

# CURRICULUM VITAE

November, 2012

## **Charles W. Howe**

(born March 28, 1931, Dayton, Ohio)

### Educational Background

Ph.D. in Economics	Stanford University	1959
M.A. in Economics	Stanford University	1955
B.A. in Economics and Business Administration	Rice University	1952

### Awards.

Elected Fellow of the Association of Environmental and Resource Economists.  
January, 2008

Recognized by the Governor of Colorado for contributions to the work of the Intergovernmental Panel on Climate Change (IPCC) that, collectively, was awarded the Nobel Peace Prize.  
November, 2007

The Warren A Hall Medal for distinguished contributions to the water resources field, awarded by the Universities' Council on Water Resources, 2003

University of Colorado Boulder Faculty Assembly Award for Outstanding Research 1998

American Water Resources Association – Icko Iben Award for The Promotion of Interdisciplinary Water Research 1994

Fulbright Scholar, Wageningen Agricultural University, The Netherlands 1991

Elected Fellow of the American Geophysical Union 1986

Stanford Research Institute Doctoral Fellowship 1957-58

Phi Beta Kappa, Rice University 1952

### Employment Experience:

Professor Emeritus of Economics, Professional Staff, Environment & Behavior Program, Institute of Behavioral Science, UCB 2000-

Professor of Economics, University of Colorado-Boulder, Chair, 1972-1976.	1970-2000
Director, Environment and Behavior Program, Institute of Behavioral Science, University of Colorado-Boulder	1986-97
Professional Staff, Environment and Behavior Program, IBS present	2000-
Visiting Professor, Universities of York (UK) and Montpellier (France)	1997-98
Visiting Professor, Wageningen University (Netherlands)	1991
Rockefeller Foundation Field Staff and Visiting Professor of Economics, Gadjah Mada University, Yogyakarta, Indonesia	1981-83
Hill Visiting Professor, Department of Agricultural and Applied Economics, University of Minnesota	1977-78
Director, Water Resources Program, Resources for Future, Inc. Washington, D.C.	1965-70
Rockefeller Foundation Field Staff and Visiting Professor of Economics, University of Nairobi, Kenya	1964-65
Assistant and Associate Professor of Economics, Purdue University	1958-64
Instructor in Economics, Stanford University	1956-57
United States Navy, Lieutenant, Mine Force Pacific	1952-54

### Other Appointments

President, Association of Environmental and Resource Economists	1989-1991
Chair, Committee on Privatization of Water Services in the United States, Water Science and Technology Board, National Research Council	1999-2002
General Editor, Edward Elgar Monograph Series on Water Resources	1999-2001
Lead Author on Water Resources, Working Group II, Intergovernmental Panel on Climate Change (IPCC), IPCC awarded Nobel Peace Prize,	1998-2001
Member, National Panel for the Evaluation of the State Water Resources Research Institutes, U. S. Geological Survey	1993-94
Chair, Governor's Science and Technology Advisory Council, State of Colorado	1983-87

General Editor, Studies in Water Policy and Management Monograph Series, Westview Press	1980-93
Member, Subcommittee on Economics and Policy of the Committee on Irrigation-Induced Water Quality Problems, Water Science and Technology Board, National Research Council - National Academy of Sciences	1986-90
Member, Juba Valley Advisory Panel, Board on Science and Technology for International Development, National Research Council - National Academy of Sciences	1985-87
Member, Climate Board, National Research Council – National Academy of Sciences	1977-81
Chairman, Panel on Climate Impact Research, Climate Board, National Academy of Science	1980-81
Co-Editor, <i>Water Resources Research</i> , published by the American Geophysical Union	1967-74

Other Assignments:

Expert Witness for the Attorney General of Texas on the Pecos River case, Texas <i>versus</i> New Mexico	1989-90
Expert Witness for the State Engineer, New Mexico on the El Paso <i>versus</i> New Mexico water case	1986-87
Consultant to the Middle Rio Grande Water Conservancy District, Albuquerque, NM on tariff structures	1988, 1992
River Basin Planning Consultant, Gambia River Basin Commission Dakar, Senegal, Sponsored by USAID (part time)	1985-87
River Basin Planning Consultant, Senegal River Basin Commission, Dakar, Senegal, Sponsored by USAID (part time)	1986-87
Advisor on water resource planning to the Minister of Environment, State of Mendoza, Argentina, Summer	1985

Consultant on Water Resources Planning to the Technical Cooperation Service, Organization for Economic Cooperation and Development (OECD), Paris	1977-81
Water Program Fellow, International Institute of Applied Systems Analysis, Laxenburg, Austria	Summer, 1976
Consultant on National Water Planning to the Government of Botswana, sponsored by the Ford Foundation	Summer, 1974
Consultant to United Nations Development Program and Government of Kenya: Development Plan for the Tana River	1971-72
Consultant on National Water Planning and Project Evaluation, Plan Nacional Hidraulico, Secretaria de Recursos Hidraulicos, Government of Mexico and World Bank ,Summers	1971, 1973
Consultant on Water Development, Ministry of Agriculture, Robert R. Nathan Associates, Accra, Ghana	Spring, 1970
Lecturer in Economics, International Courses in Hydrology and Sanitary Engineering, Delft, The Netherlands	Summer 1968

### Memberships in Professional Societies

Association of Environmental and Resource Economists  
American Water Resources Association  
European Association of Environmental and Resource Economists  
American Geophysical Union

### Books Published.

1. *Management of Water Projects: Decision-Making and Investment Appraisal*, (with H.A. Becker, J. Bourgin, J.M. Boussard, J. van Doorn, and F. van Vught), Paris, O.E.C.D. 1985.
2. *Managing Renewable Natural Resources in Developing Countries*, editor and co-

- author with D. Gale Johnson, J. Crutchfield, M. Clawson, and R.G. Cummings, Boulder, CO.: Westview Press, January 1982, 150 pages.
3. *Natural Resource Economics: Issues, Analysis, and Policy*, New York: John Wiley and Sons, 1979, 350 pages.
  4. *Salinity in Water Resources: Proceedings of the Western Resources Conference*, co-edited with J.E. Flack, Boulder, CO.: Merriman Publishing Company, 1974, 177 pages.
  5. *Benefit/Cost Analysis for Water System Planning*, Washington, D.C.: American Geophysical Union, 1971, 144 pages.
  6. *Interbasin Transfers of Water: Economic Issues and Impacts*, co-authored with William K. Easter, Baltimore: Johns Hopkins Press, 1971, 196 pages.
  7. *Inland Waterway Transportation: Studies in Public and Private Management and Investment Decisions* (with others), Baltimore: Johns Hopkins Press for Resources for the Future, 1969, 145 pages.
  8. *Quantitative Decision Procedures in Management and Economics*, co-authored with C.R. Carr, New York: McGraw-Hill Book Company, 1963, 383 pages.

#### Articles and Book Chapters

1. Howe, Charles W. 2013 (forthcoming), "Reconciling Water Law and Economic Efficiency in Western Water administration", *University of Denver Water Law Review*, Vol. 17/Issue 1/Spring 2013.
2. Howe, Charles W., 2012, "Achievements and Issues in 2012 Colorado Water", *Colorado Business Review*, Vol. 78, No. 2, 2012.
- 3.. Howe, Charles W., 2012, "A Vision of Unified River Basin Planning and Management", Chapter 10 in Grayman, Loucks and Saito, eds., *Toward a Sustainable Water Future: Visions for 2050*, American Society of Civil Engineers, Reston VA.
- 4.. Howe, Charles W., John J. Boland and Nicholas Flores, 2009, "The Theory and Practice of Benefit Cost Analysis" in John J. Boland and Duane Baumann, *The Evolution of Water Resource Planning and Decision Making: Cheltenham, UK: Edward Elgar*.
- 5.. Howe, Charles W., 2008, "Water Law and Economics: An Assessment of River Calls and the South Platte Well Shutdown", *University of Denver Water Law Review*, Volume 12/Issue 1/Fall 2008, pp 181-189.
- 6.. Howe, Charles W. and Haripriya Gundimedda, 2008, "Interstate River Conflicts: Lessons from India and the U.S.", *Water International*, 33:4, 395-405, December.
7. Howe, Charles W., 2007, "Some Suggestions for Reducing Surface

Water/Groundwater Conflicts in the South Platte: Water Law and Economics”, *Colorado Water*, Colorado Water Resources Research Institute, October/November.

8. Howe, Charles W. (Chuck) and Christopher Goemans, 2007, “The Simple Analytics of Demand Hardening”, *Journal of the American Water Works Association*, Volume 99, Number 10 (24-25), October.

9. Howe, Charles W. and John S. Howe, 2006, "The Performance of Water Service Industry Stock Prices and Sensitivity to Highly Publicized Contract Failures", *Water International*, Volume 31, Number 4 (448-454), December.

10. Howe, Charles W. Howe, 2005, "The Return to the River Basin: The Increasing Costs of 'Jurisdictional Externalities' ", *Journal of Contemporary Water Research and Education*, Issue No. 131, June, pp 26-32.

11.. Howe, Charles W. and Helen Ingram, 2005, "Roles for the Public and Private Sectors in Water Allocation: Lessons from Around the World", Chapter 2 in Douglas S. Kenney (ed.) *In Search of Sustainable Water Management: International Lessons for the American West and Beyond*, Cheltenham, UK: Edward Elgar.

12.. Howe, Charles W., 2005, “The Functions, Impacts, and Effectiveness of Water Pricing: Evidence from the United States and Canada”, *International Journal of Water Resources Development*, Vol. 21, No. 1, March, pp43-54.

13. Howe, Charles W., 2005, "Property Rights, Water Rights and the Changing Scene in Western Water", Chapter 8 in Chennat Gopalakrishnan, Cecilia Tortajada, & Asit K. Biswas (eds.) *Water Institutions: Policies, Performance and Prospects*, New York: Springer.

14. Howe, Charles W. and Jeffrey W. Jacobs, 2005, “U.S. Water Services Privatization”, *The Water Report*, Issue # 12, February, pp 1-5.

15. Howe, Charles W. and Christopher Goemans, 2003, “Water Transfers and Their Impacts: Lessons from Three Colorado Water Markets”, *Journal of the American Water Resources Association*, Vol. 39, No. 5, October.

16. Howe, C. W., 2003, Transboundary Water Problems as "Jurisdictional Externalities": Increased Economic Efficiency Through Institutional Reform. *In: Diaz, H. F. and Morehouse, B. J. (eds.), Climate and Water, Transboundary Challenges in the Americas*. Kluwer Academic Publishers, Dordrecht, The Netherlands.

17. Howe, Charles W., 2002, "Historical Innovations in Water Management, Water Services, Institutions and Technologies", in *The Oxford Encyclopedia of Economic History*, New York: Oxford University Press.

18. “Policy Issues and Institutional Impediments in the Management of Groundwater: Lessons from Case Studies”, 2002, *Environment and Development Economics* 7: 625-

641, October.

19. "Effectiveness of Water Rate Increases Following Watering Restrictions", (with Chris Goemans), 2002, *Journal American Water Works Association*, October..
20. "The Interstate Compact as a Water Allocation Mechanism: Efficiency Aspects", with Lynne Bennett and James Shope, 2000, *American Journal of Agricultural Economics*, 82(4), November (1006-1015).
21. "The Effects of Privatization of Public Services: The Case of Urban Water", *Water Resources Update*, Issue Number 117, October, 2000.
22. "Protecting Public Values in a Water Market Setting: Improving Water Markets to Increase Efficiency and Equity", *University of Denver Water Law Review*, Vol. 3, Issue 2, Spring 2000 (357-372).
- 23.. "Reflections On A Century of Water Science and Policy, Special Issue of *Water Resources Update*, Editor, Issue No. 116, March, 2000.
24. "Guidelines for Riverine Water Quality Rehabilitation and Management during Economic Transition: Institutions, Economics and Alternative Strategies" (with Jeffrey J. Carmichael), 383-398 in D.P. Loucks (ed.), *Restoration of Degraded Rivers*, Kluwer Academic Publishers, 1998.
25. "Forms and Functions of Water Pricing: An Overview," 181-191 in Duane Baumann, John Boland and Michael Hanemann (eds.) *Urban Water Demand Management and Planning*, McGraw-Hill, Inc., 1998.
- 26.. "Designing Property Rights and the Regulatory Framework for Efficient Allocation of Water: Overcoming Institutional Failure," 257-273 in Carlos San Juan Mesonada and Alicia Montalvo Santamaria (eds.), *Environmental Economics in the European Union*, Mundi Prensa, Madrid, 1998.
- 27.. "Water Markets in Colorado: Past Performance and Needed Changes," 65-77 in K. William Easter, Mark W. Rosegrant and Ariel Dinar (eds.), *Markets for Water: Potential and Performance*, Kluwer Academic Publishers, 1998.
28. "Determinants of Ditch Company Share Prices in the South Platte River Basin" (with D. Jay Goodman), *American Jour. of Ag. Economics*, 79, August, 1997
29. "Water Resources Planning in a Federation of States: Equity vs Efficiency", *Natural Resources Journal*, vol. 36, Winter, 1996 (29-36).
30. "Increasing Efficiency in Water Markets: Examples from the Western United States", Terry L. Anderson and P. J. Hill (eds.) *Water Marketing: The Next Generation*, New York: Rowman and Littlefield Publishers, 1997.
31. "Sharing Water Fairly", *Our Planet*, Vol. 8, No. 3 (United Nations Development Program), 1996.

- 32 . "Environmental Policy in a Confederation of States", Chapter 2 in John Braden, Henk Folmer and Tom Ulen (eds.) *Environmental Policy with Political and Economic Integration*, Cheltenham, U.K.: Edward Elgar Publishing, Ltd., 1995.
- 33 . "On the Theory of Optimal Regional Development Based on an Exhaustible Resource" (originally published in *Growth and Change*, Vol. 18, No. 2 (53-68), Spring, 1987) republished in Kingsley E. Haynes, Kenneth J. Button and Peter Nijkamp (eds) *Modern Classics in Regional Science: Regional Dynamics*, Cheltenham, U.K.: Edward Elgar Publishing, Ltd. 1995.
34. .Review of Peter H. Gleick (ed.), *Water in Crisis: A Guide to the World's Fresh Water Resources*, New York and Oxford: Oxford University Press, in *Climate Change*, 31 (119-122), 1995.
- 35 . "Taxes versus Tradable Discharge Permits: A Review in the Light of the U. S. and European Experience," *Environmental and Resource Economics*, Vol. 4 (151-169), 1994.
- 36 . "Integracion de las Politicas de Agricultura, de Agua y de Medio Ambiente: Lecciones de la Experiencia de Estados Unidos," *Revista de Estudios Agro-Sociales* (Madrid), Vol. 1, 1994, pp. 229-242.
37. "Water Banks in the West" (with L. MacDonnell, K. Miller, T. Rice and S. Bates), *Natural Resources Law Center*, School of Law, University of Colorado, August 1994, pp. 1-220.
38. "Design and Analysis of Contingent Valuation Surveys Using the Nested Tobit Model," (with B. J. Lee and Lynne Bennett) *Review of Economics and Statistics*, May, 1994.
39. "Resolving Water Disputes Through Water Markets: Fact or Fiction?" in Ariel Dinar and Edna Loehman (eds.), *Resolution of Water Quantity and Quality Conflicts*, Westport, CT: Greenwood Publishing Group, 1994.
40. "The Value of Water Supply Reliability in Urban Water Systems" (with Mark G. Smith), *Journal of Environmental Economics and Management*, Vol. 26 (19-30), January 1994.
41. "Tradable Discharge Permits: Functioning, Historical Applications, and International Potential," *Colorado Journal of International Environmental Law and Policy*, Vol. 4, No. 2, Summer 1993.
42. "Inefficiencies in Water Project Design and Operation in the Third World: An Economic Perspective" (with John A. Dixon), *Water Resources Research*, Vol. 29, No. 7, (1889-1894) July 1993.
43. "Incorporating Public Preferences in Planning Urban Water Supply Reliability (with Mark G. Smith), *Water Resources Research*, Vol. 29, No. 10, (3363-3369) October, 1993.
44. "The U. S. Environmental Policy Experience: A Critique with Suggestions for the



- European Community," *Environmental and Resource Economics*, 3:1-21, 1993.
45. "Environmental Implications of the Single European Market," *Environment*, Vol. 36, No. 10, pp. 2-5, December 1991.
47. "An Evaluation of U. S. Air and Water Policies," *Environment*, Vol. 33, No. 7, pp. 10-18, September 1991.
48. "Environmental Problems and Policy in the Single European Market" (with Henk Folmer), *Environmental and Resource Economics*, Vol. 1, No. 1, (17-41), 1991.
49. *The Water Transfer Process as a Management Option for Meeting Changing Water Demands* (with others), Natural Resources Law Center, University of Colorado, 1990.
50. "The Economic Impacts of Agriculture-to-Urban Water Transfers on the Area of Origin: A Case Study of the Arkansas River Valley in Colorado" (with Jeffrey K. Lazo and Kenneth R. Weber), *American Journal of Agricultural Economics*, Vol. 72, No. 5, December 1990, 1200-1204.
51. "Equity versus Efficiency in Indonesian Irrigation: An Economic Evaluation of the PASTEN Method," Chapter 15 in (eds.) R.K. Sampath and R.A. Young, *Social Economic and Institutional Issues in Third World Irrigation Management*, Boulder: Westview Press, 1990.
52. "Transaction Costs as Determinants of Water Transfers," with Carolyn S. Boggs and Peter Butler, *University of Colorado Law Review*, Vol. 61, Issue 3, Spring 1990.
53. "Public Intervention Revisited: Is Venerability Vulnerable?" Chapter in (ed.) V. Kerry Smith, *Environmental Resources and Applied Welfare Economics*, Resources for the Future, Inc., 1988, pp. 191-211.
54. "Water Resources of the Upper Colorado River Basin: Problems and Policy Alternatives" (with Ashley Ahrens), Chapter 5 in (eds.) El Ashry and Gibbons, *Water and Arid Lands of the Western United States*. Cambridge and New York: Cambridge University Press, 1988.
55. "Water As An Economic Commodity," Chapter 4 in (ed.) David H. Getches, *Water and the American West*, Natural Resources Law Center, University of Colorado, 1988.
56. "Project Benefits and Costs from National and Regional Viewpoints: Methodological Issues and Case Study of the Colorado-Big Thompson Project," *Natural Resources Journal*, Vol. 27, No. 1: 1-20, Winter, 1987.
57. "Area-of-Origin Protection in Transbasin Water Diversions," with Lawrence J. MacDonnell, *University of Colorado Law Review*, Vol. 57, Issue 3, 527-548, Spring, 1986.
58. "Environment & Primary Activities: Economic, Social, and Legal Considerations," *Science of the Total Environment*, 55 (3-24), 1986.
59. "Economic Model of Water Quality Management for a Heavily Polluted River in Central Java," with Wan Usman, *Economics and Finance in Indonesia* (Ekonomi dan Keuangan Indonesia), Vol. XXXIV, No. 2, 181-196, 1986.

60. "Innovative Approaches to Water Allocation: The Potential for Water Markets" (with Dennis Schurmeier and W. Douglass Shaw, Jr.) *Water Resources Research*, Vol. 22, No. 4: 493-445, April 1986.
61. "Innovations in Water Management: Lessons from the Colorado-Big Thompson Project and the Northern Colorado Water Conservancy District," Chapter 6 in 52. Kenneth D. Frederick (ed.) *Scarce Water and Institutional Change*, Washington, D.C.; Resources for the Future, Inc., 1986.
63. "Economic, Legal, and Hydrologic Dimensions of Potential Interstate Water Markets," *American Journal of Agricultural Economics*, Vol. 67, No. 5, December 1985.
64. "Observations on the Frontiers and Fringes of the Neoclassical Paradigm," with William D. Schulze, *American Journal of Agricultural Economics*, Vol. 67, No. 5, December 1985.
65. "Natural Resources: Perspectives, Problems, and Policy Guidelines," *Ricerche Economiche*, 1985, No. 4, 439-466.
66. "Organizing the Receptor Side of Pollution Rights Markets," *Australian Economic Papers*, December 1983 (with D.R. Lee), pp. 280-289.
67. "Priority Pollution Rights: Adapting Pollution Control to a Variable Environment," *Land Economics*, May 1983 (with D.R. Lee), pp. 141-149.
68. "Priority Pollution Rights: An Adaptation of Western Water Law to Pollution Control Problems," (with D.R. Lee) in (eds.) Erhard F. Joeres & Martin H. David, *Buying A Better Environment*, Madison: University of Wisconsin Press, 1983, pp. 121-130.
69. "The Impact of Price on Residential Water Demand: Some New Insights," *Water Resources Research*, Vol. 18, No. 4, August 1982, pp. 713-716.
70. "The Performance of Appropriative Water Rights in the Western United States During Drought," with Paul K. Alexander and Raphael A. Moses, *Natural Resources Journal*, Vol. 22, No. 2, April 1982, pp. 379-390.
71. "Guidelines for a Responsible Natural Resources Policy" in George Horwich and James P. Quirk (eds.) *Essays in Contemporary Fields of Economics*, West Lafayette, Indiana: Purdue University Press, 1981, pp. 131-151.
72. "New Procedures for the Evaluation of Federal Water Projects," *The Southwestern Review of Management and Economics*, Vol. 1, No. 1, Spring 1981, pp. 115-122.
63. "Regional Economic Effects of Changes in Irrigation Water Salinity Within A Riverbasin Framework," (with J.T. Young) in Dan Yaron (ed.), *Salinity in Irrigation and Water Resources*, New York: Marcel Dekker, 1980. pp. 215-244.
64. "Economic Issues Related to Large-Scale Water Transfers in the U.S.A." *Water Supply and Management* (Pergamon Press), Vol. 2, 1978, pp. 127-136.
65. "The Effects of Water Resource Development on Economic Growth: The Conditions for Success," in *Natural Resources Journal*, Vol. 16, October, 1976, pp. 939-955, and reprinted in Utton, Albert E. and Ludwik Teclaff (eds.), *Water in A*

*Developing World*, Boulder, CO.: Westview Press, 1978, pp. 202-218.

66. "A Coordinated Set of Economic, Hydro-Salinity, and Air Quality Models of the Upper Colorado River Basin with Applications to Current Problems," in Bower, Blair T. (ed.) *Regional Residuals Environmental Quality Management Modeling*, Washington, D.C.: Resources for the Future, Inc. 1977, pp. 125-156.

67. "Displaced Facilities and Benefit Calculations: A Comment," *Land Economics*, Vol. 53, No. 4, November 1977, pp. 496-498.

68. "A Decision Model for Adjusting to Natural Hazard Events, with Application to Urban Snow Storms," (with Harold C. Cochran), *Review of Economics and Statistics*, Vol. LVIII, No. 1, February 1976, pp. 50-58.

69. "Economic Incentives for Salinity Reduction and Water Conservation in the Colorado River Basin," with D.V. Orr in Howe and Flack (eds.) *Salinity in Water Resources*, Boulder, CO.: Merriman Publishing Company, 1974, pp. 120-138.

70. "Effects of Agricultural Acreage Reduction on Water Availability and Salinity in the Upper Colorado River Basin," (with D.V. Orr) *Water Resources Research*, Vol. 10, No. 5, October 1974, pp. 893-897.

71. "In-House Water Savings," with William J. Vaughn, *Journal American Water Works Association*, Vol 64, No. 2, February 1972, pp. 118-121.

72. "Interbasin Transfers: Do We Need Them?", *Water Resources Bulletin*, Vol. 7, No. 4, August 1971, pp. 323-345.

73. "Savings Recommendations with Regard to Water-System Losses," *Journal American Water Works Association*, Vol. 63, No. 5, May 1971, pp. 284-286.

74. "Policies for Efficient Regional Water Management," with B.T. Bower, *Proceedings of the American Society of Civil Engineers, Journal of the Irrigation and Drainage Division*, December 1970.

75. "The Structure of Congestion Costs and Optimum Pricing in Inland Waterway Transportation," (with Robert M. Steinberg), *Highway Research Record*, No. 296, Highway Research Board, National Academy of Sciences, 1969.

76. "Municipal Water Demands," in Sewell, W.R. and Blair T. Bower et al., *Forecasting the Demands for Water*, Policy and Planning Branch, Department of Energy, Mines, and Resources, Ottawa, Canada, 1968.

77. "An Analysis of African Household Consumption and Financial Behavior in Kenya and Uganda," *East African Economics Review*, 1968.

78. "Water Pricing in Residential Areas," *Journal of the American Water Works Association*, Vol. 60, No. 5, May 1968, pp. 497-501.

79. "Water Resources and Regional Economic Growth in the United States, 1950-1960," *Southern Economic Journal*, April 1968.

80. "Mathematical Model of Barge Tow Performance," *Proceedings of the American*

*Society of Civil Engineers, Journal of the Waterways and Harbors Division*, November 1967.

81. "The Impact of Price on Residential Water Demand and Its Relation to System Design and Price Structure," (with F.P. Linaweaver, Jr.) *Water Resources Research*, Vol. 3, No. 1, 1967.

82. "Broad Horizons in Water Resource Planning and Investment," *Water Resources Research*, Vol. 2, No. 4, 4th Quarter 1966.

83. "The Use of Sample Household Expenditure Surveys in Economic Planning in East Africa," *Bulletin of the Oxford Institute of Economics and Statistics*, August 1966.

84. "A Statistical Projection Model for the Kenya Economy," with H. Karani, *East African Economics Review*, June 1965.

85. "Methods for Equipment Selection and Benefit Evaluation in Inland Waterway Transportation," *Water Resources Research*, Vol. 1, No. 1, 1965.

86. "Optimal Service Policies and Finite Time Horizons," with C.R. Carr, *Management Science*, Vol. 9, No. 1, October 1962.

87. "Proof of Existence of Equilibrium in von Neumann Models," *Econometrica*, July, 1960.

#### Technical Reports, Editorials, and Comments

1. "Guidelines for the Uniform Definition, Identification, and Measurement of Economic Damages from Natural Hazard Events" (with Harold C. Cochrane), Program on Environment and Behavior Special Publication No. 28, Institute of Behavioral Science, University of Colorado, 1993.
2. "Water Pricing: An Overview," *Water Resources Update* (Universities Council on Water Resources), Issue No. 92, Summer 1993.
3. "The IUCN Review of the Southern Okavango Integrated Water Development Project," *Environment*, Vol. 36, No. 1, Jan./Feb. 1994.
4. "Achieving Fairness in Water Transfers: A Review of *Water Transfers in the West*, Committee on Western Water Management, Water Science and Technology Board, National Research Council," in *Rivers*, Vol. 4, Jan. 1993.
5. "An Analytical Framework for Water Transfers," 1990, in *Transferability of Water Entitlements*, Proceedings of An International Seminar and Workshop, Centre for Water Policy Research, University of New England, Armidale, Australia, July.
6. "Impacts of Water Transfers on Rural Regions and Communities: A Case Study of the Arkansas Valley, Colorado," 1990, Proceedings of An International Seminar and Workshop, Centre for Water Policy Research, University of New England,

Armidale, Australia, July

7. "Technology, Institutions and Politics: Still Out of Balance," 1990, *Water Resources Research*, 26(10) October.
8. "The Social Discount Rate: An Introduction," *Journal of Environmental Economics and Management*, Vol. 18, No.3, May 1990.
9. "Obstacles to the Use of Social Science Analysis in Water Decision-Making, or 'Where's the Demand for Social Science Input'," Chapter 2 in (eds.) Baumann and Haines, *The Role of Social and Behavioral Sciences in Water Resources Planning and Management*, American Society of Civil Engineers, 1988, pp. 40-50.
10. *Handbook for the Economic Evaluation of Application for Appropriation of Surface and Ground Water in the State of Idaho*, Idaho Water Resources Research Institute, February 1988, pp. 1-152.
11. "The Utilization and Impacts of Climate Information on the Development and Operation of the Colorado River System," (with Allan H. Murphy) in *Managing Climatic Resources and Risks*, Climate Board, National Research Council, National Academy Press, 1981, 36-44.
12. "The Design and Evaluation of Institutional Arrangements for Water Planning and Management," background paper for the United Nations Water Conference, Mar del Plata, Argentina, E/Conf. 70/A.4, November 1976, UN, New York, 53 pages.
13. *Future Water Demands: The Impacts of Technological Change, Public Policies, and Changing Market Conditions on the Water Use Patterns of Selected Sectors of the United States Economy: 1970-1990*, with others, a study for the National Water Commission, National Technical Information Service, March 1971, 225 pages.
14. "Models of a Bargeline: An Analysis of Returns to Scale in Inland Waterway Transportation," Institute Paper No. 77, Krannert Graduate School of Industrial Administration, Purdue University, July, 1964.
15. "Process and Production Functions for Inland Waterway Transportation," Institute Paper No. 65, Institute of Quantitative Research in Economics and Management, Krannert Graduate School of Industrial Administration, Purdue University, February 1964.