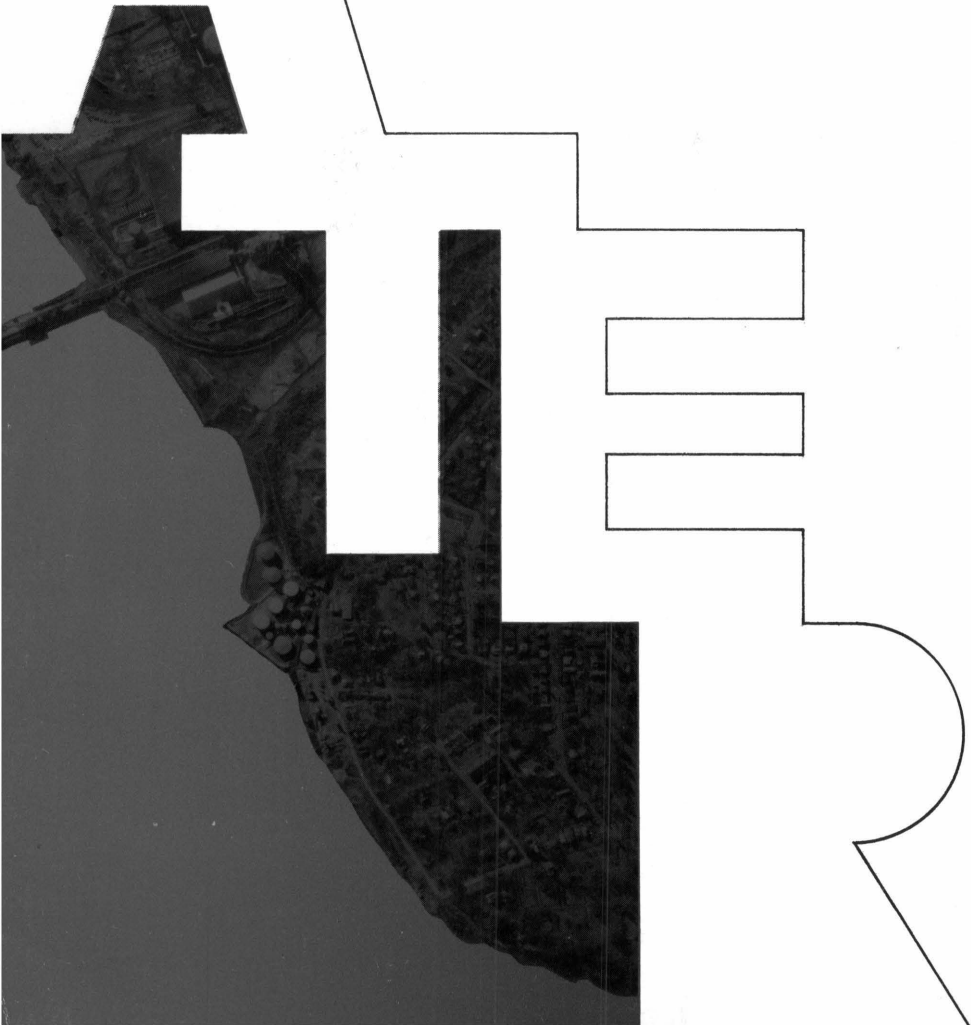


Bulletin 17:
WATER RESOURCES RESEARCH INTERESTS
IN THE COLLEGES AND UNIVERSITIES OF VIRGINIA
William R. Walker



WATER RESOURCES RESEARCH INTERESTS
IN THE COLLEGES AND UNIVERSITIES
OF VIRGINIA

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PREFACE

To establish guidelines and priorities for the water resources research and development programs in Virginia, three basic reports are planned by the Water Resources Research Center. The first presents a detailed inventory of persons with water related research interests at Virginia Colleges and Universities; the second presents a detailed survey of active and current research projects now being conducted by Universities, Government Agencies and Industries; and the third surveys the water resource problems and research needs within the state.

This bulletin, "Water Resources Research Interests in Colleges and Universities of Virginia," constitutes the first report. In effect, it documents the current reservoir of research capability within the state educational institutions.

The information is segmented according to colleges and universities represented. For each school, the persons and their interests are listed by department in alphabetical order.

The addresses of the participating institutions are in Appendix A.

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SUMMARY OF WATER RESEARCH INTERESTS

College or University	Faculty Members	
	Number with Indicated Interest	No. Involved with Active Research Proj.
College of William and Mary	9	5
Hollins College	1	0
Old Dominion College	2	2
University of Richmond	4	4
Univeristy of Virginia	9	7
Virginia Institute of Marine Science	12	11
Virginia Military Institute	5	2
Virginia Polytechnic Institute	48	34
Virginia State College	3	2
Washington and Lee	4	0
	—	—
TOTALS	97	67

INTEREST IN
WATER RESOURCES RESEARCH
AT THE
COLLEGE OF WILLIAM AND MARY

*Denotes persons engaged in currently active or recently active research projects.

COLLEGE OF WILLIAM AND MARY

BIOLOGY

Dr. J. T. Baldwin

Water relations in the Dismal Swamp and the preservation of a botanically rich and unique swamp in James City County, Virginia.

Dr. Garnett R. Brooks, Jr.*

Ecology of herpets.

CHEMISTRY

Dr. Alfred R. Armstrong

Analytical methods for trace elements.

Dr. Bryant E. Harrell

Organic chemical reaction mechanisms, particularly nucleophilic aromatic substitution; more particularly, the chemistry of pyrylium ion and related species.

Dr. Sheppard Y. Tyree, Jr.*

The detailed behavior of inorganic solutes in water.

Dr. Joseph T. Zung*

Theory of cloud and spray evaporation; evaporation and condensation of droplets; and monolayer effects and electric charge effects on droplet evaporation.

GEOLOGY

Dr. Kenneth F. Bick

Fluvial geomorphology.

COLLEGE OF WILLIAM AND MARY

Dr. Bruce K. Goodwin*

Ground water of the Virginia Piedmont; and transport of solid particles in streams.

GOVERNMENT

Dr. James M. Roherty*

Water Resources as affected by broad public policy implemented by the Federal Government.

INTEREST IN
WATER RESOURCES RESEARCH
AT THE
H O L L I N S C O L L E G E

* Denotes persons engaged in currently active or recently active research projects.

HOLLINS COLLEGE

ECONOMICS

Dr. Bernard Jump, Jr.

Causes, extent, cost, and solutions to pollution problems.

INTEREST IN
WATER RESOURCES RESEARCH
AT THE
O L D D O M I N I O N C O L L E G E

*Denotes persons engaged in currently active or recently active research projects.

OLD DOMINION COLLEGE

ENGINEERING

Prof. William M. Beck, Jr.*

Physical oceanography, river and harbor development, water conservation.

GEOLOGY

Dr. Arthur C. Munyan*

Sub-surface reservoirs; surface water supplies and dam sites.

INTEREST IN
WATER RESOURCES RESEARCH
AT THE
UNIVERSITY OF RICHMOND

*Denotes persons engaged in currently active or recently active research projects.

U N I V E R S I T Y O F R I C H M O N D

BIOLOGY

Dr. John W. Bishop*

Trophic ecology.

Dr. Nolan E. Rice*

Nature and action of the poison of the common stinging nettle in the region of Chesapeake Bay and tributary rivers.

Dr. John C. Strickland, Jr.*

Taxonomy, culture, etc. of the filamentous myxophyceae (Cyanophyta).

CHEMISTRY

Dr. W. Allan Powell*

Nature and action of the poison of the common stinging nettle in the Chesapeake Bay and tributary rivers.

INTEREST IN
WATER RESOURCES RESEARCH
AT THE
UNIVERSITY OF VIRGINIA

*Denotes persons engaged in currently active or recently active research projects.

UNIVERSITY OF VIRGINIA

CHEMICAL ENGINEERING

Dr. John L. Gainer*

Reservoir evaporation suppression as influenced by solar reflection of monolayer-covered water surfaces.

Dr. Robert M. Hubbard*

Purification by continuous ion exchange.

Dr. Lembit U. Lilleleht*

Transition from laminar to turbulent flow in non-circular conduits and in multiphase flow systems; and the structure and origin of surface waves.

CIVIL ENGINEERING

Prof. Charles E. Echols

Flow in open channels, culverts, and conduits.

Prof. Robert E. L. Gildea

Water quality control and waste treatment.

Dr. Hiram G. Larew*

Ground water flow, especially the design, analysis, and construction of earth dams and sewage lagoons.

Dr. Clinton E. Parker*

Water quality control and waste treatment.

GEOLOGY

Dr. Robert L. Ellison*

Distribution and ecology of microfauna, especially foraminifera.

UNIVERSITY OF VIRGINIA

MECHANICAL ENGINEERING

Dr. James T. Beard*

Reservoir evaporation suppression as influenced by solar reflectance of monolayer-covered water surfaces.

INTEREST IN
WATER RESOURCES RESEARCH
AT THE
VIRGINIA INSTITUTE OF MARINE SCIENCE

*Denotes persons engaged in currently active or recently active research projects.

VIRGINIA INSTITUTE OF MARINE SCIENCE

Dr. Jay D. Andrews*

Biology and ecology of mollusks and associated fauna.

Dr. Morris L. Brehmer*

Environmental chemistry and pollution biology.

Dr. Jackson Davis*

Fisheries.

Prof. Dexter S. Haven*

Oyster and clam biology.

Dr. William G. MacIntyre*

Chemical oceanography; estuarine fluid dynamics.

Dr. Maynard Nichols*

Estuarine hydrology and sedimentation.

Prof. J. J. Norcross*

Structure and dynamics of coastal waters.

Dr. Frank O. Perkins*

Ultrastructure of pathogenic marine protists.

Prof. Evon P. Ruzicki*

Estuarine and continental shelf circulation.

Dr. Willard A. Van Engel*

Crustaceans of the Chesapeake Bay and its tributaries.

VIRGINIA INSTITUTE OF MARINE SCIENCE

Dr. Marvin L. Wass

Analysis of benthic populations and communities in tidal waters.

Dr. Langley Wood*

Physiology, ecology, and behavior of marine animals; marine biochemical ecology.

INTEREST IN
WATER RESOURCES RESEARCH
AT THE
VIRGINIA MILITARY INSTITUTE

*Denotes persons engaged in currently active or recently active research projects.

VIRGINIA MILITARY INSTITUTE

BIOLOGY

Dr. Louis R. Hundley

Stream pollution and fresh water ecology.

CHEMISTRY

Dr. Gene Wise

Phosphate pollution of natural waters.

CIVIL ENGINEERING

Prof. Samuel W. Dobyns*

Programming water resources and predicting demands.

Dr. John Knapp*

Hydraulics.

Prof. William A. Vaughan

Water law; relationship to soils, foundations in presence of water, drawdown, etc.

INTEREST IN
WATER RESOURCES RESEARCH
AT THE
VIRGINIA POLYTECHNIC INSTITUTE

*Denotes persons engaged in currently active or recently active research projects.

VIRGINIA POLYTECHNIC INSTITUTE

AGRICULTURAL ECONOMICS

Dr. William L. Gibson, Jr.

1. The study of rationing domestic use of water during periods of short droughts through market price mechanism, and the effects on economics of water storage.
2. The study of the political and administrative aspects of industrial water supplies in relation to economic development.
3. The study of the extent of increase in run-off arising from surface paving in growing metropolitan regions; the effect of additional run-off on local water supplies and flood conditions; the possibility of removing a part of the detrimental effects through zoning.
4. The study of the extent of external diseconomies arising from pollution of selected waters, and the criteria for decision-making on whether to control the pollution.

AGRICULTURAL ENGINEERING

Prof. James H. Lillard*

Soil moisture use efficiency in soil-crop systems; hydrologic characteristics of agricultural watersheds.

Prof. Vernon O. Shanholtz*

Soil moisture use efficiency in soil-crop systems; hydrologic characteristics of agricultural watersheds.

AGRONOMY

Dr. Clarence F. Genter

Drought tolerance of corn; response of corn and other crops to time and amount of irrigation.

Prof. Jacob A. Lutz, Jr.*

The effect of irrigation on crop yields.

Dr. David C. Martens

Leaching of micronutrients (B, Cu, Mn, Mo, and Zn) through soils.

VIRGINIA POLYTECHNIC INSTITUTE

Dr. John D. Miller

Development of forage crops for soil conservation, with related interest in the prevention of pollution.

Prof. William W. Moschler*

Crop production with reduced water and soil loss.

Prof. Hobart C. Porter

Soil and water resource relationships.

Dr. Charles I. Rich

Movement and retention of ions in soils.

BIOLOGY

Dr. Robert E. Benoit*

Water quality and its effect on certain bacteria, particularly the metabolism of Streptococcus lactic.

Dr. William A. Calder*

Physiology of respiration and diving.

Dr. Paul W. Kirk*

Ecology, physiology, cytology, morphogenesis, systematics of salt water fungi and subterranean fungi.

Dr. Richard S. Mitchell*

Morphological, cytological, and anatomical study of amphibious plants and their capacity for invading lakes and estuaries.

Dr. Stuart E. Neff*

Biological productivity in water and water quality.

VIRGINIA POLYTECHNIC INSTITUTE

Dr. Robert A. Paterson*

Aquatic phycomycetes and limnology.

Dr. Robert D. Ross*

Faunistic, taxonomic, and Zoogeographical studies; morphology of fishes.

Dr. Cleo D. Wilder, Jr.*

Ecological studies of water resources, with special interest in the Dismal Swamp area of Virginia.

CHEMICAL ENGINEERING

Dr. Jerry A. Caskey*

The effect of detergents on the oxygenation of water.

Dr. Donald L. Michelsen*

Separation processes and mass transfer.

Dr. George B. Wills*

Mass transport in aqueous systems; membrane processes, and adsorption on activated carbon.

CHEMISTRY

Dr. Hans F. Ache

Production of radioisotopes; radiation chemistry of inorganic and organic compounds; chemical effects of nuclear transformations; counting techniques; positronium chemistry.

Dr. Allan F. Clifford*

Chemistry of fluorine and of the heavy metals.

VIRGINIA POLYTECHNIC INSTITUTE

Dr. Paul E. Field

Solubility and diffusivity of gases in liquids.

Dr. Larry T. Taylor

Chemistry of metal-ions, coordination chemistry and chelating agents.

Dr. James P. Wightman*

Adsorption of organic compounds on solids from aqueous solutions.

CIVIL ENGINEERING

Dr. Paul H. King*

Water treatment; the distribution, removal and fate of micropollutants.

Dr. Robert D. Krebs*

Soil-water interaction; flow in porous media; identification and mapping of alluvium; infiltration.

Dr. Clifford W. Randall*

Sanitary microbiology, nutrient removal, and other forms of biological waste treatment.

Dr. James M. Wiggert*

Hydraulics and hydrology.

ECONOMICS

Dr. Norman L. Brown*

Water-based recreation.

Prof. Leland S. Case*

Cost and benefit analysis of inland waterway transportation.

VIRGINIA POLYTECHNIC INSTITUTE

Dr. Donald C. Darnton*

Water-based recreation.

Dr. Wilson E. Schmidt*

Optimal financing of water projects.

Prof. Kevin C. Sontheimer

Welfare costs and compensation criteria associated with pollution;
cost benefit analysis of proposed water resource development programs.

FORESTRY & WILDLIFE

Dr. Kenneth B. Cumming*

Ecology and physiology of fishes, and the science and management of
fisheries; also limnology and oceanography.

Dr. Herbert A. I. Madgwick*

Plant-soil relationships; forest ecology.

Dr. Burd S. McGinnes

The impact of impoundments upon recreation-user use, particularly in
the George Washington National Forest area.

GEOLOGICAL SCIENCES

Dr. Byron N. Cooper*

Hard-rock geohydrology; engineering geology of dam sites and
reservoirs.

Dr. Richard M. Pratt

Oceanography, fluvial morphology, and Pleistocene geology.

VIRGINIA POLYTECHNIC INSTITUTE

Dr. Edwin S. Robinson*

Ground water and aquifers, particularly as affected by tidal water fluctuations.

PLANT PATHOLOGY & PHYSIOLOGY

Dr. George M. Shear*

Crop production with reduced water and soil loss.

Dr. John P. Sterrett*

Improvement of watersheds by control of brush and unwanted forest trees.

Dr. Wirt H. Wills

Soil moisture in plant disease caused by soil-borne pathogens.

POLITICAL SCIENCE

Dr. Joseph L. Bernd

Planning to meet future water needs, and the possibility of desalinization of sea water at commercially feasible rates.

STATISTICS

Dr. Boyd Harshbarger*

Environmental engineering statistics.

Dr. Richard G. Krutchkoff*

Water pollution-probability precipitation forecasting.

VIRGINIA POLYTECHNIC INSTITUTE

ESSA WEATHER BUREAU STATE CLIMATOLOGIST, V.P.I.

Prof. Morton H. Bailey*

Climatological aspects of precipitation.

INTEREST IN
WATER RESOURCES RESEARCH
AT THE
VIRGINIA STATE COLLEGE

*Denotes persons engaged in currently active or recently active research projects.

VIRGINIA STATE COLLEGE

AGRICULTURAL ENGINEERING

Prof. Adolphus J. Miller*

Ground water.

AGRONOMY

Dr. John L. Lockett

Irrigation water from farm ponds, streams, and ground water.

BIOLOGY

Dr. Bernard R. Woodson, Jr.*

Ecological and systematic study of algae of Virginia ponds and streams.

INTEREST IN
WATER RESOURCES RESEARCH
AT THE
WASHINGTON AND LEE UNIVERSITY

*Denotes persons engaged in currently active or recently active research projects.

WASHINGTON AND LEE UNIVERSITY

GEOLOGY

Dr. Edgar W. Spencer

Water supply as related to structural geology.

ECONOMICS

Dr. S. Todd Lowry

Forestry and land use problems, particularly the relationship of forest related industries to water quantity and quality in the James and Roanoke Valleys.

Dr. Charles F. Phillips, Jr.

Water resources as related to regulation of public utilities and transportation, particularly with problems that affect electric utilities.

POLITICAL SCIENCE

Dr. William Buchanan

Forestry and land use problems, particularly the relationship of forest related industries to water quantity and quality in the James and Roanoke Valleys.

APPENDIX A

Mailing Addresses of the Colleges
and Universities Represented

College of William and Mary
Williamsburg, Virginia 23185

Hollins College
Hollins College, Virginia 24020

Old Dominion College
Norfolk, Virginia 23508

University of Richmond
Richmond, Virginia 23173

University of Virginia
Charlottesville, Virginia 22901

Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

Virginia Military Institute
Lexington, Virginia 24450

Virginia Polytechnic Institute
Blacksburg, Virginia 24061

Virginia State College
Petersburg, Virginia 23803

Washington and Lee University
Lexington, Virginia 24450

WATER RESOURCES RESEARCH CENTER
VIRGINIA POLYTECHNIC INSTITUTE BLACKSBURG, VIRGINIA 24061

