

ROBERT S. GEMMELL

e-mail: r-gemmell@northwestern.edu

Professor of Civil Engineering, Northwestern University, 1975-present.
Associate Professor of Civil Engineering, Northwestern University, 1967-1975.
Assistant Professor of Civil Engineering, Northwestern University, 1964-1967.
Lecturer and Research Fellow, Harvard University, 1963.
Teaching Fellow and Research Assistant, Harvard University, 1957-1962.
Instructor (Civil Engineering) Rutgers University, 1957.

CONSULTING AND PRIVATE PRACTICE

State of Illinois, Institute of Natural Resources (Various environmental studies).

Northeastern Illinois Planning Commission (Various tasks related to development of Areawide Waste Treatment Management Plan).

Argonne National Laboratory, Center for Environmental Quality (Conceptual studies on the development of a program for comprehensive river basin planning with special emphasis on water quality management, for the State of Illinois, Institute for Environmental Quality).

U.S. Army Corps of Engineers, Chicago District (Impact assessment of their projected Alternatives for Wastewater Management in the Chicago-South End of Lake Michigan Area. Team Leader). Also, Chicagoland Underflow Plan, Phase I General Design Memorandum Study (Special Assignments).

Metropolitan Water Reclamation District of Greater Chicago (Computer Task Force).

City of Chicago, Department of Development and Planning (Preparation of a research agenda relating to proposed further development of Chicago's lakefront).

American Public Works Association (Studies on costs of storm sewer separation, on infiltration in sewers, and related topics).

Department of Housing and Urban Development, U.S. Gov't., Washington (Report on the application of systems engineering to urban problems).

General American Transportation Corporation, Research Division, Chicago (Consulting on water resources research and hydrologic modeling).

National Bureau of Standards, Institute for Applied Technology, Technical Analysis Division (Impact evaluation methodologies).

Barton-Aschmann Associates (Water resources planning).

City of Chicago, Dept. of Water and Sewers, Division of Water Purification (In-plant research on water treatment processes).

Consortium of Governmental Counselors, Inc., Evanston, Illinois (Special studies for various governmental entities).

C.B. Burke Engineering, Ltd., Rosemont, Ill. (Hydraulic, hydrologic and environmental studies).

CES Telecommunications, Skokie, Ill. (Hydrologic consulting for flood early-warning system).

Employment Research & Development Institute, Wilmette, Illinois (Development of civil service examinations for engineering personnel, Metropolitan Water Reclamation District of Greater Chicago).

Metro Design Associates, Inc., Schaumburg, Illinois. (Technical guidance and peer review of sanitary sewer force main analysis and evaluation for Finch University, Chicago Medical College, North Chicago, Illinois.)

ROBERT S. GEMMELL

CIVIL SERVICE EXAMINATION BOARDS AND ADVISORY COMMITTEES

- 1) Metropolitan Water Reclamation District of Greater Chicago
- 2) City of Chicago, Department of Environmental Control
- 3) Institute for Environmental Quality (State of Illinois)
Water Quality Advisory Committee

PROFESSIONAL AND HONORARY SOCIETIES

(current and previous activities)

American Society of Civil Engineers

Past Editor, ASCE Research Newsletter, Committee on Research (National)
Committee on Sanitary Engineering Aspects of Water Resources (National)
Past President, Illinois Section
Past Secretary, Illinois Section
Committee on Economic Status of Engineers (Illinois Section)
Founding Chairman, Water Resources Division (Illinois Section), now known
as Environmental Engineering and Water Resources Division
Past Chairman, Committee on Ethics and Professional Practice (Illinois
Section)
Past Chairman, Committee on Continuing Education (Illinois Section)
Awards Committee (Illinois Section)
Board of Directors (Illinois Section)
Former Advisor, Northwestern University Student Chapter

American Water Works Association

Student Activities Committee (National)
Past Chairman, Student Activities Committee (Illinois Section)
Water Resources Committee (Illinois Section)

American Water Resources Association

Director, (1978-1981)
Publications Committee (National)
Founding President, (Illinois Section)
Program Committee, Illinois Water Resources Conf. (2 yrs., Chairman 1 yr.)
Chairman, Technical Program Committee, Sixteenth AWRA Conference.
Minneapolis, Min.: Oct. 12-16, 1980.

International Water Resources Association

Vice Chairman, Technical Program Committee, First International Congress
on Water Resources (Chicago, 1973)

American Geophysical Union

Society of the Sigma Xi

Past President, Northwestern University Chapter
Past Member, Executive Committee

Tau Beta Pi

Chi Epsilon

ROBERT S. GEMMELL

UNIVERSITY COMMITTEE ACTIVITY

(current and previous activity)

Civil Engineering

Education Committee (Chairman, 1989-present)
Environmental Health Engineering
Urban and Regional Planning
Student Activities Committee (Chairman, 1966-1968)
Committee for Senior Design Project (Chairman, 1965-1966)
Curriculum Committee (Chairman 1971-1972 and 1972-1973)
High School Institute (Coordinator 1970-1971)
Accreditation Coordinator (1986-1988)

Technological Institute

Secretary to the Faculty
Council on Urban and Regional Planning (Chairman 1975-1979)
Atmospheric Sciences Committee
Design and Development Center Executive Committee
Urban Systems Engineering Center
 (a) Research Committee
 (b) Educational Programs Committee
Long Range Planning Committee
Space, Facilities and Services Committee
Committee on Committees
Curriculum Committee
Review Committee on Promotions and Tenure
Academic Standing Committee
Safety Committee

Graduate School

Administrative Board
Graduate Student Affairs
Advanced Degrees (Chairman, 1972-1974)

University

Architecture, Aesthetics and Physical Plant (Chairman, 1973-1974)
Biohazards Safety Committee (Chairman, 1982-83)
Faculty Planning Committee
Transportation Education Programs Review Committee (Chairman)
Northwestern Community Council

COMMUNITY ACTIVITIES

City of Evanston

Evanston Environment Board, Member

First Presbyterian Church, Evanston, Illinois

Elder and past member, Session
 Past Chairman, Mission and Benevolence Committee

Deacon and past President, Board of Deacons

Past Member, Long Range Planning Committee

ROBERT S. GEMMELL

COURSES TAUGHT

720-101	Engineering Man's Environment
720-190	Civil Engineering Freshmen Seminar (Shared)
720-202	Planning and Management of Man's Environment
720-302	Legal and Administrative Aspects of Engineering
720-340	Fluid Mechanics II (grad-undergrad)
720-346	Meteorology and Hydrology (grad-undergrad)
720-359	Hazardous Waste Management
720-360	Environmental Impact Evaluation (grad-undergrad)
720-361	Public Health Engineering (grad-undergrad)
720-363	Community Air Pollution (grad-undergrad)
720-364	Sanitary Engineering (grad-undergrad)
720-370	Environmental Engineering Design (grad-undergrad)
720-377	Project in Planning and Design (Senior Project)
720-378	Water Resources Development (grad-undergrad)
720-395	Special Topics in Civil Engineering
720-398-1,2	Community-Based Design
720-399	Independent Study in Civil Engineering
720-460-1	Water and Wastewater Treatment (grad)
720-462-1	Sanitary Engineering Design I (grad)
720-462-2	Sanitary Engineering Design II (grad)
720-499	Projects (grad)
720-516	Environmental Health Engineering Seminar
720-590	Research (grad)

ROBERT S. GEMMELL

PH.D. STUDENTS

Heaney, James P. (with A. Charnes) June, 1968
Dissertation Title: "Mathematical Programming Model for Long-Range River Basin Planning with Emphasis on the Colorado River."

Lagvankar, Ashok L. - June 1968
Dissertation Title: "Some Size-Density Relationships for Chemical Floccs"
(Dr. Lagvankar received the Academic Achievement Prize from the American Water Works Association for the best dissertation on a water supply topic for the year.)

Rogers, Jerry R. - June 1970
Dissertation Title: "Seasonal Streamflow Generation for Rivers with Highly Variable Flow."

Dajani, Jaris S. - June 1971
Dissertation Title: "Network Evaluation of Wastewater Collection Economics."

Letterman, Raymond D. (with J. Quon) - June 1972
Dissertation Title: "Influence of Rapid Mix Parameters on Flocculation."

Chang, Shih-cheng - June 1972
Dissertation Title: "Computer Simulation of Flocculent Settling."

Adams, B.J. - August 1973
Dissertation Title: "Regional Wastewater Management: A Water Quality Evaluation of System Centralization."

Hey, Donald G. - June 1974
Dissertation Title: "A Marginal Cost Basis for Metropolitan Water Supply Allocation and Operation."

Lin, Andar C. - 1975
Dissertation Title: "Simulation Model for Sedimentation Basis Analysis."

Van Meer, Gretchen L. (with W.O. Pipes) - August 1976
Dissertation Title: "A Mathematical Model of Conservative Substances in the Illinois Waterway."

Ratanachai, Chat-Chai - August 1984
Dissertation Title: "An Ion Exchange System Optimization With Emphasis on Regenerant Waste Disposal."

Lumeh, Larry Michael - June 1986
Dissertation Title: "A Water Resources Planning Methodology for West Africa."

ROBERT S. GEMMELL

RESEARCH GRANTS AND CONTRACTS

"Orthokinetic Coagulation Studies," R.S. Gemmell, U.S.P.H.S. Research Grant UI 00685, June 1, 1965 through May 31, 1968; \$48,738 total. Continued support for two additional years approved, but not funded.

"Systems Analysis in Sewage Treatment," A. Charnes and R.S. Gemmell, expired August 31, 1966.

"Network Evaluation of Wastewater Collection Economics," Office of Water Resources Research, Dept. of Interior. Project No. A-042-Ill. July 1970-June 1971. \$6,700 (direct costs).

"Urban Water Resources: A Methodology for Management," R.S. Gemmell and H.B. Gotaas. Office of Water Resources Research, Dept. of Interior Project No. B-059-Ill. Sept. 1970 - Aug. 1973. \$24,500 (direct costs).

"Performance of Regionally Related Wastewater Treatment Plants," R.S. Gemmell, Office of Water Resources Research, Dept. of Interior Project No. A-050-Ill. July 1970 - June 1972, \$6,850 (direct costs). July 1972 - June 1973, \$8,205 (direct costs).

"Provision of Urban Services," L. Moses (Economics), A. Hurter (Industrial Engr.) and R.S. Gemmell, Urban Systems Engineering Center, N.U. (NSF funding), June 1972 - Sept. 1973 (faculty summer support + research assistants, approx. \$15,000).

"Systematic Analysis of the Proposed Chicago Lakefront Program: Issues, Problems and Related Research Needs." R.S. Gemmell (contract coordinator), J. Armstrong, J. Meltzer and M. Reshkin. City of Chicago, Department of Development and Planning, Contract No. 37900, June 1974 - October 1975. \$32,000 (direct costs).

"Evaluation of Impacts Arising from Wastewater Management Systems, Chicago - South End of Lake Michigan Region," R.S. Gemmell, Contract, U.S. Army Corps of Engineers, Chicago District. February 1972 through June 1973. \$32,000 (direct costs).

"A Comparative Study of the Attitudes and Characteristics of Selected River Recreation Users in Montana and Colorado," Robert S. Gemmell, Principal Investigator. Forest Service, U.S.D.A., May 26, 1977 through September 30, 1978. \$24,000 (direct costs).

"Economic Impact of Proposed Changes in Illinois Regulations for Public Water Supply," R.S. Gemmell. Project No. 80.118, State of Illinois, Institute for Environmental Quality. November 1977 through June 30, 1978. \$17,500 (direct costs).

"Disposal of Brines from Ion Exchange Softening Processes," Robert S. Gemmell, Principal Investigator, State of Illinois, Institute of Natural Resources, Project No. 20.129, April 1979 through May 1980. \$14,500 (direct costs).

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PUBLICATIONS

"A Mathematical Model of Coagulation," with G.M. Fair, Jour. Col. Sci., 19, pp.360-372, April 1964.

"Power Dissipation in Biological Flocculation," with G.M. Fair and H.N. Myrick, Advances in Water Pollution Research, J.K. Baars, ed., p.201, Pergamon Press, 1965 (Proceedings of 2nd Int. Conf. on Water Pollution Control, Tokyo, 1964.)

"Economic Evaluation of Flow Augmentation: A Systems Analysis Case Study," with J.R. Rogers, Proc. 21st Industrial Waste Conference, Part I, Purdue University, May 1966, p.568.

"Place of Water Resources Planning in Economic Regional Development," Panel Discussion Contribution, The Fresh Water of New York State: Its Conservation and Use, Wm.C. Brown & Co., 1967, p.182.

"Research on Variables Affecting Filtration," Discussion paper with J.E. Quon, SED Jour., 92, No. SA1, ASCE, Feb. 1966, p.328.

"Long Range River Basin Planning: Alternative Developmental Paths for Water Allocation and Pollution Control," with J.P. Heaney, A. Charnes and H.B. Gotaas, Proceedings, Water for Peace Conference, Washington, D.C., May, 1967.

"Simulation of Flood Diversion from a Lake System," (with J.R. Rogers), Proceedings, Third American Water Resources Conference, San Francisco, Nov. 1967, p.284.

"Impact of Institutional Arrangements on the Available Alternative Developmental Paths for Water Allocation and Pollution Control in the Colorado River Basin," (with J.P. Heaney, A. Charnes and H.B. Gotaas), Proceedings, Third American Water Resources Conference, San Francisco, Nov. 1967, p.84.

"A Size-Density Relationship for Flocs," with A.L. Lagvankar, J. AWWA, 60, 9, pp.1040-1046, Sept. 1968.

"Production Cost Factors for Rate-Making," with J.P. Heaney. J. AWWA, 62, No. 2, pp.102-106. Feb. 1969.

"Civil Engineering and Urban Systems," with G.L. Peterson, D.S. Berry and R.D. Worrall. Jour. Urban Planning & Development Div., ASCE, April 1969.

"Coagulation of Activated Carbon Suspensions," (with J.E. Quon and R.D. Letterman), J. AWWA, 62, 2, pp.652-658, Oct 1970.

"Mixing and Sedimentation Basins," Chapter 4 of Water Quality and Treatment. McGraw-Hill, 1971.

"Generated Monthly Streamflows for the Midwestern and Southwestern United States," (with J.R. Rogers), Water Resources Bulletin, No. 3, pp.581-591, June 1971.

"On the Centralization of Wastewater Treatment Facilities," with B.J. Adams and J.S. Dajani, Water Resources Bulletin, 8, pp.669-678, August 1972.

"Mathematical Modeling of Particle Destabilization and Flocculation," Mathematical Modeling in Environmental Engineering (Proceedings of AEEP Workshop), Dec. 1972.

"The Optimal Design of Urban Wastewater Collection Networks," with J.S. Dajani and E.K. Morlok, Jour. San Engr. Div., ASCE, pp.853-867, December 1972.

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"The Performance of Regionally-Related Wastewater Treatment Plants," with B.J. Adams. Jour. Water Pollution Control Federation, 45, pp.2088-2102, October 1973.

"The Influence of Rapid Mix Parameters on Flocculation," with R.D. Letterman and J.E. Quon, Jour. Amer. Water Works Assn., 65, pp.716-722, Nov. 1973.

"Economic Guidelines for Public Utilities Planning," with J.S. Dajani, ASCE Urban Planning and Development Division Journal, 99, UP3, pp.171-182, Sept. 1973.

"Multidisciplinary, Judgmental Assessment of the Environmental Impacts of Large Scale Engineering Projects," with G.L. Peterson and J.L. Schofer, Ekistics, 218, pp.23-30, January 1974.

"Impact Assessment: A Design-Interactive Strategy Using a Multidisciplinary Panel," with J.L. Schofer and G.L. Peterson, Environmental Impact Assessment, Midwest Universities Consortium on Environmental Education and Research, pp.21-47, September 1974.

"Multidisciplinary, Design-Interactive Evaluation of Large Scale Projects," with G.L. Peterson and J.L. Schofer. Proceedings, Fifth Environmental Design Research Assoc. Conf. (EDRA-5), Methods & Measures, pp.2510272, September 1974.

"Film Transport Coefficient in Agitated Suspensions of Activated Carbon," with R.D. Letterman and J.E. Quon, Water Poll. Control Fed. 46, No. 11, pp.2536-2546, November 1974.

"Mean Estimate Deficiencies in Water Quality Studies," with B.J. Adams, Jour. Hyd. Div., ASCE, 101, No. 7, pp.989-1022, July 1975.

"Modeling and Simulation of the Aggregation of Suspension," Mathematical Modeling for Water Pollution Control Processes, Chapter 2, T.M. Keinath and M. Wanielista, Editors, Ann Arbor Science, Ann Arbor, pp.67-84, 1975.

"Biological and Chemical Water Pollutants of Local Concern," with Richard P. Reilly. Staff Paper No. 9, Northeastern Illinois Planning Commission 208 Project, November 1976.

"The Judgmental Impact Matrix Approach: A Framework for Evaluating the Social and Environmental Impacts of Transportation Alternatives," with J.L. Schofer and G.L. Peterson, Social Impact Assessment: A Sourcebook for Highway Planners, Vol. 7. Report No. FHWA-RD-76-52, Federal Highway Administration, June 1975.

"Social Impact Assessment: Comments on the State of the Art," with G.L. Peterson. Methodology of Social Impact Assessment, Finster-Bush and Wolf, Editors, Dowden, Hutchinson and Ross, pp.374-387, 1977.

"Water Quality Standards of Illinois, Indiana and Wisconsin," with Gary D. Harmon. Staff Paper No. 19, Northeastern Illinois Planning Commission 208 Project, (25 pp.), April 1977.

"A Systems Analysis of the Solid-Liquid Separation Processes of a Water Treatment Plant," with Dean C. Gross and J.A. FitzPatrick, Proceedings, 98th Annual Conference, American Water Works Association, June 1978.

"Water Quality Evaluation of Regional Wastewater Management," with B.J. Adams, Jour. Envr. Eng. Div., ASCE, 106, EE2, pp.437-450, April 1980.

"Evaluation of Barium Removal Methods for Groundwater Supplies," with T.L. Krause. Proceedings 102nd Annual Conference, American Water Works Association, May 1982. pp.293-330.

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REPORTS

"Orthokinetic Coagulation," Report to U.S.P.H.S. (1963) with G.M. Fair.

"Internal Hydraulic Work in Flocculation," Final Report to U.S.P.H.S. on Harvard Univ. Research Grant, 1966, with G.M. Fair.

"A Method of Solution of Some Non-Linear Problems in Abatement of Stream Pollution," with A. Charnes, Systems Research Memorandum No. 103, Northwestern University, Tech. Institute, May 1964.

"Fox River: A Diversion Scheme," C.E. Senior Class Design Project, 1965.

"DesPlaines River: A Plan for Multipurpose Development in Northeastern Illinois," C.E. Senior Class Design Project, 1966.

"Lake Michigan Development Proposal," C.E. Senior Class Design Project, 1969.

"Urban Systems Engineering," with G.L. Peterson and R.D. Worrall. Advisory Report to the Department of Housing and Urban Development, February 1967.

"Urban Wastewater Systems: Planning and Economic Analysis" (with J.S. Dajani) Report N. TP-71-06-01, Urban Systems Engineering Center, Northwestern University, 1971.

"Economics of Wastewater Collection Networks," (with J.S. Dajani) Final Report, Proj. No. A-042-Ill. Univ. of Illinois Water Resources Center, Research Report No. 43, 1971.

"An Analysis of Individual and Grouped Performance of Regionally Related Wastewater Treatment Plants," with B.J. Adams, Report No. TP-73-06-01 Urban Systems Engineering Center, Northwestern University, 1973.

"Water Quality Evaluation of Regionalized Wastewater Systems," with B.J. Adams. Final Report, Project A-050-Ill., Water Resources Center, University of Illinois (Urbana), July 1973.

"Social-Environmental Evaluation, Chicago-South End Lake Michigan Area Wastewater Management Study" with L.C. Strawhun and others. U.S. Army Corps of Engineers, Chicago District, 1973.

"Metropolitan Water Supply Allocation and Operation," with D.L. Hey. Final Report, Proj. No. B-059 Ill. Univ. of Illinois Water Resources Center, Research Report No. 83, April 1974, (UILLI-WRC-74-0083).

"An Analysis of the Environmental Protection Agency Needs Survey." Prepared for National Commission on Water Quality by the American Public Works Association, April 1975 (consultant to APWA).

"Chicago Lakefront Development: A Proposed Research Agenda," with J. Armstrong, J. Meltzer and M. Reshkin. Final Report, Contract No. 37900, Department of Development and Planning, City of Chicago, October 1975.

"Analysis of Practices for Preparing an Economic Analysis and Determining Infiltration and Inflow." Vol. 1, Chapter 5: Economic Analysis. Prepared for American Public Works Association Research Foundation for incorporation in their report to the USEPA, Storm and Combined Sewer Branch. Demonstration Grant No. 803151-01-0, March 1976 (Draft).

"Economic Impact of Revisions of the Public Water Supply Regulations, R77-13," with T.D. Waite, Illinois Institute of Natural Resources, Document No. 78/09, August 1978.