707, 79 S.E. 647 (1913) (dictum); McCoy v. Cohen, 149 W.Va. 197, 140 S.E.2d 427 (1965) (G1e: gas well hydraulic fracturing fluid allegedly polluted domestic well). ENGLAND: Norton v. Scholefield, 9 M. & W. 665, 152 Eng. Rep. 281 (Ex. 1842) (A1i: cesspool polluted domestic well). CANADA: Bennett v. Imperial Oil Ltd., 28 D.L.R.2d 55 (Newf. 1961) (J1a: service station gasoline leak polluted domestic well).

#### D. Nuisance

##### 1. PUBLIC NUISANCE

Listed below are cases apply public nuisance rules to pollution of percolating groundwater.

KANSAS: Berry v. Shell Petroleum Co., 140 Kan. 94, 33 P.2d 953 (1934), rehearing denied, 141 Kan. 6, 40 P.2d 359 (1935) (G1a: oil well salt water discharged into drainage canal percolated to and polluted domestic wells). PENNSYLVANIA: Barclay v. Commonwealth, 25 Pa. 503 (1855) (M2a: manure and hay seepage polluted public water supply spring). SOUTH DAKOTA: Watson v. Great Lakes Pipeline Co., 85 S.D. 310, 182 N.W.2d 314 (1970) (H1a: petroleum tank farm seepage polluted domestic wells).

##### 2. PRIVATE NUISANCE

Listed below are cases applying private nuisance rules to pollution of percolating groundwater.

ALABAMA: Kingsbury v. Flowers, 65 Ala. 479 (1880) (Q1e: cemetery allegedly would pollute domestic well); Bellevue Cemetery Co. v. McEvers, 168 Ala. 535, 53 So. 272 (1910) (Q1e: cemetery seepage allegedly would pollute domestic well). ARKANSAS: McDaniel v. Forrester Park Cemetery Co., 156 Ark. 571, 246 S.W. 874 (1923) (Q1e: cemetery seepage allegedly would pollute domestic wells); Hodge v. Marmaduke, — Ark. —, 503 S.W.2d 174 (1973) (C1,3e: treated effluent from city treatment plant allegedly polluted domestic and livestock well). CALIFORNIA: Carter v. Chotiner, 210 Cal. 288, 291 P. 577 (1930) (Q1,3b: cemetery seepage would pollute domestic and livestock well). CONNECTICUT: Brown v. Illius, 25 Conn. 583 (1857) (K5a: gas plant residues polluted industrial well); Swift & Co. v. Peoples Coal & Gas Co., 121 Conn. 579, 186 A. 629 (1936) (H7c: fuel oil from dealership traveled through groundwater to basement warehouse); Kostyal v. Cass, 163 Conn. 92, 302 A.2d 121 (1972) (J1a: heating oil storage tank leak polluted domestic well). GEORGIA: Harper v. Nashville, 136 Ga. 141, 70 S.E. 1102 (1911) (Q1e: cemetery allegedly would pollute domestic well). ILLINOIS: Ottawa Gas Light & Coke Co. v. Thompson, 39 Ill. 599 (1864) (K1e: gas plant residues polluted domestic well); Wahle v. Reinback, 76 Ill. 322 (1875) (A1b: privy allegedly would pollute domestic well); Rand v. Wilber, 19 Ill. App. 395 (1886) (A1b: privy allegedly would pollute domestic well); Iliff v. School Directors, 45 Ill. App. 419 (1892) (D1e: school privy allegedly would pollute domestic well); Phoenix v. Graham, 349 Ill. App. 326, 110 N.E.2d 669 (1953) (dictum) (negligence law applied as between holders of surface and mineral interests) (G1i<sup>o</sup>: salt water leak from plugged oil well polluted domestic well). IOWA: Payne v. Wayland, 131 Iowa 659, 109 N.W. 203 (1906) (Q1b: cemetery seepage allegedly would pollute domestic well and spring); Iverson v. Vint, 243 Iowa 949, 54 N.W.2d 494 (1952) (L1a: molasses waste dumped in highway drainage ditch polluted domestic well). KANSAS: Gilmore v. Royal Salt Co., 84 Kan. 729, 115 P. 541 (1911) (R3c: outdoor salt pile seepage polluted livestock spring and poisoned soil); Helms v.

Eastern Kan. Oil Co., 102 Kan. 164, 169 P. 208 (1917) (dictum); Hall v. Galey, 126 Kan. 699, 271 P. 319 (1928) (G1,3,4a: gas well salt water polluted domestic, livestock, and irrigation well); Berry v. Shell Petroleum Co., 140 Kan. 94, 33 P.2d 953 (1934), *rehearing denied*, 141 Kan. 6, 40 P.2d 359 (1935) (dictum) (G1a: oil well salt water discharged into drainage canal percolated to and polluted domestic wells); Klassen v. Central Kan. Coop. Creamery Ass'n, 160 Kan. 697, 165 P.2d 601 (1946) (L3a: creamery wastes discharged into city sewer overloaded city treatment plant; sewage discharged by city polluted receiving stream; stream water percolated to and polluted livestock well); Atkinson v. Herington Cattle Co., 200 Kan. 298, 436 P.2d 816 (1968) (M3a: feedlot drainage discharged into stream polluted stream water which percolated to livestock well).

KENTUCKY: Kinnaird v. Standard Oil Co., 89 Ky. 468, 12 S.W. 937 (1890) (H1,3a: oil tank leak polluted domestic and livestock spring); Miley v. A'Hearn, 13 Ky. L.R. 834, 18 S.W. 529 (1892) (A1b: privy allegedly would pollute domestic well); Livezey v. Schmidt, 96 Ky. 441, 29 S.W. 25 (1895) (M6j: manure pile seepage allegedly percolated to house cellar during rains); Louisville & N.R.R. v. Simpson, 17 Ky. L.R. 989, 33 S.W. 395 (1895) (R1a: buried cow polluted domestic spring); Davis v. Adkins, 18 Ky. L.R. 73, 35 S.W. 271 (Ky. 1896) (A1e: privy allegedly would pollute domestic spring); Rogers v. Bond Bros., 279 Ky. 239, 130 S.W.2d 22 (1939) (L2e: creosote allegedly polluted public water supply well); McCaw v. Harrison, 259 S.W.2d 457 (Ky. 1953) (Q3e: cemetery seepage allegedly would pollute livestock well).

MAINE: Monk v. Packard, 71 Me. 309 (1880) (Q1e: cemetery seepage allegedly polluted domestic well).

MASSACHUSETTS: Call v. Buttrick, 58 Mass. (4 Cush.) 345 (1849) (A1c: cesspool polluted domestic well); Sherman v. Fall River Iron Works Co., 84 Mass. (2 Allen) 524 (1861) (L3c: gas main leak polluted livestock well); Sherman v. Fall River Iron Works, 87 Mass. (5 Allen) 213 (1862) (L3j\*: same facts as above); Ball v. Nye, 99 Mass. 582 (1868) (M1,6a: manure seepage polluted domestic well and caused odors in house cellar); Mears v. Dole, 135 Mass. 508 (1883) (R1ab: removal of beach caused sea water to percolate into domestic well).

MICHIGAN: Upjohn v. Board of Health, 46 Mich. 542, 9 N.W. 845 (1881) (Q1e: cemetery seepage allegedly would pollute domestic well).

MINNESOTA: Berger v. Minneapolis Gaslight Co., 60 Minn. 296, 62 N.W. 336 (1895) (K1a: gas plant fuel oil seepage polluted domestic well); Nelson v. Swedish Evangelical Lutheran Cemetery Ass'n, 111 Minn. 149, 126 N.W. 723, *petition for reargument denied*, 127 N.W. 626 (1910) (Q1c: cemetery seepage allegedly would pollute domestic well).

MISSOURI: Haynor v. Excelsior Springs Light, Power, Heat & Water Co. 129 Mo. App. 691, 108 S.W. 580 (K.C. Ct. App. 1908) (H1k: oil and grease escaping into creek polluted domestic well); Shelley v. Ozark Pipe Line Corp., 327 Mo. 238, 37 S.W.2d 518 (1931), *rev'g* 2 S.W.2d 115 (Spr. Mo. App. 1927) (I1a: pipeline leak polluted domestic well).

NEBRASKA: Beatrice Gas Co. v. Thomas, 41 Neb. 662, 59 N.W. 925 (1894) (K1,3i\*: gas plant residues polluted domestic and livestock well); Lowe v. Prospect Hill Cemetery Ass'n, 58 Neb. 94, 78 N.W. 488 (1899) (Q1b: cemetery seepage allegedly would pollute domestic well); Braasch v. Cemetery Ass'n, 69 Neb. 300, 95 N.W. 646 (1903) (Q1e: cemetery seepage allegedly would pollute domestic well).

NEVADA: Czipott v. Fleigh, 87 Nev. 496, 489 P.2d 681 (1971) (M1b: horses in pasture allegedly would pollute domestic well).

NORTH CAROLINA: Clark v. Lawrence, 59 N.C. 83 (1860) (Q1c: cemetery seepage allegedly would pollute domestic well); Masten v. Texas Co., 194 N.C. 540, 140 S.E. 89 (1927) (J1c: service station gasoline leak polluted domestic well).

OHIO: Columbus Gas Light & Coke Co. v. Freeland, 12 Ohio St. 392 (1861) (K1i: gas plant residues polluted domestic well); Bassett v. Osborn, 23 Ohio C.C.R. (n.s.) 342, 34 Ohio C.C. Dec. 284 (1912) (A1b: cesspool polluted domestic well).

OKLAHOMA: *Clinton Cemetery Ass'n v. McAttee*, 27 Okla. 160, 111 P. 392 (1910) (Q1e: cemetery allegedly would pollute domestic cistern); *Danciger Oil & Ref. Co. v. Donahey*, 205 Okla. 390, 238 P.2d 308 (1951) (G1,3a: oil well salt water and refuse discharged into dry stream percolated into and polluted domestic and livestock well); *Cities Serv. Oil Co. v. Merritt*, 332 P.2d 677 (Okla. 1958) (but negligence law applied as between holders of surface and mineral interests (dictum)) (G1a: oil well salt water discharged into stream percolated into and polluted domestic well).

OREGON: *Ex parte Wygant*, 39 Ore. 429, 64 P. 867 (1901) (dictum); *Ulmen v. Mt. Angel*, 57 Ore. 547, 112 P. 529 (1911) (BP1b: sewer and storm drainage polluted domestic well).

PENNSYLVANIA: *Shuter v. The City*, 3 Phila. (Pa.). 228 (Dist. Ct. 1858) (K1a: gas plant reservoir leak polluted domestic well); *Pottstown Gas Co. v. Murphy*, 39 Pa. 257 (1861) (K1a: gas plant residues polluted domestic well); *Haugh's Appeal*, 102 Pa. 42, 2 Walk 376 (1882) (A1b: privy and cesspool polluted domestic well); *Briegel v. Philadelphia*, 135 Pa. 451, 19 A. 1038 (1890) (D6a: school privy wastes seeped into cellar); *Hauck v. Tide Water Pipe-Line Co.*, 153 Pa. 366, 26 A. 644 (1893) (I1a: pipeline leak polluted domestic well); *Rarick v. Smith*, 17 Pa. County Ct. 627, 5 Pa. Dist. 530 (C.P. 1896) (L1,3b: dynamite manufacturing wastes percolated to and polluted stream used for domestic and livestock water); *Vandivort v. Hunter*, 265 Pa. 585, 109 A. 479 (1920) (A1i\*: cesspool allegedly polluted domestic spring); *Hawk v. Davis*, 76 Pa. Super. 565 (1921) (A1b: cesspool polluted domestic spring); *Lynch v. Jefferson Township School Dist.*, 6 Pa. D. & C. 343 (C.P. 1924) (D1c: school privy polluted domestic well); *Schroll v. George Brown's Sons, Inc.*, 41 Lanc. Law. Rev. 297 (Pa. C.P. 1928) (L1c: dye wastes from cesspool polluted domestic spring); *Matthews v. Plum Township & School Dist.*, 152 Pa. Super. 544, 33 A.2d 38 (1943) (MR1c: creosote and manure on road polluted domestic well).

Pennsylvania abandoned the common law nuisance rule in 1954 and since has followed the RESTATEMENT rule.

TENNESSEE: *Lytton v. Steward*, 2 Tenn. Ch. 586 (1876) (D1e: university sewage discharged into natural sink allegedly would pollute domestic spring and well); *Reid v. Memphis Memorial Park*, 5 Tenn. App. 105 (1927) (Q1e: cemetery allegedly would pollute domestic well).

TEXAS: *Jung v. Neraz*, 71 Tex. 396, 9 S.W. 344 (1888) (Q1c: cemetery seepage allegedly would pollute domestic well); *Dunn v. Austin*, 77 Tex. 139, 11 S.W. 1125 (1889) (Q1e: cemetery seepage allegedly would pollute domestic well); *Elliott v. Ferguson*, 37 Tex. Civ. App. 40, 83 S.W. 56 (1904) (Q1j: cemetery allegedly would pollute domestic well); *Elliott v. Ferguson*, 101 Tex. 317, 107 S.W. 51 (1908), *rev'g* 103 S.W. 453 (Tex. Civ. App. 1907) (Q1i\*: same facts as above); *Farb v. Theis*, 250 S.W. 290 (Tex. Civ. App. 1923) (Q1i: cemetery allegedly would pollute groundwater tributary to stream rendering stream unpotable); *Continental Oil Co. v. Berry*, 52 S.W.2d 953 (Tex. Civ. App. 1932) (J1i\*: service station gasoline leak polluted domestic well); *Jones v. Highland Memorial Park*, 242 S.W.2d 250 (Tex. Civ. App. 1951) (Q1e: cemetery seepage allegedly would pollute domestic well); *Eternal Cemetery Corp. v. Tammen*, 324 S.W.2d 562 (Tex. Civ. App. 1959) (Q1e: cemetery seepage allegedly would pollute well).

WASHINGTON: *Hite v. Cashmere Cemetery Ass'n*, 158 Wash. 421, 290 P. 1008 (1930) (Q1e: cemetery seepage allegedly would pollute domestic well); *Haveman v. Beulow*, 36 Wash. 2d 185, 217 P.2d 313 (1950) (L1ab: potato processing wastes discharged into pit polluted domestic well); *Clark v. Sunset Hills Memorial Park*, 45 Wash. 2d 180, 273 P.2d 645 (1954) (Q1e: cemetery seepage might pollute domestic well).

WISCONSIN: *Anstee v. Monroe Light & Fuel Co.*, 171 Wis. 291, 177 N.W. 26 (1920) (K1a: gas plant residues discharged into abandoned sewer polluted domestic well); *Enders v. Sinclair Ref. Co.*, 220 Wis. 254, 263 N.W. 568 (1935), *motion for rehearing denied*, 265 N.W. 67 (1936) (J1e: service station gasoline leak allegedly polluted domestic well).

ENGLAND: Norton v. Scholefield, 152 Eng. Rep. 281 (Ex. 1842) (A1i: cesspool polluted domestic well); Turner v. Mirfield, 34 Beav. 390, 55 Eng. Rep. 685 (Rolls 1865) (L7b: wool washings discharged into old coal pit percolated into coal mine); Fletcher v. Rylands, L.R. 1 Ex. 265 (Ex. Ch. 1866) (dictum); Womersley v. Church, 17 L.T.R.(n.s.) 190 (Rolls 1867) (A1b: cesspool polluted domestic well); Millington v. Griffiths, 30 L.T.R.(n.s.) 65 (C.P. 1874) (K1a: gas plant residues polluted domestic well); Ballard v. Tomlinson, 29 Ch. D. 115 (C.A. 1885), *rev'g* 26 Ch. D. 194 (1884) (D5ab: factory privy wastes discharged into sewage well polluted brewery well); Paine & Co., v. St. Neota Gas & Coke Co., [1939] 3 All E.R. 812 (C.A.), *aff'g* [1938] 4 All E.R. 592 (K.B.) (K5a: gas plant ammonia wastes polluted malt works well).

CANADA: Swan v. Adams, 23 Grant Ch. 220 (Ont. 1876) (H1,5i: oil refinery wastes in disposal pit polluted domestic and tannery springs); Hubbs v. Prince Edward County, 8 D.L.R.2d 394 (Ont. 1957) (R1,5ab: sand and salt mixture for de-icing roads polluted domestic and commercial well); British Am. Oil Co. v. Burrill, [1942] Que. K.B. 218 (C.A.) (J1,6a: service station gasoline leak polluted domestic well and caused odors in house).

#### E. Restatement Rule

Listed below are cases applying the rule described in RESTATEMENT OF TORTS § 822 (1939) to pollution of percolating groundwater.

MONTANA: Nelson v. C & C Plywood Corp., 154 Mont. 414, 465 P.2d 314 (1970) (L1a: plywood glue wastes discharged into drainage ditch or sump percolated to and polluted domestic well with phenols).

PENNSYLVANIA: Waschak v. Moffat, 379 Pa. 441, 109 A.2d 310 (1954); Burr v. Adam Eidemiller, Inc., 386 Pa. 416, 126 A.2d 403 (1956) (N1,5a: slag seepage polluted domestic and resort spring); Reinhart v. Lancaster Area Refuse Authority, 201 Pa. Super. 614, 193 A.2d 670 (1963) (N1a: sanitary landfill seepage polluted domestic well); Gessner v. Ditzler, 37 Northumb. L.J. 119 (Pa. C.P. 1965) (A1d: toilet seepage pit polluted domestic well).

#### F. Abnormally Dangerous Substances Rule

Listed below are cases imposing strict liability for the escape of abnormally dangerous substances to pollution of percolating groundwater.

ALABAMA: Killian v. Killian, 175 Ala. 224, 57 So. 825 (1912) (E1e: mine drainage allegedly polluted domestic spring).

ILLINOIS: Ottawa Gas Light & Coke Co. v. Graham, 28 Ill. 73 (1862) (K1a: gas plant gas leak polluted domestic well); Ottawa Gas Light & Coke Co. v. Graham, 35 Ill. 346 (1864) (by implication) (K1a: same facts as above); Decatur Gas Light & Coke Co. v. Howell, 92 Ill. 19 (1879) (K1k: gas plant leak polluted domestic well); Belvidere Gaslight & Fuel Co. v. Jackson, 81 Ill. App. 424 (1898) (K1a: gas plant gas leak polluted domestic well).

KANSAS: Hall v. Galey, 126 Kan. 699, 271 P. 319 (1928) (G1,3,4a: gas well salt water polluted domestic livestock and irrigation well); Martin v. Shell Petroleum Corp., 133 Kan. 124, 299 P. 261 (1931) (G1,3,5a: oil well salt water polluted domestic, livestock and irrigation well—statutory strict liability); Berry v. Shell Petroleum Co., 140 Kan. 94, 33 P.2d 953 (1934), *rehearing denied*, 141 Kan. 6, 40 P.2d 359 (1935) (G1a: oil well salt water discharged into drainage canal percolated to and polluted domestic well—statutory strict liability); Rusch v. Phillips Petroleum Co., 163 Kan. 11, 180 P.2d 270 (1947) (G3c: oil well salt water discharged into slush ponds percolated to fresh water aquifer and polluted livestock well and spring—statutory strict liability); Reiserer v. Murfin, 133 Kan. 597, 331 P.2d 313 (1958) (G1,3c: salt water from improperly cased oil well polluted domestic and livestock well—statutory strict liability).

MARYLAND: Yommer v. McKenzie, 255 Md. 220, 257 A.2d 138 (1969) (J1a: service station gasoline leak polluted domestic well—RESTATEMENT OF TORTS § 520 (1939)).

MASSACHUSETTS: Mears v. Dole, 135 Mass. 508 (1883) (R1ab: removal of beach caused sea water to percolate into domestic well).



MINNESOTA: *Berger v. Minneapolis Gaslight Co.*, 60 Minn. 296, 62 N.W. 336 (1895) (K1a: gas plant fuel oil seepage polluted domestic well).

OKLAHOMA: *Shell Petroleum Corp. v. Blubaugh*, 187 Okla. 198, 102 P.2d 163 (1940) (G3e: salt water from plugged oil well allegedly polluted livestock well).

PENNSYLVANIA: *Jackson v. United States Pipe Line Co.*, 325 Pa. 436, 191 A. 165 (1937) (I1a: pipeline leak polluted domestic well—statutory strict liability); *Bumbarger v. Walker*, 193 Pa. Super. 301, 164 A.2d 144 (1960) (E1a: mine drainage percolated through strata disturbed by blasting and polluted domestic well).

SOUTH DAKOTA: *Watson v. Great Lakes Pipeline Co.*, 85 S.D. 310, 182 N.W.2d 314 (1970) (H1a: petroleum tank farm seepage polluted domestic well—RESTATEMENT OF TORTS §§ 519-20 (1939)).

TEXAS: *Texas Co. v. Giddings*, 148 S.W. 1142 (Tex. Civ. App. 1912) (I1,3a: pipeline leak polluted domestic and livestock well); *Gulf Oil Co. v. Alexander*, 291 S.W.2d 792 (Tex. Civ. App.), *aff'd per curiam*, 156 Tex. 455, 295 S.W.2d 901 (1956) (G4a: oil well salt water in disposal pit polluted irrigation well).

ENGLAND: *Hipkins v. Birmingham & Staffordshire Gas Light Co.*, 5 H. & N. 74, 157 Eng. Rep. 1106 (Ex.), *aff'd*, 6 H. & N. 250, 158 Eng. Rep. 103 (Ex. Ch. 1860) (K1a: gas plant residues polluted domestic well—statutory strict liability).

### G. Theory Not Stated

Listed below are cases involving pollution of percolating groundwater where the decisional theory is not stated.

ALABAMA: *Pan American Petroleum Co. v. Byars*, 228 Ala. 372, 153 So. 616 (1934) (Q1j<sup>o</sup>: service station gasoline leak polluted domestic well).

KANSAS: *Spencer v. Derby Oil Co.*, 140 Kan. 657, 37 P.2d 991 (1934) (I1,3a: oil pipeline leak polluted domestic and livestock well); *Martin v. Continental Oil Co.*, 141 Kan. 37, 39 P.2d 917 (1935) (G1,3f: oil well salt water discharged into drainage canal polluted domestic and livestock well); *Alliston v. Shell Petroleum Corp.*, 143 Kan. 327, 55 P.2d 396 (1936) (G1,3a: oil well salt water injected underground polluted domestic and livestock well); *Augustine v. Hinnen*, 201 Kan. 710, 443 P.2d 354 (1968) (G3a: oil well salt water injected underground polluted livestock well).

MINNESOTA: *Sandstone Spring Water Co. v. Kettle River Co.*, 122 Minn. 510, 142 N.W. 885 (1913) (L2a: creosote discharged into broken sewer polluted bottled water works well).

MISSOURI: *Windle v. Springfield*, 320 Mo. 459, 8 S.W.2d 61 (1928), *transferred from* 275 S.W. 585 (Spr. Mo. App. 1925) (B5a: city sewage discharged into cave polluted spring and lake and caused odors).

OHIO: *Krazeweski v. Berea*, 21 Ohio C.C.R. (n.s.) 449, 33 Ohio C.C. Dec. 378 (1906) (B6c: sewer leak percolated into house cellar).

OKLAHOMA: *Darby Petroleum Corp. v. Mason*, 176 Okla. 138, 54 P.2d 1046 (1936) (G1,3a: oil well salt water polluted domestic and livestock well and poisoned soil); *Shell Oil Co. v. Blubaugh*, 199 Okla. 353, 185 P.2d 959 (1947) (G3j: salt water and refuse from plugged oil well polluted livestock well); *D-X Sunray Oil Co. v. Billue*, 361 P.2d 212 (Okla. 1961) (J1k: service station gasoline leak polluted domestic well).

PENNSYLVANIA: *Carson v. Bromley*, 184 Pa. 549, 39 A. 1115 (1898) (M1e: stable seepage allegedly polluted domestic well); *Wahl v. Methodist Episcopal Cemetery Ass'n*, 197 Pa. 197, 46 A. 913 (1900) (Q1e: cemetery seepage allegedly would pollute domestic well); *Moyer v. Boehringer*, 13 Berk Co. L.J. 77 (Pa. C.P. 1920) (A1i<sup>o</sup>: cesspool allegedly polluted domestic well).

TEXAS: *Beaty v. Abilene*, 458 S.W.2d 496 (Tex. Civ. App. 1970) (N1e: sanitary landfill allegedly would pollute underground water).

APPENDIX C

TABLE I  
DECISIONAL THEORY UTILIZED IN POLLUTION CASES  
(dicta not counted)

State	Surface Watercourse		Percolating Groundwater					Total		
	Riparian Rights	Public & Private Nuisance	Diver-sion Allo-cation Rule	Negli-gence Excep-tion	Negli-gence Rule	Public & Pri-vate Nui-sance	Restate-ment Rule		Strict Lia-bility	Rule not Stated
Alabama	18	6	—	—	1	2	—	1	1	5
Alaska	—	—	—	—	1	—	—	—	—	1
Arizona	—	1	—	—	—	—	—	—	—	—
Arkansas	2	5	—	—	—	2	—	—	—	2
California	1	15	—	—	1	1	—	—	—	2
Colorado	—	—	—	—	1	—	—	—	—	1
Connecticut	4	7	—	1	2	3	—	—	—	6
Delaware	—	—	—	—	—	—	—	—	—	—
Dist. of Columbia	—	—	—	—	—	—	—	—	—	—
Florida	—	7	—	—	1	—	—	—	—	1
Georgia	5	5	—	1	—	1	—	—	—	2
Hawaii	—	—	—	—	—	—	—	—	—	—
Idaho	2	5	—	—	—	—	—	—	—	—
Illinois	5	12	—	—	2	4	—	4	—	10
Indiana	7	7	—	—	—	—	—	—	—	1
Iowa	2	9	1	—	—	—	—	—	—	2
Kansas	—	11	—	—	—	2	—	—	—	2
Kentucky	—	7	—	2	1	4	—	5	4	14
Louisiana	—	3	—	—	2	7	—	—	—	11
Maine	1	5	—	—	1	—	—	—	—	1
Maryland	5	7	—	—	1	1	—	1	—	2
Massachusetts	8	10	—	—	2	5	—	1	—	1
Michigan	5	1	—	1	1	1	—	1	—	8
Minnesota	1	6	—	—	—	2	—	—	—	3
Mississippi	1	3	—	—	—	—	—	—	—	4
Missouri	1	20	—	—	1	2	—	1	1	9
Montana	2	2	—	—	6	—	—	—	—	1
Nebraska	—	1	—	—	—	3	—	—	—	3

State	Surface Watercourse			Percolating Groundwater				Total		
	Riparian Rights	Public & Private Nuisance	Diver-sion Allo-cation Rule	Negli-gence Excep-tion	Negli-gence Rule	Public & Pri-vate Nui-sance	Restate-ment Rule		Strict Lia-bility	Rule not Stated
Nevada	1	1	—	—	—	1	—	—	—	1
New Hampshire	9	6	—	1	2	—	—	—	—	3
New Jersey	—	—	—	—	—	—	—	—	—	—
New Mexico	27	24	—	4	2	2	—	—	—	6
New York	3	18	—	1	—	—	—	—	—	3
North Carolina	2	1	—	—	2	2	—	—	—	5
North Dakota	2	7	—	—	7	3	—	1	—	14
Ohio	—	38	—	—	—	1	—	—	—	1
Oklahoma	1	8	—	—	—	3	—	—	—	3
Oregon	11	15	—	4	6	12	3	2	—	30
Pennsylvania	3	1	—	2	1	—	—	—	—	3
Rhode Island	2	4	—	—	—	—	—	—	—	3
South Carolina	—	1	—	—	—	1	—	1	—	2
South Dakota	1	1	—	—	—	1	—	—	—	2
Tennessee	4	12	—	—	1	2	—	2	—	18
Texas	—	—	—	—	7	8	—	—	—	1
Utah	3	—	—	—	1	—	—	—	—	1
Vermont	2	—	—	—	1	—	—	—	—	1
Virginia	2	4	1	—	—	—	—	—	—	3
Washington	2	3	—	—	—	3	—	—	—	3
West Virginia	2	1	—	—	1	—	—	—	—	1
Wisconsin	—	8	—	—	—	2	—	—	—	2
Wyoming	—	—	—	—	—	—	—	—	—	—
England	17	24	—	—	1	6	—	1	—	8
Canada	n.a.	n.a.	—	—	1	3	—	—	—	4
TOTAL	148	327	2	17	57	86	4	20	15	201

Sources: Surface Watercourse Pollution—Davis, *Theories of Water Pollution Litigation*, Appendices A-C, 1971, Wis. L. Rev. 788, 783-804. This article does not examine the treatment of pollution under the prior appropriation doctrine and does not examine Canadian cases.

Percolating Groundwater Pollution—Appendix B, *supra*.

TABLE 2  
ANALYSIS OF PERCOLATING GROUNDWATER POLLUTION CASES—SOURCE OF POLLUTION  
(dicta not counted)

Disposition of Case	Source of Pollution (Codings supra at 147)													Total				
	A	B	C	D	E	F	G	H	I	J	K	L	M		N	P	Q	R
(1) <i>Diversion Allocation Rules</i>																		
Plaintiff wins (a-c, <sup>o</sup> )					1													
Defendant wins: on merits (d-h)																		1
for other reasons (i-k)																	1	1
total					1												2	2
Total					1												1	2
(2) <i>Negligence Exception to Above</i>																		
Plaintiff wins (a-c, <sup>o</sup> )					1			3	1		1	1						6
Defendant wins: on merits (d-h)					3			1	2		1							10
for other reasons (i-k)																		1
total					1			1	2		1	1						11
Total					1			3	4		2	2						17
(3) <i>Negligence Rule</i>																		
Plaintiff wins (a-c, <sup>o</sup> )																		
Defendant wins: on merits (d-h)					1			15	1	4	5	4		2	1			34
for other reasons (i-k)										2	2			1				17
total					1			1		3				1				7
Total					1			1		7	5	2		1				24
(4) <i>Public Nuisance Rule</i>																		
Plaintiff wins (a-c, <sup>o</sup> )																		
Defendant wins: on merits (d-h)																		
for other reasons (i-k)																		
total																		
Total																		
(4) <i>Public Nuisance Rule</i>																		
Plaintiff wins (a-c, <sup>o</sup> )																		
Defendant wins: on merits (d-h)																		
for other reasons (i-k)																		
total																		
Total																		

Disposition of Case

	Source of Pollution													Total				
	A	B	C	D	E	F	G	H	I	J	K	L	M		N	P	Q	R
(5) <i>Private Nuisance Rule</i>																		
Plaintiff wins (a-c,*)	9	1	—	3	—	—	3	2	2	4	7	8	4	—	1	7	4	55
Defendant wins: on merits (d-h)	1	—	1	2	—	—	—	—	—	1	1	1	—	—	—	15	—	22
for other reasons (i-k)	1	—	—	—	—	—	2	—	—	—	1	—	1	—	—	2	—	7
total	2	—	1	2	—	—	2	—	—	1	2	1	1	—	—	17	—	29
Total	11	1	1	5	—	—	3	4	2	5	9	9	5	—	1	24	4	84
(6) <i>Restatement Rule</i>																		
Plaintiff wins (a-c,*)	—	—	—	—	—	—	—	—	—	—	—	1	—	2	—	—	—	3
Defendant wins: on merits (d-h)	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
for other reasons (i-k)	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
total	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Total	1	—	—	—	—	—	—	—	—	—	—	1	—	2	—	—	—	4
(7) <i>Abnormally Dangerous Substance Rule</i>																		
Plaintiff wins (a-c,*)	—	—	—	—	—	1	—	6	1	2	1	5	—	—	—	—	1	17
Defendant wins: on merits (d-h)	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	2
for other reasons (i-k)	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1
total	—	—	—	—	—	1	—	1	—	—	—	1	—	—	—	—	—	3
Total	—	—	—	—	—	2	—	7	1	2	1	6	—	—	—	—	1	20
(8) <i>Theory Not Stated</i>																		
Plaintiff wins (a-c,*)	1	2	—	—	—	—	3	—	1	—	—	1	—	—	—	1	—	9
Defendant wins: on merits (d-h)	—	—	—	—	—	—	1	—	—	—	—	—	1	1	—	—	—	4
for other reasons (i-k)	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	2
total	—	—	—	—	—	—	2	—	—	1	—	—	1	1	—	—	—	6
Total	1	2	—	—	—	—	5	—	1	1	—	1	1	1	—	2	—	15
(9) <i>Totals</i>																		
Plaintiff wins (a-c,*)	10	3	—	3	1	—	31	6	9	11	17	10	7	3	1	8	7	127
Defendant wins: on merits (d-h)	4	—	2	4	5	—	9	2	2	4	1	1	2	1	2	17	1	57
for other reasons (i-k)	2	—	—	1	—	—	2	2	3	1	3	1	1	—	—	3	—	19
total	6	—	2	5	5	—	11	2	5	5	4	2	3	1	2	20	1	76
Total	16	3	2	8	6	—	42	10	14	16	21	12	10	4	3	28	8	203

Source: Appendix B, *supra*.

TABLE 3  
ANALYSIS OF PERCOLATING GROUNDWATER POLLUTION CASES—TYPE OF POLLUTION CREATED  
(dicta not counted)

Disposition of Case	Traditional Nuisance Pollution							Non-Nuisance Pollution			Grand Total
	1	2	3	6	7	Total	4	5	Total		
(1) <i>Diversion Allocation Rules</i>											
Plaintiff wins (a-c, <sup>8</sup> )	—	—	—	—	—	—	—	—	—	—	—
Defendant wins: on merits (d-h)	1	—	—	—	—	1	—	—	—	—	1
for other reasons (i-k)	1	—	—	—	—	1	—	—	—	—	1
total	2	—	—	—	—	2	—	—	—	—	2
Total	2	—	—	—	—	2	—	—	—	—	2
(2) <i>Negligence Exception to Above</i>											
Plaintiff wins (a-c, <sup>9</sup> )	5	—	2	—	—	7	—	1	—	1	8
Defendant wins: on merits (d-h)	9	—	3	—	—	12	—	—	—	—	12
for other reasons (i-k)	—	—	—	—	—	—	—	1	—	1	1
total	9	—	3	—	—	12	—	1	—	1	13
Total	14	—	5	—	—	19	—	2	—	2	21
(3) <i>Negligence Rule</i>											
Plaintiff wins (a-c, <sup>8</sup> )	27	—	4	—	—	31	3	3	6	6	37
Defendant wins: on merits (d-h)	15	—	2	—	—	17	—	—	—	—	17
for other reasons (i-k)	6	—	2	—	—	8	—	—	—	—	8
total	21	—	4	—	—	25	—	—	—	—	25
Total	48	—	8	—	—	56	3	3	6	6	62
(4) <i>Public Nuisance Rule</i>											
Plaintiff wins (a-c, <sup>9</sup> )	2	1	—	—	—	3	—	—	—	—	3
Defendant wins: on merits (d-h)	—	—	—	—	—	—	—	—	—	—	—
for other reasons (i-k)	—	—	—	—	—	—	—	—	—	—	—
total	2	1	—	—	—	3	—	—	—	—	3
Total	2	1	—	—	—	3	—	—	—	—	3
(5) <i>Private Nuisance Rule</i>											
Plaintiff wins (a-c, <sup>9</sup> )	45	—	11	3	2	61	1	4	5	5	66

<i>Disposition of Case</i>	<i>Traditional Nuisance Pollution</i>							<i>Total</i>	<i>Non-Nuisance Pollution</i>					<i>Grand Total</i>
	1	2	3	6	7	4	5		Total					
Defendant wins: on merits (d-h) for other reasons (i-k) total	20	1	2	—	—	—	—	23	—	—	—	—	—	23
Total	26	1	2	1	—	—	—	30	—	1	—	—	—	31
(6) <i>Restatement Rule</i> Plaintiff wins (a-c,*) Defendant wins: on merits (d-h) for other reasons (i-k) total	71	1	13	4	2	—	—	91	1	5	—	—	6	97
Total	8	—	—	—	—	—	—	8	—	1	—	—	—	4
(7) <i>Abnormally Dangerous Substances Rule</i> Plaintiff wins (a-c,*) Defendant wins: on merits (d-h) for other reasons (i-k) total	14	—	4	—	—	—	—	18	2	1	—	—	3	21
Total	2	—	2	—	—	—	—	4	—	—	—	—	—	4
(8) <i>Theory Not Stated</i> Plaintiff wins (a-c,*) Defendant wins: on merits (d-h) for other reasons (i-k) total	1	—	—	—	—	—	—	1	—	—	—	—	—	1
Total	3	—	2	—	—	—	—	5	—	—	—	—	—	5
(9) <i>Totals</i> Plaintiff wins (a-c,*) Defendant wins: on merits (d-h) for other reasons (i-k) total	17	—	6	—	—	—	—	23	2	1	—	—	3	26
Total	5	1	4	2	—	—	—	12	—	—	—	—	—	12
(9) <i>Totals</i> Plaintiff wins (a-c,*) Defendant wins: on merits (d-h) for other reasons (i-k) total	4	—	1	—	—	—	—	5	—	—	—	—	—	5
Total	1	—	1	—	—	—	—	2	—	—	—	—	—	2
(9) <i>Totals</i> Plaintiff wins (a-c,*) Defendant wins: on merits (d-h) for other reasons (i-k) total	5	—	2	—	—	—	—	7	—	—	—	—	—	7
Total	10	1	6	2	—	—	—	19	—	—	—	—	—	19
(9) <i>Totals</i> Plaintiff wins (a-c,*) Defendant wins: on merits (d-h) for other reasons (i-k) total	101	2	25	5	2	—	—	135	6	10	—	—	16	151
Total	52	1	10	—	—	—	—	63	—	—	—	—	—	63
(9) <i>Totals</i> Plaintiff wins (a-c,*) Defendant wins: on merits (d-h) for other reasons (i-k) total	15	—	3	1	—	—	—	19	—	2	—	—	2	21
Total	67	1	13	1	—	—	—	82	—	2	—	—	2	84
(9) <i>Totals</i> Plaintiff wins (a-c,*) Defendant wins: on merits (d-h) for other reasons (i-k) total	168	3	38	6	2	—	—	217	6	12	—	—	18	235

Source: Appendix B, *supra*.



