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The University of Wisconsin

MADISON CAMPUS

CONSERVATION EDUCATION PROGRAMS
602 STATE STREET
MADISON, WISCONSIN 53706

August 1, 1967

James A. Graaskamp
Assistant Professor
Business
The University of Wisconsin
101 Commerce
Madison, Wisconsin

Dear Jim:

As you may know, we propose to repeat Conservation 300: Environmental Resource Management Principles and Problems this fall. The course has been approved for conservation credit by the School of Education and is now a part of the mandatory curriculum of the School of Natural Resources.

The enclosed Course Concept will refresh your memory as to the rationale and general scope of the course. The enclosed Program of Instruction represents a course outline somewhat revised from last semester. The Memorandum to Participants recapitulates administrative details, including a new section on "Teaching Suggestions."

We are very anxious that your time and interest will permit you to continue to participate in this course to the extent of one class period. We have been thinking about you particularly in connection with:

II, D, on November 3--in which you would make essentially the same presentation you made last semester, with any changes you care to make.

I certainly hope you can be with us again.

Sincerely,



Prof. CLARENCE A. SCHOENFELD
Coordinator

CAS/kr
Enclosures



DEPARTMENT OF WILDLIFE ECOLOGY

226 Russell Laboratories University of Wisconsin - Madison 53706
COLLEGE OF AGRICULTURAL AND LIFE SCIENCES SCHOOL OF NATURAL RESOURCES

September 18, 1974

Dr. James Graaskamp
118 Commerce

Dear Dr. Graaskamp:

I am looking forward to your participation in Conservation 300 at 7 P. M. on Oct. 7, 1974. Please note that the class will meet in 204 Ed. Sci. If this classroom will not meet your needs, please let me know as soon as possible. Also, please inform Nancy (2-1984) or me (2-2671) of your needs of copies of handouts, projection equipment, etc.

Thanks again for your cooperation.

Sincerely,

Don Rusch
Asst. Prof.

DHR/dkt

267-300-2 Environmental Management

First Semester 1974

James Graaskamp
Associate Professor of Business
October 7, 1974

"Cash Constraints on Environmental Management"

OUTLINE #1

CONSTRAINTS ON FREEDOM OF FIRM TO MAKE DECISIONS
TO INCUR COSTS OF CONSERVATION PRACTICES

1. THE PRICE AND QUANTITY REQUIREMENTS OF THE CONSUMER.
2. THE RETURN ON CAPITAL REQUIRED BY THE LENDER.
3. THE PROFIT REQUIRED BY THE INVESTOR.
4. EMPLOYMENT STABILITY AND GROWTH REQUIRED BY THE COMMUNITY.
5. TAX REVENUES REQUIRED BY THE SOCIETY.
6. EQUITABLE DISTRIBUTION OF COST TO EFFECT EFFICIENT ALLOCATION OF RESOURCES
REQUIRED BY ECONOMIC SYSTEM.

OUTLINE #2

POSITIVE ECONOMIC INCENTIVES FOR
INDUSTRIAL CONSERVATION OF ENVIRONMENT

1. REGENERATION OF NATURAL RESOURCES (I.E. TREES, FISH).
2. USE OF MARGINAL SUPPLIES OF SCARCE RESOURCES (I.E. TACONITE ORE).
3. PREVENTION OF LOSS OF RESOURCES DUE TO NATURAL CAUSES TO LOWER COST OF
PRODUCTION (I.E. FIRE PREVENTION).
4. ENVIRONMENT UNDISTURBED LOWERS COSTS (I.E. SUBDIVIDING).
5. GOOD ESTHETICS--GOOD ECONOMICS TO INCREASE SALES OR LOWER COSTS
(I.E. ARCHITECTURAL LANDMARK).

OUTLINE #3

ARTIFICIAL ECONOMIC INCENTIVES FOR
INDUSTRIAL CONSERVATION OF ENVIRONMENT

1. INTERNALIZE SOCIAL COSTS BY SHIFTING COST BACK TO INDUSTRIAL SOURCE AND CONSUMER THROUGH PRICE STRUCTURE.
2. CREATE LEGAL PENALTIES FOR FAILURE TO FOLLOW SPECIFIED CONSERVATION PRACTICES.
3. CREATE SPECIAL INCENTIVES IN THE FORM OF SUBSIDY, TAX RELIEF, OR PRIVILEGE.
4. CREATE INTANGIBLE STANDARDS OF SOCIAL APPROVAL FOR DESIRED PATTERNS OF RESPONSE TO ENVIRONMENTAL CONSERVATION.

OUTLINE #4

EXPERIENCE OF PULP MANUFACTURERS RESEARCH LEAGUE
ILLUSTRATES SOME MAJOR ELEMENTS OF
INDUSTRIAL CONSERVATION

1. INDUSTRIAL CONCERN FOR CONSERVATION CAN BE VOLUNTARY, SELF-FINANCED, AND OF MANY YEARS STANDING.
2. INDUSTRIAL CONSERVATION DEMANDS CHEMICAL TECHNOLOGY WHICH MAY NOT EXIST.
3. CREATION OF A SALEABLE PRODUCT FROM WASTE MAY PRODUCE THE PRODUCT IN SUCH QUANTITIES AS TO BREAK THE MARKET PRICE.
4. LIMITED CAPACITY OF MARKET TO ABSORB A SINGLE USEFUL BY-PRODUCT MAY REQUIRE A VARIETY OF WASTE CONVERSION PRODUCTS AND PROCESSES.
5. VARIATIONS IN PRODUCTION PROCESS PRODUCING WASTE MAY REQUIRE ALTERNATIVE WASTE REDUCTION TECHNIQUES.
6. WASTE CONTROL MEANS SIMULTANEOUS DEVELOPMENT OF TECHNIQUES:
 - A. TO NEUTRALIZE LARGE QUANTITIES OF WASTE ECONOMICALLY.
 - B. TO PRODUCE SALEABLE BY-PRODUCTS REQUIRING LARGE QUANTITIES OF MATERIAL TO OFFSET WASTE CONTROL COSTS.
 - C. TO CREATE HIGH VALUE PRODUCTS SELLING AT A PROFIT ON CAPITAL INVESTED FOR WASTE CONTROL.
7. CAPITAL INVESTMENT INCLUDES RESEARCH, PRODUCTIVE HARDWARE, AND MARKET DEVELOPMENT.

The University of Wisconsin

Mr. Schoenfeld

267-300-2 Environmental Resource Management Principles and Problems

FACULTY BIOGRAPHIES

Irving K. Fox (Associate Director, Water Resources Center and Professor of Urban and Regional Planning) came to The University of Wisconsin in September 1966 from Washington, D. C., where he was vice-president of Resources for the Future, Inc., a non-profit research organization. Educated in Michigan he began his career as a teacher in a one-room school but left teaching to become a government servant. He started in the Civil Service Commission, was the assistant director of the administrative division of the National Labor Relations Board, and served on the staff of the first Hoover Commission. In 1949-50 he was in New Mexico for the Southwest Field Committee of the U. S. Department of the Interior and he participated in the Arkansas-White-Red Basins survey in Oklahoma from 1950 until he went to Resources for the Future as a research associate in 1955.

Richard B. Corey (Professor of Soils) is a native of Wisconsin Rapids, earned all three of his degrees at The University of Wisconsin, and became a member of the faculty in 1954. He is a specialist in soil chemistry, has done research on soil chemical reactions related to procedures for determining available plant nutrients, and has co-authored publications on silicate analysis, use of radioisotopes in soil and fertilizer research, lime requirements, and soil potassium and phosphorus. In 1964 Professor Corey was on leave in Mexico to teach under the auspices of the Rockefeller Foundation and this summer he will go on leave again to join The University of Wisconsin team at The University of Ife in Western Nigeria under the auspices of the Agency for International Development.

George F. Hanson (State Geologist and Director of the UW Geological & Natural History Survey) was born in Schenectady, New York, but received much of his education in England where he participated in explorational work while attending British public schools. After completing a year of undergraduate studies in medicine at Oxford University he decided that he had a stronger interest in geology, and he returned to Schenectady for a B.S. in geology from Union College and then earned a M.S. from The University of Wisconsin. He has directed many studies of Wisconsin rocks, soils, and water resources, and was a member of the Governor's Committee which drafted Wisconsin's Water Resources Act of 1965.

Grant Cottam (Professor of Botany) was born in Utah, did his undergraduate work at The University of Utah, came to The University of Wisconsin for his Ph.D. in botany, and then taught one year at The University of Hawaii before joining the Wisconsin faculty. He has made many studies of Wisconsin forests and he is chairman of the Madison campus Arboretum Committee. As a plant ecologist he is especially interested in methods of measuring and analysing plant communities and is studying the vegetation of the Wasatch Mountains in his native state of Utah on a joint project with his father who is also a plant ecologist. Dr. Cottam is currently working on a study of the role of black cherry in southern Wisconsin forests and is also concerned with the higher plant communities in Wisconsin lakes and methods for their control.

Robert S. Ellarson (Associate Professor of Wildlife Ecology) was born in Milwaukee, received all three of his degrees from The University of Wisconsin, and joined The University of Wisconsin staff in 1950. He is a member of the Department of Wildlife Ecology and is also an Extension Specialist in Game Management. He conducts the "The Wonderful World of Nature", a Wisconsin School of the Air program which is broadcast over WHA to 50,000 children in grades 5-9 and in 1966 he won the Governor's Award for "Wisconsin Conservation Educator of the Year." Professor Ellarson as a researcher has studied the environmental relationships of Old Squaw ducks on Lake Michigan and, more recently, those of cottontail rabbits, and tree swallows.

Reid A. Bryson (Professor of Meteorology) was born in Detroit, did his undergraduate work in geology at Denison University, received a Ph.D. in meteorology from The University of Chicago, came to The University of Wisconsin in 1946 as Assistant Professor of Geology and Meteorology, and two years later became chairman of a new Department of Meteorology. He directs the Center for Climatic Research, has a joint project with Professor D. A. Baerreis on Historical Climatology and Cultural Change, and a cooperative project with the Indian Meteorological Service on Climatic Modification in the Indian Desert. Professor Bryson is a world climatologist, and his research has taken him to many parts of Asia, Africa, Central America, South America, Iceland and Greenland. His field experience includes 6 summers in Alaska and the Canadian Arctic, 2½ years in the islands of the Pacific, and specialized training in tropical meteorology and climatology in Puerto Rico.

Robert A. McCabe (Professor of Wildlife Ecology) was born in Milwaukee, did his undergraduate work at Carroll College with a major in biology, came to The University of Wisconsin for his M.S. and Ph.D., and stayed on as a member of the faculty. His research concerns wildlife populations and their relationships to their environment. He has developed several research techniques which are now in fairly wide use, he teaches management methodology and he collects books about the Arctic. Professor McCabe is a member of the board of directors of the Wisconsin Exposition Department representing conservation, the research advisory committee for the Wisconsin Conservation Department, and is chairman of the All-University Special Committee on Conservation Education.

John C. Neess (Associate Professor of Zoology) was born in Milwaukee, attended Marquette University, and then transferred to The University of Wisconsin where he earned a Ph.D. in zoology. His major interests are ecology and limnology and he also teaches biometric techniques in ecological research. He has conducted studies in lake biology and environmental relations on several continents and is also interested in the relationship of relic vegetation to animal populations in Wisconsin. In 1966 Professor Neess was on leave to give a senior seminar at Swarthmore College.

William H. Stone (Professor of Genetics and Medical Genetics) was born in Boston and received his B.A. from Brown University, his M.S. from The University of Maine, and his Ph.D. from The University of Wisconsin. He remained here after his Ph.D. and has specialized in immunogenetics with research in serology, genetics, and chemistry of antigens of erythrocytes, serum, and other tissues. He has also studied transplantation and tolerance in chimeric twins and has done research in immunoreproduction and made immunologic studies of fertility and sterility.

Robert W. Finley (Associate Professor of Geography) was born in Jackson, Missouri, and received a Bachelor of Education from Southern Illinois University before coming to The University of Wisconsin where he earned a Master of Philosophy and a Doctor of Philosophy. His Ph.D. thesis was a study of Wisconsin's original vegetation cover and his special interests are Wisconsin geography and philosophic approaches to the management of our resources. Professor Finley is an associate professor in the College of Letters and Science, the Center System, and University Extension and he is Chairman of the Geography Departments of the Center System and University Extension.

Philip H. Lewis, Jr. (Professor of Landscape Architecture and Environmental Design) was born in Robinson, Illinois, and did his undergraduate work in landscape architecture at The University of Illinois. He earned a Master of Landscape Architecture Degree at Harvard University and then spent a year in Europe on a Charles Eliot Traveling Fellowship. He was a member of the faculty of The University of Illinois from 1953 until 1961 when he came to the Wisconsin Department of Resource Development as Director, Recreation Resource Research and Design Section. Professor Lewis joined The University of Wisconsin faculty in 1964 and has also been a visiting lecturer at a great many other universities and a panel member of a number of governmental conferences. In his research he has developed the concept of environmental corridors and he has also been a professional consultant with his own site planning practice.

Douglas G. Marshall (Professor of Rural Sociology) was born in Ontario, Canada, and holds degrees from Colorado State and Montana State as well as a Ph.D. from The University of Wisconsin. He taught at Toronto and The University of Minnesota before returning to The University of Wisconsin in 1952. A demographer with a special concern for population changes and their effects on community services, he is an expert in the estimation, projection, and analysis of migration changes in the translation of community data into community development efforts. Professor Marshall has also done a lot of work toward refinement of techniques for social science research.

Robert W. Hougas (Professor of Horticulture and Genetics, Associate Dean and Director of College of Agriculture) was born in Blythdale, Missouri, but his academic and professional career has all been at The University of Wisconsin where he earned a B.S. in plant science and a Ph.D. in genetics. He has been a member of the Wisconsin faculty since 1949 and did much of his work at the University's experimental farm at Sturgeon Bay before he became Assistant Director of the Experiment Station in 1962, Assistant Dean in 1965, and Associate Dean and Director in 1966. Professor-Director-Dean Hougas is known internationally for his research in hybridizing wild and cultivated potatoes for breeding and genetics research.

Henry H. Webster (Associate Professor of Forestry) was born in Sault Ste. Marie, Michigan, and studied forest management at the State University of New York and then earned a Master's degree and Ph.D. in forestry economics at The University of Michigan. He came to The University of Wisconsin after ten years of service in the U.S. Forest Service as a project leader for forest management economics and marketing. Professor Webster's research has centered on the economic evaluation of major timber management in Wisconsin and other lumbering states. He has also worked on the appraisal of the usefulness and limitations of economic analysis as a guide to forest management decisions.

James A. Graaskamp (Assistant Professor of Business) was born in Milwaukee and received a B.A. at Rollins College in Florida, a M.B.A. at Marquette University, and a Ph.D. at The University of Wisconsin. He began his education in creative writing, switched to marketing and securities at Marquette, and to insurance and real estate at Wisconsin. A victim of polio while he was a high school senior, Professor Graaskamp has managed his academic career from a wheelchair and also had his own building construction firm for several years in Milwaukee. In 1966 he was awarded a William H. Kiekhofers Teaching Award for his scholarly thoroughness, his personal rapport with students, his teaching success, and his leadership of the student Risk-Management Club and the Student Real Estate and Construction Management Association. *

Leo Jakobson (Professor of Urban and Regional Planning) was born at Viipuri, Finland, received his Diploma Architect's degree, which is comparable to our Master's Degree, from the Institute of Technology, Helsinki, and was an instructor there in city planning. He was a postgraduate student at the Royal Academy of Arts in Stockholm, Sweden, and at The University of Pennsylvania while in the U.S. on a Fulbright exchange grant. Before coming to The University of Wisconsin in 1957, Professor Jakobson was Chief of Central City Planning in Helsinki. His designs have won awards in Israel and Finland and his duties here have included campus planning for Madison and Milwaukee. In 1964-65, Professor Jakobson served as consultant on regional planning for the Ford Foundation Advisory Planning Group in Calcutta, India.

H. Clifton Hutchins (Professor of Curriculum and Instruction) was born in Grafton, Massachusetts, and received a B.S. from Springfield College in Massachusetts, and came to The University of Wisconsin for his M.A. and Ph.D. in Educational Administration. He taught at Willamette University in Salem, Oregon, and then was Field Representative for the National Recreation Association for eight years before returning to The University of Wisconsin as an Assistant Professor in Education in 1952. Recreation education is his special interest; he is advisor for both undergraduate and graduate programs in that field.

Allan G. Bogue (Professor of History) is of Canadian origin and received his B.A. and M.A. at The University of Western Ontario. He was a special student at The University of Kansas for one year and then was Assistant Librarian and Lecturer in Economics and History at The University of Western Ontario while working for his Ph.D. at Cornell University. He taught at The University of Iowa for twelve years before coming to The University of Wisconsin in 1964. Professor Bogue's special field of interest is American nineteenth century history, particularly the economic and political history of the American West.

Herbert F. Smith (Associate Professor of English) was born in Elmira, New York, and received a B.A. and M.A. at Boston University and a Ph.D. at Rutgers University. In 1957 he was a Fellow, National Trust for Historical Preservation and he has been a member of the University Faculty since 1961 except for the year 1963-64 when he was a Fulbright lecturer in American literature at the Universite d' Aix-Marseille. His special field of interest is nineteenth century American literature and in 1965 he published a critical study of the writings of John Muir.

Charles W. Loomer (Professor of Agricultural Economics) was born in Calgary, Alberta, and went to South Dakota State College for his B.S. in general science and M.S. in economics. His early interests were in the field of public land administration and he served seven years with the U.S. Department of Agriculture's Bureau of Agricultural Economics where he became Acting Head of the Land Policy Section of the Division of Land Economics. He received his Ph.D. in Economics at The University of Wisconsin and joined the faculty in 1947. His publications include studies of the tax and ownership problems of northern Wisconsin forests and recreation lands and he has also done important research into the land tenure problems of the Menominee Indians.

Gordon L. Bultena (Assistant Professor of Rural Sociology) was born at Jerome, Idaho, received his B.A. at the State College of Iowa, and his M.A. and Ph.D. at The University of Minnesota. While a graduate student, he participated in a joint project of The University of Minnesota Agricultural Experiment Station, the Lakes States Forest Experiment Station, and the Quetico-Superior Wilderness Research Center and was a co-author of the joint project study of canoe country vacationers. He came to The University of Wisconsin in 1963 and recently has become involved in a training and research program in social gerontology but he retains a strong interest in the sociology of leisure and the sociology of natural resource development.

James S. Watrous (Oskar Hagen Professor of Art History) was born in Winfield, Kansas, but has spent most of his life in Madison, and earned all three of his degrees at The University of Wisconsin. He was curator of the University's permanent art collection until he was asked to take charge of the planning for the Elvehjem Art Center. In his teaching and research, Professor Watrous is especially interested in the historical techniques of the graphic arts, and his prize-winning book, "The Craft of Old-Master Drawings", was published by the U.W. Press in 1957. As an artist he is known best for his early Paul Bunyan mural paintings and for the mosaic murals which he has done since 1953-54 when he spent a year studying mosaics in Italy on a Ford Fellowship.

James L. McCamy (Professor of Political Science) was born in Knoxville, Tennessee, and received his B.A. and M.A. at The University of Texas. He completed his Ph.D. at The University of Chicago and then taught at Bennington College in Vermont before going to Washington as assistant to the Secretary of Agriculture. He served successively as assistant to the Director of the Board of Economic Warfare, as Director of the Bureau of Areas, Foreign Economic Administration, chief economic officer in the U.S. State Department mission to Austria, and director of the world trade policy staff of the U.S. Department of Commerce. Professor McCamy came to The University of Wisconsin in 1947 and is the author of many publications in the field of public administration.

Jacob H. Beuscher (Professor of Law) was born in Cudahy, Wisconsin and received a B.A. and L.L.B. from The University of Wisconsin and a J.S.D. from Yale University. He practiced law in Milwaukee for three years before joining the Wisconsin faculty in 1935. He served a year as attorney in the Office of Price Administration in Washington and during World War II he was attached to the Bureau of Ships, Office of the General Counsel, U.S. Navy. Professor Beuscher is a specialist in land use law and was a member of the Governor's Committee on Water Resources and had a major role in drafting Wisconsin's new Water Resources Act. Recently Professor Beuscher was awarded a Ford Foundation grant to be used for fellowships for the training of lawyers in land use law.

Fred A. Clarenbach (Professor of Regional Planning) was born in Jefferson City, Missouri, and received a B.A. and M.A. at The University of Missouri, and a Ph.D. at Cornell University. He came to The University of Wisconsin from Washington where he was an economist in the Division of Land Economics of the Bureau of Agricultural Economics, U.S. Department of Agriculture. He has been a member of the faculty since 1945 but has been away on several leaves to serve as a government consultant and in 1957-58 was assigned by the U.N. as a consultant to the National Planning Council of the Government of Ceylon. In 1965 he became Chairman and Director of the new Graduate School program in Water Resource Management and is currently involved in research on institutional arrangements for water pollution control and regional water quality management systems.

Harold C. Jordahl, Jr. (Regional Coordinator, U.S. Department of the Interior) was born in McIntosh, Minnesota, and came to the Wisconsin Conservation Department in 1950 after receiving a B.S. and M.S. from The University of Michigan. In 1955 he earned another Master's degree, in public administration, from Harvard University, and in 1960 he transferred to the Department of Resource Development where he became its Director. Mr. Jordahl left state service in 1963 to become the representative of the Secretary of the Interior to other federal, state, and local agencies and to coordinate the resource development programs of the various bureaus within the Department of the Interior in the five-state region covering Minnesota, Michigan, Iowa, Illinois, and Wisconsin. Since 1965, Mr. Jordahl has been a lecturer in the Department of Urban and Regional Planning and gives a graduate seminar in regional and national resource policy issues.

John E. Ross (Professor of Agricultural Journalism) was born in Medford, Oregon, received a B.S. at Oregon State College, and came to The University of Wisconsin for a Ph.D. in mass communications. He has been a member of the faculty since 1950, except for two years of army service, and in 1963 he became Special Assistant to the Dean of Agriculture. He has conducted research on the communications activities of Wisconsin Farm families and attitudes of audiences toward such topics as pesticides and conservation decision-making. Since July 1966 he has been Executive Director of the Pilot Project in Environmental Sciences. This is an interdisciplinary faculty study program, financed by the U.S. Public Health Service, which will explore the potentialities for research and training in Environmental Sciences at The University of Wisconsin.

Arthur D. Hasler (Professor of Zoology) was born in Lehi, Utah, did his undergraduate work at Brigham Young University, and earned his Ph.D. at The University of Wisconsin. He was a Fulbright Research Scholar in Germany, in 1954-55, and in Finland, in 1963-64, and he is a member of a number of national and international committees. Since 1963 he has been Director of the U.W. Laboratory of Limnology and his current research areas include homing and migration of fishes. Professor Hasler has been author or co-author of numerous research publications and his most recent book, UNDERWATER GUIDEPOSTS-Homing of Salmon, has just been published by The University of Wisconsin Press.

John R. Palmer (Professor of History and of Curriculum and Instruction) was born in Aurora, Illinois, is a graduate of Knox College, and earned a M.Ed. and Ph.D. at The University of Illinois where he supervised the social science student teachers and taught social theory and the foundations of education. He was chairman of the Department of History and Philosophy of Education at The University of Illinois in 1965-66 and came to The University of Wisconsin in the fall of 1966 with a joint appointment in the College of Letters and Science and the School of Education.

Raymond J. Penn (Professor of Agricultural Economics) was born in Morris, Minnesota, and taught for five years at South Dakota State College before receiving a Ph.D. from The University of Wisconsin. He then spent six years as supervisor of regional research for The United States Department of Agriculture before joining the faculty of The University of Wisconsin. He is especially interested in the problems of land tenure in Latin America and is chairman of the Advisory Council of the Land Tenure Center. Professor Penn is also a specialist in land and water use aspects of natural resources.

Ruth Baumann (Associate Professor of Political Science Extension) was born in Beaver Dam, Wisconsin, and earned her B.A. and M.A. at The University of Wisconsin. Her training as a specialist in intergovernmental affairs includes service with the League of Wisconsin Municipalities, the Wisconsin Labor Relations Board, the State of Virginia Advisory Council on the Virginia Economy, and the Council on Intergovernmental Relations in Washington, D.C. She also served as assistant Secretary to Senator Robert M. LaFollette, Jr., and as secretary to the Progressive Party Central State Committee. Her special interest in the case history of Madison's Cherokee Marsh controversy probably resulted from her six years' association with the Interstate Commission on the Potomac River Basin.

Gerard A. Rohlich (Director, Water Resources Center, and Professor of Civil Engineering) was born in Brooklyn, New York, and earned a B.S. in civil engineering at Cooper Union School of Engineering in New York before coming to The University of Wisconsin where he earned a second B.S. in civil engineering and then a M.S. and Ph.D. in sanitary engineering. In 1963 he served as associate dean of the Graduate School and coordinator of University-Industry Research and in 1965 he became director of the new Water Resources Center where his special fields of research are industrial wastes and the problems of water and sewage purification. Professor Rohlich was a member of the Governor's Water Resources Committee which drafted Wisconsin's new Water Resources Act and he is secretary of the new Resource Development Board which determines policies under the act. He also is chairman of the planning committee for the International Symposium on Eutrophication which will be held on the Madison campus June 11-16, 1967.

Clarence A. Schoenfeld (Professor of Journalism and Wildlife Ecology) is Coordinator of Conservation Education Programs, Director of Summer Sessions, and a member of two academic departments. He is a Wisconsin native and holds two degrees from The University of Wisconsin where he majored in journalism and minored in wildlife ecology under the late Aldo Leopold. He is the author of numerous books in the fields of journalism, public relations, educational administration, and conservation, including a new outdoors reader, Wisconsin Sideroads to Somewhere. Professor Schoenfeld has a special interest in improving the training of future conservation journalists.

A New Intercollege Course
Conserv 267-300-2, Jr St, 3 cr, ~~116 Ed~~ MWF, 116 Ed
7:45

Environmental Resource Management Principles and Problems*

Conservation Education Program
The University of Wisconsin at Madison



COURSE CONCEPT

IN PROFILE

This new course deals broadly with the development of a conservation literacy, aimed at contributing to a general knowledge of resource management science, technology, history, organization, and philosophy, and to a basic understanding of current issues and problems calling for intelligent citizen decisions. While the course is being presented in the manner of Contemporary Trends—as an intercollege course under the continuing purview of an interdisciplinary committee, it eschews the forum approach in which aspects of a subject are apportioned among various departments; it attempts, rather, a truly integrated approach, focussing on broad themes, with a moderator lending continuity to the presentations of some 30 participating professors.

The course is a one-semester course carrying three academic credits. Open to juniors, seniors, and graduate students, it will meet the statutory requirements for a background course in conservation for prospective teachers, will fill the need for a generalized survey course for professional students in a variety of resource management fields, and will also serve as a cultural introductory course for liberal arts majors. Its major goal is to help students develop ideas and concepts useful in appraising resource problems. It offers no pat solutions; if anything, the course will emphasize that resource management issues are not simple and the answers not easy; yet that in the absence of a consensus on definitions and viewpoints, the educated man has a particular obligation to confront the problems involved with all the geobiotic facts and ethics he can bring to bear.

BACKGROUND

Sensing a rising concern about conservation education, the President of The University of Wisconsin several years ago formed a faculty Committee to “consider the leadership role of the University in the field of conservation education.” Among the recommendations of that Committee (Faculty Document #1515) was a call for “an integrated course which will present a synthesis of philosophy and knowledge of conservation, the content of which will be drawn from the various disciplines that relate to this field; such a course should extend the student’s study of conservation beyond the level of content incorporated in the basic liberal education program required of all students; it should be open to all University students interested in conservation as well as to prospective teachers.” In due time a faculty Committee was set to work “to plan an integrated course in conservation which will draw upon the contributions of the various disciplines that deal with this area, to define the content of such a course, and to suggest the scholars within the University faculty who might be called upon to teach in it.”

At about the same time, the State Department of Public Instruction was defining the “adequate instruction in conservation of natural resources” required of all prospective teachers in science and social studies by Chapter 445, Laws of 1935, the State of Wisconsin. The Department determined that such instruction should consist of: “A minimum of three semester hours or equivalent thereof. Such study should include the following areas—history and philosophy of the conservation movement; appreciative understanding of the wide variety of natural resources;

Summary

To paraphrase Aldo Leopold, barring love and war few enterprises are undertaken with such abandon, or by such diverse individuals, or with so paradoxical a mixture of appetite and altruism, as that group of vocations and avocations known collectively as environmental resource management. It is, by common consent, a good thing to practice conservation. But wherein lies the goodness, and what can be done to encourage its pursuit? On these questions there is confusion of counsel, and only the most uncritical minds are free from doubt. This course represents no magic formula for capsuling conservation and administering it to assorted students. It recognizes the importance, however, of confronting University of Wisconsin students with a set of resource principles and values, and encouraging them to face the kinds of problems upon which as citizens and voters they will be asked to render crucial judgments in the days ahead.

THE TEXTS

The required texts for the course are Darling and Milton, Future Environments of North America, Natural History Press, 1966; and Udall, The Quiet Crisis, Avon, 1963. The recommended readings are Burton and Kates, Readings in Resource Management and Conservation, Chicago, 1965; and Dasmann, Environmental Conservation, Wiley, 1959.

THE MULTIMEDIA CLASSROOM

The course will be presented in 116 Education Building, the Multimedia Laboratory, which makes available a unique range of audio-visual aids, student response devices, and advanced lighting arrangements. Personnel of the Laboratory assist the participating professors in adapting the capabilities of the special classroom to the subject matter.

THE COMMITTEES

The membership of the All-University Conservation Education Committee has included: Ira L. Baldwin, former Special Assistant to the President and Professor of Bacteriology; Paul W. Eberman, former Associate Dean of Education; John T. Emlen, Professor of Zoology; Robert W. Finley, Associate Professor of Geography; Ingvald O. Hembre, Associate Professor of Soils and Agricultural Extension; Emlyn D. Jones, former Professor of Education and History; C. William Loomer, Professor of Agricultural Economics; Robert A. McCabe, Professor of Wildlife Ecology; Milton O. Pella, Professor of Curriculum and Instruction; Theodore A. Peterson, Instructor in Forestry; Robert W. Roeming (UWM), Professor of French and Italian; William L.

Sachse, Professor of History; Clarence Schoenfeld, Professor and Coordinator of Conservation Education; Lindley J. Stiles, former Dean of Education; Alvin L. Throne (UWM), Professor of Botany; Harvey A. Uber (UWM), former Professor of Geography; Thomas W. Walton (UWM), Associate Professor of Elementary Education; Marvin Beatty, Professor of Soils, and Professor of Geological and Natural History Survey; and H. M. Rose (UWM), Assistant Professor of Geography.

The present Committee includes: L. D. Clark, Professor of Minerals and Metals; Professor Finley; Irving K. Fox, Associate Director of the Water Resources Center, and Professor of Urban and Regional Planning; L. B. Hunt (Center System, Kenosha), Assistant Professor of Botany and Zoology; Professor Loomer, Professor McCabe; Clifford Mortimer (UWM), Professor of Physics; William Reeder, Associate Professor of Zoology; Peter Salamun (UWM), Professor of Botany; Professor Schoenfeld; Wilson Thiede, Professor of Curriculum and Instruction; and James Watrous, Professor of Art History.

The membership of the special faculty Committee on an Integrated Course in Conservation has included: Professor Beatty; Grant Cottam, Professor of Botany; Robert Ellarson, Associate Professor of Wildlife Ecology; Professor Finley; Professor Jones; Professor Loomer; Professor Pella; Professor Schoenfeld; Professor Thiede; Philip H. Lewis, Jr., Professor of Landscape Architecture and Environmental Design; Clifton Hutchins, Professor of Curriculum and Instruction; Professor Reeder; Professor McCabe; Gerald McVey (ex-officio), Manager of the Multimedia Laboratory; and John E. Ross, Professor of Agricultural Journalism (ex-officio).

THE CONSERVATION EDUCATION PROGRAM

The intercollege survey course in Environmental Resource Management Principles and Problems is one of the principal activities of the University's Conservation Education Program, an office with a Coordinator whose primary mission is to serve as a catalyst and point of focus in encouraging and facilitating the development and implementation of teaching, research, and extension programs related to natural resource conservation education on the part of the widest possible range of University individuals, departments, and schools, lending to such efforts an interdisciplinary character and a problem-solving stance. The Program also attempts to serve as a valuable point of contact between the University and the related programs of public and private agencies. In both roles, the Program is guided by appropriate faculty committees, lay consultants, and the staffs of the Deans and Chancellors concerned.

PROGRAM OF INSTRUCTION FOR INTER-COLLEGE COURSE, MADISON CAMPUS, THE UNIVERSITY OF WISCONSIN

267-300-2: ENVIRONMENTAL RESOURCE MANAGEMENT PRINCIPLES AND PROBLEMS

First Semester, 1967-68

3 Credits

Junior Standing

116 Education Building

7:45 MWF

Moderator: Schoenfeld, Clarence A.--Coord Conservation Ed Prog
Prof Journalism Wldlf Ecol 602 State (262-2116)

<u>DATE</u>	<u>LECTURER</u>	<u>DEPARTMENT</u>	<u>TOPIC</u>
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I. INTRODUCTION

Monday, September 18	Staff		Purpose, Procedures
Wednesday, September 20	Fox, Irving K	Assoc Dir Water Res Hydraulics Lab Prof Urban & Rgnl Plan 228 Lang (2-3577)	Some Critical Issues Today
Friday, September 22	Iltis, Hugh H	Prof Botany 245 Birge (2-2792)	Some Critical Issues Today

II. ENVIRONMENTAL PROBLEMS

A. Component Resources

Monday, September 25	Cameron, Eugene N	Prof Geology 30 Science (2-1805)	Land Forms, Minerals
Wednesday, September 27	Retzer, John L	Visiting Prof Soils 204 Soils (2-2633)	Soils
Friday, September 29	Hanson, George F	State Geologist 1815 Univ Av Instr Geology (2-1705)	Ground Water

<u>DATE</u>	<u>LECTURER</u>	<u>DEPARTMENT</u>	<u>TOPIC</u>
<u>II. A. (Cont'd)</u>			
Monday, October 2	Rohlich, Gerard A	Dir Water Res Hydraulics Lab Prof Civil Engr (2-3577)	Surface Water
Wednesday, October 4	Cottam, Grant	Prof Botany 324 Birge (2-2692/2977)	Terrestrial Vegetation
Friday, October 6	Hasler, Arthur D	Prof Zoology Lab of Limn (2-2840/3304)	Aquatic Flora and Fauna
Monday, October 9	Ellarson, Robert S	Assoc Prof Wldlf Ecol 215 Russell Lab (2-2671)	Wildlife
Wednesday, October 11	Bryson, Reid A	Prof Meteorology 733 Univ/418 Sci (2-2860/2827)	Climate
Friday, October 13	Lewis, Philip H Jr	Prof Land Arch 206 Hort Prof Env Design 970 Observ Dr (2-2677/6944)	Scenery, Space
<u>II. B. Relationships</u>			
Monday, October 16	Neess, John C	Assoc Prof Zoology 451 Birge (2-1519)	Ecosystematics
Wednesday, October 18	Stone, William H	Prof Genetics 201 Genet Prof Med Genet (2-3387)	Organic Evolution
Friday, October 20	Denevan, William M	Asst Prof Geog 460 Sci (2 -1804)	Geographic Patterns

<u>DATE</u>	<u>LECTURER</u>	<u>DEPARTMENT</u>	<u>TOPIC</u>
<u>II. C. Environmental Impacts on Society</u>			
Monday, October 23	Crow, James F	Prof Med Genet Prof Zoology 507 Genet (2-3112)	The Quality of People
Wednesday, October 25	Bogue, Allan G	Prof History 193 Bascom (2-2043)	Public Lands and Politica
Friday, October 27	Smith, Herbert F	Assoc Prof English 403 Bascom (2-2934)	Nature in Literature
<u>II. D. Societal Requirements of the Environment</u>			
Monday, October 30	Smith, David C	Prof Agronomy 111 Moore (2-1390/1391)	Agriculture
Wednesday, November 1	Cunningham, Gordon R	Assoc Prof Forestry 111 Russell Lab (2-3357)	Forestry
Friday, November 3	Graaskamp, James A	Asst Prof Business 101 Commerce (2-1555)	Industry *
Monday, November 6	Jakobson, Leo	Prof Urban & Rgnl Plan 228 Lang (2-1004)	The City
Wednesday, November 8	Fine, Isadore V	Prof Business 312 Commerce (2-1892)	Recreation
Friday, November 10	Staff		EXAMINATION

<u>DATE</u>	<u>LECTURER</u>	<u>DEPARTMENT</u>	<u>TOPIC</u>
<u>III. ENVIRONMENTAL PRINCIPLES</u>			
<u>III. A. Value Systems</u>			
Monday, November 13	Smith, Stephen C	Assoc Dean School of Nat Res Prof Econ	Economic Factors
Wednesday, November 15	Bultena, Gordon L	Asst Prof Rural Soc 308E Ag Hall	Social Factors
Friday, November 17	Hanson, Robert P	Prof Vet Sci 237 Vet Sci (2-3177/3178)	Health Concerns
Monday, November 20	McCamy, James L	Prof Pol Sci North Hall (2-3915)	Scientific Perspectives
Wednesday, November 22	Logan, Frederick M	Prof Art & Art Ed 119 Education (2-3383)	Esthetics
Friday, November 24			Thanksgiving Recess
<u>III. B. Political Systems</u>			
Monday, November 27	Clarenbach, Fred A	Prof Urban & Rgnl Plan 228 Lang (2-1004)	Legislative
Wednesday, November 29	Jordahl, Harold C Jr	Assoc Prof Urban & Rgnl Plan 228 Lang (2-1004)	Executive
Friday, December 1	Yanggen, Douglas A	Assoc Prof Ag Econ 346-A Ag Hall (2-3654)	Judicial

<u>DATE</u>	<u>LECTURER</u>	<u>DEPARTMENT</u>	<u>TOPIC</u>
		<u>III. C. Tools</u>	
Monday, December 4	Ross, John E	Prof Agr Journ Exec Dir Environ Sci Proj 2141 Univ Av (2-3270)	Research
Wednesday, December 6	Pella, Milton O	Prof Curric & Instr Prof Resch & Dev 223 Ed 1404 Regent (2-1714/5866)	Education
Friday, December 8	Donoghue, James R	Prof Pol Sci Ext 501 Ext Bldg (2-3150)	Planning
Monday, December 11	Cutlip, Scott M	Prof Journalism 425 Henry Mall (2-3692)	Pressure Groups
Wednesday, December 13	Lord, William B	Prof Ag Econ Dir Res Policy Studies 340 Ag Hall (2-3656)	Action
Friday, December 15	Staff		EXAMINATION
December 16 through January 2			Christmas Vacation

<u>DATE</u>	<u>LECTURER</u>	<u>DEPARTMENT</u>	<u>TOPIC</u>
<u>IV. THE UPSHOT</u>			
<u>IV. A. Toward A Man-Land Ethic</u>			
Wednesday, January 3	Potter, Van R	Prof Oncology Asst Dir McArdle Lab 221A McArdle (2-1224/2177)	Environmental Management Problems
Friday, January 5	McCabe, Robert A	Prof Wldlf Ecol 226 Russell Lab (2-2671)	Environmental Management Principles
<u>IV. B. Case Study</u>			
Monday, January 8	Baumann, Ruth	Assoc Prof Pol Sci Ext 707 Towers (2-3150)	Cherokee Marsh
Wednesday, January 10	"		"
Friday, January 12	"		"
Monday, January 15	Staff		SUMMARY-REVIEW
Saturday, January 27	Staff		<u>FINAL EXAMINATION</u>

Draft

Gentlemen:

The University of Wisconsin has created a new lecture course to survey resource conservation management in a variety of state and national activities. The Business School has been asked to contribute several lectures on the advances and economic restrictions for industry in matters of air and water pollution, esthetic considerations of environment, and the reduction and conversion of waste of raw material and by-products. Conservation of natural resources in terms of forests, ~~and~~ minerals, and agricultural resources will be treated by other fields at the University.

The course format involves experimental use of visual aids in the audio-visual laboratory in the School of ~~the~~ Education, so that the individual lecturer can supplement his comments with all manner of films, slides, transparencies, and specially prepared art work and outlines. It is a unique opportunity to tell what industry is doing and the economic restrictions on what ~~it can do.~~ *(be expected to)*

~~XXXXXX~~ We are ~~are~~ looking for case materials and experiences for situations which illustrate industrial concern for conservation of ~~an~~ environment, where we can suggest how this concern affects the firm's cost structure, price structure, ^{and} capital investment, ^{in addition there might be illustrations of} ~~and~~ management incentives ~~and~~ unnecessary ~~difficulties~~ ~~discomforting~~ pressures to relocate, ~~XXXX~~ close, or otherwise change ~~XXXXXX~~ employment patterns *due to local conservation cost burdens.*

If you can suggest such a case, provide materials, or know of a situation where we can assemble data on the economic and management realities of concern for environment, we would appreciate hearing from you at ~~once~~ as we ~~need~~ ^{need} a certain amount of lead time for preparation of lectures to be delivered in the first week of March, 1967.

Sincerely,

James A. Graessley
~~Assistant Professor~~ in Business

December 1, 1966

Industrial Division
American Management Association
New York, New York

Chamber of Commerce
1615 H. H. W.
Washington, D. C.

The Brookings Institution
1775 Massachusetts Avenue, N.W.
Washington, D. C.

Department of Commerce
1026 17th N.W.
Washington, D. C.

Gentlemen:

The University of Wisconsin has scheduled a series of lectures on conservation management with several lectures reserved to the Business School for a defense of industry practices. The Business School lectures will treat air and water pollution, by-products from waste material, and esthetic consideration for landscape environment in general. However, conservation of natural resources such as trees and minerals and agricultural land will be treated by these special fields at the University.

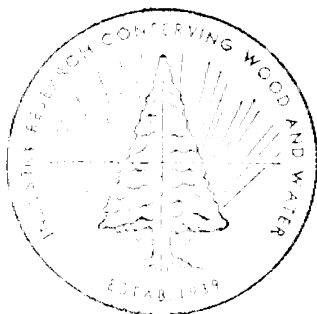
We would appreciate suggestions as to case material adaptable to audio-visual presentation on these subjects in which concern for conservation has significantly affected the policies of a manufacturing firm in regard to costing, pricing, and capital investment. If you have any literature or bibliography for purchase please forward a description and price list.

Yours truly,



James A. Graaskamp
Assistant Professor
of Business

JAG:slv



PULP MANUFACTURERS RESEARCH LEAGUE, INC.

1043 EAST SOUTH RIVER STREET

APPLETON, WISCONSIN 54911

Mailing Address Box 436

Telephone 414 / 734-9251

January 4, 1967

Professor James A. Graaskamp
School of Business
The University of Wisconsin
1155 Observatory Drive
Madison, Wisconsin 53706

Dear Professor Graaskamp:

We have your letter of December 29 which refers to, "evaporation process" but we note your apparent interest in much broader fields of the total water pollution control problem.

I believe you will understand that we are working with a variety of alternative approaches to the water pollution control problem as well as evaporation and burning. However, the history of the pulping industry's experience with evaporation and burning could very well be subject for one or more lectures in the program you outline.

Evaporation, drying and burning of spent sulfite liquor is almost as old as the 100 year commercial history of the sulfite pulping process. Evaporation to reduce the water content is basic to the production of useful products from the spent liquor solids, and the early inventors and developers of the acid sulfite process were working on this problem in the 1870's. In this country the International Paper Company was producing "Goulac" adhesive products around 1910. However, all of these early efforts were greatly hampered by corrosion and scaling of the evaporator heating surfaces. It was not until about 1940 that modern evaporation processes and corrosion resistant alloys became available to the industry to take care of the scaling problem and to improve the economics of evaporation.

In the meantime other types of pulping processes were under development for the industry and evaporation for recovery of pulping chemicals was much easier in these processes. The alkaline sulfate, or Kraft pulping process, universally uses evaporation and combustion type recovery systems for the pulping chemicals.

These preceding paragraphs give you a little history, but you are concerned with the economic effects of installing evaporation for water pollution control. Here in Wisconsin our sulfite industry has widely adopted evaporation since 1953 and installations are proceeding at an increasing pace among those mills not yet so equipped. Economics are a critical factor. Careful and proper design of the evaporation systems coupled with well planned programs for

utilization of the organics and also of the inorganic pulping chemicals are important factors which can be critical to the success of these installations.

For case histories of successful evaporation installations at sulfite mills in Wisconsin, we refer you especially to:

Mr. Harold Lausman, Manager
Appleton Division
Consolidated Papers, Inc.
Appleton, Wisconsin 54911

Green Bay Marathon Division
American Can Company
Green Bay, Wisconsin 54305

Mr. Charles Schultz, Manager
Chemical Division
St. Regis Paper Company
Rhinelander, Wisconsin 54501

You are also interested in case histories of evaporation installations which proved unsuccessful.

Several years ago, Consolidated Papers, Inc., and Western Precipitation jointly financed and operated a semi-commercial scale plant for evaluation of a newly developed chemical recovery process involving an evaporation step. For a number of reasons this proved unsuccessful and was abandoned after expenditures reported to have reached the seven figure category. This was disappointing to the many research and development engineers who had made a major effort to bring this process into full scale use. Theoretically, and also in many respects technically, the process appeared sound but economically the process could not be commercially justified. Further information may be available by writing Mr. Groff Collett, Vice President for corporate development, Consolidated Papers, Inc., Wisconsin Rapids, Wisconsin.

Another and much more serious example of an uneconomic installation of evaporation occurred at the Brown Company in New Hampshire seven or eight years ago. This was a large 6-effect evaporator of full commercial size based upon successful European installations but adapted to a special situation at the Brown Company mill. This proved to be a complete failure with substantial shock to the financial structure of the two companies concerned. The pulp mill and evaporator installation were both shut down and abandoned.

In between the successful and non-successful examples are installations operating under marginal economics and for which much research and engineering effort is currently underway to bring operations definitely over into the black side of the ledger.

Two new installations at Brokaw, Wisconsin (Wausau Paper Mills) and at Green Bay (Green Bay Packaging Company) are being closely watched by the pulping

Professor James A. Graaskamp
The University of Wisconsin

January 4, 1967
Page 3

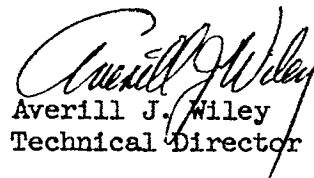
industry. They are newly constructed commercial size pulping chemical recovery systems with special evaporators and fluidized bed furnaces, developed by separate equipment supply organizations.

Successful operation at Brokaw and at Green Bay could usher in a new route for water pollution control with advantageous recovery of pulping chemicals.

If these examples are of the nature for which you are searching, I am sure further information to fill out the case histories of each can be obtained from the companies involved.

The enclosures describe and illustrate results accruing from a portion of the organized research and development supported by the pulping industry for the past 27 years in development of practical and economically supportable answers to these critical water pollution problems.

Very truly yours,


Averill J. Wiley
Technical Director

Enclosures



UNITED STATES
DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
WASHINGTON, D.C. 20242

March 7, 1967

Professor James A. Graaskamp
Graduate School of Business
The University of Wisconsin
1155 Observatory Drive
Madison, Wisconsin 53706

Dear Professor Graaskamp:

Thank you for your letter of February 13 in regard to your audio-visual presentation efforts for the economics of the individual firm in regard to water pollution control. Apparently, your contact with Professor Clarenbach inspired his telephone call to me shortly afterward. He may be a real ally for you from the standpoint of his studies of the Wisconsin River pollution situation.

Your remark that the Kimberly Clark paper company outlined comparative costs for pollution control for seven of their plants is especially interesting to me. Would you be able to send me a copy of that material?

I think you are on the track of an interesting subject. Manufacturing firms are now fully aware of the implications for them of environmental control. Within the next few years they must meet tight controls on waste disposal to both water and air and land too. Certainly the scholars from the business school realms have an opportunity to take the clear-eyed, tough analytical look the situation needs. Maybe you can steer your grad students in this direction.

In the meantime, the best of luck on your ventures.

Sincerely yours,


James J. Flannery
Chief Economist



UNITED STATES
DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
WASHINGTON, D.C. 20242

January 16, 1967

Mr. James A. Graaskamp
Assistant Professor of Business
The University of Wisconsin
1155 Observatory Drive
Madison, Wisconsin 53706

Dear Professor Graaskamp:

Your letter of December 21, addressed to the Department of Commerce asking for financial data on industrial decisions involving air and water pollution control has been referred to me for reply.

Unfortunately, we do not have data or examples of such specific instances as you request. We do not have access to data on individual industrial decisions. Even the enforcement authority under the Federal Water Pollution Control Act does not bring us to this point. As you suggest, only through case studies can it be obtained. We do have a research grant program, however, that provides funds for such efforts as you describe. I shall have the information on that program sent to you under separate cover.

You might also contact Professor Fred Clarenbach of the Department of Urban and Regional Planning at your University on this subject. He is especially well-informed on the economics of water pollution control and has been doing some work in regard to the pollution problems of Wisconsin rivers. Professor Irving Fox of the same Department is also a very good contact.

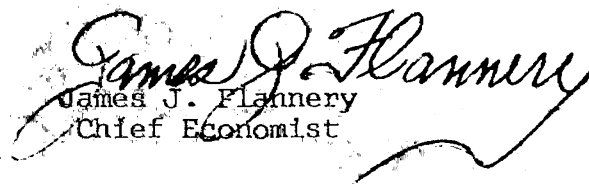
During my graduate days at the University, (1950 - 1952), I recall that an industrial firm processing cellulose or some other fiber moved from Madison to Iowa, claiming that the Wisconsin pollution control requirements made the Madison operation too costly. The firm obtained an industrial site in Iowa on the Mississippi River. I don't remember the name of the firm, and it was only a newspaper account. However, Mr. Ted Wisniewski of the Wisconsin State Water Pollution Control Agency might have the particulars. He also might know of the situation involving particular paper mills.

The Industrial Arts Index lists a host of articles on the costs of meeting specific industrial waste problems. So far as I know, no one has done a systematic job of examination of these references.

Professor Harold Wolyzin of the American University Economics Department edited a paperbound book, The Economics of Air Pollution, last year. My copy has strayed and I cannot remember the publisher, but it has a collection of articles which should be of value to your students.

I am also sending along under separate cover a couple of my own articles on water pollution economics. They will give you a good picture of the current situation. In the meantime, good luck on your work.

Sincerely yours,


James J. Flannery
Chief Economist

Separate Cover

AIR POLLUTION CONTROL ASSOCIATION

4400 FIFTH AVENUE



PITTSBURGH, PA. 15213

AREA CODE 412

PHONE: 621-1100

January 18, 1967

Mr. James A. Graaskamp
Assistant Professor in Business
School of Business
1155 Observatory Drive
The University of Wisconsin
Madison, Wisconsin 53706

Dear Mr. Graaskamp:

This will refer to your inquiry of January 7 requesting my assistance for Case Illustrations of Air and Water Pollution Control.

It is difficult at present for me to select something pertinent for your lecture course, but may I suggest that you examine the sample copies of our Journal and Abstracts which I am sending you under separate cover attached, and I hope you will accept my invitation to membership. After you have had a chance to digest the type of publications we produce, I will be glad to discuss this with you on the telephone or entertain a personal visit from you.

Sincerely yours,

Arnold Arch
Executive Secretary

AA:eb

Enclosure

Green Bay Packaging



Inc.

• MILL DIVISION

P. O. BOX 1107, GREEN BAY, WISCONSIN 54305

January 23, 1967

Mr. James A. Graaskamp
University of Wisconsin
1155 Observatory Drive
Madison, Wisconsin

Dear Mr. Graaskamp:

Please excuse the delay in reply to your letter of December 29, regarding our Fluidized Bed Process. This is a plant addition made to eliminate a significant portion of our spent liquor discharge to the Fox River. This plant is the first of its kind and we are going through the start-up efforts needed to achieve stable operations. We believe it would be premature to discuss the economic impact of this installation since we have not yet completed the investment in materials or manpower.

It will possibly be several months before we will be able to make an overall evaluation of the Fluidized Bed installation. If at that time, our evaluation of the installation would be of interest, we would be happy to discuss it with you.

Very truly yours,

William R. Nelson
Director, Research & Development

WRN:kp



E. R. KRUMBIEGEL, M. D.
Commissioner of Health

JEAN C. ANTONMATTEI, M. D.
Deputy Commissioner of Health

HEALTH DEPARTMENT
BUREAU OF ENVIRONMENTAL SANITATION
MUNICIPAL BUILDING • 841 NORTH BROADWAY • ROOM 105
MILWAUKEE, WISCONSIN 53202

January 5, 1967

276-3711
Ext. 538

James A. Graaskamp
Assistant Professor in Business
School of Business
1155 Observatory Drive
The University of Wisconsin
Madison, Wisconsin 53706

Dear Mr. Graaskamp:

Dr. Krumbiegel forwarded to me your letter of request for materials relating to business establishments which have undertaken air and water pollution control measures. We do have several such industries which have been required through neighborhood pressure and through our enforcement efforts to install control equipment. Specifically, we have several instances where companies have had to expend substantial amounts of monies to provide air pollution control equipment.

It would be of help to know specifically what type of information you would like to accumulate on such cases and also if there is any particular type of situation in which you are most interested. If you will indicate to me your particular interest and needs, we can perhaps provide information which will be of value to you in your program.

Sincerely,

A handwritten signature in cursive script, reading 'George A. Kupfer', is written over the typed name.

George A. Kupfer
Superintendent
Bureau of Environmental Sanitation

CAK:lg

Mr. George A. Kupfer, Superintendent
~~San~~ Bureau of Environmental Sanitation
Health Department
Municipal Building,
841 North Broadway
Room 105
Milwaukee, Wisconsin 53202

draft

We appreciate your indication of interest in our search for examples of the economic realities of industrial provision for air pollution control. These examples, as you will recall, are to be used in illustrated lectures programmed for March as part of a new basic course in ~~conservation~~ resource conservation.

You mentioned several companies which had to invest substantial amounts of money to provide air pollution control. We would like to use at ~~least~~ one of these companies as an example to suggest how these investments would affect product costs, product prices, working capital needs, return on invested capital and rate of company growth, particularly growth of employment. An example of a medium sized firm which would illustrate the typical types of equipment involved, installation problems, and economic restraints on management otherwise favorably inclined to environmental conservation would be most useful. The lecture series into which this ~~example~~ would fit is also an experiment in audio-visual classroom media. Therefore it is desirable for the selected case to have ^{some kind of} a photo record, schematic drawing file, ^{or} some graphic measure of the pollution control efficiency achieved. We have artists who can do the necessary photographic or other ~~reproduction~~ reproduction conversion processes involved so long as there is some original graphic source. Moreover, where your information is incomplete or in part, confidential, we are prepared to interview the companies ~~involved~~ involved to secure additional data, fictionalize if necessary to preserve their privacy, or otherwise secure their cooperation.

Essentially therefore we need one or more examples of an average firm which went to some sacrifice to correct ~~an air pollution problem~~ ^{and regulatory problems} in a manner which is suggestive of technical problems, documented with graphic materials, and analyzed in terms of its financial implications. Perhaps too, the ideal example would be one where the investment produced little in the way of valuable by-products as too often the public is oversold on the profitability of using ~~coal tar, sulphide liquor, and the like~~ which imply conservation is always profitable for the firm.

I would be happy to visit ~~with you~~ with you in Milwaukee almost immediately as we are in the exam period and my schedule is most flexible. You may reach me at 608-262-6378 or 608-238-8452.

Sincerely,

James A. Graaskamp
Assistant Professor in Business

County of Milwaukee

J. E. BROWN
DIRECTOR

DEPARTMENT OF AIR POLLUTION CONTROL

F. R. REHM
DEPUTY DIRECTOR

9722 W. WATERTOWN PLANK ROAD
MILWAUKEE, WIS. 53226

771-3612

January 30, 1967

Professor James Grasskamp
University of Wisconsin
School of Business - Room 101
Madison, Wisconsin

Subject: Economics of Air Pollution

Dear Professor Grasskamp:

Pursuant to our recent telephone conversation relative to a presentation you are to make to a group on the subject matter, you will find enclosed the following material.

1. A copy of Table 3 extracted from a paper presented by Robert L. Chass, Deputy Director of the Los Angeles Air Pollution Control District, to the 1962 National Conference on Air Pollution.

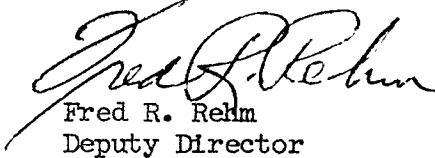
2. A copy of Paper C-4, by Herbert L. Lund, presented to the 1966 National Conference on Air Pollution. This paper provides illustrations and detailed cost data on control systems. This information is in line with the type specific cost data you seek, if I interpret your request correctly.

3. A copy of Paper H-2, by Allen V. Kneese, also given to the 1966 Conference. Herein, costs of air pollution and air pollution control are discussed in a more general sense.

May I also suggest that if you seek further data, that you contact a Mr. Thomas Crocker of the staff of the University of Wisconsin-Milwaukee locally, who is studying the costs attendant to air pollution control under a grant from the U.S. Public Health Service. I hope the data we have provided will prove helpful to you.

Yours sincerely,

DEPARTMENT OF AIR POLLUTION CONTROL



Fred R. Rehm
Deputy Director

FRR:jlw
Enclosures

The University of Wisconsin

MADISON CAMPUS

CONSERVATION EDUCATION PROGRAM
602 State Street
Madison 53706

January 3, 1967

James A. Graaskamp
Assistant Professor
School of Business
The University of Wisconsin
101 Commerce
Madison, Wisconsin

Dear Jim:

The attached sheet indicates the broad outline of an adult seminar I have been asked to try to pull together on campus this summer.

Could you imagine yourself on a panel Friday, August 4, in which your assignment would be to state the case for economic realism in any consideration of resource management policies?

Sincerely,



Prof. CLARENCE A. SCHOENFELD
Coordinator

CAS/kr

Enclosure

SOME CONFLICTS IN CONSERVATION

Many of us are increasingly concerned about an American environment that is diminished daily by vanishing beauty, waning wildlife, shrinking open space, pollution, litter, and blight. As an antidote, most of us would generally agree that conservation is a good thing. But what is conservation and what exactly can be done to encourage its pursuit? When the issues become specific and personal, we find we frequently disagree about what conservation means in terms of how a particular area of land or water should be used, or how our own environment should be managed.

This seminar will attempt to clarify the reasons for some current conflicts in conservation by studying in depth a variety of very real controversies in environmental resource management. Case histories have been chosen that present value choices and planning alternatives typical of those being faced by citizens in many communities. Against a background of the historical and philosophical traditions at work, the dimensions of modern ecological and economic tensions will be examined. Out of this problem analysis the seminar group may discover guidelines that can be used in coming to conclusions about wise resource use in the public interest.

The moderator of the seminar will be Prof. Clay Schoenfeld, Director of Summer Sessions and moderator of a new University inter-college survey course, "Environmental Resource Management Principles and Problems." Some of the faculty who participate in that course will be guest lecturers in the seminar, and other guests will be participants from the conflict-areas to be studied.

There will be optional field trips in the vicinity of Madison, and optional showings of new conservation films. Appropriate reading in advance would be: Burton and Kates, Readings in Resource Management and Conservation, Chicago, 1965, \$8.50; Dasmann, Environmental Conservation, New York, 1959, \$6.50; and Udall, The Quiet Crisis, Avon, 1963, \$.95.

Sunday, July 30 7:30 pm	Orientations: Green Pastures, Still Waters, and You
Monday, July 31 all day	The Pollution Problem: Pure Water versus Cows, Paper, and People
Tuesday, Aug 1 all day	The Park Problem: Paddles versus Power Boats
Wednesday, Aug 2 all day	The Problem of Megalopolis: Open Spaces versus Sprawl
Thursday, Aug 3 all day	The Problem of Administrative Control: Grass-Roots Individualism versus Government Intervention
Friday, Aug 4 all day	The Problem of an Ethic: Ecological Balance versus Economic Efficiency

Wausau papers

Area Code 715 -- 675-3361

WAUSAU PAPER MILLS COMPANY • AT BROKAW, WISCONSIN



54417

January 9, 1967

Mr. James A. Graaskamp,
Assistant Professor in Business
School of Business
1155 Observatory Drive
The University of Wisconsin
Madison, Wisconsin 53706

Dear Mr. Graaskamp:

In answer to your letter of December 29th, with regard to the case material for your new series of lectures, I'm afraid our fluidized bed process is not far enough along to serve as one of the cases. We are still in the process of "shaking down the unit" and anticipate that it may be several months before we are on stream full time. It is quite possible that other Paper Companies that have had pollution abatement programs in operation for several years might be able to provide case material for you. Among those you might check with are Kimberly Clark Corporation, Rhinelander Division of St. Regis or American Can Pulp and Paper Division at Rothschild, Wisconsin.

Very truly yours,

WAUSAU PAPER MILLS COMPANY


William V. Arvola

Vice President Manufacturing

WVA:vr



STATE OF WISCONSIN

DEPARTMENT OF RESOURCE DEVELOPMENT

MADISON 53702

WATER RESOURCES DIVISION

December 22, 1966

Professor James Graaskamp
202A Breese Terrace
Madison, Wisconsin

Dear Professor Graaskamp:

At your request I am sending a copy of the Wisconsin Water Resources Act, Chapter 614, Laws of 1965. In addition, I have included a copy of Water Pollution Control Progress--January 1, 1966, which mentions a few of the numerous water pollution abatement facilities Wisconsin industry has built and gives some background about the pollution problem.

Very truly yours,

A handwritten signature in cursive script that reads "Carl J. Blabaum".

Carl J. Blabaum
Public Health Engineer

JM
Enc.

Kimberly · Clark Corporation

NEENAH, WISCONSIN 54956 • TELEPHONE AREA CODE 414 722-3311

January 24, 1967

James A. Graaskamp
Assistant Professor in Business
School of Business
1155 Observatory Drive
The University of Wisconsin
Madison, Wisconsin 53706

Dear Professor Graaskamp:

I apologize in the delay in answering your letter of December 29 because I know that you will require considerable background information and the time is short if you are to deliver the lecture the first part of March. We have no case studies of the type which you request, although we have reviewed different phases of the problem a number of times during the course of the last two years.

I do have some information that may be of help to you. Mr. Rolf Elaissen, Professor of Sanitary Engineering, at Stanford University, requested similar information from me about two years ago. At that time I selected six mills in Kimberly-Clark. I picked these out because they represent the extreme difficulty involved in trying to give a general answer to your problem. These mills produce practically all types of paper, pulp, crepe wadding and specialties. They vary in age from old to brand new. One is located on no river at all and one on an enormous river (over 100,000 cubic feet per second). Some take water from wells, some use surface water and some combine these. One mill softens all the water used in that mill for manufacturing purposes. One mill treats

Professor James A. Graaskamp
January 24, 1967
Page 2

the greater part of its water and reuses it. The attached table gives the figures as I was able to prepare them. If the attached table does nothing else, it illustrates the point that the economic, like the technical approach, differs tremendously between mills.

I have chosen to take the cost of water and the cost of effluent treatment as a percent of the production cost. To give some comparison, I have included the cost of raw materials on the same basis. This is our major cost along with that of labor and when compared with these, the total percentage for water and effluent treatment may seem quite small but so would profit if included on the same basis, because it should be remembered that only the controllable costs of production are included in fixed costs.

Another piece of information which may be of assistance to you is the attached report on the Pollution Abatement installation at our Anderson, California, mill. This goes into the background of factors that were considered in situating the mill at this point as well as technical problems to be overcome into details of operation.

One last suggestion which might be of help to you in presentation of the problem and which illustrates the different technical approaches to quote from your letter "illustrate industrial concern for conservation of environment" is the Kimberly-Clark film The New River. This film runs 23 minutes and shows seven different approaches to the pollution problem as used in seven different Kimberly-Clark mills. This film can be obtained for showing without charge by contacting Kimberly-Clark Corporation, Mr. Truman Hawkinson. If you wish to call him, the telephone number is 414-722-23311 extension 2304.

Professor James A. Graaskamp
January 24, 1967
Page 3

I hope that some of these points may be of assistance to you in your very difficult task. If I can be of further service, do not hesitate to contact me.

Very sincerely yours,

A handwritten signature in cursive script, reading "R. M. Billings". The signature is written in dark ink and has a fluid, personal style.

R. M. Billings
Assistant to the Vice President
Research and Engineering

RMB:dak

Mill Number	1	2	3	4	5	6
Product	WS	P	WS	WS	P	P
Age of Mill	D	B	C	B	D	A
Size of River	X	W	Z	W	X	Y
Unit cost of water \$/1000 gallons	\$.0463	\$.1397	\$.0177	\$.1888	\$.0292	\$.0150
Cost of water as a % of product cost	0.3%	0.4%	0.2%	0.9%	0.4%	0.3%
Cost of raw materials as a % of production cost	42.0%	54.0%	47.2%	47.0%	43.8%	--
Cost of effluent treatment as a % of production cost	.05%	0.8%	0.0	0.0	0.1%	2.0%

KEY

Product

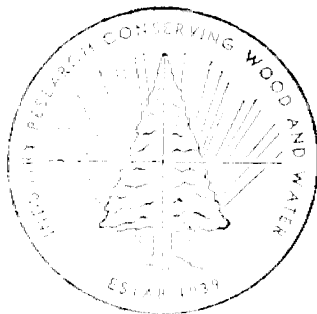
WS = Wadding and/or Specialties
P = Pulp and/or Paper

River Size (average flow)

W = 0 - 800 CFS
X = 1000 - 2500 CFS
Y = 2600 - 10,000 CFS
Z = over 10,000 CFS

Age of Mill

A = less than 5 years
B = 5 years to 15 years
C = 16 years to 35 years
D = over 35 years



PULP MANUFACTURERS RESEARCH LEAGUE, INC.

1043 EAST SOUTH RIVER STREET

APPLETON, WISCONSIN 54911

March 15, 1967

Mailing Address Box 436

Telephone 414 / 734-9251

Professor James A. Graaskamp
University of Wisconsin
School of Business
115 Observatory Drive

Dear Professor Graaskamp:

Sorry not to have been able to see you personally or to talk with you at the time of your phone call requesting the technical bulletins describing the utilization phase of our League program on developing methods of processing spent liquors from the pulping industry. I was due in Madison the next day and decided to bring the bulletins with me but was traveling fast when on the campus and could not come back to your office at a later time.

We are, of course, quite proud of the utilization phase of the spent liquor research which has been under way for the past 27 years. About half of our member mills are now taking advantage of the developments on the processing of the strong digester liquors which permits marketing products which help to pay for at least a part of the total cost of processing these effluent liquors from the various phases of pulping operations by the sulfite process. This has been an effective incentive for greatest possible recovery of strong process effluents.

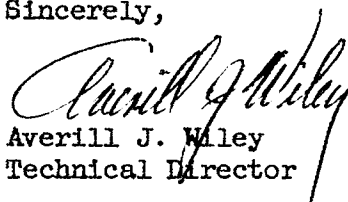
On the other hand, it should be clearly understood that although some return can be obtained if marketable products are produced from the strong digester liquors, still there are quite a number of dilute wash water and other process streams which can not possibly be processed for recovery of values. The overall picture for processing the total of all wastes of pulp mills does not by any means appear on the black side of the ledger. There is little prospect that it ever will be. For the strong liquors we have found ways of recovering the liquor in sufficient concentrations so that it is not necessary to remove more than 5 or 6 tons of water for every ton of solids to be processed and the concentrates obtained can be further processed by methods such as are described in the technical bulletin which you requested. These recovered products can be marketed to various outlets. However, the dilute wastes may involve removal of one hundred tons of water or more for every ton of solids to be processed, and as you can see, there is little prospect of being able to recover values under such conditions.

Professor James A. Graaskamp
University of Wisconsin

March 15, 1967
Page 2

There is much work in the background for developing effective methods of processing these dilute wastes which will probably not receive much attention in the press. It is long, hard work to find economic answers to processing these dilute wastes. We have some good new approaches along the lines of the "Industrial Kidney" concept for membrane processes described in the Annual Report. But this may be about as much as you can find in the papers about this big, long haul of research effort directed to finding permanent answers to the problem of water pollution in our industry.

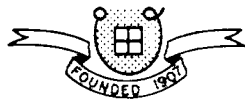
Sincerely,



Averill J. Wiley
Technical Director

AIR POLLUTION CONTROL ASSOCIATION

4400 FIFTH AVENUE



PITTSBURGH, PA. 15213

AREA CODE 412 PHONE: 621-1100

February 3, 1967

Mr. James A. Graaskamp
Assistant Professor in Business
1155 Observatory Drive
The University of Wisconsin
Madison, Wisconsin 53706

Dear Mr. Graaskamp:

Your letter of December 27 is an extremely interesting one, but you will have to forgive me for not responding sooner.

If you were to study our Journal and other publications, you would find many valuable materials which would assist you in preparing your lectures. However, I just do not have time nor do we have staff personnel available to make a detailed study of case histories that would be valuable in your course.

I am enclosing an invitation to individual membership and, under separate cover attached, am sending you a copy of our January Journal and Abstracts.

I fail to see how a university with the reputation of yours does not have our publications in its library.

Sincerely yours,

Arnold Arch
Executive Secretary

AA:ss
Enclosures

OUTLINE--RESOURCE CONSERVATION LECTURE

Tuesday, October 10, 1972

Prof. James A. Graaskamp

1. The process of civilization has always been related to the rate of industrialization. However, mass production plus mass consumption has led to a critical mass of by-products and resource consumption which threatens to implode industrialized civilization itself.
 - A. David Brower (organizer of the Sierra Club and Friends of the Earth, etc.) uses the 6 days of Genesis as a figure of speech for what has been 4 billion years to that a day in Genesis equals something like 666 million years. On that standard life didn't begin until Tuesday noon. At 4:00 p.m. Saturday the big reptiles came on and 3 minutes before midnight on Saturday man appeared. At 1/4 of a second before midnight Christ arrived and 1/40 of a second before midnight the industrial revolution began. Thus in 1/40 of a second man is struggling to shift from frontier economics where land, air, and water are his cheapest goods to a spaceship economy within which everything must be recycled and accounted for. ("Encounters With the Archdruid"--by John McPhee--New Yorker, March 1971)
 - B. The rate of resource consumption in 1/40 of a second as a result of industrialization is generally well recognized concern about the next 1/40 of a second but.....
 1. Technology was not the whim of "business" but rather the result of a social decision to support and pursue the presumed benefits of growth with single-minded relentlessness.
 2. There are no simplistic responses to growth. The romantics hold with a return to preservation of the natural world. The conservationists hold with a reduction of the waste of unnecessary growth, a leveling of living standards and conscious trade-off of the future for needs of the present.
 3. The values which determine the criteria of economic decisions are not made by business but by society and these values shift as information is available to shape them.
 - C. Any organized undertaking is an enterprise, and a subset of those are enterprises with a cash cycle. The cash cycle must be at least at a point of equilibrium. Enterprises in which the cash cycle is supposed to be positive, i.e. profitable, are called business. Management Dynamics, The New Synthesis by John A. Beckett.
 1. The industrial age is characterized by incomplete definition of systems, be it accounting, packaging, energy or legal.
 2. All cash cycle systems can properly account for only outlays and receipts which flow through the enterprise and thus cannot reflect externalities.
 3. Packaging engineering carries the product from the production line to the supermarket to the point of use but provides no built-in functional solution to the empty box, bottle or can.

Resource Conservation Lecture

4. Even the law is an incomplete system. We have exclusive private rights and exclusive governmental rights, and a tremendous area of common rights to air and water, etc. which are difficult to define in order to protect. "The Property Interface".
- D. Economics of business behavior is closely tied to the law of responsibility for behavior and to the politics which create much of that law. As an awareness of our environmental dilemma has reached the majority of persons, the insecurity of discovering that America cannot produce an answer to every question has led to a good deal of political hysteria.
 1. Paranoia for any political viewpoint produces bad politics as it cannot distinguish between friend or foe.
 2. Those who are opposed to growth must be opposed to one of its major instruments, i.e. business, and impute to business the single-mindedness of society's values in general with a good deal of name calling.
 3. As a result more businessmen are guilty of misconceptions about environmentalists than about environment.
 4. Businessmen feel there is a double standard in the politics of environment. Citizens are relatively patient with problems created by their own sewage or automobile and will await technological solutions or improvements at a rate which will not seriously affect the real estate tax or the capital cost of their car.
 5. What is self serving pragmatism by the consumer is regarded as malevolent insensitive negligence by the corporate conspiracy which does not instantly correct its paper mills and power plants.
 6. Solvency ...
- E. I submit the problem of environmental control of business enterprise is not one of ethics for management as a group; rather it is a question of resolving short-term economic constraints so that the individual enterprise can survive in the long run or receive some equitable compensation should society require its dissolution.
- II. The economics of environmental control are quite different for society as a group than for the firm as an individual entity operating in a market economy.
 - A. Assuming for the moment society could put a dollar value on benefits of environmental conservation programs, the net product of services, goods, and well being would be increased by incurring cost to a point where marginal cost equalled marginal benefit.
 - B. No such benefit-cost relationship may govern the decision of the individual firm. With some exceptions environmental control costs provide no direct benefit to the individual firm, and if these costs cannot be shifted to the consumer in the price tag, the firm must relocate, go broker, or begin the following projects:

Resource Conservation Lecture

1. An increase in cost requires an increase in price if the firm was at its equilibrium.
 2. An increase in price means a decline in units purchased.
 3. As units sold decreases, average cost per unit increase requires a second increase in price.
 4. Thus it can be shown that a conservation cost must increase total cost and price by a multiple of the original expenditure--affecting the entire revenue flow of the firm.
- C. Contrary to superficial analysis, the firm must make decisions serving a variety of claims on its abilities, including:
1. The price and quantity requirements of the consumer.
 2. The return of capital required by the lender.
 3. The profit required by the investor.
 4. Employment stability and growth required by the community.
 5. Tax revenues required by the society.
 6. Equitable distribution of cost to effect efficient allocation of resources.
- III. There can be an economic motivation for industrial utilization of environmental conservation practices which increase sales or lower costs of production.
- A. Regeneration of natural resources (i.e., trees, fish).
- B. Use of marginal supplies of scarce resources (i.e., taconite ore).
- C. Reclamation of resources from waste (chemicals from paper liquor)
The theoretical answer to waste disposal is recycling but the popular view that all wastes can become resources falters on technology and markets. In a moment we will look at two cases, one successful and one partly successful.
- D. Loss prevention to reduce non-productive resource consumption (fire prevention). The lagoon in this picture serves as an emergency water supply for the sprinkler fire system. Sprinklers themselves reduce fire losses and fire rates to a point where the insurance premium savings will pay for the entire water supply system in less than 5 years. The fountain aerates the water to prevent algae which would clog the fire pumps, and in cases of rural plant location, the pond also serves as a third stage sedimentation pond for sewer plant effluent. In this case good loss control was good economics.
- E. Good esthetics--good economics to increase sales or lower costs (subdividing clusters). The creation of urban building sites is a manufacturing process. Smaller lots in a clustered plan allow the property developer to leave many acres in their natural state, thereby creating attractive open space. At the same time the amount of sewer, street and curb, and other improvement costs are reduced. The need to grade down the ridges or cut the trees, both at great expense, is eliminated.

Resource Conservation Lecture

- IV. When the economic system does not of itself allocate social cost of any particular production factor to the producer and then to the user of that service or good, economists seek legislative and economic devices to internalize the social costs.
- A. Internalize social costs by shifting cost back to industrial source and consumer through price structure. For example, the Industrial Revolution began to produce a large number of accidents, injuries to workers in the course and scope of their employment. This strict law of liability provided some recourse where the employer or a fellow employee was demonstrably negligent and the cause of an injury to another employee thereby. However, recovery was slow and uncertain and charities and welfare agencies carried the burden of the injured worker. Finally the issue of fault was removed and employers were required to carry insurance for full medical benefits, lost wages, and benefits to the survivors of those who were killed in industrial accidents.
1. The premium for this insurance was based on individual company losses so that companies had an economic incentive to reduce losses with safety programs and safer equipment.
 2. The average cost of such insurance is included in the price of the product to be paid by all the users of that product. The unusual benefits or costs of loss experience for each firm provides an economic force bringing about conservation of human resources.
 3. Economists and legislators are now seeking ways to internalize the costs of resource conservation, that is to shift the full burden of environmental consideration onto the user of the product or the manufacturing firm responsible.
- B. Create legal penalties for failure to follow specified conservation practices.
- C. Create special incentives in the form of subsidy, tax relief, or privilege.
- D. Create intangible standards of social approval for desired patterns of response to environmental conservation.
- V. Consider the experience of the paper industry in Wisconsin. The paper-making process requires tremendous volumes of water, most of which can be returned to the surface water without pollution. However, much of this water may be carrying something called sulphite liquor, a harmless, non-toxic dark residue which does break down with the oxygen in the water. Such large quantities are involved that the river is left little of oxygen to support BOD of plants, fish, or sewage reduction.
- A. In the 1930's the industry was asked to correct conditions in the Fox River Valley and the industry voluntarily formed the Pulp Manufacturer's Research League, financed it, and implemented the recommendations. Industrial concern for conservation can be voluntary, self-financed, and of many years standing.

Resource Conservation Lecture

- B. Sulphite liquor is a by-product of cooking wood to make paper. Wood can be compared to masonry, with cellulose fibers as the bricks and lignin as the mortar. By cooking woodchips in a bisulphate solution, the lignin is dissolved by sulfonation and some of the cellulose is reduced to pentose sugars. Only half the log become pulp and the balance goes into a solution with all the chemical elements of wood except the cellulose.
- C. Industrial conservation demands chemical technology which may not exist. The problem has been to dispose of 2 1/4 million tons of sulphite liquor other than by returning it to surface water sources.
1. Disposal in volume first led to development of soil filtration methods, lagoon for sedimentation, and timed discharges at high flow periods of the river. No benefit derived.
 2. Chemists then developed methods for using these rich organic wastes for fuel and roadbinder, a low benefit value but high volume consumer of the waste.
 3. More recently these organic sulphite liquors have been converted to adhesives and yeast. These products have a high benefit value but can be produced in such quantities that the market could not use all the yeast and adhesives that could be made from available sulphite liquor. (3,4,5,6)
 4. The chart will indicate that high value utilization now uses about 30% of available sulphite liquor of participating paper companies and the need to waste these liquors through disposal has fallen to less than 2%. Low benefit value uses are also declining as a per cent of liquor available. Markets have still to be found for more than 50% of total available SSL.
- D. This progress had required capital investment in research, then market development, and then productive hardware.
- E. An alternative approach is to find new ways of making paper with less water water-inputs from outside. Water can be recycled or less water may be required for paper in solutions.
- F. Ultimately we need to use less paper per capita but this may require significant restructuring of our communication, packaging, and waste collection systems. Recycling paper requires the homeowner to sort and society to collect from a million households raw material formerly handled in mass as a log from only a few points of lumbering at a time. Cable TV with data retrieval may eliminate the need for newspaper lineage for advertising or telephone book.
- G. While significant dislocations take place in the paper industry to eliminate old-style plants or unneeded output for the benefit of posterity, how does society internalize the cost of inequity to the present generation whose jobs are eliminated and whose properties are made worthless by the closing of a mill? How does one dismantle and internalize the cost of a microsocial system?

Resource Conservation Lecture

- VI. While the scale of waste material for an industry requires a long-term approach, the single firm may be able to achieve dramatic advancement. Business Week of January 1, 1972 reports that Dow Chemical has made some interesting progress on pollution control at the Midland, Michigan installations which produce some 500 products from Saran Wrap to tongue-twisting industrial chemicals. While it does not serve our purposes to review their intensification of reclamation and recycling procedures which in general represent more thorough applications of existing technology, some elements of management philosophy are significant.
- A. While companies generally know to the penny what treatment facilities cost they rarely credit whatever savings may occur or net increase in product may result so they cannot correctly evaluate cost-benefit relationships and thereby justify capital expenditures.
 - B. The company has three goals - eliminate pollution, find ways to off-set the costs, and decentralize their program to put operating responsibility with operating people - what their president calls building to building and department to department accountability. For example, when planning cooling towers design to eliminate thermal pollution of the Tittabawassee River, Dow chose 28 small towers rather than one large one, trading economies of scale in order to make each department foreman responsible for his own problems. Accountability to the law is a device for internalizing social costs but it is a new motivation for management in the case of pollution.
 - C. Management has tied capital decisions to be contingent on a satisfactory solution of environmental impacts.
 - D. Dow made a profit center division called Environmental Control Systems Group of its environmental labs and technicians 12 years ago and expects this group not only to solve Dow's problems but to sell their technical skills and products to other companies and municipalities. This year, for the first time, this division turned a small profit on revenues of about 10 million.
 - E. The program is seldom touted on slogans of corporate responsibility but rather on hard-headed necessity of surviving in the face of tougher regulations, the constraints imposed by their site at Midland, and rising waste treatment costs. In Midland, Dow had 400 acres devoted to production and another 400 acres for waste treatment. Said Dow "The outhouse was getting bigger than the house" and Dow no longer regards waste treatment as an acceptable solution.
- VII. While the paper and chemical industries may be making some progress, the steel and power industries continue to provide unlimited number of horror stories relative to air pollution.

Resource Conservation Lecture

- A. The problem for blast furnace and foundry operations may be one of nonexistent control technology or one of cost. In many cases there are no off-setting by-products and often clean air may be at the expense of dirty water or increments of energy which causes additional need for the contamination of larger power plants.
- B. Firms voluntarily developed successful control installations but experienced unexpectedly high capital investment and operating costs. Only a few completely successful control installations have been made, largely in Michigan, on blast furnace cupolas.
 - 1. Costs of initial installation were more than one million dollars per cupola, more than 25% of the total cost.
 - 2. On these large units the fans, pumps, and other motors required at least 1,400 total horsepower--so that electric power to run systems for scrubbing the air with water ranged from \$40,000 to \$100,000 per year depending on hours of use.
 - 3. Corrosive action of waste led to frequent breakdowns and high repair bills at an annual cost of at least 30% of the original cost.
 - 4. Control equipment is economically out of reach of most companies and cannot be paid for out of increase prices without dislocation. On a smaller scale a small foundry costing \$750,000 to build would require at least \$300,000 for additional air filtration systems with high operating costs.
- C. In the absence of economically acceptable control procedures, industry must continue conversion to oxygen processes to remain competitive with overseas supplies and alternative domestic materials.
 - 1. Alternatives of changing the process requires use of an induction furnace which cannot produce in sufficient quantities.
 - 2. Present modernization would postpone replacement construction if pollution control processes were discovered tomorrow. Control of the old style furnace is possible but not at a cost which will allow the foundry to stay in business.
 - 3. A change in melting procedures might require complete reconstruction of the steel industry, a process which must take at least 20 years.
- D. Industry, of course, depends on power and our demand for electric power requires combustion of coal to produce the steam to turn the turbine which runs the generator. Most waste recycling or preparation for discharge requires huge inputs of additional power. Business is simply a special subdivision of the social process concerned with converting natural resources to the products required by the society in which it operates. Conversion means applied energy and energy requires large scale combustion of chemical reduction. Thus many business problems are really a sub-category of the energy dilemma.

Resource Conservation Lecture

- VIII. Last November 2 the Senate passed The Federal Water Pollution Control Act on a roll call vote of 86 to 0, a unanimity which might be difficult to obtain for a nonbinding resolution in support of motherhood. Nevertheless, it has established that no one has the right to pollute and that the national goal will be elimination of all waste discharges into the nation's waterways by 1985.
- A. This year the zero discharge bill
It is opposed by business and thus the Nixon administration and wild claims have been made as to its economic impact on posterity.
 - B. Nevertheless, it represents a reasonable two-stage program and sets zero discharge as a goal not a legal requirement, a goal which will be circumscribed by cost considerations.
 - 1. By 1976 companies must apply the "best practicable" technology to control water pollution.
 - 2. By 1981 companies are to achieve zero discharge unless they can show it cannot be done at a reasonable cost, in which case they must employ the best available technology.
 - 3. The phrases "best practicable" and "best available" are defined to consider the ages of the plants, their sizes, their processes and cost of controls.
 - 4. If research indicates total cost to be prohibitive the goal can be abandoned as an explicit feature of the bill.
 - C. Why is industry opposed to a bill that seemingly safeguards its economic interests? For that matter with all of the qualifications why would the Senate postulate zero discharge? Businessmen are people and people never react favorably to rapid change in philosophy.
 - 1. In 1965 the water pollution law then enacted permitted each state to determine how its rivers and lakes would be used and the water quality standards appropriate to the use. These, in turn, would impose specific limits of effluent on all polluters. Thus the limits would vary from stream to stream depending on its intended use. In theory this focused on ends, not means. It linked cause (effluent) to effect (water quality) and by relating use to the degree of control it related abatement cost to benefits and citizen priority.
 - 2. In practice it was very hard to implement as many state legislators did not wish to set water quality standards or could not establish relationships of effluents to water use which would be supportable in court.
 - 3. Thus the Senate on Public Works decided to shift from the technical difficulties of water quality standards to direct control of the cause. That was a radical change for it ended the policy assumption that one legitimate use of waterways is to assimilate waste. To move from awareness of the problem in the early 60's to a premise that "industry shalt not pollute" has been too rapid a philosophic evolution for Nixon and some who maintain their industry leaders to swallow.

Resource Conservation Lecture

4. Note, however, that the leader such as Dow have already dismissed treatment as an answer. In short, the Senate, is telling business that treat and dump is no answer and that what is needed is 10 years of R & D based on the assumption that closed cycle systems are the norm - not modified waste discharge.
- D. The Nixon argument is based on fear of high cost and capital investment to achieve zero discharge. While no one knows precisely what it would cost, Senator Muskie countered that price tag based on unknown or scanty data serves no useful purpose other than to intimidate business in Congress.
- E. Since many companies are moving toward closed loop recycling of water before they are compelled to do so, the cost cannot necessarily be prohibitive and many find recycling cheaper than expensive treatment.
- F. The major economic problem which can be identified are those of local governments which must provide sewer service as all communities would be required under the bill to have secondary treatment plants under way by 1974 and ultimately zero discharge just like industry. Like industry local government is a cash cycle enterprise and are strapped for funds which must come from higher real estate taxes or higher utility costs for each of the voters. For the municipality the voter is a common stock holder and the mayor has no more latitude than the company president in decisions of this magnitude when they are accountable to their constituents.
- G. The voter is also a cash cycle enterprise committed to solvency, ultimately environmental control must mean less of everything at higher prices. The business decision process simply reflects the general ability of our people to adapt to changing awareness of the realities and responsibilities of a spaceship economy. Look how far we have come in public education since 1960!
- H. I predict business will have achieved recycling of its water, controls on its exhausts, and elimination of its solid wastes of useable by-products about the time that the average home owner is driving nothing more than a Volkswagen, is recycling his house water supply, and properly venting his furnace.

OUTLINE #1

CONSTRAINTS ON FREEDOM OF FIRM TO MAKE DECISIONS TO INCUR COST OF CONSERVATION PRACTICES

1. THE PRICE AND QUANTITY REQUIREMENTS OF THE CONSUMER.
2. THE RETURN ON CAPITAL REQUIRED BY THE LENDER.
3. THE PROFIT REQUIRED BY THE INVESTOR.
4. EMPLOYMENT STABILITY AND GROWTH REQUIRED BY THE COMMUNITY.
5. TAX REVENUES REQUIRED BY THE SOCIETY.
6. EQUITABLE DISTRIBUTION OF COST TO EFFECT EFFICIENT ALLOCATION OF RESOURCES REQUIRED BY ECONOMIC SYSTEM.

OUTLINE #2

POSITIVE ECONOMIC INCENTIVES FOR INDUSTRIAL CONSERVATION OF ENVIRONMENT

1. REGENERATION OF NATURAL RESOURCES (TREES, FISH).
2. USE OF MARGINAL SUPPLIES OF SCARCE RESOURCES (TACONITE ORE).
3. RECLAMATION OF RESOURCES FROM WASTE (CHEMICALS FROM PAPER LIQUOR).
4. LOSS PREVENTION TO REDUCE NON-PRODUCTIVE RESOURCE CONSUMPTION (FIRE PREVENTION).
5. GOOD ESTHETICS--GOOD ECONOMICS TO INCREASE SALES OR LOWER COSTS (SUBDIVIDING CLUSTERS).

OUTLINE #3

ARTIFICIAL ECONOMIC INCENTIVES FOR INDUSTRIAL CONSERVATION OF ENVIRONMENT

1. INTERNALIZE SOCIAL COSTS BY SHIFTING COST BACK TO INDUSTRIAL SOURCE AND CONSUMER THROUGH PRICE STRUCTURE.
2. CREATE LEGAL PENALTIES FOR FAILURE TO FOLLOW SPECIFIED CONSERVATION PRACTICES.
3. CREATE SPECIAL INCENTIVES IN THE FORM OF SUBSIDY, TAX RELIEF, OR PRIVILEGE.
4. CREATE INTANGIBLE STANDARDS OF SOCIAL APPROVAL FOR DESIRED PATTERNS OF RESPONSE TO ENVIRONMENTAL CONSERVATION.

OUTLINE #4

EXPERIENCE OF PULP MANUFACTURERS RESEARCH LEAGUE ILLUSTRATES SOME MAJOR ELEMENTS OF INDUSTRIAL CONSERVATION

1. INDUSTRIAL CONCERN FOR CONSERVATION CAN BE VOLUNTARY, SELF-FINANCED, AND OF MANY YEARS STANDING.
2. INDUSTRIAL CONSERVATION DEMANDS CHEMICAL TECHNOLOGY WHICH MAY NOT EXIST.
3. CREATION OF A SALEABLE PRODUCT FROM WASTE MAY PRODUCE THE PRODUCT IN SUCH QUANTITIES AS TO BREAK THE MARKET PRICE.
4. LIMITED CAPACITY OF MARKET TO ABSORB A SINGLE USEFUL BY-PRODUCT MAY REQUIRE A VARIETY OF WASTE CONVERSION PRODUCTS AND PROCESSES.
5. VARIATIONS IN PRODUCTION PROCESS PRODUCING WASTE MAY REQUIRE ALTERNATIVE WASTE PROCESSING TECHNIQUES.
6. WASTE CONTROL MEANS SIMULTANEOUS DEVELOPMENT OF TECHNIQUES:
 - A. TO NEUTRALIZE LARGE QUANTITIES OF WASTE ECONOMICALLY.
 - B. TO PRODUCE SALEABLE BY-PRODUCTS REQUIRING LARGE QUANTITIES OF MATERIAL TO OFFSET WASTE CONTROL COSTS.
 - C. TO CREATE HIGH VALUE PRODUCTS SELLING AT A PROFIT ON CAPITAL INVESTED FOR WASTE CONTROL.
7. CAPITAL INVESTMENT INCLUDES RESEARCH, PRODUCTIVE HARDWARE, AND MARKET DEVELOPMENT.

OUTLINE #5

EXPERIENCE OF STEEL MILLS SUGGESTS MAJOR DILEMMAS OF INDUSTRIAL CONSERVATION

1. A BLAST FURNACE OR FOUNDRY AIR CONTAMINANTS ARE CORROSIVE, OFFENSIVE, AND DAMAGING TO LIVING STANDARDS.
2. FIRMS VOLUNTARILY DEVELOPED SUCCESSFUL CONTROL INSTALLATIONS BUT EXPERIENCED UNEXPECTEDLY HIGH CAPITAL INVESTMENT AND OPERATING COSTS.
3. CONTROL EQUIPMENT IS ECONOMICALLY OUT OF REACH OF MOST COMPANIES AND CAN NOT BE PAID FOR OUT OF INCREASE PRICES WITHOUT DISLOCATION.
4. CHANGE IN STEEL MAKING PROCESSES IS POSSIBLE BUT CANNOT PRODUCE SUFFICIENT VOLUMES OF STEEL TO MEET NEEDS.
5. IN THE ABSENCE OF ECONOMICALLY ACCEPTABLE CONTROL PROCEDURES, INDUSTRY MUST CONTINUE CONVERSION TO OXYGEN PROCESSES TO REMAIN COMPETITIVE WITH OVERSEAS SUPPLIES AND ALTERNATIVE DOMESTIC MATERIALS.
6. PRESENT MODERNIZATION WOULD POSTPONE REPLACEMENT CONSTRUCTION IF POLLUTION CONTROL PROCESSES WERE DISCOVERED TOMORROW.
7. PROBLEM IS NOT PERFORMANCE OF KNOWN CONTROL TECHNOLOGY, BUT COST.
8. TYPICAL OF INDUSTRIAL POLLUTION PROBLEMS, THERE ARE FEW COST OFFSETS IN THE FORM OF USEABLE BY-PRODUCTS.
9. CONTROL OF PLANT LOCATIONS THROUGH ZONING.
10. REDUCTION OF OTHER SOURCES OF CONTAMINANTS TO REDUCE OVERALL POLLUTION.
11. DIRECT GOVERNMENT SUBSIDY OF CAPITAL COSTS.
12. LEGAL PENALTIES WOULD FORCE FOUNDRIES OUT OF BUSINESS WHERE ENFORCED.
13. WITHOUT INITIAL CAPITAL FOR INVESTMENT, INCOME TAX PROVISION FOR CAPITAL RECOVERY DOES NOT OPERATE.

CHART #5

TYPICAL COSTS OF BASIC AND CONTROL EQUIPMENT
INSTALLED IN LOS ANGELES COUNTY

Source	Size of equipment	Cost of basic equipment	Type of control equipment	Cost of control equipment	% of control to basic cost
Airblown asphalt system	500 bbls./batch	\$ 10,500	Afterburner	\$ 3,000	29%
Bulk gasoline loading rack	667,000 gals./day	88,000	Vapor control	50,000	57%
Carbon black plant	2,000 gals./day	5,000	Baghouse	5,000	100%
Coffee roaster	3 tons/hr.	35,000	Cyclone and afterburner	8,000	23%
Crucible furnace, yellow brass	4 furnaces @ 850 lbs. each/heat	10,000	Baghouse	17,000	170%
Cupola, gray iron	48" ID	40,000	Baghouse and quench tank	67,000	168%
Fiberboard production	32,000 lbs./hr.	10,000	Electric precipitator	15,000	150%
Fluid catalytic cracking unit	40,000 bbls./day	7,460,000	Afterburner and precipitator	3,469,000	47%



October 4, 1972'

Margaret Kelly
Vilas Communications Center
Box 546
Park Street at University Avenue
Madison, Wisconsin 53706

Re: List of Slides, Prof. Graaskamp

1. Chart #1, Benefit Cost Triangle
2. Outline #1
- **3. Outline #2 (make new slide)
4. Yates-American Slide
5. VW bus (street scene)
6. Single lot illustration (conventional vs cluster lot size)
7. Comp. utility layout (stick diagram of utility runs)
8. Comp. subdivision layout (two plats with green space)
9. Outline #3
10. Outline #4
11. Chart #2
12. Steel mill slide

267-300-2: Environmental Resource Management Principles and Problems

First Semester, 1968-69

Professor Graaskamp

Monday, November 1

Industry

OUTLINE - RESOURCE CONSERVATION LECTURE

1. The rate of evolution in the process of civilization has always been a function of the rate of industrialization in the broad sense.
 - A. The tools, specialization, and scale of industry is praised for creating a miraculous standard of living and damned for destroying the natural balance and quality of the environment in which we live.
 - B. Historically industrial enterprise could be indicted for:
 1. Waste of natural physical resources.
 2. Contamination of air supply.
 3. Pollution of all water resources.
 4. Desecration of the natural landscape with industrial hardware.
 - C. With hindsight we condemn our industrial decision makers for lack of foresight although they accurately reflected the concerns of the great majority of their contemporaries and the competitive restraints on cost, price, and capital investment of the times.
 - D. Industrial management is now experiencing the same awareness of the environmental problems of our civilization that brought you here to this type of program. Industrial managers must live in the same environment and bear the cost of negligence like everyone else. It is foolish to accuse the pilot of an airliner of disregard for his passengers safety when it is the nose of the airplane that will hit the ground first.
 - E. The question of environmental control in the long-run is not one of ethics for management as a group; rather, it is a question of resolving short-term economic constraints so that the individual firm can survive for the long-run.
11. The economics of environmental control are quite different for society as a group than for the firm as an individual entity operating in a market economy.

- A. Assuming for the moment society could put a dollar value on benefits of environmental conservation programs, the net product of services, goods, and well being would be increased by incurring cost to a point where marginal cost equalled marginal benefit.
- B. No such benefit--cost relationship may govern the decision of the individual firm. With some exceptions environmental control costs provide no direct benefit to the individual firm, and if these costs cannot be shifted to the consumer in the price tag, the firm must relocate, go broker, or begin the following projects:
 1. An increase in cost requires an increase in price if the firm was at its equilibrium.
 2. An increase in price means a decline in units purchased.
 3. As units sold decreases, average cost per unit increase requires a second increase in price.
 4. Thus it can be shown that a conservation cost must increase total cost and price by a multiple of the original expenditure--affecting the entire revenue flow of the firm.
- C. Contrary to superficial analysis, the firm must make decisions serving a variety of claims on its abilities, including:
 1. THE PRICE AND QUANTITY REQUIREMENTS OF THE CONSUMER.
 2. THE RETURN OF CAPITAL REQUIRED BY THE LENDER.
 3. THE PROFIT REQUIRED BY THE INVESTOR.
 4. EMPLOYMENT STABILITY AND GROWTH REQUIRED BY THE COMMUNITY.
 5. TAX REVENUES REQUIRED BY THE SOCIETY.
 6. EQUITABLE DISTRIBUTION OF COST TO EFFECT EFFICIENT ALLOCATION OF RESOURCES.
- D. Industry is a prime target for those who would reduce smog or water pollution because industrial smoke stacks with black smudges and rivers discolored with oil slick are dramatic symbols of disregard. However, the major source of pollution is the odorless, colorless carbon monoxide produced by the family auto and the major source of water pollution is the untreated sewage of those local citizens who want low property taxes.
 1. In the short space of one hour we can only suggest factors in the decision making process of the single firm in regard to environment conservation.
 2. First, some problems of waste and esthetics have economic self-interest correction features.
 3. However, our principal stress will be on the water and air pollution dilemmas of a steel firm, a paper firm, and an electric power plant.

111. There can be an economic motivation for industrial utilization of environmental conservation practices which increase sales or lower costs of production.

- A. REGENERATION OF NATURAL RESOURCES (I.E. TREES, FISH).
- B. USE OF MARGINAL SUPPLIES OF SCARCE RESOURCES (I.E. TACONITE ORE).

- C. PREVENTION OF LOSS OF RESOURCES DUE TO NATURAL CAUSES TO LOWER COST OF PRODUCTION (I.E. FIRE PREVENTION). Good aesthetics can also be good economics. The attractive industrial plant near the expressway establishes a favorable name identification with many potential customers. However, the lagoon in this picture serves as an emergency water supply for the sprinkler fire system. Sprinklers themselves reduce fire losses and fire rates to a point where the insurance premium savings will pay for the entire water supply system in less than five years. The fountain aerates the water to prevent algae which would clog the fire pumps, and in cases of rural plant location, the pond also serves as a third stage sedimentation pond for sewer plant effluent.
- D. ENVIRONMENT UNDISTURBED LOWERS COSTS (I.E. SUBDIVIDING). The creation of urban building sites is a manufacturing process. Smaller lots in a clustered plan allow the property developer to leave many acres in their natural state, thereby creating attractive open space. At the same time the amount of sewer, street and curb, and other improvement costs are reduced. The need to grade down the ridges or cut the trees, both at great expense, is eliminated.
- E. GOOD ESTHETICS--GOOD ECONOMICS TO INCREASE SALES OR LOWER COSTS (I.E. ARCHITECTURAL LANDMARK).

IV. When the economic system does not of itself allocate social cost of any particular production factor to the producer and then to the user of that service or good, economists seek legislative and economic devices to internalize the social costs.

- A. INTERNALIZE SOCIAL COSTS BY SHIFTING COST BACK TO INDUSTRIAL SOURCE AND CONSUMER THROUGH PRICE STRUCTURE. For example, the Industrial Revolution began to produce a large number of accidents, injuries to workers in the course and scope of their employment. This strict law of liability provided some recourse where the employer or a fellow employee was demonstrably negligent and the cause of an injury to another employee thereby. However, recovery was slow and uncertain and charities and welfare agencies carried the burden of the injured worker. Finally, the issue of fault was removed and employers were required to carry insurance for full medical benefits, lost wages, and benefits to the survivors of those who were killed in industrial accidents.
 - 1. The premium for this insurance was based on individual company losses so that companies had an economic incentive to reduce losses with safety programs and safer equipment.
 - 2. The average cost of such insurance is included in the price of the product to be paid by all the users of that product. The unusual benefits or costs of loss experience for each firm provides an economic force bringing about conservation of human resources.
 - 3. Economists and legislators are now seeking ways to internalize the costs of resource conservation, that is to shift the full burden of environmental consideration onto the user of the product or the manufacturing firm responsible.

- B. CREATE LEGAL PENALTIES FOR FAILURE TO FOLLOW SPECIFIED CONSERVATION PRACTICES.
 - C. CREATE SPECIAL INCENTIVES IN THE FORM OF SUBSIDY, TAX RELIEF, OR PRIVILEGE.
 - D. CREATE INTANGIBLE STANDARDS OF SOCIAL APPROVAL FOR DESIRED PATTERNS OF RESPONSE TO ENVIRONMENTAL CONSERVATION.
 - E. Water and air pollution are major areas of current debate. Workmen's compensation represents perhaps two per cent of modern labor costs but conservation of environment can mean as much as fifty per cent of product cost so that the increase in economic stakes magnifies the complexities of decisions in this area. We will find illustrative situations in the paper industry, the steel industry, and in public power.
- V. Consider the experience of the paper industry in Wisconsin. The paper-making process requires tremendous volumes of water, most of which can be returned to the surface water without pollution. However, much of this water may be carrying something called sulphite liquor, a harmless, non-toxic dark residue which does break down with the oxygen in the water. Such large quantities are involved that the river is left little of oxygen to support BOD of plants, fish, or sewage reduction.
- A. In the 1930's the industry was asked to correct conditions in the Fox River Valley and the industry voluntarily formed the Pulp Manufacturer's Research League, financed it, and implemented the recommendations. INDUSTRIAL CONCERN FOR CONSERVATION CAN BE VOLUNTARY, SELF-FINANCED, AND OF MANY YEARS STANDING.
 - B. Sulphite liquor is a by-product of cooking wood to make paper. Wood can be compared to masonry, with cellulose fibers as the bricks and lignin as the mortar. By cooking woodchips in a bisulphate solution, the lignin is dissolved by sulfonation and some of the cellulose is reduced to pentose sugars. Only half the log becomes pulp and the balance goes into a solution with all the chemical elements of wood except the cellulose.
 - C. INDUSTRIAL CONSERVATION DEMANDS CHEMICAL TECHNOLOGY WHICH MAY NOT EXIST. The problem has been to dispose of 2½ million tons of sulphite liquor other than by returning it to surface water sources.
 1. Disposal in volume first led to development of soil filtration methods, lagoons for sedimentation, and timed discharges at high flow periods of the river. No benefit derived.
 2. Chemists then developed methods for using these rich organic wastes for fuel and roadbinder, a low benefit value but high volume consumer of the waste.
 3. More recently, these organic sulphite liquors have been converted to adhesives and yeast. These products have a high benefit value but can be produced in such quantities that the market could not use all the yeast and adhesives that could be made from available sulphite liquor. (3,4,5,6)

4. The chart will indicate that high value utilization now uses about 30 per cent of available sulphite liquor of participating paper companies and the need to waste these liquors through disposal has fallen to less than two per cent. Low benefit value uses are also declining as a per cent of liquor available. Markets have still to be found for more than 50 per cent of total available SSL.

D. THIS PROGRESS HAS REQUIRED CAPITAL INVESTMENT IN RESEARCH, THEN MARKET DEVELOPMENT, AND THEN PRODUCTIVE HARDWARE.

E. Another way to change the waste disposal problem is to find new ways of making paper with less water. Efficient use of water means less waste goes into solution. Efficient use of water means less is contaminated, less oxygen removed from rivers, more manageable volumes of waste.

VI. The steel industry can provide an unlimited number of horror stories in regard to air pollution. The typical blast furnace will emit iron oxide, silica fumes, carbon monoxide, sulfur dioxide, oil, and coke dust.

A. A BLAST FURNACE OR FOUNDRY AIR CONTAMINANTS ARE CORROSIVE, OFFENSIVE, AND DAMAGING TO LIVING STANDARDS. These products of the cupola will damage the surface of automobiles and buildings, blight vegetation, produce uncomfortable odors, and reduce visibility.

B. FIRMS VOLUNTARILY DEVELOPED SUCCESSFUL CONTROL INSTALLATIONS BUT EXPERIENCED UNEXPECTEDLY HIGH CAPITAL INVESTMENT AND OPERATING COSTS. Only a few completely successful control installations have been made, largely in Michigan, on blast furnace cupolas.

1. Costs of initial installation were more than one million dollars per cupola, more than 25 per cent of the total cost.

2. On these large units the fans, pumps, and other motors required at least 1,400 total horsepower--so that electric power to run systems for scrubbing the air with water ranged from \$40,000 to \$100,000 per year depending on hours of use.

3. Corrosive action of waste led to frequent breakdowns and high repair bills at an annual cost of at least 30 per cent of the original cost.

C. CONTROL EQUIPMENT IS ECONOMICALLY OUT OF REACH OF MOST COMPANIES AND CAN NOT BE PAID FOR OUT OF INCREASE PRICES WITHOUT DISLOCATION. On a smaller scale a small foundry costing \$750,000 to build would require at least \$300,000 for additional air filtration systems with high operating costs.

D. CHANGE IN STEEL MAKING PROCESSES IS POSSIBLE BUT CANNOT PRODUCE SUFFICIENT VOLUMES OF STEEL TO MEET NEEDS. Those systems which were installed did work but the cost cannot be supported by the present prices of steel or foundry products.

1. IN THE ABSENCE OF ECONOMICALLY ACCEPTABLE CONTROL PROCEDURES, INDUSTRY MUST CONTINUE CONVERSION TO OXYGEN PROCESSES TO REMAIN COMPETITIVE WITH OVERSEAS SUPPLIES AND ALTERNATIVE DOMESTIC MATERIALS. Alternatives of changing the process requires use of an induction furnace which cannot produce in sufficient quantities.
2. PRESENT MODERNIZATION WOULD POSTPONE REPLACEMENT CONSTRUCTION IF POLLUTION CONTROL PROCESSES WERE DISCOVERED TOMORROW. Control of the old style furnace is possible but not at a cost which will allow the foundry to stay in business.
3. A change in melting procedures might require complete reconstruction of the steel industry, a process which must take at least 20 years.
4. No one yet knows what the right control process should be and the steel industry must continue to modernize by current standards.

- E. PROBLEM IS NOT PERFORMANCE OF KNOWN CONTROL TECHNOLOGY, BUT COST. The unsolved problem in industrial problems of air pollution is often not one of performance by known techniques, but rather of cost within the capacity of the capital structure and pricing framework of an industry. Consider the relationship of conservation control costs for some of the industries suggested in Chart #5.
- F. TYPICAL OF INDUSTRIAL POLLUTION PROBLEMS, THERE ARE FEW COST OFFSETS IN THE FORM OF USEABLE BY-PRODUCTS.
- G. CONTROL OF PLANT LOCATIONS THROUGH ZONING.
- H. REDUCTION OF OTHER SOURCES OF CONTAMINANTS TO REDUCE OVERALL POLLUTION.
- I. DIRECT GOVERNMENT SUBSIDY OF CAPITAL COSTS.
- J. LEGAL PENALTIES WOULD FORCE FOUNDRIES OUT OF BUSINESS WHERE ENFORCED.
- K. WITHOUT INITIAL CAPITAL FOR INVESTMENT, INCOME TAX PROVISION FOR CAPITAL RECOVERY DOES NOT OPERATE.

VII. Our demand for electric power requires combustion of coal to produce steam to turn the turbine which runs the generators. Coal supplies more than 50 per cent of our thermoelectric capacity and electric power represents 50 per cent of the market for coal.

- A. The Oak Creek Plant in Milwaukee is presently rated at 1.7 million kilowatts and will eventually produce 2 million kilowatts as the largest power plant in Wisconsin. The coal is brought in on Lake Michigan and its tall stacks are designed to disperse its exhausts over the lake with the aid of prevailing westerlies. It consumes 7,000 tons of coal each day in a pulverized coal process which is one of the most efficient in the world. They feature efficient dust collecting devices which make it possible to burn coal with little discharge of chimney soot and smoke. The cost to control this ash was about 12 million dollars or 6 per cent of the total cost of construction.

- B. But the problem is that the burning of coal releases huge volumes of sulphur dioxide, one of the most serious of the air pollutants. Combining with atmospheric moisture it means that a release of 18 tons of sulphuric acid and other sulphur gases occurs per hour! If 50 per cent of these gases were processed to make commercially saleable acid, the market for acid would be broken with the glut.
- C. Until now, the basic approach has been to build tall chimneys to disperse these gases into the breezes well above ground level by increased air travel and engineering considerations hold stack heights to about 600 feet. Moreover, there is increasing evidence that as the concentration of sulphur dioxide increased with increased power production, down wind communities experience excessive concentration of SO_2 in certain weather conditions.
- D. One solution is a washing process but this simply switches the solution to a water problem because of the tremendous number of gallons of water involved.
- E. Another proposal has been to use low sulphur content coal, but these coals are in the west while the coal burning power plants are in the east and moreover would quickly be in short supply. There is the peripheral problem of changing to non-coal fuels such as atomic power but this would be a long-term process of conversion and would magnify economic dislocations.

VIII. Industry and business is simply a special subdivision of the social process concerned with converting natural resources to the products required by the society in which it operates. Conversion means applied energy and energy requires some form of combustion. Even atomic energy produces exhausts which have great potential harm.

- A. If society wants the benefits of fire, it produces the wastes of combustion and our ecology is rapidly losing its tolerance for absorption of these wastes in the atmosphere.
- B. If society intercepts combustion waste by dissolving them in water, then the water pollution problem is aggravated to the critical point of survival.
- C. If society forces industry to use existing, chemical and mechanical techniques for pollution control, there would need to be restructuring of our price system for resource allocation and provision made for the majority of existing business enterprises which would fail financially in the short-run since they lack the resources to survive to a new point of equilibrium in the long-run.
- D. Even if industry abuse of our natural environment is drastically curtailed, the environment will continue to deteriorate due to the auto and the single family home. Consumer abuse will rise with population growth, development of under-developed areas, and expansion of our own standard of living.

- E. The exciting prospect of industry is that in the next 35 years, in this country alone, we must house an additional 140 million people in cities at the same time that we develop new production systems, transportation systems, energy systems for systematic conservation of a liveable environment.
- F. The problem of sustaining life on the moon or in space travel is neither as complex a problem or one that will require as much capital for its solution as the manufacture of an environment which will make it possible for us to survive at even our present standard of living here on earth.

CHART #5

TYPICAL COSTS OF BASIC AND CONTROL EQUIPMENT
INSTALLED IN LOS ANGELES COUNTY

Source	Size of equipment	Cost of basic equipment	Type of control equipment	Cost of control equipment	% of control to basic cost
Airblown asphalt system	500 bbls./batch	\$ 10,500	Afterburner	\$ 3,000	29%
Bulk gasoline loading rack	667,000 gals./day	88,000	Vapor control	50,000	57%
Carbon black plant	2,000 gals./day	5,000	Baghouse	5,000	100%
Coffee roaster	3 tons/hr.	35,000	Cyclone and afterburner	8,000	23%
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Cupola, gray iron	48" ID	40,000	Baghouse and quench tank	67,000	168%
Fiberboard production	32,000 lbs./hr.	10,000	Electric precipitator	15,000	150%
Fluid catalytic cracking unit	40,000 bbls./day	7,460,000	Afterburner and precipitator	3,469,000	47%

11/6/68
kkg

Commerce, Industry, Public Utilities

James A. Grasskamp

Business is not the natural enemy of conservation nor of civilization. I think historically we can show that civilization has evolved with industrial technology and that the standard of living we enjoy is based on industrial technology. So, with hindsight industry is condemned by citizens for its lack of foresight, even though its industrial managers have the same cultural pattern as the citizens condemning it. Certainly, industry can stand indicted for waste of natural resources, contamination of the air supply, pollution of our water sources, and desecration of the natural landscape with industrial hardware of all kinds. But I think that we should abandon immediately the view that this is an ethical question--that industry is naturally inclined toward exploitation and destruction of the environment. This is nonsense. Accusing the pilot of the airliner of reckless disregard for the passengers' safety does not seem to make too much sense when one realizes that it is the nose of the airplane that will hit the mountain first.

I think, rather than taking the easy answer that industrial management is without social ethic, we should examine the basic constraints on the individual firm which has to serve many masters and which, like the politician, has first the problem of surviving and then advancing and progressing. Therefore, the economics of advancing environmental control and quality should be examined, if only briefly.

First of all, the environmental economics of society are quite different than the economics of the individual farmer. ^{slide} Society can invest its resources in environmental control up to an amount which equals the benefits being derived.

A triangle can illustrate this principle. The left side measures the total cost; the bottom represents the total benefits to be derived out of a commitment of society's resources to some aspect of conservation, the right side represents environmental control. *and soon.* Now obviously, there are two statements which are rather large assumptions, but the economists never seem to falter in making them. The first one is that we can measure the benefits. What is the cost of something such as dust in the air? We can't put a dollar value on it. We know it is not good, but we don't know how bad it is. And, by the same token, we can't really measure the cost of controlling a simple thing such as the soot which is emitted from all of the various chimneys in the land. We do have some processes which would be 99 per cent effective in eliminating soot but which can be installed only at considerable cost. However, the rather apparent contamination element of soot is the least important of the emissions from smokestacks.

Therefore, we cannot accurately measure in dollar terms the benefits to society of a given conservation program nor its cost. However, we can say that to the degree that the harmful effects of a given condition are reduced, we are justified in allocating some of society's resources for that purpose. A benefit-cost relationship is involved, which means that we will invest as much as is justified by the return in benefits to society. But no such benefit-cost relationship exists for the individual firm. With some exceptions, technological advances on environmental control provide no direct benefit to the individual firm. They are only a cost and a burden--a re-allocation of that firm's own resources and capacities toward environmental control. If it cannot shift the additional costs back to the consumer of its product, then it must absorb these costs, relocate to some other area without such controls on the businessman, or go broke. And I submit that survival of the individual business firm is an essential element in the fabric of the society.

If the firm does incur additional cost for some element contributing to environmental improvement--the control of smokestacks or water pollutant elements--this increase in its cost requires an increase in price to the consumer if the firm was at an equilibrium point to begin with. Now, if the price increases and the demand for the product is elastic, there must be a decline in the number of units which will be purchased. If the number of units purchased decreases, so will the number of units produced. Next, the fixed costs of operation must be distributed over a smaller product line, increasing the total cost of the product per unit by more than the ^{incremental} cost of environmental control. Thus, the cost of conservation must increase the total cost of the products being produced and sold by a multiple of the conservation expenditure, which will affect the entire revenue flow of the firm. In making a decision to implement one conservation procedure or another the firm must make decisions which consider the impact on a great number of persons with a vested interest in that firm.

First, the price and quantity requirements of the consumer must be considered: how much he needs, how much he can afford to pay, the level of quality he can afford to pay for in the product. The second consideration must be the return of capital required by the lender. The more capital that is necessary to go into the business and the longer it takes to repay that capital, the higher the interest rate on it will be and the less that can be invested in other projects, resulting in the delay of projects, with less priority.

A third point involved is the profit required by the equity investor of the firm. The businessman must also consider the employment stability in his region and the growth required by the community. If one firm is subject to restraints in terms of what it can or cannot do from an environmental standpoint, this means that it will not grow or expand in this area. It will either move to some area with less control or perhaps shut down entirely. Since the community is

encouraging industrial expansion so that it may continue to employ its younger citizens, some kind of balance must be struck between the economic base of the community, the expansion of that base, and the constraints under which the firm must expand in that community.

The next consideration is the tax revenue by society. For example, if a firm is encouraged to invest in sewage treatment facilities of one sort or another, it may be given certain tax incentives or be allowed to depreciate the facilities more rapidly than other investments, thus decreasing the contribution toward the social treasury in the form of income taxes. Only so many favors can be given a business before there are no income taxes to support the other activities of society. So a balance must be struck between tax incentives and the tax revenue needs of the community. The final consideration is an equitable distribution of the cost of the conservation element in order to affect an efficient allocation of resources. A market economy presumes that, by having each firm operate to achieve its most optimal equilibrium point--the natural resources, labor, capital and management talents of that society will eventually be allocated to the most efficient degree possible. However, once the investment of capital is rearranged by imposing certain environmental restraints on the firm, obviously there will be a re-allocation of the entire society's resources.

Industry is a prime target for those who would reduce smog or water pollution, simply because industry offers both visible and dramatic targets, such as the black smudges coming from its tall smokestacks and the oil slicks on the water. However, I would suggest that you look at the record of communities such as Los Angeles, where very severe restrictions have been placed on the companies which contribute the most dramatic air contaminants of all, such as the oil refineries. Although industry has spent a tremendous fortune adjusting to these controls, the smog and other air pollutants continue to rise. It has been found

that the primary contributor to the pollution problem in Los Angeles is the odorless and colorless carbon monoxides, carbon dioxides, and sulfur dioxides from the family auto and oil burner. Water pollution was found to be primarily the result of untreated sewage from communities where the citizens wanted to maintain their low property taxes. Therefore, industry should not be the sole whipping boy. Indeed, it remains to be proven whether the majority of what we call the pollutants of our environment are actually emitted by industry or produced by the consumer in enjoying the standard of living that industry has provided.

In this lecture we obviously can only suggest how some conservation factors affect the decision-making processes of the individual firms. First I would like to cite cases in which it is to the benefit of industry to follow good environmental practices. The principal problem of industry is adjusting to those conservation problems which impose only a capital cost, allocation of management, or a technological process which may be beyond their abilities to install and to operate. However, in some areas industry would benefit if it would only pursue conservation programs. An example is the regeneration of natural resources, which includes tree farms and fish farms. All sorts of natural resources can be regenerated as they are used, and, of course, companies using them have extensive programs for a natural cycle of replacement. If they did not, obviously the raw materials of their whole operation would be lost and, as the supply dwindled relative to the demand, the price of the materials they need for their business would become exorbitant. Therefore, it is to their economic advantage to pursue a policy of conservation and regeneration.

There next is the problem of having marginal supplies of scarce resources, such as the iron ore in Wisconsin and Minnesota. Having exhausted the richest veins of these ores, businesses are now faced with either finding new sources

of iron far more remote from productive blast furnaces or utilizing the more marginal sources of the raw materials, such as the taconite process which condenses and concentrates iron ores before shipment.

A third area, perhaps less apparent has to do with the loss of resources due to natural disasters and includes such things as fire prevention. The example of the Yates-American plant suggests where good aesthetics mean good economics (slide). The Yates-American plant on I-90 near Beloit, Wisconsin, is very attractive, with a very elaborate mosaic pattern on the plant and a large lagoon in front containing a fountain on which colored lights can be used. Now, while this is certainly an enlightened view of the factory building in the natural landscape, the lagoon also serves as a natural emergency water supply for the plants sprinkler system which is used to prevent fire. The sprinklers themselves reduce fire losses to the point where the fire insurance rate reduction will pay for the sprinklers and the lagoon in a very short period of time. Moreover, the fountain aerates the water, preventing algae from forming and clogging the pumps in case the fire system should have to be used. Also, because this is a rural plant without a municipal sewer system, the pond is used as a secondary treatment facility for the sewage plant, serving as a sedimentation/aeration pond for the effluent from plant sewers. Therefore, the natural landscaping--the fountain, the pond--are all supported and justified by the economics of a rural plant location.

Another manufacturing business produces suburban residential sites. Formerly Suburbia was the familiar grid plan going on ad infinitum. However, it is much cheaper for the manufacturer if he has a little smaller lot, and allocates the land he saves to a common greenery area. (slide) By trimming a little off the back and the sides of lots, the area^{0'} related to that green area can be saved. (slide) By clustering lots in a circular pattern, the extent of streets necessary to serve it can be reduced, as can the length of the utility runs for sewer, water, and electricity.

As a result of producing a subdivision of homes made up of cluster patterns, we avoid the extensive utility investments of the conventional plan, and the construction costs caused by working with difficult slopes, ravines, and other areas which otherwise must be plowed down by the bulldozer and the earth grader. Much of the sterility of the grid plan is also avoided, and the result is a lower-cost product which has conserved the natural contours and attractive features that make suburban life worthwhile. (slide)

A comparison of the two types of subdivision layouts would show that all of the open space is used in a conventional pattern--even that which is difficult to subdivide. (slide) The cluster plan would have the same number of lots, but by reducing them only slightly in size the wooded, hilly, and ravine areas would be released to common use and enjoyment. Since these areas are difficult to build on, the result is a more attractive neighborhood at less cost.

Good aesthetics can also be good economics when the building, such as an architectural landmark of one sort or another, both advertises the firm's product and also serves to create an image of enlightened management. This can be carried through in the design of the individual products. But unfortunately for industry as well as society, these types of situations are in the minority. Instead the problem is how to cope with pollution. ^(air or water) When consideration of environmental control is of no immediate benefit to the firm except that it is necessary in order to survive with society. When any economic system does not itself justify the cost involved, it is necessary to shift the social cost of disregard for these factors back to the individual producer by creating some type of economic, legal, or legislative penalty for failure to consider them.

For example, when the industrial revolution first began, factory personnel had a large number of accidents. There was a strict law of liability which would

place the cost of these accidents upon the employer if it could be shown that he was negligent. But recovery was slow and uncertain. Charities, welfare agencies, and society in general had to carry the burden of the accidents. Finally, the issue of fault was removed, and employers were required to carry workman's compensation insurance to provide full medical benefits, lost wages, and rehabilitation to those who were injured, their survivors, and family. The premium for this mandatory insurance was based in part on the company's individual loss experience, and thus was made a function of the company's care and regard for its employees. The cost of this insurance induced the employers to undertake accident prevention and safety programs of various kinds in order to reduce their premium and the result was a conservation of human resources.

We are now trying to find ways to internalize the cost of environmental control in a way which is both fair to the manufacturer and provides an incentive for him to find the most efficient way of doing it. One way is to create legal penalties for failure to follow specified conservation practices. But ^{under} ~~once~~ these penalties are set high enough, it simply becomes a way of licensing abuse of what otherwise might be conservation procedure. Another way is to create special incentives in the form of subsidy, tax relief, or special privileges for the firms which do whatever desired conservation element is in question. Another way is to create rather intangible standards of approved social behavior to bring about the desired response to environmental conservation.

Water and air pollution are perhaps the dominant subjects in the debate on environmental control today. To see what lessons can be drawn about the reaction of the individual firm to these problems, we will look at the paper and steel industries and then the problems of an electric power plant.

The first problem of the paper industry is that of spent sulfite liquor. The paper making process is a cooking process, whereby logs are reduced to pulp in a pressure cooker, and it involves tremendous volumes of water. Spent sulfite liquor is not toxic or harmful and consists basically of about 50 per cent of the log products dissolved in the water. To understand the cooking process, look at the cellulose in logs as bricks, *and the lignin in the logs as the mortar which holds the cellulose bricks together.* The cooking process divorces the cellulose and the lignin reducing much of the cellulose to sugars. The lignin goes into solution as a result of the sulfination of the fluid, and what is left of the cellulose becomes the paper element. A very rich effluent results from paper production--the spent sulfite liquor which comes in tremendous volumes and is rich in some potentially useful organic material. For every ton of paper produced more than a ton and a half of this fluid is produced. The first problem then, is simply one of disposing of two and a quarter million tons of sulfite without putting it back in the river or lake from which the water came.

During the late 1930's in Wisconsin, the paper industry was asked to do something about the Fox River, which was being overburdened with sulfite liquor. Although the sulfite liquor itself was not the contaminant, it did require much of the oxygen capacity of the river, leaving little oxygen for reduction of the sewage elements and other pollutants being introduced into it. In order to relieve the river of this burden, the paper companies were asked to find another way of handling the sulfite liquor. Therefore, for the last 26 years they have financed the research themselves on a voluntary basis and they now have implemented some system at each plant for disposing and perhaps utilizing the sulfite liquor.

At first the problem of disposing of this tremendous volume led to solutions such as sedimentation ponds, where the fluid was simply pumped in and allowed to evaporate. Another solution was timing discharges of the fluid from storage tanks, so

that it would be disposed of only at points of high flow of the river and thus would not become the dominant fluid in the river. A very low cost utilization of these products was spraying them on gravel roads to ^{keep} the dust down, since they are an excellent road binder. Some of them were used as fuel, by distilling and extracting the solids from the liquor and then injecting these solids into the furnace.

But all of these uses were simply ways to dispose of large volumes of the fluid, and the economic benefit bore no resemblance to the total cost of disposing of the fluids.

More recently chemistry has made it possible to reduce these wastes to what we would call high-value products, such as adhesives and yeasts. The paper plant at Rhinelander converts almost all of its sulfite products to yeast. However, the volume of yeast which could be produced from sulfite liquor exceeds the total demand for yeast in the country. Therefore, one solution alone is not enough to solve the problem.

By the same token, the volume of adhesives which could be produced probably exceeds the industrial applications of these adhesives at this point. Therefore, technology must find multiple answers to the utilization of these products. Otherwise, the market for the various products which were created can be literally broken by oversupply. (slide)

Until recently the problem has simply been one of total disposal. Then, gradually, there was some low-value utilization. But as chemistry made possible high-value utilization of these fluids, the disposal through ~~sedimentation~~, spraying on vacant land and so forth, dropped to a very small percentage of total production. Presently, we are utilizing about 35 per cent of these fluids in various types of products. However, chemists have still been unable to develop enough uses for all of this waste. The process has required a tremendous investment in capital, although most people think of capital as being hardware--the pumps, the furnaces, the machinery, the presses, and

so on. But capital here meant a long-term investment, in research, market development, and education on using these products rather than what may already be on the market. Finally, once the process and the product were known, capital meant the creation of the hardware to make it commercially feasible.

One way to ameliorate the waste disposal problem is simply to find new ways of making paper with less water. This means first of all that an unnecessary burden is not placed on our total surface water supplies. Secondly, by using less water less waste goes into solution. Thus efficient use of water means not only ^wchange in the disposal pattern, but also a change in the entire production process in order to eliminate the initial source of wastes. By doing this there is less of an oxygen demand on the rivers, the volumes of waste are smaller, and the balance of the waste produced is brought back to the level of the productive uses for it.

An excerpt from a movie produced by Kimberly Clark shows the research they have done in water conservation in paper processes. (Movie script follows) In the notoriously water-short area of Southern California, the problem of conserving the water supply is coupled with waste treatment and disposal. In this section of the country waste treatment is approached with the double goals of water recovery for re-use as well as fiber reclamation. This surplus water drains from the stock, through the screen to the tray collector and into the white water chest, called that because the water is white with bleached wood fibers. It is pumped from there to various other locations for dilution and a vacuum filter or save-all recovers the wood fibers and clarifies the water.

The design of the Fullerton plant allowed it to start operation using only half the amount of water normally required for a ton of production. This has since been reduced to one-third, and still further reductions now appear within reach.

The material from the save-all contains fibers formerly lost, but now recovered for ~~it~~ profitable production. Clarified water^e, the other product of the save-all, is re-used in processing and also for clean-up purposes.

The giant mixing bowl or hydro-pulper prepares the pulp for the quake wadding machines. The mix consists of treated wood fibers, or cellulose, and water and is thick, looking something like white cotton candy. To thin the mix dilution water is used, which already contains wood fibers and is drawn from the white water chest. Water is precious at Fullerton and none is wasted. (?)

Part of the continuing conservation effort includes the water recovery systems at the Fullerton mill. Incoming fresh water, treated to soften it and reduce dissolved solids, is mixed with mill effluent. The mixture passes through a sedimentation and flocculation unit--a high-rate settler where particles collect and settle out. After the water goes through a final polishing filtration it is ready for re-use in the production process. With this system in operation, water is re-cycled though the plant repeatedly with the addition of only relatively small amounts of fresh or make-up water. (end of movie)

The cost of providing that type of research runs from five to ten per cent of the cost of the paper mill itself.

Let's take a look at a problem where we can get a better idea of costs. The steel industry provides probably an unlimited number of horror stories for conservation in regard to air and water pollution. The typical blast furnace emits iron oxide, silica fumes, carbon monoxide, sulfur dioxide, oil, and coke dust. No matter how you state it, these are harmful and corrosive, and in some areas they have been known to erode the stone on the face of buildings. It will cause damage to the surface of automobiles, blight vegetation, produce uncomfortable odors, and reduce visibility. There is no way to get around that, unless we can eliminate the fumes themselves. ^{ist}

Firms voluntarily have tried to develop control installations, but they have experienced an unexpectedly high investment and operating cost. In Michigan the cost for a simple foundry was more than one million dollars per cupola, the vent on the top

of a single blast furnace. This represented more than 25 per cent of the total construction cost of that cupola. The fans and pumps necessary to handle the air control features of these cupolas required 1,400 total electric horsepower, and the cost of operating them for three shifts a day was \$100,000 a year for electricity alone. Moreover, the replacement and maintenance cost equalled a yearly expenditure of one-third the initial investment--over \$300,000 each year to replace the fans and pumps, and to otherwise keep the machinery in operating order. The very things which make the fumes corrosive and undesirable *to the average citizen, makes them also highly undesirable* for the ordinary piece of machinery. Often fan blades had to be replaced, as often as every two weeks. Break-downs and other disadvantages with this type of equipment meant that the cost of operating adequate control equipment on the exhaust from a single foundry cupola represented at least half the cost of the initial equipment, or more than \$500,000 a year.

Control equipment, therefore, is just economically out of reach of most companies because they cannot afford to pass these costs along to their customers. If the foundries in Michigan are required to meet these standards, but the foundries in Illinois, Wisconsin, and Ohio are not, then those foundries which have the lower costs obviously have lower prices and soon will have all of the customers. A small foundry that might invest \$750,000 in a total plant, equipment, and all of its inventories would require at least an additional \$300,000 for an air filtration system. The price structure for foundry products will not presently support that kind of investment.

If we wanted to change the steel-making process or the foundry process, there are several technological alternatives, but most of them will not produce the products we need in sufficient volume. In the absence of economically acceptable control procedures, industry still must continue to convert to the new oxygen furnace in order to remain competitive with both overseas producers and alternative domestic producers in areas which may not be so concerned with conservation. The current modernization of equipment

will postpone replacement construction, if and when pollution control processes are discovered. Even if they were made operational tomorrow, more than 50 per cent of our steel capacity would not benefit from them for another twenty years. A change in the melting procedures might require a complete reconstruction of the steel industry, which under present replacement and depreciation processes, would take at least twenty-five years.

The fact is that no one today knows what the right control process should be. The steel industry has to continue to modernize to survive in the current competitive environment. Therefore, the dilemma is one of securing conservation controls when the technology does not exist without either setting back the industry or the standards that society has set for its products.

The problem in the steel industry applies to many others. (slide) The problem is not the performance of a known control but rather the cost. We can control plant location through zoning so that these fumes are emitted in the less desirable parts of our country, but this still contributes to the total air pollution problem which can be considered on a world-wide basis. Time magazine recently reported that the carbon dioxide-carbon monoxide build-up for the world as a whole has been 10 per cent since the turn of the century. This has created what they call a green house effect--a gradual warming of our average temperatures. If this continues another 10 per cent the polar ice caps will begin to melt. This would be one solution to much of our pollution problem, since the coastal cities where industry is heaviest would be under about 50 feet of water.

There is the alternative of direct government subsidy of capital costs, but as yet our legislators have been unwilling to do this. If legal penalties were enforced, foundaries would be put out of business, and this has in fact, happened. Firms in both Milwaukee and Detroit have literally gone out of business or gone broke in the process of installing air filtration equipment on their plant.

All of the assumptions up to now have been that firms can afford to do whatever they want, which is not so. Without initial capital for investment, all of the income tax provisions and other types of incentives simply will not operate. You cannot tell

someone to spend \$300,000 on a given process when he does not have \$300,000, nor the profit expectations in his business such that he can attract \$300,000. He has the choice of simply going out of business quickly, by graceful liquidation, or slowly, through an undignified bankruptcy.

Another type of horror story for the various firms involved here is the different types of equipment that are needed and the expense relative to their total capital investment. Those which I selected are not necessarily the worst, but they were the costs that came to hand quickly. They suggest the cost of air filtration or water pollution equipment, relative to the total cost of the plant for various types of basic industrial processes.

There is also the problem of power and energy. Our demand for electric power is basic to an industrial society, and it requires energy to turn the turbines which turn the generators. Some 55 ¹⁰⁰ per cent ^{if this energy is created by the combustion of coal. Coal suppliers find now that 50 per} of their market in electric power. (slide)

The Oak Creek power plant in Milwaukee is rated about 1.7 million kilowatts, and it will eventually produce about two million kilowatts, to be the largest power plant in Wisconsin. It is run on a highly efficient coal system, which pulverizes coal into a very fine talcum-like dust and blows the dust into the furnace so that it burns like a gas rather than as a solid. The tall stacks are designed to disperse the fumes from this process over Lake Michigan at a height which will hopefully avoid ground-level concentrations. This, of course, allows them to disperse over the lake where the prevailing breeze is westerly so that the good people in the southern part of Milwaukee County will not be irritated often. It consumes about 7,000 tons of coal each day. The chimneys each feature electric precipitators to remove the soot and ash so that the smudges ordinarily associated with this type of plant are almost non-existent. The system is about 99.6 per cent efficient in removing soot and ash. Its site is the best that could be had under the circumstances. The cost to control that ash was about 6 per cent or \$12 million of the total construction cost.

Certainly the electric company is sensitive and aware of the problem of air control. But the problem is really that burning of coal releases huge volumes of sulfur dioxide, one of our most serious air pollutants. Combined with the atmospheric moisture, it is the equivalent of 18 tons of sulfuric acid per hour. If 50 per cent of these gases could be processed and converted to make commercially salable acid, the commercial market for sulfuric acid would be destroyed. We simply do not have the industrial demand to utilize all of the potential products of the wastes being vented up chimneys. Until now the basic approach has been to build a tall chimney and hope that we can disperse these gases in the breeze well about ground level and the local citizenry. But now we are reaching points where beyond 600 feet these chimneys are a hazard to airplanes. Moreover, there is increasing evidence that the concentration of sulfur dioxide may not increase in Milwaukee but will increase on the lee side of Michigan. As our concentrations of these gases increase in downwind communities, we begin to have the adverse effects that we were trying to avoid with the local community where the power plant is located.

One solution is to wash the gases before venting them, as is done in England. But the problem here is that this simply changes the problem for one of air pollution to one of water pollution. What could be done with the 1.2 million gallons of water per hour needed to make the system work and from where could that much water be taken without having the aggregate effect of power plants all around the Great Lakes draining off the surface of the lakes to a point where channels, shipping, and so forth would be adversely affected.

Another proposal is to use low sulfur coal. However, these coals are largely in the western part of the United States, while most coal-burning power plants are on the eastern side of the United States. The peripheral problem then is how to transport the coal to where it is needed most. Indeed, ^{if} all of the electric power plants did convert to low sulfur coal, the supply would quickly be exhausted, since it represents only a small part of our available energy resources. The same problem with sulfur dioxide exists with the use of all our fossil fuels, including oil, and gas, as well as coal. As yet there has been no technological solution to this which is one of the most

serious problems of our environmental control.

Industry is simply a subdivision of the social process, and it shares with the average citizen the same standards, the same willingness to choose from one advantage or another and the same willingness to incur cost without its own special benefit. Even atomic energy, for example, will produce potentially dangerous exhaust wastes. But society wants the benefits of fire, even if it produces wastes of combustion. However, our ecology is rapidly losing its tolerance to absorb these wastes in the atmosphere, and if they are intercepted by dissolving them in water, our water resources will be destroyed. If society forces industry to use existing chemical and mechanical techniques for control, there would be ^acomplete restructuring of our price system for resource allocation and for the standard of living which is presently enjoyed. This is also politically unacceptable. Even if industry ^{12.1}abuse of our natural environment were curtailed, the environment would still continue to deteriorate because of the auto and the single-family home.

Consumer abuse will rise with population growth, with development of our underdeveloped areas around the world, and expansion of our own standard of living. In addition, ~~that~~ in the next 35 years industry will have to supply, house, and feed another 140 million people in cities while at the same time developing an entirely new production process which does not produce harmful environmental consequences. We must produce transportation systems which do not have unpleasant consequences for our ecology. We must have new energy systems in order to produce a livable environment.

Industry is quite aware of its responsibilities since it, too, would like to survive. The problem of sustaining life on the moon or in space travel is neither as complex a problem nor one that will require as much capital and private initiative for its solution as the manufacture of an environment which will make it possible for us to still have our industry and our natural environment by the year 2000.

August 11, 1987

TO: ✓ Jim Blakely
✓ Jim Graaskamp

FROM: Jim Hickman *JH*

SUBJECT: Notes on Meeting Devoted to Organizational Review
of the Program in Construction Administration,
August 10

1. Attendance. Dean Walsh, Chair, Dean Bollinger, Professor Calvin Cramer and Jim Hickman.
2. Purpose. The meeting was required by a memorandum from B. C. Cohen, July 3, written to the Deans of CALS, Engineering and Business requiring an Organization Review of the Program in Construction Management.
3. Facts
 - a. The current program is not accredited and major improvements will be needed to achieve accreditation. Under UW-System mandated program review, Construction Administration may be threatened.
 - b. Two sets of technical electives are offered in the program and 10% of the students elect the engineering emphasis and 90% of the students elect the business emphasis.
 - c. UW-Stout is rapidly expanding in construction administration.
 - d. Those managing the Construction Administration Program are satisfied with their relations with Business. Civil Engineering does not want to manage the program but has given lukewarm support. It is clear that the relationship with Civil Engineering is the main issue.
4. Position statements by Deans
 - a. School of Business supports the program. However, it is interested in limiting the program to building. Financing, including leasing, labor-management relations, social problems and urban planning are examples of topics that go beyond building and are best taught in the School of Business. It is necessary to define sharply the limits of the program.

Jim Blakely
Jim Graaskamp
August 11, 1987
Page 2

- b. The College of Engineering supports the program. The Department of Civil Engineering has little interest in construction. The College is attempting to recruit faculty in construction which should strengthen Civil Engineering and Construction Administration.
- c. CALS feels it necessary to improve the quality of the program. It generates many students and their placement is good.

5. Summary and next steps

- a. It is clear that Civil Engineering is the key. For Construction Administration to succeed it needs support from Civil Engineering. It has not gotten this support in recent years. The School of Business plays only a tangential role in this.
- b. Dean Walsh will appoint a working group composed primarily of faculty from Civil Engineering and Construction Administration to explore cooperation between CALS and Engineering on this subject. Jim Blakely would probably be appointed as a School of Business representative. My guess is that he can be an observer. Our interests do not seem central to the current discussions.

rg

University of Wisconsin-Madison

Office of Dean and Director
140 Agriculture Hall
1450 Linden Drive
Madison, Wisconsin 53706
608-262-1251

College of Agricultural and Life Sciences

October 16, 1987

TO: Gary Bubenzer
Cal Cramer
Norbert Lovata
Jim Blakely
Jim Graaskamp ✓
Al Wortley
Ray Matulionis
Alain Peyrot
C. K. Wang

FROM: Dean John Bollinger 
Dean James Hickman 
Dean Leo Walsh 

RE: Establishment of a Construction Education Coordinating Committee

Because of the need within the construction industry for people trained in both administration and engineering, several Departments, Schools and Colleges within the Madison campus are placing increased emphasis on construction education. It is important that this growth be well coordinated so that program goals are clearly defined and are complimentary rather than duplicative.

We are asking you to serve as a committee to help coordinate the growth and enhance the quality of the construction education programs on campus. Specifically we ask you to address the following issues:

1. Develop a plan for undergraduate education that will ensure the rapid accreditation of (a) a Construction Administration program in Agricultural Engineering and, (b) a Construction Engineering option within Civil Engineering.
2. Develop a structure which will encourage interdisciplinary research and graduate education. Adapting an administrative structure such as that used in the Land Resources program or in the Land Information Studies program may be appropriate for the Construction program as well.
3. Develop a plan to encourage coordination between Graduate/Research programs and Continuing Education programs.

Questions related to the appropriate designation of the Agricultural Engineering/Construction Administration program will not be addressed by this committee. After program coordination and accreditation is achieved we will consider whether it would be advisable to change the title or the administrative structure of the Construction Administration program.

We appreciate your willingness to serve as a member of this team. Gary Bubenzer will serve as chairman and convene the group in the near future. We would appreciate copies of the minutes of all meetings so that we will be informed of your progress, and we request a final report by December 4, 1987.

xc--B. Cohen
P. Certain

INFORMAL MINUTES

CONSTRUCTION EDUCATION COORDINATING COMMITTEE November 5, 1987

Present: Jim Blakely, Neil Eldin, Alain Peyrot, Jim Graaskamp,
C. K. Wang, Norbert Lovata, Gary Bubenzer

Absent: Al Wortley, Ray Matulionis

After introductions and background comments concerning construction education on campus, the committee reviewed the charge received from the Deans. A framework was established for establishing recommendations for the first two charges.

In order to establish complementary undergraduate programs in Construction Administration and Construction Engineering the uniqueness of each program must be clearly established. A framework for establishing areas of uniqueness and commonality was established (Figure 1). Wang and Peyrot will develop the engineering portion of the figure and Eldin and Lovata will develop the Administration portion. The results will be presented at the next meeting. In addition courses should be identified as 1. Courses required of both programs, 2. Courses required of one program but not the other, 3. Courses acceptable to both programs as technical electives, and 4. Courses not transferable between programs. Copies of ABET and ACCE accreditation requirements will be distributed to each committee member.

Alternatives for developing coordinated Graduate Education/Research programs were briefly discussed (figure 2). Graaskamp presented the structure for a new informal program in Facilities Management that could serve as a model for an initial effort in the graduate education area. A more formal structure such as that used by the programs in the Institute for Environmental Studies was also discussed. The two approaches may represent a natural sequence in developing a strong, visible program in graduate education and research in the construction area.

The next meeting will be WEDNESDAY, NOVEMBER 18 at 1:30 in 104 of the Commerce Building.

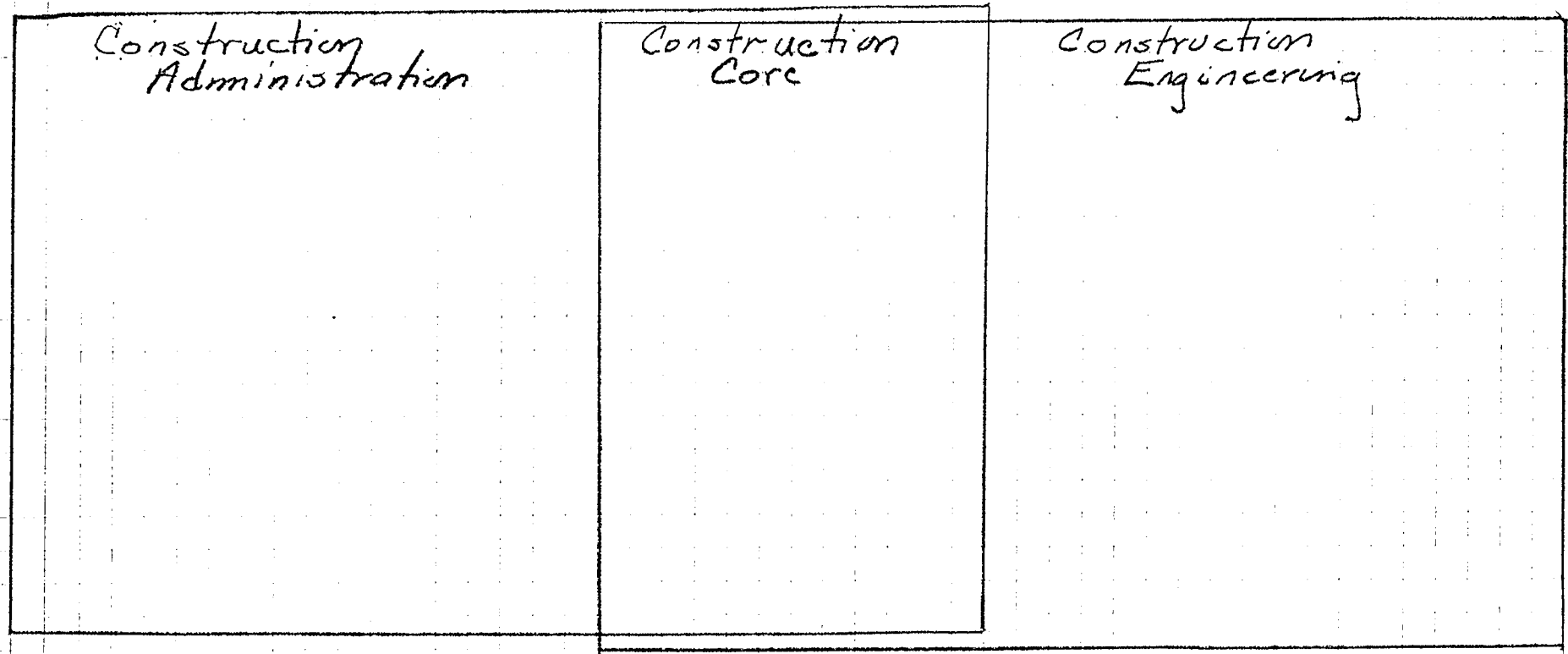
ASSIGNMENTS:

Undergraduate Education Programs - Wang, Peyrot, Eldin, Lovata
Graduate Research Structure - All
Distribute ACCE and ABET Requirements - Bubenzer

Distribution:

All Committee Members
Deans Bollinger, Walsh, Hickman

← ACCE Construction Administration ← Construction Engineering → ABET →



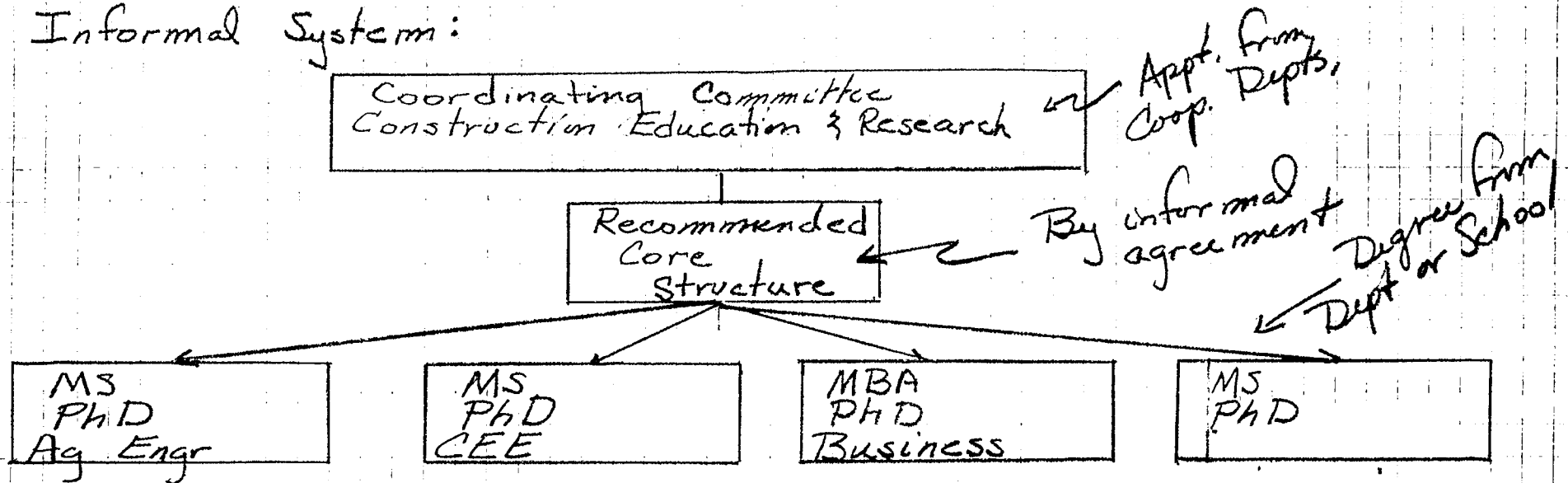
Goals:
Unique

Common

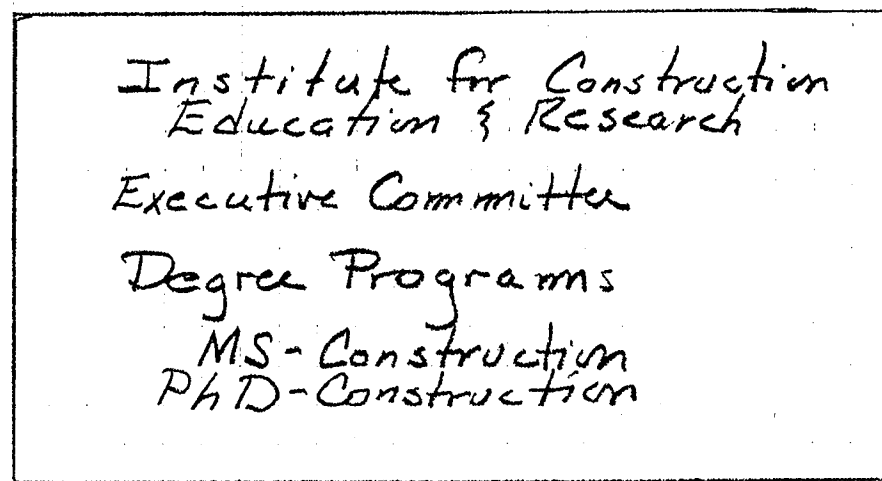
Unique

Figure 1:

Informal System:



Formal System



Require
formal
establishment
of
Institute/Center
and
Degrees

Figure 2

INFORMAL MINUTES
CONSTRUCTION EDUCATION COORDINATING COMMITTEE
November 18, 1987

Attendees : Jim Blakely, Neil Eldin, Alain Peyrot, Jim Grasskamp,
C. K. Wang, Norbert Lovata, Ray Matulionis, and Gary
Bubenzer.

The meeting started by reviewing the minutes of November 5, 1987 meeting. A summary of the criteria for the ACCE and ABET accreditation curriculum (copy attached) prepared by G. Bubenzer was distributed to all attendees to facilitate identifying the requirements of both accreditation boards.

The Civil Engineering Department presented a list of the courses required for the sought Construction Option, and the Agricultural Engineering Department presented a list of the courses required for the Construction Administration program. A review of both lists showed apparent similarity of several courses required by both departments. Courses identified as potentially similar included:

1. Construction Plans & Specifications
2. Construction Planning & Scheduling
3. Automation of Project Controls
4. Legal Issues in Construction
5. Construction Estimating
6. Cost Control
7. Construction Safety

The committee's chairman recommended that the representatives of both departments should prepare outlines for the above courses showing the contents of each course. A comparison of the contents prepared by the two departments will allow an objective assessment for cross-listing and sharing of teaching responsibilities in these areas.

The next meeting is scheduled for November 24, 1987 at 1:30 in room 104 - Commerce Building.

Distribution - All committee members.
Deans Bollinger, Walsh, Hichman

CRITERIA FOR ACCREDITATION
Curriculum

ACCE	ABET
General Education 18 Semester Credits	Humanities and Social Sciences 1/2 yr 16 Semester Credits
Mathematics and Science 18 Semester Credits Beyond Algebra & Trig	Mathematics and Basic Sciences 1 yr 32 Semester Credits Beyond Algebra & Trig
Construction Sciences 24 Semester Credits	Engineering Sciences 1 year 32 Semester Credits
Construction 24 Semester Credits	Engineering Design 1/2 year 16 Semester Credits
Business and Management 24 Semester Credits	Business Management (Required of Construction Engineering Programs, not all ABET Engineering) 1/2 year 16 credits
Other 12 Semester Credits	Non-designated 1/2 year 16 credits

INFORMAL MINUTES
CONSTRUCTION EDUCATION COORDINATING COMMITTEE
November 24, 1987

Attendees: Neil Eldin, Alain Peyrot, Jim Grasskamp,
Norbert Lovata, and Ray Matulionis

The Agricultural Engineering Department distributed a copy of the contents of the courses which appeared similar in the two construction programs (copy attached). A list of these courses is provided in the minutes of the previous meeting dated November 18, 1987. The course contents were discussed in detail. Course contents for Construction Administration and the Construction Engineering option of CEE appear to be very similar in these areas. Construction Administration faculty expressed their willingness to accomodate the requirements of the Construction Engineering option in the new courses

Grasskamp recommended the addition of the topic of "liability of third party" to the contents of the "Construction Safety" course. He also suggested that the sequence of these courses should allow a Masters' student in a related program to benefit from these courses without having to extend the minimum time for this degree. In order to do so, he suggested the consideration of offering some of these courses in summer semesters and the use of 500 and 600 numbering series for the courses classified as advanced level.

A motion to recommend cross-listing these courses between Ag Engr and CEE was made and seconded. The motion was passed unanimously. The cross-listing of these courses will prevent duplication of efforts in the two departments, will facilitate the sharing of teaching responsibilities, will help the two departments in the accreditation process, and will provide more flexibility for other programs related to facility management across the campus.

The next meeting is scheduled for December 2, 1987 at 1:30 in room 104 - Commerce Building.

Distribution - All committee members,
Deans Bollinger, Walsh, Hichman

COURSE OUTLINE

CAL.	WEEK	CLASS LECTURES AND TOPICS
	1	intro. to estimating practices & methods basic quantity. units, volumes & calculations
	2	introduce labor requirements and equipment
	3	specific quantity take off units (examples) dirt, concrete, masonry
	4	INTRODUCE FIRST CONSTRUCTION PROJECT begin basic quantity take off from project
	5	cont. specific quantity take off EXAMINATION # 1
	6	Introduce scheduling activity list & CPM
	7	interface quantities with labor & scheduling
	8	complete first project and present results
	9	START MAIN COMMERCIAL CONSTRUCTION PROJECT
	10	introduce PDM activities EXAMINATION # 2
	11	cover specialty items & materials management
	12	integrate construction equipment & crew size into project estimating concepts
	13	introduce elec. & mech. construct. summaries
	14	review main project summaries & quantities
	15	introduce punch list requirements
	16	present complete estimates to class
	17	local contractors pre-bid review FINAL EXAMINATION

COMPUTER APPLICATIONS IN PROJECT MANAGEMENT - AgrEng#375
Course Outline

<u>Week No.</u>	<u>Topics Covered in the Period</u>
1	- Project Phases - Types of Contracts
2	- Bidding Cycle and Strategies - Review of MTOs
3	- Use of Lotus (MTOs & Pricing)
4	- Use of WESSEX (Computer Generated Bid)
5	- Compilation and Submission of Formal Bids
6	- Bid Evaluation and Awards Cycles
.....	
7	- Review of Scheduling Techniques
8	- Use of PV/P3 Systems
9	- Use of PMS80 Systems
.....	
10	- Review of Cost Control Principles
11	- Use of TCM system
12	- Cost/Scheduling Integration Techniques
13	- Use of GEROCPM System
14	- Computer Generated Management Reports
.....	

TEXT : Class Handouts will be provided to cover selected topics
REFERENCES : Systems Manuals will be available on reserve

CONSTRUCTION PLANS AND SPECIFICATIONS - AgrEng#375
Course Outline

<u>Week No.</u>	<u>Topics Covered in the Period</u>
1	- The Need for Standardization - Organization of Drawings and Specifications
2	- Elements of legal agreements and Contracts - Project Manuals - CSI Example
3	- Bidding Requirements and Documents - Surety, Insurance, and Bonds
4	- Changes to Bidding Documents - Changes to Contract Documents
5	- Reading Construction Drawings - Coordination of Plans and Specifications
6	- Specification Writing Techniques - Specification Language
7	- Descriptive, Performance, Reference, Proprietary, and nonrestrictive Specifications
8	- CSI Divisions and Format - General Conditions
9	- Supplemental Conditions - Division 1: General Requirements
10	- Master Specifications (AIA, CSI, USCE) - Use of Electronic Media
11	- Specification Production Techniques
12	- Producing a Project Manual: Small / Large Offices
13	- Special Issues: Allowances, Unit Prices, Procurement, Performance, Alternates
14	- Examination of Actual Documents - Panel Discussion with CSI Officers and Guest Speakers from the Industry

TEXT : Manual of Practice, CSI Publication, Alexandria, VA 22314
REFERENCES : Construction Specifications, J. R. Lewis, New Jersey:
Prentice-Hall, Inc.
Construction Specification Writing, H. J. Rosen, New
York: John Wiley & Sons.

COURSE OUTLINE

CAL. WEEK	CLASS LECTURES AND TOPICS
1	introduction to network concepts
2	development of networks, logic & rules
3	time estimates & schedules
4.	mathematical scheduling concepts
5.	introduction to project cost controls
	EXAM. # 1
6.	field and practical applications
7	project parameters & constraints
8	time costing & critical analysis
9	statistical technique analysis
10	computer applications for scheduling
	EXAM # 2
11	computer scheduling systems
12	computer plannings systems
13	interfacing plan.-sched. & field situations
14	decision analysis for scheduling
15	FINAL EXAM
15	planning, scheduling & leadership decisions

COURSE OUTLINE

Course Topics:

1. What is Safety?
- definitions, etc.
2. Beliefs as to Why Accidents Occur
3. Economic Impact of Accidents
4. Worker's Compensation
5. OSHA Act
6. Standard and Codes
7. Human Factors - Safety Attitudes
8. Management's responsibility for safety
9. Personnel's responsibility for safety
10. Hazards and their control
11. Developing a plant safety program
12. First-aid
13. Accident investigation
14. Mechanical injuries and their prevention
15. Heat and temperature
16. Noise and vibration
17. Eye safety
18. Electrical hazards
19. Fire
20. Safety analyses

UNIVERSITY OF WISCONSIN—MADISON

DEPARTMENT OF
AGRICULTURAL ENGINEERING
CONSTRUCTION ADMINISTRATION PROGRAM

460 Henry Mall
Madison, Wisconsin 53706
608-262-3310



December 2, 1987

TO: CONSTRUCTION EDUCATION COORDINATING COMMITTEE

FROM: AGRICULTURAL ENGINEERING UNDERGRADUATE CURRICULUM
COMMITTEE

RE: Review and recommendation of construction courses

The undergraduate curriculum committee of the Department of Agricultural Engineering has reviewed the five following proposed course outlines as submitted to the special committee for coordinating construction education.

1. Construction Plans and Specifications
2. Construction Cost Estimating
3. Computer Applications in Project Management
4. Construction Safety
5. Construction Planning and Scheduling

It is the recommendation of this committee to:

1. Submit these courses for approval to the Civil and Ag Engineering Departments.
2. Cross list these courses between the two departments involved.
3. Number the appropriate courses which fit into the existing schedule with current courses offered by Civil Engineering. Designate those courses which will be graduate level courses.

These courses will be brought before the Agricultural Engineering faculty for consideration at the December 1987 faculty meeting. The recommendation of this committee will be for approval of the construction courses.

cc
Bubenzer
Barrington
Cramer
Lovata
Straub

DATE: 26 November 1984

TO: Ben Niemann

FROM: James Graaskamp
Mike Robbins

SUBJECT: "Centers of Excellence in Land Information Science Group"

The Department of Real Estate and Urban Land Economics would be honored to participate in a new, multi-disciplinary Center for Land Information Science. Land Economics and commercial applications of Land Data Systems are critical elements in the justification of methods for modernizing Land Data Systems.

In response to your memo of November 12 we are providing the following attachments:

1. a list of Real Estate Department faculty who will be associated.
 2. a paragraph describing our department activities, suitable for insertion at the bottom of page eleven of the "Centers" paper to which we would then add our name as authors. We believe it very important that our department be regarded as an equal partner to the others listed and identified.
 3. a list of relevant courses.
- A. The edited page eleven is attached.
- B. Insert for page fifteen.

Real Estate and Urban Land Economics, Department of, School of Business
Drs. James A. Graaskamp and Michael L. Robbins

- C. Faculty inserts for Appendix A

James A. Graaskamp

- Professor and Chairman, Department of Real Estate and Urban Land Economics, School of Business, real estate appraisal theory and technique,
- urban investment, institutional real estate portfolio management, and
- urban land economic systems.

Michael L. Robbins

- Assistant Professor, Real Estate and Urban Land Economics, School of Business. Acting Director of Business School Computer Center.
- Land development, real estate computer systems, wilderness valuation,
- Municipal land use planning models.

LAND RECORDS MODERNIZATION: CENTERS OF EXCELLENCE
FROM A WISCONSIN PERSPECTIVE

The Business School Department of Real Estate and Urban Land Economics offers a broad array of coursework and research in Urban Land Appraisal, Wilderness Valuation, Land Development Process, Institutional Real Estate Investment Practices, Land Use Control Law, Urban Economics and Land Economics and Real Estate Taxation. It has been a leader in the introduction of computer data processing to real estate and urban decision models for 20 years and has worked closely with the IES and Environmental Monitoring programs since their inception with an array of cross-listed courses which are unique for Business School/Environmental Science relationships.

Recent Faculty Discussions: Due to this long-term interest in land records modernization plus the history of interdepartmental activity, it became apparent that discussions were in order concerning Wisconsin's role. These discussions have resulted in identification of the most active faculty, and the types of professions and disciplines associated with this activity; and development of statements reflective of each unit's teaching and research interest. Identifying relevant coursework and beginning the process of identifying the necessary components of a center of excellence have also resulted.

Existing Programs and Faculty: The University of Wisconsin-Madison offers a broad array of graduate studies in the general realm of mapping and land information sciences. An analysis of this array shows that the disciplines of agricultural economics, cartography, geodesy, geography, landscape architecture, planning photogrammetry, environmental remote sensing, and surveying support several study or research and teaching themes (e.g., environmental studies, geographic information systems, image processing, land tenure, land registration, land records modernization, multipurpose cadastre, natural resource inventory, pattern recognition, policy formulation and analysis, and spatial analysis).

Fifteen faculty that have been identified as being interested in these areas of study come from a range of departments and institutes and centers including the Departments of Agricultural Economics, Civil and Environmental Engineering, Geography and Cartography, Landscape Architecture, Urban and Regional planning, and the Institute for Environmental Studies (especially the IES Environmental Monitoring Program and Environmental Remote Sensing Center) and the Land Tenure Center. (see Appendix A)

Four of these academic units deal most specifically with the technological elements and conceptual bases of the mapping and land information disciplines.
 Three ~~Two~~ of these departments and one center offer relevant coursework and conduct research that provides economic and social context for land information studies.

The Department of Civil and Environmental Engineering offers coursework and research opportunities in the measurement sciences plus the historical, legal, and practical aspects of property location. The cartography program within the Department of Geography offers in-depth study of map design, production, and use, plus the historical and philosophical aspects of cartography. The Department of Landscape Architecture offers opportunities to address the institutional complexities, applications, and use of modern informational technology. The IES Environmental Monitoring Program addresses the use of remote sensing as a technology to expedite the inventory and monitoring of environmental conditions; data collection from airborne and satellite platforms is emphasized.

The Department of Agricultural Economics offers opportunities in studies of land values, capitalization of conservation practices and zoning and benefit-cost analyses. The Department of Urban and Regional Planning provides background course work in land use and environmental planning and the utility of land information for planning and analysis, policy formulation, and policy implementation. The Land Tenure Center focuses upon land tenure systems and economic development primarily in Latin America, Africa and Asia. Recent work has involved land registration, and cadastres in Latin America. (see Appendix B)

Insert

SCHOOL OF BUSINESS ADMINISTRATION
DEPARTMENT OF REAL ESTATE AND URBAN LAND ECONOMICS
ROOM 118 COMMERCE BUILDING
1155 Observatory Drive
(608) 262-6378

Urban Land Economics is a tradition at Wisconsin and the School of Business legitimized real estate and the study of City building enterprises as proper subject material for a School of Business and as a multi-disciplinary field in the late 50's and early 60's. The Department's programs prepare qualified students to become effective Real Estate Project Developers, Financiers, Managers, Corporate Asset Managers, Public Administrators of Housing and Economic Development Programs, and objective valuers of land resources and improvements to the land. Real Estate is a field for the eclectic curiosity and gallant entrepreneur and the academic background of department faculty include advanced degrees in Risk Management, Environmental Monitoring, Urban Economics and History, Law of Land Use, as well as Real Estate. The Department has always emphasized data processing for decision making and has been funded for research over many years of Real Estate Taxation Systems, Wilderness Valuation, and Corporate Asset Real Estate Performance.

Degrees offered: BBA, MBA (Real Estate), MS (Real Estate Appraisal and Investment Analysis), Ph.D. (Urban Land Economics).

Bus 550 The Real Estate Process
Bus 551 Real Estate Finance: Income Property
Bus 552 Residential Real Estate Finance
Bus 553 Urban Land Economics - Housing
Bus 554 Residential Property Development and Management
Bus 555 Commercial Property Development and Management
Bus 556 Valuation of Real Estate
Bus 557 Urban Economics: Structure and Dynamics
Bus 559 Construction Enterprise Management
Bus 650 History and Principles of Urban Land Economics Theory
Bus 651 Urban Economics: Public Sector
Bus 652 Microcomputer Applications For Real Estate Analysis
Bus 757 Real Estate Market Analysis
Bus 850 Real Estate Equity Investment
Bus 851 Real Estate Administration: Public and Corporate Institutions
Bus 705 The Real Estate Process
Bus 852 Land Use Controls on Business
Bus 853 Advanced Urban Land Economics
Bus 856 Advanced Appraisal Theory and Practice
Bus 857 Seminar in Feasibility and Appraisal Reports
Bus 858-59 Seminar in Urban Land Economics

The Institute for Modernization of Land Data Systems/LAND INFORMATION

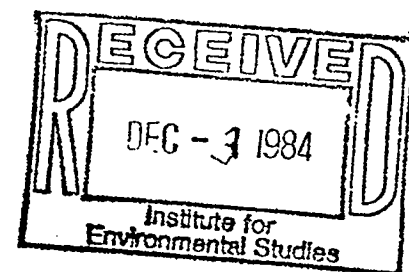
INSTITUTE

November 27, 1984

Please reply to:

7516/83

Dr. Irving Shain,
Chancellor
Room 158, Bascom Hall
University of Wisconsin-Madison
Madison, WI 53706



Dear Chancellor Shain:

On behalf of the Board of Directors of the Institute for Modernization of Land Data Systems (MOLDS), I wish to inform you that at its March board meeting MOLDS designated the University of Wisconsin-Madison as one of three Centers of Excellence in Land Information Science.

This designation recognizes the University of Wisconsin-Madison's long interest and leadership in research and instruction in the area of multipurpose land information systems through its College of Agricultural and Life Sciences, the College of Engineering, the Institute for Environmental Studies, and the College of Letters and Science.

MOLDS recognizes the extent of economic and human investment already in place at Wisconsin and hopes that this commitment will be maintained and enhanced.

We are also aware that there may well be additional needs to strengthen the program through net additions to the faculty and through securing the computer hardware required for the state-of-the-art research, instruction, and outreach needed to advance this important effort.

As background, MOLDS is an international organization of representatives from an array of public and private agencies. Officially organized in 1974, MOLDS' principal objective has been to foster the development of improved Land Information Systems. We represent a wide range of public and private agencies that are deeply involved with land information collection and management (see enclosure).

The need for concentrated, organized education, research and outreach in land information sciences is an issue of national consequence. In 1980 the Committee on Geodesy of the National Research Council concluded the following:

"There is a critical need for a better land-information system in the United States to improve land conveyance procedures, furnish a basis for equitable taxation, and provide much-needed information for resource management" (National Research Council, 1980, page 1)

In the Committee's deliberations on the implementation of modern land information systems, it became evident that qualified personnel to manage such systems are rare:

"There is considerable concern that qualified personnel required to perform the functions inherent in a comprehensive land-information system will not be available at all levels of government and in the private sector. The panel believes that means must be found to develop the qualified personnel and to encourage and support university research and development activities and programs--therefore: We recommend support by the federal government for the establishment of a center or centers of excellence in land information science, for the purpose of providing a program that develops scholars and professionals. The curriculum should include direct experience with land-data system problems." (National Research Council, 1980, page 4)

Since this initial study, two additional panels have been sponsored by the NRC. Both panels have concurred with the recommendation that a limited number of academic centers of study and training be established.

To help facilitate this NRC recommendation, MOLDS requested information from two U.S. and one Canadian university concerning their interest and capacity to conduct research, education and outreach in land information science. The initial selection of these three universities was based upon our knowledge of their past work in land records modernization issues.

Faculty from your university responded to this request in two forms. Sponsored by the Institute for Environmental Studies, they prepared a paper and presented their ideas at the American Congress of Surveying and Mapping meeting this past March.

They illustrated your institution's present array of available course work related to land information science, and they identified existing graduate degree programs which could be used to begin the education and training of scholars and professionals.

Based upon this documentation of their past research and teaching activities and their enthusiasm, we have concluded that the University of Wisconsin-Madison meets our expectations as a Center.

To expand somewhat, in hopes of indicating how impressed MOLDS has been with your institution's activities in land information studies during the past decade, the following is important: The College of Agricultural and Life Science's work on the automation of highway and

electrical transmission location procedures provided some early insights into the potential advantages of computing technology, but also identified various institutional problems associated with land records modernization.

The Land Tenure Center's experience in implementing land registry and property systems as part of agrarian reform in Central and South America has been and continues to be outstanding. I might also say that we would support the extension of the Land Tenure Center's knowledge and expertise to study land tenure in the U.S.

The on-campus relationship between the U.S. Department of Agriculture-Economic Research Service and the College of Agricultural and Life Sciences is also noteworthy.

The Economic Research Service sponsored the first national symposium on local land records modernization issues in 1966. Since that time, they have conducted important work in developing monitoring systems of alien farm ownership and land tenure change in rural America in association with your institution.

The College of Letters and Science has also been active through the Geography Department during the past several decades. The University Cartographic Laboratory was established in 1953, and degree programs in Cartography were established at the bachelor's and master's level in 1973 and 1974 respectively.

The innovative cartographic work by faculty and students in the Geography Department is of national consequence.

The College of Engineering has been instrumental in addressing the issues of modernizing cadastral and ownership records to allow for their merger with other existing land records. It should be noted that a strong surveying component is essential in that geo-positioning, property boundary location, and mapping provide the foundation for land information systems.

The kind of work being conducted by the Departments of Civil and Environmental Engineering and Landscape Architecture in the Dane County Land Records Modernization Project is just the type of educational, research, and training experience we believe essential to bring about needed improvement in land information systems in North America.

The Institute for Environmental Studies' Environmental Remote Sensing Center has been at the forefront of applying advances in remote sensing technology to the mapping sciences. The Environmental Remote Sensing Center has also been addressing the use of remote sensing in land management policy formulation.

The Institute for Environmental Studies' spring semester sponsorship of the "Seminar on the Multi-Purpose Cadastre: Modernizing Land Information Systems in North America" has made a major contribution to understanding the complex of issues as seen from the academic, governmental agency, and commercial perspectives. The breadth of subject matter and the quality of the speakers have been most impressive.

Perhaps the most important aspect of your institution's past and present activities is the interdisciplinary nature of the research and training in land information science.

The most compelling proof, however, is the paper submitted by the fifteen faculty authors from seven departments and/or institutes.

The fact that consensus could be obtained across such a diverse set of disciplines is proof of your institution's ability to provide needed leadership in beginning the process of integrating and synthesizing knowledge relevant to the problems this country faces as it begins to modernize its land records systems and institutions.

We are also cognizant of the fact that your institution, through the Institute for Environmental Studies, has the administrative structure, experience, and expertise to provide meaningful frameworks for cooperative interaction across traditional school and college boundaries.

These examples are provided to suggest that we believe the University of Wisconsin-Madison is deserving of being designated as a Center of Excellence in Land Information Science.

To further the aims of MOLDS and your LIS activities, we encourage joint sponsored research, workshops, and conferences, joint sponsored publications, and joint pursuit of mutual goals.

Please advise us, if any specific joint sponsorship of any particular project would be helpful.

Again, our congratulations on your level of excellence. We extend best wishes for your continued growth and excellence in Land Information Sciences.

Yours truly,



K. L. Shirk, Jr.
President
MOLDS/LII

KLSjr:dd:clc

cc: Dr. Robert M. Bock, Dean, Graduate School (333 Bascom Hall)
Dr. John G. Bollinger, Dean, College of Engineering (258 Mechanical Engineering Building)
Dr. Reid A. Bryson, Director, Institute for Environmental Studies (1007 WARF Building)
Dr. Bernard C. Cohen, Vice Chancellor-Academic Affairs (150 Bascom Hall)
Dr. E. David Cronon, Dean, College of Letters and Science (102 South Hall)
Dr. Leo M. Walsh, Dean, College of Agricultural and Life Sciences (140 Agriculture Hall)

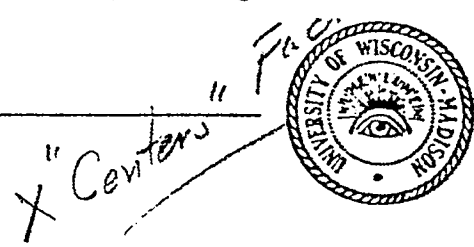
REPRESENTATIVES TO MOLDS/LII BOARD OF DIRECTORS

American Bar Association
American Congress on Surveying and Mapping
American Land Forum
American Land Title Association
American Planning Association
American Public Works Association
American Society of Photogrammetry
Bureau of Census
Bureau of Land Management
Canadian Bar Association
Canadian Department of Energy Mines & Resources
Canadian Institute of Surveying
Council of State Governments
Direccion General de Geografia
Federal Highway Administration (U.S. Department of
Transportation)
Forest Service
Institute of Registration and Notarial Law of Puerto Rico
International Association of Assessing Officers
International City Management Association
Land Information Institute
Land Registration and Information Service
Lincoln Institute of Land Policy
National Association of Counties
National Association of County Recorders and Clerks
National Oceanic and Atmospheric Administration
Office International Du Cadastre Et Du Regime Foncier
Urban and Regional Information Systems Association
U.S. Department of Agriculture
U.S. Department of Housing and Urban Development
U.S. Geological Survey

UNIVERSITY OF WISCONSIN-MADISON

CHANCELLOR
Bascom Hall • 500 Lincoln Drive
Madison, Wisconsin 53706
608-262-9946

ABS → JLC



December 12, 1984

IES

DEC 18 1984

Business Office

Mr. K. L. Shirk, Jr.
President
The Institute for Modernization of Land Data Systems/
Land Information Institute
P.O. Box 1552
Lancaster, PA 17603

Dear Mr. Shirk:

The University of Wisconsin-Madison is pleased to accept the designation as a "Center of Excellence in Land Information Science" conferred on it by the Board of Directors of the Institute of Modernization of Land Data Systems (MOLDS). We are cognizant that this designation has been made by MOLDS only after a careful scrutiny of the commitment, accomplishments, and capabilities of the board, an interdisciplinary group of UW-Madison faculty who have been engaged in research, instruction, and outreach activities associated with land information systems for more than a decade.

This designation serves as a significant recognition of UW-Madison faculty leadership and energy in an area of study that has far-ranging implications at national and international levels for both public and private sectors--the individual citizen; local, state and federal government; and business and industry. Their work has been in the best tradition of the Wisconsin Idea.

The designation will also serve to draw greater attention to the complex array of technological, institutional, and public policy issues involved in modernizing land records. Diverse experience and disciplinary expertise and a coordinated effort to integrate knowledge are required to meet real world needs and provide flexibility for the future. In addition, this designation will help faculty attract resources to move the effort forward.

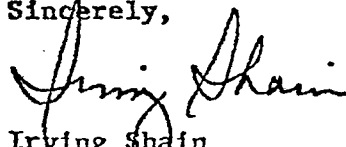
It has become increasingly evident that ours is an information society. Computer technology permits the storage and manipulation of vast quantities of information and data. The microprocessor revolution makes this technology readily available. At the UW-Madison we have

December 12, 1984

recognized that this reality also requires new institutional arrangements to facilitate the flow of information through systems that are compatible and can be networked for greater efficiency and power. For this reason, we established an all-campus Office of Information Technology designed to promote effective uses of computers and preclude the confusion and inefficiency that would result from unplanned, uncoordinated proliferation of systems and approaches. Though the issues involved in modernizing land records are far more complex than handling information on one university campus, the need for new institutional mechanisms not only to manage information but to provide flexibility and balance for as yet unidentified future needs, is not dissimilar. We applaud the farsightedness of MOLDS in taking such steps as this designation of the UW-Madison as a Center of Excellence in Land Information Science in the effort to respond to an important national need.

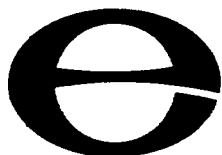
I would welcome the opportunity to meet with you, the faculty involved, and their academic deans and directors should you wish to come to Madison for a formal presentation of this designation.

Sincerely,



Irving Shain
Chancellor

cc: Robert M. Bock
John G. Bollinger
Reid A. Bryson ✓
Bernard C. Cohen
E. David Cronon
Leo M. Walsh



Institute for Environmental Studies

University of Wisconsin-Madison

Center for Geographic Analysis

1042 WARF Building, 610 Walnut Street
Madison, Wisconsin 53705
(608) 262-9937

DATE: 20 December 1984

TO: Born, Steve, URB R PL/IES
Buttenfield, Barbara, GEOG/CART
Chrisman, Nick, LAND ARC/IES
Clapp, Jim, CEE/IES
Gilbert, Jess, RUR SOC
Graaskamp, James, BUSINESS
Jacobs, Harvey, URB R PL/IES
Jordahl, Harold, URB R PL/IES
Kanarek, Marty, IES/PREV MED
Kaufman, Jerome, URB R PL
Kiefer, Ralph, CEE/IES
Krikelas, James, LIB & INF ST
Kuipers, Ed, CEE
Lillesand, Tom, CEE/IES/FOR
MacDonald, James, LAW/IES
Mezera, Dave, CEE
Miller, Al, SEA GRANT INST
Morse, Anita, LAW
Moyer, Dave, AG ECON
Muehrcke, Phillip, GEOG/CART/IES
Raushenbush, Walter, LAW
Robbins, Mike, BUSINESS
Sacks, Arthur, IES
Scarpace, Frank, CEE/IES
Scherz, James, CEE
Stanfield, David, LAND T CTR
Steinhart, John, GEOL/IES
Strasma, John, AG ECON/ECON
Thome, Joseph, LAW/LAND T CTR
Vonderohe, Alan, CEE
Walker, Richard, LIB & INF ST
Williams, Robert, LAW
Wolf, Paul, CEE
Woodward, David, GEOG/CART

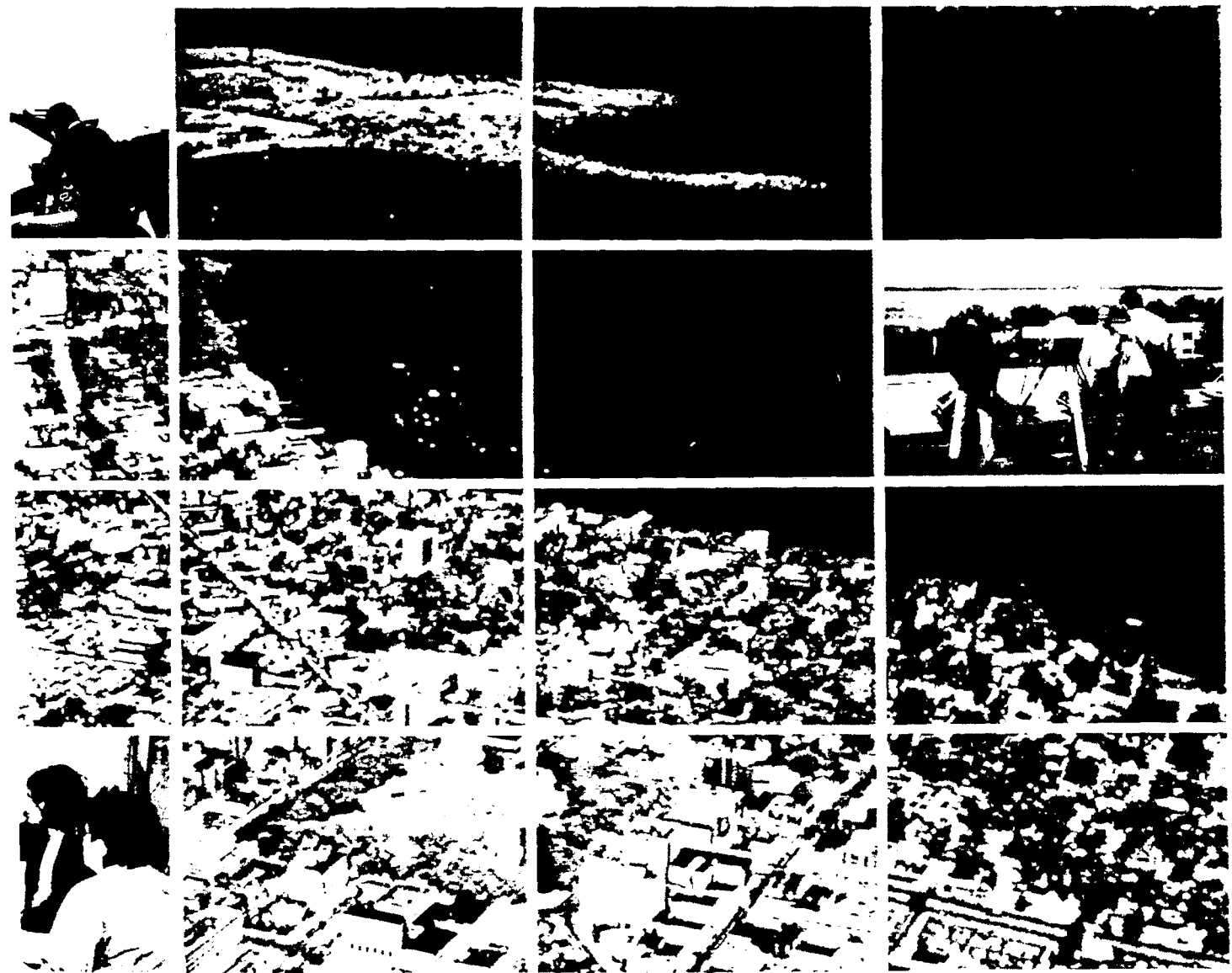
FROM: Ben Niemann

RE: UW-Madison - Center of Excellence in Land Information Sciences

Chancellor Shain responded favorably to the MOLDS designation of UW-Madison as a "Center of Excellence in Land Information Sciences". A copy of the acceptance letter is attached. For those of you who were unable to attend the last "Centers" faculty meeting and did not receive the MOLDS "designation letter", dated 27 November 1984, it is also attached.

Congratulations are in order to all of you. Have a great holiday.

Land Information and Mapping Studies



Real Estate and Urban Land Economics

School of Business

Room 118 Commerce Building , 1155 Observatory Drive
Madison, WI 53706
(608) 262-6378

Urban Land Economics is a tradition at Wisconsin. The School of Business legitimized the study of real estate and city building enterprises as proper subject material for a School of Business and as a multidisciplinary field in the late 1950s and early 1960s. The department's programs prepare qualified students to become effective real estate project developers, financiers, managers, corporate asset managers, public administrators of housing and economic development programs, and objective valuers of land resources and improvements of the land. Real estate is a field for the eclectically curious and gallant entrepreneur, and the academic background of department faculty include advanced degrees in risk management, environmental monitoring, urban and economic history, and land use law, as well as real estate. The department has always emphasized data processing for decision making and has been funded for research over many years in real estate taxation systems, wilderness valuation, and corporate asset real estate performance.

Degrees available

B.B.A., M.B.A. in Real Estate
M.S. in Real Estate Appraisal and Investment Analysis
Ph.D. in Urban Land Economics

Faculty

James A. Graaskamp

Professor, Business

Chairman, Real Estate and Urban Land Economics

Professional interests:

Real estate appraisal and technique, urban investment, institutional real estate portfolio management, and urban land economic systems.

Dowell Myers

Assistant Professor, Business

Professional interests:

Economic base analysis, demography, and real estate marketing research.

Michael L. Robbins

Assistant Professor, Business

Professional interests:

Land development, real estate computer systems, wilderness valuation, municipal land use planning models.

Land information related courses

BUSINESS 551 *Income Property Finance and Group Investment*

Income property loans; risk management strategies and alternative financing instruments during uncertain times; the rise of group equity funding; and implications for institutional sources of funds.

BUSINESS 552 *Residential Finance and Housing Policy*

Financing homes and apartments, sources of funds; institutional risk management systems; alternative home finance subsidy programs; and the pervasive role of governmental agencies charged with the implementation of legislative shelter priorities.

BUSINESS 553 *Urban Land Economics (Use Location and Succession)*

Analysis of location theories of major urban land use classes; urban land use succession theory.

BUSINESS 554 *Residential Property Development and Management*

Creating housing including strategy; market and merchandising trends; legal and political constraints; site selection; social implications; design and construction procedures; and financial analysis and control for single family subdivisions; multifamily projects and new towns. Case studies emphasize rental property management and federally subsidized projects for lower income families.

BUSINESS 555 *Commercial Property Development and Management*

Creating industrial real estate, office space, shopping centers, and recreational facilities including strategy and feasibility analysis, functional design and construction factors, and financial analysis. Emphasis on negotiation of leases from the viewpoint of both tenant and landlord.

BUSINESS 556 *Valuation of Real Estate*

Economic theories of value applied to real estate; valuation as a guide to business decisions; real estate markets which affect value; valuation methods, analysis of evidence of value; appraising residential and income properties.

BUSINESS 557 *Urban Economics: Structure and Dynamics*

Nature and structure of urban economies; location of economic activity; economic analysis in an urban framework; principles of urban economic development, housing, transportation, poverty, unemployment and municipal finance. Forecasting economic activity using census and socioeconomic data.

BUSINESS 559 *Construction Enterprise Management*

An analysis of construction from the viewpoint of organization, accountability, and contractual relations of all participants: owner, architect, contractor, subcontractor, and insurance and bonding companies. Attention to assessing financial capabilities; accounting and cost systems; plus labor relations and legal contractual problems.

Real Estate and Urban Land Economics

BUSINESS 650 *History and Principles of Urban Land Economics Theory*

Historical development of theories explaining the value of urban land and location of urban economic activities. Evolution of institutions and policies which influence and regulate urban land use and value. Interdisciplinary approach emphasizing economics, geography and planning.

BUSINESS 651 *Urban Economics: Public Sector*

Identification and economic analysis of the service policies, problems, and financial systems of American municipal and urban county governments with emphasis on the relation of public sector policies to activity in the local private sector.

BUSINESS 652 *Contemporary Real Estate Analysis*

The application of contemporary real estate theory, and advanced analytical tools to refine techniques in appraisal, financial analysis, and feasibility. Contemporary real estate theory will be structured to establish consistent problem solving procedures. Emphasis will be placed on the identification of critical assumptions and real estate decision models including field applications of microcomputers.

BUSINESS 705 *The Real Estate Process*

Decision making processes for manufacture, marketing, management, and financing of real estate space. Survey of institutional context, economics of urbanization, historical pattern and structure of city growth, and public policy issues regarding urban environment and business management.

BUSINESS 757 *Real Estate Market Analysis*

Analytical techniques used in performing market research and trade area studies needed to assess feasibility of proposed projects in retail, trade, residential, office and other developments. Includes methods of primary and secondary data collection activities, survey research, spatial patterns of urban development, economic base analysis, retail gravity models, and models of consumer behavior and preferences.

BUSINESS 850 *Real Estate Equity Investment*

Fitting investment strategy in the context of physical property, leverage, form of ownership, income tax, and management alternatives. Review of literature and case problem analysis emphasizing cash flow projection, yield, and risk projection for sole proprietorship, partnership, trust, and corporate real estate enterprises.

BUSINESS 851 *Real Estate Administration: Public and Corporate Institutions*

The programming, procurement, management, or disposal of real estate required for public institutions such as hospitals, cities, churches, government agencies; also, large corporate enterprises requiring real estate peripheral to principal activities or possessing surplus fixed assets in real estate. Primarily intended for the public administration major or real estate major interested in public service or broad corporate management.

BUSINESS 852 *Land Use Controls on Business*

Basic principles of the law affecting the use of land and natural resources including legal remedies and defenses available to the private sector. Recent case law. Rapid introduction of administrative law through federal government controls (Environmental Protection Agency, Interstate Land Sales, Federal Trade Commission, Securities and Exchange Commission, and Proposed Land Use Resource

Conservation Act from 1975). State law in New York, California, Vermont, Florida, and Wisconsin compared in terms of economic impact, compensation, and implications for real estate decision making.

BUSINESS 853 *Advanced Urban Land Economics*

Advanced theory of urban situs principles, structure, succession, and related institutional forces.

BUSINESS 856 *Advanced Appraisal Theory and Practice*

Critical review of existing appraisal techniques being proposed nationwide; field appraisal work to apply market simulation approach of most probable selling price theories.

BUSINESS 857 *Seminar in Feasibility and Appraisal Reports*

Feasibility research technique and appraisal theories applied to an actual case situation in the field; students work in teams on selected projects.

BUSINESS 858-859 *Seminar in Urban Land Economics*

Philosophic basis of research thinking and technique; case application to the problems of urban land economics.

Sample Curriculum

The following is a sample set of courses with a focus on land information studies. Final curriculum decisions must be made in consultation with a faculty member.

MS

BUSINESS 550 or 705 *The Real Estate Process*
 BUSINESS 551 *Real Estate Finance: Income Property*
 BUSINESS 556 *Valuation of Real Estate*
 BUSINESS 652 *Contemporary Real Estate Analysis*
 BUSINESS 850 *Real Estate Equity Investment*

two of the following courses

BUSINESS 554 *Residential Property Development and Management*
 BUSINESS 555 *Commercial Property Development and Management*
 BUSINESS 650 *History and Principles of Urban Land Economics Theory*
 BUSINESS 741 *Intermediate Statistics*
 BUSINESS 852 *Land Use Controls on Business*
 LAND ARC 655 *Survey in Computerized Land Information Systems*
 LAND ARC 755 *Methods of Computers and Land Use Planning*
 CIV ENGR/ENVIR ST 552 *Remote Sensing of the Environment*
 CIV ENGR/ENVIR ST 555 *Airphoto Interpretation for Terrain Evaluation*
 CIV ENGR/ENVIR ST 567 *Land Use Suitability Evaluation*



I. OBJECTIVE OF THE INNOVATIVE URBAN CORE REHABILITATION WORKSHOP

The Urban Core Rehabilitation Workshop was a three semester course for undergraduate seniors initiated in January 1972 and completed in June 1973. The course originated in response to a request for proposals to improve undergraduate teaching throughout the University of Wisconsin system and was one of five proposals selected by the University from more than 100 submitted. The School of Business offers both a BBA degree with a major in real estate and a BS degree with a major in Construction Administration and the latter program is run in conjunction with Civil Engineering and the School of Agricultural Engineering whose students are under the direction of Professor Dick Stith. Professor Stith became a co-partner in faculty responsibility for the project.

The objectives of the course program were:

1. To create a senior level work-study real estate and construction project for practical application of course work.
2. To expose students to the procedures and frustrations of interfacing a business enterprise with all levels of government from local administration to federal financing.
3. To interface management skills of the business school student with the design abilities of construction students and possibly the industrial arts of junior college vocational school apprentices.

4. To inject middle-class students in building construction and real estate courses into a core neighborhood environment.
5. To use minority students to interface the middle-class student with the core neighborhood while giving the minority student participation in a practical problem in housing improvement requiring infinite attention to detail and administration.
6. To develop a course format for undergraduates which might provide closer faculty-student interaction than is generally available in a work-study format.

II. SUMMARY DESCRIPTION OF THE INNOVATION

The basic vehicle for the educational objectives was very simple. The class would acquire an old house in a deteriorating neighborhood and renovate it for sale to a low or moderate income family. The renovation process would provide the opportunity for both technical application of skills and a realistic occasion for social interaction. Hopefully the finished product would improve relationships between town and gown, particularly in blue collar neighborhoods.

The intricacies of the executions of that simple idea were documented in the illustrated report prepared by participating students and faculty members toward the conclusion of the project, and that report is attached to and made a part of this nomination outline form. Some of the key devices developed in this process of moving from concept to execution were:

1. A spring semester course of three credits, given a business school special readings and research in real estate course number, was created to initiate the search, acquisition, planning, and financing of an old residential structure.

2. A summer school course of two credits was created to provide official status for summer enrollment which involved actual construction by the students, supplemented by additional students on a part-time basis hired for their trade skills and by subcontractors for certain mechanical specialties.
3. Creation of a non-profit corporation, Badger Redevelopment Corporation (BRC), with three faculty members as permanent directors and with the balance of the directorship consisting of all the students enrolled in the course. Faculty directors abstained from voting so that the students were in control and scheduled class time was made the regular meeting of the Board of Directors until the students adjourned so that notice of Directors meetings was not continually required. The students hammered out standards, operating procedures, and their choice of student field manager. The students drafted their own charter of operation and by-laws and maintained all of the necessary corporated records and governmental reports.
 - a. The corporation made it possible to avoid state purchasing procedures and labor contracts which would have made the project impossible as well as limiting the liability to the University for workman's compensation risk, trade credit, and mortgage notes.
 - b. The non-profit status of the corporation freed the enterprise from a variety of tax costs including the sales tax on purchases, income tax, and even social security for the part-time student.
 - c. The corporated shell prevented the University from paying certain costs for insurance, legal fees, and administration which it had promised to pay but administrative alternatives have been discovered as a result of these constraints.

- d. The corporate shell remains in the custodial care of the three faculty directors pending repetition of the course so that it will not be necessary to reapply for tax numbers, tax rulings, and other administrative elements such as a bank account, checks, and the like.
4. Since the University did not fund the working capital of the corporation of the proposed budget, a banking connection was sought and found which provided mortgage money for acquisition and 100% financing of materials and student labor on a forgivable note.
5. After considerable search students found two old houses of identical construction side by side and it was decided to do both as a coordinated townhouse conversion.
6. Conversion of the units was qualified to meet standards of the then existent subsidized home purchase loan program, the FHA 236 rehab loan, which permitted purchase at market price of \$18,500 with monthly housing payments of less than \$100 to qualify low income families.
7. Selection of qualified families was left in the hands of the Dane County Housing Corporation, an agency of the Office of Economic Opportunity which specialized in the housing problems of low income families.
8. Delays caused by confusion related to the Nixon moratorium on 236 loans postponed final closing of the second home sale until June of 1973 although students had completed it in December of 1972.
9. During the course of the project the students evolved a management program which moved from cooperative decision

making to a point where they hired one of their own as project manager with power to hire and fire. If the student were fired, he was permitted to drop the course but the student manager participated in the grading of the remainder.

III. REPORT OF EXPERIMENTATION WITH THE INNOVATIVE PROGRAM

1. The non-profit corporation provided a vehicle to support classroom activities while avoiding the unacceptable risks and problems of university or public institution procedures.
2. The students were permitted with helpful input from the faculty when requested to develop their own organizational line of authority and the experiment was successful in teaching them why a kind of military pyramid of control characterizes construction.
3. The initial objectives in terms of sociology proved too complex to "arrange" but the students by being themselves and consciously considerate of the neighborhood accomplished the desired result without being programmed.
4. The Madison neighborhood was really too good to give the students any real insight into ghetto conditions but the minority students who were involved in the course felt a real ghetto would have been too tough a climate for the students to operate in effectively and to concentrate on the business of building a house rather than just building communication bridges.
5. All of the students who participated reported that in their employment interview, prospective employers regarded their experience with Badger Redevelopment Corporation the most important thing in their academic program.

6. Working capital estimates anticipated the need of \$5,000 working capital for one house. The project lost approximately \$3,500 in building two houses and the bank swallowed the loss with some chagrin as it had thought the net loss would be a lesser amount. The University's position relative to overhead increased the loss by more than \$1,000 and FHA delaying processing probably represented 50% of the balance of the budget overall. In future projects student efficiency could be improved by instituting the hire and fire (and drop from the course rule at the outset) with profit sharing in lieu of cash wages for those enrolled in the course for credit.

IV. RELATIONSHIP OF INNOVATIVE PROGRAM TO ACADEMIC PRODUCTIVITY

The two professors in charge of the course received no salary or released work time for conducting the course. Two graduate project assistants with building and real estate experience, were used to provide onsite and drafting room supervision with generous assistance of the senior faculty. There is no way a classroom course could be devised to provide the extensive experience in actual construction or to demand so many hours of student time for so few academic credits as was accomplished for the initial seventeen students in the spring semester.

V. RELATIONSHIP OF INNOVATIVE PROGRAM TO EDUCATIONAL QUALITY

Actual remodeling of an old home to be sold subject to federal specifications removed all of the convenient assumptions of the classroom and provided experience with every aspect of urban renovation and low income family housing realities. Nevertheless, it would be difficult to maintain the quality of experience from one project to the next as the faculty are essentially "hope

oriented" - hoping that involving students in a process of doing will in the process of random interaction, generate positive management experience. There is always a high risk that personalities or outside events could result in very negative experience which the senior faculty would have to unravel to protect the capital involved. That risk tempts the faculty to pre-select carefully students for such a course in a way which might be unfairly discriminatory.

VII. PLANS AND OTHER EVIDENCE RELATIVE TO CONTINUATION OF THE INNOVATION PROGRAM

The project won editorial support in the local newspaper and unqualified endorsement by Dane County Housing Corporation. Badger Redevelopment Corporation has been offered a contract to purchase in bulk at minimal prices any FHA 236 housing units which are foreclosed in Dane County. BRC would rehabilitate the dwelling units which would then be sold to a newly qualified family to whom the original subsidy would be transferred. Thus the special financing critical to such a project would survive the federal moratorium and BRC should be in operation again in the Fall of 1974.

HOUSING REHABILITATION

**innovative
undergrad
teaching
project**



**University of Wisconsin - Madison Wisconsin - 1972
project report by :
students & staff - ag. engr. dept. & school of business**

HOUSING REHABILITATION

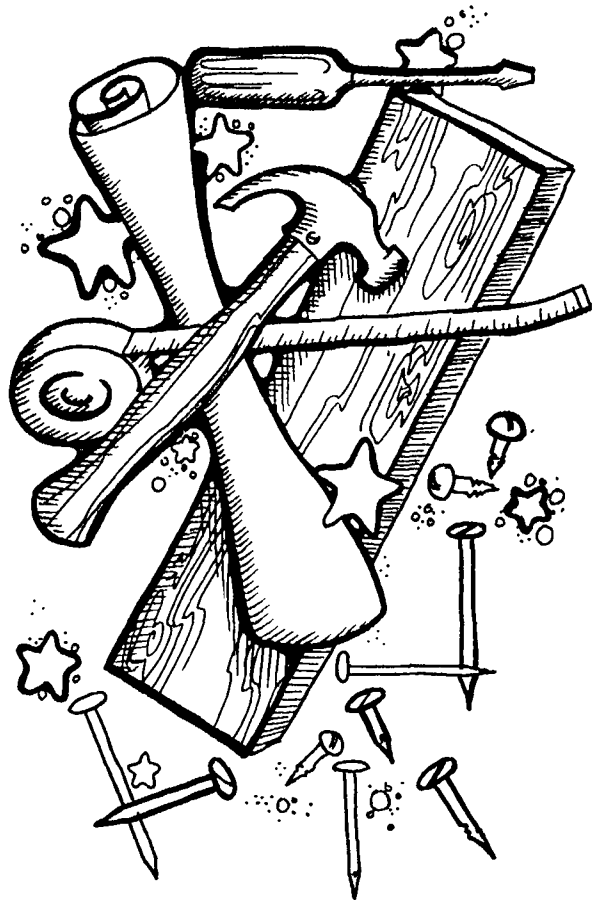
I N N O V A T I V E
U N D E R G R A D U A T E
T E A C H I N G
P R O J E C T

DEPARTMENT OF AGRICULTURAL ENGINEERING - COLLEGE OF
AGRICULTURAL AND LIFE SCIENCES
SCHOOL OF BUSINESS
THE UNIVERSITY OF WISCONSIN - MADISON

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PREFACE



On December 1, 1971, President John Weaver established an Undergraduate Teaching Improvement Fund and solicited proposals for innovative and experimental teaching programs as one-time grants for the second semester of the academic year 1971-72. Proposals for an Urban Core Rehabilitation Workshop were in the hopper by December 15 and it was announced that the Workshop was one of five proposals selected on January 11, 1972, a Big Ten record for paper shuffling over a Christmas recess. The course convened on opening day of the second semester on January 31, 1972 as a two semester field study problem in rehabilitation of an old residence.

This report is both a diary of this adventure in education and a manual for those who might wish to attempt something similar. Wherever possible the format of each section is structured to indicate the intent, the actual experience, and then recommendations to others who might learn from the mistakes. However, the explicit goal to remodel a house in "businesslike" fashion was only a vehicle for motivating students to be involved in the process of managing a joint enterprise. Despite the firm statements and buzz words of the proposal to the University, the faculty were "hope oriented"--a hope to involve students in "doing," a process which would eventually generate its own management experience. The random interaction of conflicting personalities and outside events and conditions made the success of the project highly improbable and a delightful surprise. As will be shown the adventure could have foundered at almost every decision point from beginning to end, and the fact that it did not was entirely due to the patience and perseverance of the student leadership.

The University funded \$6,100 for instructional and indirect costs but left the question of working capital to the imagination of the staff. Within 5 days of a request for help the First Wisconsin National Bank of Madison agreed to provide 100% financing for acquisition of a house via a mortgage and to provide the necessary working capital with a note that could

be forgiven to the extent resale proceeds of the remodeled property were not adequate to cover interest and principal. Since Madison has no low cost residential shells, the spread between resale and acquisition costs are generally too narrow to permit private rehabilitation. The project would not have been solvent had it not been for a number of key Madison businessmen who provided equipment, materials, and expertise at a mere fraction of the real cost. These businessmen have chosen to remain anonymous. What is significant is that the Madison financial and business community gambled \$40,000 on the ability of University students to carry off the project. The student response was to completely remodel 2 houses instead of 1, which were resold as the first FHA 235 rehabs in Madison. The resale proceeds did not fully cover the cost of the remodeling so that the educational experience required some additional outside contributions. Each reader must judge for himself whether these contributions were necessary or worthwhile.

OBJECTIVES & ORGANIZATION

A. Objectives

1

The original proposal to the University suggested using the purchase and remodeling of an urban core home as a vehicle to serve the following objectives:

1. To inject middle-class students in building construction and real estate courses into a core neighborhood environment.
2. To use minority students to interface the middle-class student with the core neighborhood while giving the minority student participation in a practical problem in housing improvement requiring infinite attention to detail and administration.
3. To interface management skills of the business student with the design abilities of construction students and industrial art of vocational school apprentices.

In reality distance made it impossible to choose a property in a community such as Milwaukee or elsewhere in a so-called urban minority ghetto. Older neighborhoods in Madison are in need of rehabilitation but are basically mixed sociologically. Minority student participation and neighborhood problems proved to be superficial. Participation with vocational school construction trade apprentices proved unworkable as these students are typically on a field work and classroom schedule with approved contractors and had no need of further manual arts training.

Thus, the original objectives in terms of sociology proved to be goals too complex to "arrange". It is enough of a problem to give students an opportunity to acquire and rehabilitate an old house. One can only hope that the neighborhood in which the students choose to operate will provide a valuable opportunity for educational interaction with the residents as a random by-product.



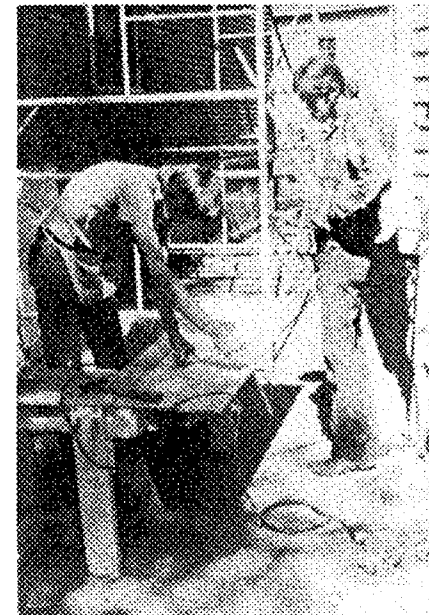
B. Course Format

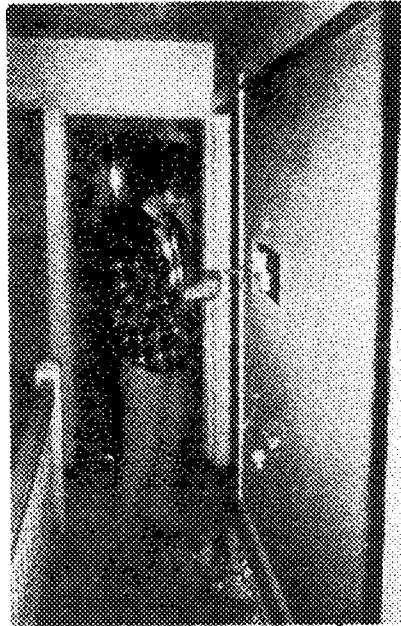
The structure of the course as proposed was to cover two semesters, a seminar for two credits in the spring semester and a workshop for three credits during the summer school semester with enrollment limited to 8-10 students having construction, real estate, or business management backgrounds. During the spring semester the students would search out and acquire a residence and plan the remodeling work which they would actually perform during the summer school workshop.

During the summer phase students registered in the course were expected to do as much of the actual construction work themselves as the law and the ability of students would permit. Many of the students had some construction skill, in woodworking, concrete, painting, etc. However, the summer work requirement provided some with an opportunity to experience house wiring, plumbing, dry-walling, finishing carpentry, or heating for the first time. The objective was not to make them skillful but rather appreciative of the detail and skill required of each. Throughout both semesters the students were responsible for the detail work of organizing, planning, and executing a micro-enterprise to achieve cash solvency so they could experience the discipline required of even small hard solutions rather than endless discussion of soft issues. Student grades were to be based on a judgment call by the professors reflecting their observation of student reliability, participation, and performance.

With 20/20 hindsight, experience suggests some improvement in both the allocation of credits and the grading of performance.

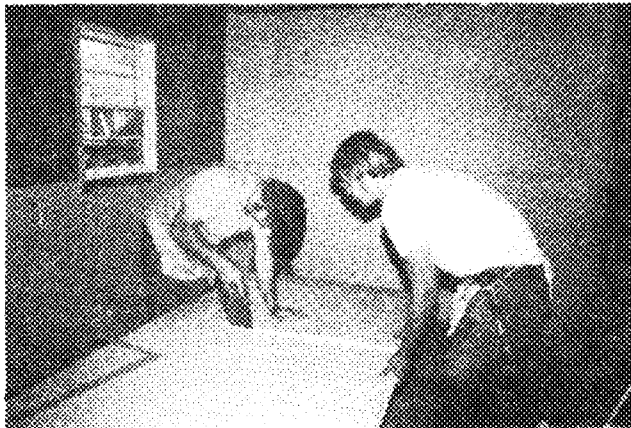
1. The spring semester should be at least 3 credits as the search and planning process is a time consuming and frustrating sequence of false leads, discarded plans, and purchase negotiations which may require convening the group frequently and with varying intensity of preparation. (See Design chapter for recommendations)





2. The summer semester credits should tie credits to daily hours of work on the job, such as 1 credit for 8 hours per week up to 5 credits for 40 hours per week.
3. During the summer semester students received a modest \$2 an hour for their time but for enrolling in the course they paid summer tuition on a per credit basis, leaving most with the need for an additional summer job to fund their education in the fall. At the very least the corporation could refund tuition per credit as additional compensation at the end of the semester. A flat lab fee could be charged in lieu of tuition per credit. Perhaps it would be better to make the summer construction work phase equivalent to a work-study alternative.

4. The heavy work-load on students with design ability during the first semester led to some hourly subsidy as project assistants as the University could not fund the corporation to employ its members as draftsmen, etc. A method for better balance of student work-loads will be discussed further in this report.



5. To reinforce the leadership position of the student foremen and manager, these managers should be directly involved in the grading process. The faculty should grade each appraisal, design, accounting, or other task assigned to each student during the semester. An appraisal which is "C" quality work should be labeled such at the time it is presented as it affects the ability of the enterprise to make its next decision. Grading must replace, in part, the incentive offered by "hire and fire power" of management in real life situations. The faculty failed to make grading a vital part of the process of personnel management.

C. Academic Budgeting

Initial budgeting estimates were hurried and mistaken in assumptions about University accounting attitudes. The budget distinguished between teaching staff costs as a responsibility of the University, indirect costs of the legal organization formed to carry out the project, and direct working capital required to handle the flow of operations. Preferably the latter was to come in the form of a grant and be available to cushion against insolvency.

There was no time to solicit a grant and thus the unsecured forgivable note from First Wisconsin was a key to undertaking the project. The proposed budget and actual costs are outlined in Illustration 1.1.

The staff budget contemplated released time for one of the faculty members, but the short term notice of project funding made it impossible to reassign teaching assignments. The University ruled that since the staff was 100% employed with their regular course load, no additional compensation was payable. The monies were therefore used to fund two graduate student teaching assistants, one of which superintended the design and estimating phase in the drafting rooms while the other advised on the construction site during the summer. Fortunately both had extensive home construction experience. The balance of staff salary allowance was paid to students on an hourly or research assistants' basis to compensate for their taking extra responsibility as corporate officers or extra design duties, so that these costs were subsidized from the original teaching budget. The student hourly rate for students involved in the course gave the faculty some method for rewarding the "take-charge" type people and balancing work loads between those with expertise and those who were willing but relatively helpless at the drawing board or on the site. For the indirect costs much difficulty with the University was of the opinion it could not transfer funds to a "private" corporation. Thus, the allowance for Workman's

Compensation and Liability Insurance was not available and a portion of actual legal expenses were paid after a long hassle which finally recognized part of the legal fee as an honorarium for teaching services. Travel expenses first anticipated the possibility of rehab in another town and would have been totally inadequate for that purpose. Supplies and contingencies became a finagle factor with which to avoid nitpicking with University accountants.

Recommendations for budgeting for a future course with 20 undergraduate students might follow the same distinctions between staff cost, indirect costs, and operational working capital. At the very least the spring semester should require 1/3 of the teaching load of someone of professorial rank and the recommended budget assumes 1/3 of a \$9,000 semester salary cost. During the semester of actual construction \$3,000 might be used for additional payment to the working student foreman in charge of the project, about which more will be said later. A modest summer honorarium should also be paid to the staff member responsible for grades and administration, say \$1,000. The University should properly carry a portion of the indirect charges which protect the University and whose payment by the rehab project might lead to insolvency and loss to direct trade creditors at the end of the project.

Legal counsel for careful organization as well as prudent property negotiations and contracts is indispensable on a day to day basis at a local level. Much of what the attorney does is instruction for the students and the input of the attorney cannot be overemphasized. Similarly the risk management program must begin with workman's compensation insurance for every student at the outset of the project, requiring a deposit premium of \$5.00 per student. In addition, a general contractors liability policy with non-owned automobile endorsement should be in force at the outset requiring another deposit premium somewhere in the neighborhood of \$150. Students should be required to pay the \$3-\$4

cost of a safety helmet and goggles themselves so that they have a vested interest in using them and not losing them. The travel expense item covers the unavoidable use of student cars during the search and construction phases of the project, a student contribution which would otherwise need to be covered from the University car pool as is done in most field work courses. Legal, insurance, and travel expense items should be transferred to the corporate entity to provide a bank deposit and a clear dichotomy between instructional responsibility and operational liability. Supplies include a variety of films, record books, drafting supplies, etc. including mimeographing of corporate minutes, etc, which are a normal part of communication among students and between field observation and classroom demonstration. Time lapse photography might even be a useful tool for evaluation of workers and future classroom instruction. Other indirect costs should be charged directly to operations but the University should carry those which are instructional or essential to its own protection against liability. Failure to do so in this case meant the Deans' involved in the program had to tap contributions from outside the University and several creditors collected only a portion of legitimate charges. Finally, working capital should be provided in part by a grant to protect private trade creditors from the insolvency of the rehabilitation efforts due to error in estimating cost or resale value. The working capital loan was an all too realistic discipline since every error and every decision related to the issue of solvency in a cash cycle enterprise. However, there should be some cushion for student mistakes because it's a learning experience, and some protection for the faculty members who feel constrained to see every trade creditor satisfied. The supervising faculty member must have some freedom to permit students to dare and to err, but should not be completely free of the fear of insolvency as it reflects on his competence. *A small grant of \$2,500 would represent a contingency of 10-15% on a single home rehabilitation, and this item completes the recommended budget on Illustration 1.1

Illustration 1.1

Summary of Instructional Cost Budget as Proposed, Realized and Recommended For a Rehabilitation Workshop

<u>Description</u>	<u>Proposed Budget</u>	<u>Actual Outlays</u>	<u>Recommended Budget</u>
A. <u>Staff Cost</u>			
Released Academic Time	\$3,400.00	\$1,024.78	\$4,000.00
Summer Time Assistant Instructor	1,300.00	1,000.00	2,000.00
Project Assistants and Student Hourly	0	2,280.96	0
	<u>4,700.00</u>	<u>4,305.74</u>	<u>6,000.00</u>
B. <u>Supplies and Expenses</u>			
Legal Counsel	400.00	400.00	750.00
Liability Insurance	100.00	0	250.00
Travel and Miscellaneous Expense	400.00	168.18	200.00
Supplies and Contingencies	500.00	712.78	300.00
	<u>\$1,400.00</u>	<u>\$1,280.96</u>	<u>\$1,500.00</u>
Total Budget	<u>\$6,100.00</u>	\$5,586.70	
Total Surplus to University		513.30	
		<u>\$6,100.00</u>	
<u>Working Capital Grant</u>	<u>5,000.00</u>	<u>4,800.00</u> ⁽¹⁾	<u>2,500.00</u> ⁽²⁾
	<u>\$11,100.00</u>	<u>\$10,900.00</u>	<u>\$10,000.00</u>

(1) Loss sustained by bank, donors, and some creditors.

(2) 15% contingency for loss incurred. See last sentence page 8.

D. Student Recruitment

The faculty anticipated some difficulty in locating eight or ten students from the specific fields involved because of the summer commitment required. The course concept had been discussed in its formative stages with student leaders and additional students were informed of confirmation of the course during the week of registration. As a result seventeen students were initially enrolled. Their backgrounds were diverse; some were business students with no familiarity with design concepts or industrial art skills; some were designers with little patience with business techniques and a couple were seniors looking for some easy credits for their last school semester. As a result of this rather unstructured recruiting, the students did not enter the course with any consensus of objectives or of methodology for decision-making.

An alternative method of student selection depends on whether the thrust of the workshop should be an educational experience with certain built-in inefficiencies or an economic enterprise with an educational byproduct. If the latter were true, the faculty could select a group of ten or twelve from applicants solicited throughout the University for their semi-professional expertise in construction or business methods. If a unique educational experience is the primary objective, the faculty must take the skills as they find them among department students only and teach the students what they need to know about carpentry, electrical wiring, or accounting. The latter would require continuous on-the-job supervision by a foreman who teamed a student with a required skill with one having no experience so that the students could teach each other. In addition, the foreman would need to rotate students between assignments and serve as instructor after each rotation. This latter approach is much more desirable but requires selection of a very knowledgeable and sensitive job foreman. Any group of students has a fascinating array of talents and the seventeen original volunteers in Urban Redevelopment Workshop included a former apprentice plumber, carpenter, several designers, a railway brakeman and self-taught electrician.

E. Legal Organization

At first thought it appeared that a bank serving as corporate trustee might acquire and hold title to the property to be rehabilitated. However, the potentials of insolvency and public liability for the students, faculty, and University dictated a shift to a corporate structure, a Wisconsin Statute Chapter 181 non-profit corporation. A young attorney, a former graduate of the UW School of Business, was retained to instruct students in the drafting and recording of a charter and by-laws of the corporation named Badger Redevelopment Corporation (BRC). (A copy of these can be found in Appendix A) In addition, the attorney assisted the students in drafting documents to purchase, to sell, and to close as well as certain other contracts of the enterprise.

To be eligible for a position as a director, a student had to be enrolled in the course for credit. In addition, the directorship included three faculty members to provide an ongoing stewardship between semesters and a vice chancellor was added to establish that the corporation was an instrument of the University. As a matter of practice the faculty attended meetings but abstained from voting so that the class, all of which were directors, could proceed to elect their own officers and to manage their own affairs. As a non-profit corporation there was a provision in its charter that in the event of corporate dissolution, any surplus would revert to the University of Wisconsin through its Board of Regents. The office of the corporation was given as the Department of Agricultural Engineering Building at 460 Henry Mall of the Madison campus.

F. Recommendations for University Sponsorship

Nonetheless these arrangements suffered from several serious flaws:

1. University officials doubted that the corporate entity was a

University agency rather than a private corporation and thus they decided BRC was not entitled to receive any transfer of funds or support, such as guidance from University maintenance shop specialists or access to motor vehicle pools.

2. Since directors were required to be enrolled in class for credit, the end of the semester brought a legal end to their authority as directors between semesters and following the end of the summer session. Rather than give everyone an "Incomplete" in order to keep them "enrolled," the faculty directors improvised a board of advisors consisting of the students. The faculty then enacted the policy decisions made by the board of advisors, a rather clumsy solution.
3. If BRC had been recognized as a University instrument, it would have been represented by the Office of State Attorney General and could not have hired its own attorney. In fact, it might have required Regent approval of its real estate purchases and might have been bound by state purchasing rules--all of which would have been impossible.

Any future repetition of the rehab course experiment under University auspices may depend on the assistance of the Attorney General in defining a unique non-profit entity to which University funds for the indirect costs discussed in the budget could be transferred. At the same time the corporation would need to be kept free of state purchasing rules, etc. as too cumbersome for efficient construction. The legal format might provide:

1. For the Regents to authorize the Chancellor to appoint three faculty members as directors.
2. For the appointed directors to designate the student directors who would serve until they failed the course, dropped the course, or the project was deemed complete by the faculty members.
3. For the University to contribute funds for insurance, legal, and travel costs of the course not to exceed some stated

maximum.

4. For authority of the corporation to employ its own attorney.
5. For authority for the corporation to buy and sell real estate, transact mortgage loans, or engage in the construction business as related to a course of instruction or work-study program without reference to University purchase procedures.
6. For the Board of Directors to create standing authority for one officer or faculty director to sign real estate documentation as required to avoid delays and confusion from time to time when vacations, class schedules, and efficiency prevent calling the board into session for approval.

Should University risk or state procedural matters prevent involvement of the Board of Directors, the opinion of the Attorney General should be sought on the transfer of funds for the indirect costs of the corporation.

TO: DIRECTOR, FBI (100-371101) FROM: SAC, NEW YORK (100-100000) (P)
SUBJECT: MURDER OF MARTIN LUTHER KING, JR.; CIVIL RIGHTS; RACIAL MATTERS; NEW YORK
RE: NEW YORK TELETYPE TO BUREAU, APRIL TWENTY, LAST.

THE UNIVERSITY OF CHICAGO

100-32768-1

14

FINANCING, INSURANCE, & ACCOUNTING CONTROL



A. The Financing Package

The critical elements for BRC financing were purchase money mortgages for 100% of the cost to acquire two old houses plus a series of short-term notes for rehabilitation costs provided by the First Wisconsin National Bank of Madison. During construction interest payments at 7% per annum were met as part of the balance of new notes drawn to cover monthly outlays but by the end of the year it appeared that BRC might take advantage of the bank note provision which would forgive any balance outstanding which could not be covered from sale proceeds or other donors. In a final accounting the bank might lose as much as \$4,000 including interest.

While the First Wisconsin National Bank Mortgage Loan Department was most accommodating, the checking account department did require a \$50 minimum deposit and BRC was all credit and no cash. In addition, \$89 was required for a deposit on workman's compensation insurance and \$200 as a premium deposit for a liability insurance program. Since the University accountants would not permit a University disbursement for these costs as budgeted, two deans stepped in with \$339 to provide working capital for the first week of operation.

A number of local businesses contributed cash after remodeling was completed and the final product could be matched against operating losses to suggest good use of the money had been made. These donations received in 1973 totaled \$750.

B. The Accounting System

The accounting system used by BRC was rather elementary although well detailed. The books of accounts consisted of a journal, a check register, a general ledger and a payroll ledger. In addition there was an open file of account payables which listed all current liabilities as received from creditors. All discounts were taken and cash requirements were planned monthly to support draws on the credit line. Bills were paid by the BRC treasurer, a graduate student in accounting and real estate, as

the bank did not make disbursements as a construction loan procedure in this case.

The treasurer spent considerable time establishing federal and state tax status. Application was made for exemptions from the social security tax because of the educational and non-profit character of BRC. In the absence of a prompt ruling, BRC did not submit social security tax payment with the quarterly report filed with the IRS on payroll. Reports were filed with form 911-E and when total social security withholding exceeded the \$200 limit set by the IRS, necessary deposits were made with the tax depository account at the bank. On November 15, the IRS favorably classified BRC from all federal income tax and social security taxes, the latter saving more than \$500 and requiring refunds to all of the participating students on payroll. The Compliance Section of the Wisconsin Revenue Service did exempt BRC from Wisconsin sales tax and this exemption reduced cost of material purchase by 4%.

Financial statements for operations and sales are provided in Chapter 7. Together with the analysis in Chapter 7 these statements will suggest the heavy indirect costs of FHA financing on property sale and the soft costs of managing a rehabilitation enterprise. As of December 31, 1972, one house had been resold and one remained as an asset subject to a conditional offer to purchase which was awaiting FHA processing under the 235 FHA subsidized home purchase plan.

The treasurer periodically prepared a report on the assets and liabilities of BRC to the directors and the bank. The treasurer, the directors, and the construction foreman met regularly on the current cash position and expected billings on subcontracts completed or materials ordered. The costs of proposed improvements were reviewed and weighed against estimated credit available to complete but it was difficult to make periodic comparisons of progress against forecasted budget due to significant errors in early budget estimates.

In future projects it is recommended to review initial budgets with an experienced remodeling contractor in the community as some of these firms have excellent time unit and material unit estimating standards which would provide a bench mark for student estimating costs. While cost control by reference to budget standards was ineffective, the treasurer spent much time checking each bill for materials with the construction crew to be sure that discounts which had been promised were noted on the bill and that prices were consistent with those quoted by the materials supplier at the time of purchase. The terms of purchase arranged with the owner of one supply firm were so unusual that the accounting and billing department of the firm was unable to adapt and many errors were made. One firm had a computerized accounting system and as a result billed the standard amount each month which was paid on time and at the close of the project the owner of the firm made a special refund as a percent of total purchases. This would seem a preferable method although it leads to some additional cash borrowing and interest costs because it avoids irritating friendly suppliers with penny ante accounting.

The treasurer set up a complete file system in the University office of BRC which included all documentation and corporate minutes, correspondence, bank statements, insurance policies, employee withholding statements, tax publications, FHA duplicate documents, and so on. Bills which had been paid were inscribed with the check number for both internal control and for ease of review to determine current cost-in-place. An accounting manual and brief file manual was available so that absence of the treasurer or any other outside contingency could be met by centralized source of information. Student rooms and apartments as "offices" should be avoided as this leads to misplacement of business records, generally a casualty of some unidentified "cleaning lady" or careless coffee drinker.

C. Insurance Program

There were three areas of basic insurance coverage which were, in order of priority, third party public liability coverage, workmen's compensation protection for the directors and employees of the corporation, and fire and property insurance on the buildings acquired for remodeling.

Coincident with the organization of Badger Redevelopment Corporation, liability insurance was sought from a major Wisconsin carrier and good friend of the University. An organization of amateurs to be working in building wrecking and rehabilitation is not an attractive underwriting risk as "do-it-yourselfers" suffer an inordinate number of accidents to themselves and to bystanders. Nevertheless, after six weeks delay, the insurance company decided to grant a comprehensive general liability policy covering bodily injury and property damage arising out of occurrences attributable to negligence of the corporation. Policy provides minimal bodily injury limits of \$50,000 per person, property damage limit of \$25,000, and a limit for total loss on any one occurrence of \$100,000. The policy was specially endorsed to cover non-owned automobiles which might be used on behalf of the corporation, motorized equipment on the corporation premises, construction operations, and complete products liability. The policy was written with a deposit premium (in this case \$180) to be applied against an annual audit of the number of properties owned and the dollar volume of various segments of corporate operations. Such an audit under the comprehension policy means it is not necessary to report each aspect of corporate activity in advance as premium would be adjusted to the degree of exposure after the fact. Contrary to the BRC experience, it would be desirable that the policy be in force from the very outset of activity as student use of their own automobiles is quite common and their insurance may be irregular at best. It may be desirable for student enterprises to endorse the policy for personal injury as well as students may not be as circumspect with credit information or their public statements about officials and others with whom they

disagree. University Risk Management Department should be involved in a future program of this type.

The application to this same major carrier for workmen's compensation insurance was turned down and diverted to a state risk pool for high risk small premium enterprises. This pool assigned each application on a proportionate formula to various companies doing business in Wisconsin. The application to the assigned risk pool was made to the Wisconsin Compensation Rating Bureau together with a deposit premium of \$89 and BRC was assigned to The Travelers Insurance Company of Hartford, Connecticut with coverage dating from March 17, 1972. Total premium would be determined by an audit of payroll. The policy made note of the fact that all of the students were to be considered both directors and employees of the corporation entitled to coverage even if they were not on the payroll so that their medical bills would be paid in any event. State law required that all the employees as well as faculty members be provided with safety helmets to be worn at all times on the site, with provision for heavy fines and loss of insurance. Two minor injury claims were settled for student employees, a paperwork problem complicated by the cooperative form of management which failed to report the first accident promptly. In future courses the faculty will need to provide a one-hour lecture on liability and workmen's compensation procedures for the class to sensitize students to necessity of sound risk management.

Fire and extended coverage insurance with a vandalism endorsement subject to a \$250 deductible was provided for both BRC properties. The policies on 1406 and 1408 Jenifer were transferred by assignment from the previous owner with the consent of the insurance company and in due course it was necessary to increase the coverage of the policy to \$18,500 as state law requires that insurance be equal to or greater than credit obligation against the property. The 100% financing established the amount even though it included the value of the land and other non-burnable items. Since Wisconsin has a valued policy law, however, the insurance would have to pay the face amount

of the policy should the property be a total loss as a result of fire, wind storm, hail, aircraft and vehicles striking the property, riot, strike, civil commotion, or vandalism or malicious mischief. Action to increase limits of the policy from their level when properties were acquired lagged the actual investment of time and materials and this poor procedure could have been avoided by using a builder's risk policy which would automatically cover values in place. However, insurance companies were somewhat reluctant to insure these rundown properties initially and since the state's fair share risk pooling plan was slow and expensive, BRC decided to take assignment of the policies when it was made possible by the property insurance carrier. Both policies were eventually assigned by BRC to the buyers of the remodeled homes.

3

A. Original Concept

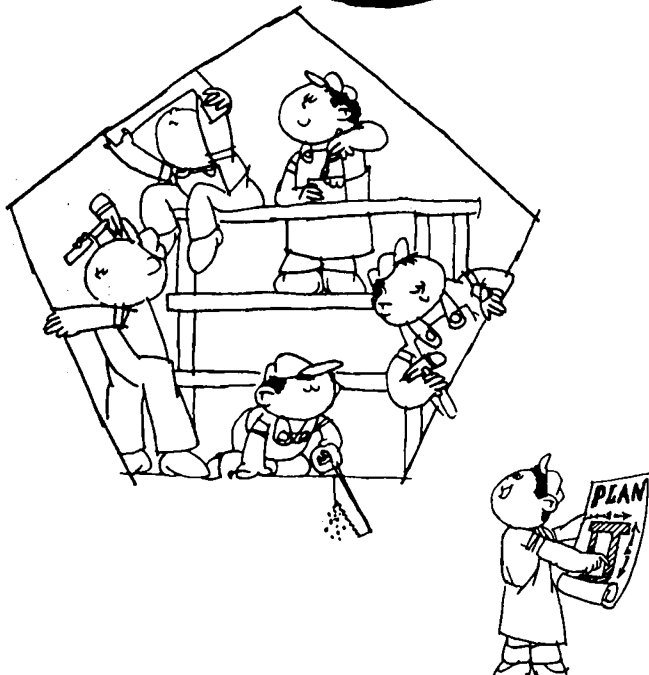
The structure of Badger Redevelopment Corporation intended that all members of the corporation--students, professors and advisors--be equals on the Board of Directors. The officers were nominated from the Board on the arbitrary premise that the President should be a construction-oriented student, the Vice-President and Secretary should be business management students, and the Treasurer should be an accounting student. Within the Corporation, committees were appointed to determine goals and direction as well as to take care of the actual business at hand from site selection to sale of completed properties.

The Corporation decided on an approach to project management other than a foreman directed site control. A cooperative work force was tacitly organized to carry on the actual rehabilitation of the residences involved.

B. Evolution of the BRC Managerial System

As previously noted, the entire project materialized very rapidly and the initial impetus was provided by the faculty. While the faculty created the opportunity, the faculty expected the students to take command of the project. It was in this sudden transfer of responsibility that the initial organization took place. Since the students came from a variety of academic backgrounds, there was no common knowledge of each others' abilities and personalities. The rather haphazard means of selecting officers fulfilled the basic need of getting the corporation functioning, but it also provided the means of conflict when ideas and personalities clashed.

The goals of the Corporation were not specific in nature and allowed for much latitude in the students' desires. Everyone involved in the project created his own picture of what the goals should be and how to reach them. Discussion on these points was very productive in identifying a variety of goals



and means and also provided exposure of individuals' philosophies. Unfortunately, inexperienced student leadership allowed the airing of project ideas to turn into the groundwork for philosophical divisions of the Board. A difficult, if not impossible situation to control among students. Many hours were lost because of what amount to stubborn, uncompromising, individualistic attitudes. Generally, the prevailing argument was not the one with the most support, but the one which wore out all others. Thus, a consensus of the Corporation's explicit goals was never stated. Time had dictated that other work continue while the goals issue was never being settled, but the Corporation was able to work effectively without detailed goals and it soon became apparent that it could continue to do so. One beneficial aspect was that it allowed the Corporation to be adaptable to the fast-changing situations that developed while investigating prospective properties.

The committee structure set up within the Board of Directors failed to work. The principal reason seemed to be that the teams of two or three qualified individuals assigned to tackle a problem generally failed to put together a co-ordinated effort. Student schedules made it difficult to get the committees together. What little success there was met a second roadblock when committee reports were made to the Board. In general, the Board seemed to distrust the reports on the same basis that the philosophical and political divisions first appeared in the issue of goals. What was happening was that without appointment by the officers, special interest groups were formed. Members of the Board banded together to prepare written statements to inform the Corporation of their opinions and suggestions, usually contrary to previous action taken. Although these presentations led to hours of argument, they did provide an internal check on many of the decisions made.

When the committee's structure failed, the effort was usually taken over by individual students. Individual effort produced the best results. Probably because the blame for not doing a thorough job could only fall on one student's shoulders. Individuals became the resources of instead of the advocates

of policy positions for the Board of Directors.

Design, supplies, change orders, financing, bookkeeping, etc., were handled by members who considered such areas their specialties. A building specialist from the University of Wisconsin made periodic visits to the site to answer any questions in procedure that could not be handled by a member. He did not, however, manage or coordinate any facet of the construction. Any voids in project coordination were filled by the use of sub-contractors, additional qualified student help, and professional advice from community businesses. This additional aid was necessary in such areas as electrical service, plumbing, heating, landscaping, FHA regulations, and legal counsel. All the additional aid was sought at the minimum cost to the Corporation. In some cases it simply involved seeking the lowest bid on a phase of construction that could not or was not legally allowed to be handled by non-professionals. Other times it involved personal meetings with prospective suppliers and explaining the project and the need for help.

The cooperative work force used for the actual construction phase of the project operated for about three months, at which time the Board unanimously dissolved it. The cooperative had failed to carry out the needs essential to project completion for the following reasons:

1. Much more responsibility fell on a few individuals in practice rather than more equally among cooperative members as in theory.
2. Incentives were non-existent for producing quality work or making correct decisions.
3. Lack of leadership resulted in wasted time and labor.
4. Time and frustration eroded dedication to the project.
5. Individual satisfaction was lost in the daily changing worker's function.

6. No priorities or criteria were established and, therefore, a sense of direction of the project was lost.
7. Individuals lost all sense of the magnitude of the project as a result of the lack of specific assignment.

C. Formalizing Site Management with a Foreman

After the initial three months of cooperative organization, the project was changed to conventional foreman management. This drastic change became essential because of limited time schedules. A student foreman took over the project with complete control over workers, schedules, sub-contractors, project design changes and construction means. In return the Corporation demanded of the foreman specific finishing dates, as well as labor and material cost ceilings (See Chapter 6). Such authorization control caused some dissatisfaction among BRC members, but it did control project costs and labor problems. The project finished in an organized effort rather than a "last gasp."

D. Recommendations for a Management System

Because of the leadership problems that arose a few basic principles should be followed when selecting the students for important roles of corporation leadership:

1. Rap sessions are needed in order for members to become acquainted with each others' philosophies, experience, personalities and dedication to the purpose of the corporation.
2. The role of officers must be clearly stated and understood.
3. Nominations must be discussed thoroughly with an eye towards future conflicts and complications.

However, given a situation where students are unfamiliar with one another, the arbitrary selection process of officers may have produced the best working compromise of divergent philosophies available under the circumstances.

Although the Corporation was not severely hampered by the lack of explicitly-stated goals, there always seemed to be a question of why things were being done the way they were. Failing to state explicit goals, the Corporation should have at least established general criteria for decision-making.

For the purposes of a functioning student corporation, it seemed necessary to use individuals in their specialties rather than the time-consuming ineffective use of committees.

The idea of everyone sharing in all facets of a corporation is a romantic and inefficient approach to making decisions with the speed necessary for real estate and construction projects. Without implying cooperatives never work, the cooperative idea in this situation was unable to bring the project to a successful conclusion. With limited time schedules, a project manager seemed to be necessary.



E. Management of Public Relations

By the time BRC had closed its acquisition of 1406 Jenifer, a rumor had spread through the neighborhood that some "crazy hippies" from the University had bought the house and intended nothing good for the neighborhood. At the same time BRC was adjusting to the possibility that the tenant in 1406 might have had some "understanding" with the seller to purchase the property. Thus, BRC began with an image in the neighborhood of irresponsible hippy and ruthless landlord having racist tendencies--an interesting case problem for the students to begin their role as development entrepreneurs.

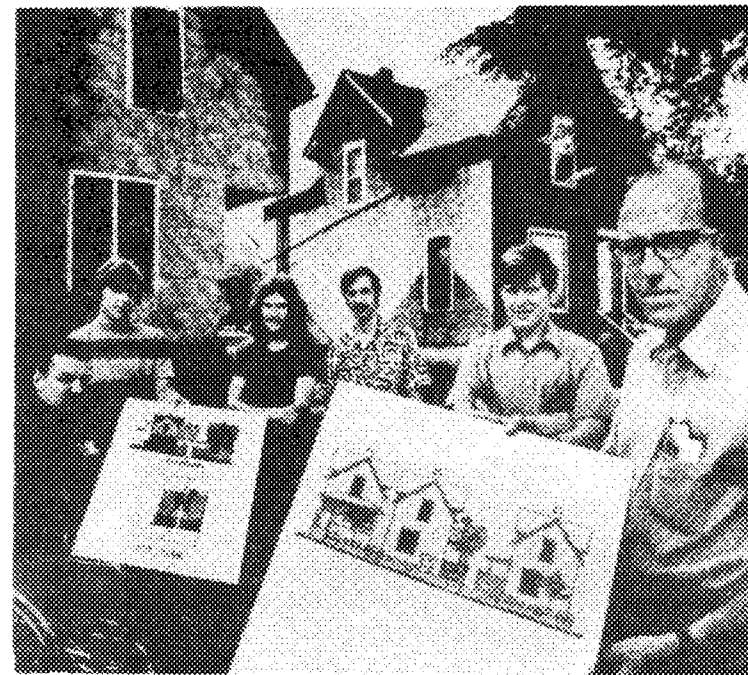
Fortunately, there was a Marquette Neighborhood Association newsletter which carried accurate information on the project

to the neighborhood. A strong asset in correcting original impressions was the thorough treatment of the project by the Madison morning paper, The Wisconsin State Journal, complete with photographs. Perhaps the best "public relations" for the project was the conduct of the students themselves as they circulated among the neighborhood and explained to other homeowners who they were and what BRC was attempting to do. As a result, there was no vandalism from the kids in the neighborhood during the summer as the students and kids maintained daily contact. Once during the fall when students were working erratic schedules, some windows were broken but by and large, equipment losses and material evaporation was negligible, an index of strong neighborhood rapport.

The housing division of the Madison Community Action Council, a division of the Office of Economic Opportunity, took an active interest in the project as a demonstration of single-family rehabilitation in an area where family housing for low income families was in short supply. Their interest and cooperation not only secured the eventual purchasers for the homes but also assisted in FHA processing. In other communities such an organization might provide a list of suitable properties appropriate for remodeling.

During the course of construction, a variety of University administrators, craft union observers, city hall types, and students inspected the premises and guiding them through became a significant nuisance factor for the student foreman. His job description was eventually defined to eliminate responsibility for slide shows and impromptu lectures on the project and these functions became the task of the communications committee.

Before construction started contact was made with the Building Trades Council of Madison, which was relatively dubious about encouraging construction work by non-union amateurs. With the help of the electricians' union representative, a presentation was made to the Council and the majority found no objection to the project. The plumbing union representative, however, was



SKETCHES OF PLANS — Teachers and students in a unique University of Wisconsin learn-by-doing class demonstrate what it's all about. Showing sketches of what they propose to do with the two houses they are buying are,

in the background, from left, Prof. James Graaskamp, Jan Klund, Tom Hoskens, Jerry Draeger, Instructor Ron Meyer, and Prof. Dick Stith.

—State Journal Photo

UW Students Learn and Earn

They'll Remodel and Sell Two Houses as Classwork

By ROGER A. GRIBBLE
Of The State Journal Staff

Who said a college education is all theory and no practical experience?

Someone who hasn't heard of a new interdisciplinary course being taught by two University of Wisconsin-Madison professors, no doubt.



Prof. Dick Smith, left of sign, greets visitors to UW student project in Marquette area —State Journal Photo by L. Roger Turner
SEPT. 5, 1972

UW Students Open Doors at House Remodeling Project

By ROGER A. GRIBBLE
Of The State Journal Staff
A University of Wisconsin-Madison student project involving the remodeling and sale of two houses reached another milestone on Friday.

Students and faculty members involved in the interdisciplinary course proudly put the project on display at an open house.

ONE OF THE TWO houses at 1406 Jenifer St. is virtually ready for sale. The other house, next door, should be ready next month.

"We hope to come out in the black, and I think we should," said Prof. Dick Stith, who with Prof. James Graaskamp

has taught the innovative interdisciplinary course.

The project was one of five funded for the Madison campus to improve undergraduate education from savings claimed by UW Pres. John Weaver in cutting the premerger UW staff.

During the first semester of the project, the 14 students involved formed a non-profit corporation to handle the purchase, remodeling, and sale of the homes.

AFTER FINDING and purchasing the two homes, they redesigned them, using a townhouse concept in keeping with Marquette Neighborhood Assn. aims.

Students did the remodeling work during the summer (except for plumbing, which required a master plumber) and paid themselves \$2 an hour for their labor.

"It's a wonderful experience — probably the best kind of senior experience you can get," said Jerry Draeger, a senior and president of the student corporation.

"You could put a lot of ideas to work," he added. "It probably will be excellent credentials for the future."

GRAASKAMP said the students involved "have managed to improvise and have been very resourceful."

Stith said the corporation hopes to sell the three bedroom houses for \$18,000 each. One was purchased for \$9,500, he said, and the other for \$8,700.

Both have all new plumbing, wiring, and air ducts to second floor bedrooms, and have been redecorated inside and out.

Stith said offers already have been made on the nearly-completed house and it may be "practically sold." The houses will be owner-occupied, he said.

OTHER WORK has included landscaping which will involve the erection of a screen to provide back yard privacy.

Stith said many students have expressed interest in working on another similar project. A representative of Weaver's office inspected the project Friday during the open house.

careful to inform us and the State Board of Health as to the legal constraints on amateur plumbing. The trade unions in general reflected some dissatisfaction with the increasing frequency of vocational school, industrial arts, or youth training and rehabilitation programs which undertook to build or remodel. Such projects were suspected of displacing union labor or undermining apprenticeship programs in the long run and it was necessary to provide assurances to the Madison Trades Council that our grant or experiment was not a "regular" feature of the University program.

At the beginning of the fall semester upon the completion of 1406 Jenifer, an open house was held on a Friday noon hour to facilitate attendance by civil service types as well as University administrators, the noon hour being preferred so as not to infringe on driving home time or weekends. The students gave lecture tours and a carousel projector was operating to show the various stages of construction. One of the local television stations provided extensive coverage of the event in the evening news while a journalism student made his own film clip as part of his senior project, which was aired on the other local TV stations. Toward the end of the project several of the students were hassled by a passerby on the street who was convinced the faculty members had made "a bundle" running this general contracting operation with slave labor and charitable donations. A public relations program always misses somebody.

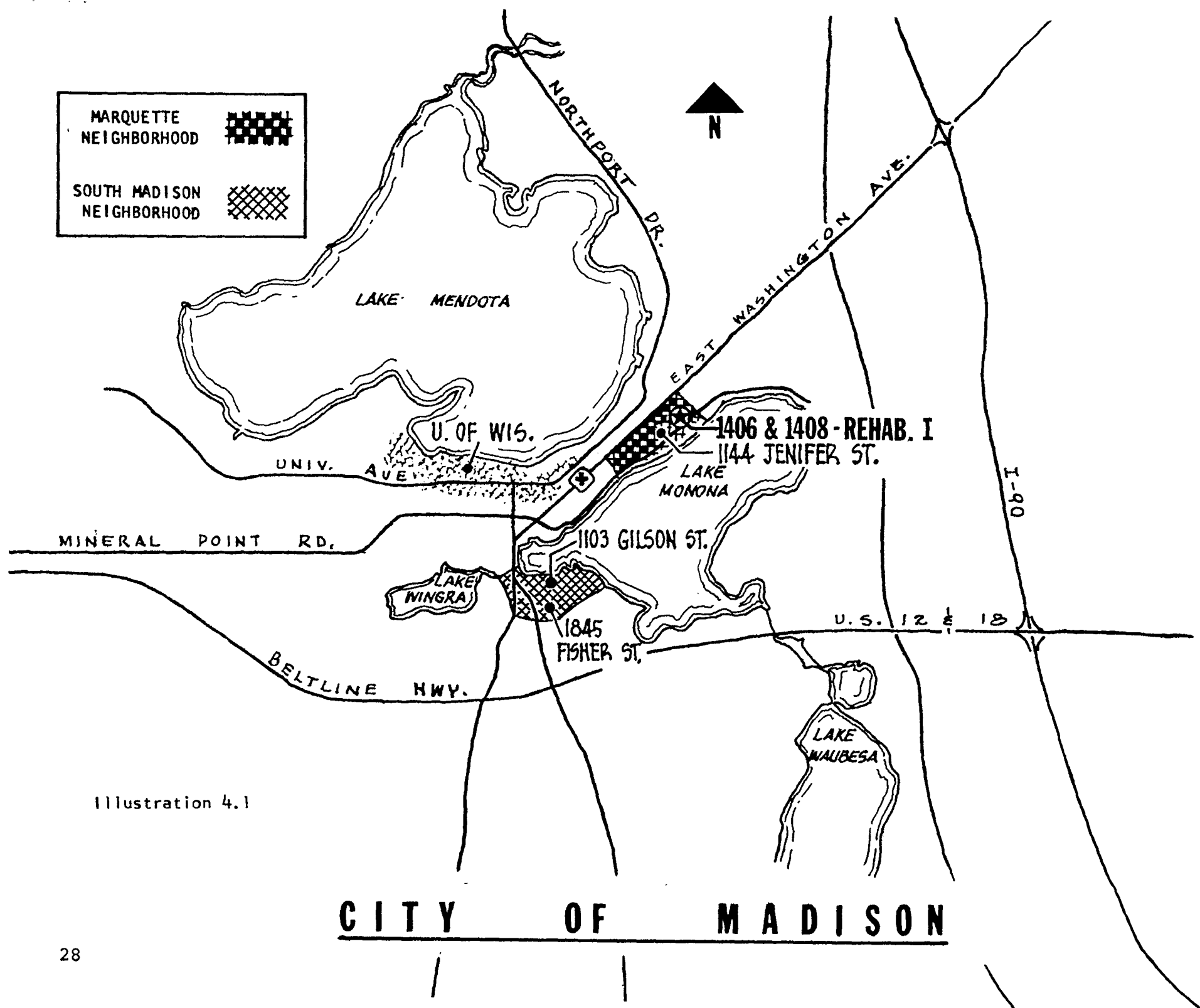
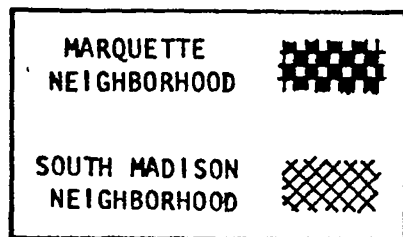


Illustration 4.1

4



A. Basic Real Estate Functions

The real estate aspects of BRC could be classified as search, selection, negotiation, closing of the acquisition, and eventually sale and closing of the disposition. A committee of real estate appraisal students was appointed to handle valuation questions while all the students participated in the search and selection process. For matters relative to closing individual students were assigned responsibility for specific meetings or negotiations but not necessarily the entire transaction.

B. The Property Search Process

The search process was initially hampered in Madison because of a lack of lower priced homes requiring rehabilitation. Unlike Milwaukee where low cost homes in the urban core approach \$4500 apiece, in Madison \$8-9,000 represented the market minimum for homes with any structural value in an area likely to remain residential. While acquisition cost might be \$8,000, market sales indicated the best sales prices in the neighborhood would approach \$15,000 for a single family home that had been somewhat modernized. The search process therefore needed to find an older house at a low price which would resell because of favorable location at a higher price to provide the maximum spread to invest in remodeling.

The Board of Directors originally limited the search to two specific neighborhoods in the City of Madison, the Marquette neighborhood and the South Madison urban renewal and rehabilitation area. (Illustration 4.1) The Marquette Neighborhood Assoc. officers were able to provide considerable information and assistance in locating property and very much desired to increase family ownership among families with children to support the neighborhood school. The South Madison area had already undergone a major effort of renovation and conservation as an urban renewal project in Madison.

A number of buildings still remained in private hands but these owners wanted to sell rather than take advantage of government grants and special credit arrangements available through the Madison Urban Renewal office. The Urban Renewal office was able to identify a number of homes that were available but not listed, and initially the city authorities felt BRC would be entitled to use the grants available to resident home owners. The possibility of a grant for \$1500 to \$4500, depending on the structure, to bring it up to code strongly favored selection of a structure in South Madison until it was determined the corporation, as a non-resident owner, would not be eligible. In addition, it appeared that the time delays in dealing with the FHA were not compatible with a semester schedule. The search to identify a home was expanded by referring to the local multiple listing service. At least one student investigated each of 25 homes and obtained 35 mm photographs using departmental Instamatic cameras. The entire class acting as a Board of Directors reviewed the slides, neighborhoods, and narrowed the choice to a number of alternatives. The class went as a group to inspect these units after scheduling showings with the owners or listing brokers. The design committee then developed some preliminary rehabilitation plans for each house identified as having some potential by its price, location, and structural condition. The appraisal committee attempted to define from the asking price and comparable sales an appropriate cost-to-acquire and also attempted to project the actual sales price for the refurbished unit. While estimated on cost-to-acquire after discounting of asking prices were reasonably reliable, there were few comparable sales to suggest what a modernized structure would sell for and no sales of a 235 rehab single family home in Madison. The appraisal committee attempted to define the spread between cost-to-acquire and sales price net of sales commissions to give the design committee the maximum budget to be spent on reconstruction. The pessimism of the appraisers left too little budget to meet the design ambitions and costs of the designers and builders, creating some frustration and ill feeling. Illustration 4.2 suggests a class display provided by the

Illustration 4.2

A Typical Appraisal Summary to Estimate
Cost-Sale Spread Available for
Remodeling Budget

Property Location	1144 Jen. <u>Single</u>	1144 Jen. <u>+ Eff. i</u>
Estimated Resale Price Additional Sales Receipts	18,000	18,000
Estimated Cost to Acquire	<u>3,000</u>	<u>13,000</u>
Gross Cost-Sales Spread	5,000	5,000
Sales Commission at 5%	<u>- 900</u>	<u>- 900</u>
Net Cost Sales Spread for Remodeling	4,100	4,100

appraisers on three properties which were prominent in the early selection process.

Analysis of sales in the neighborhood suggested \$14,000 was a probable resale ceiling for a family with \$125 per month to spend. Theoretically, beyond that point, no matter how much was invested in reconditioning a residence, the market value added would be close to zero. However, as the remodeling and design elements began to have a visual impact, the value became less sensitive to previous sales in the neighborhood and more related to alternative housing in the suburbs. It was discovered that FHA appraisals for existing structures were based on the condition of basic elements, quality of remodeling, and compliance with Federal Housing specifications. A basic limit that could not be exceeded by the FHA appraisal was that of a comparable size new structure located in the suburbs. The lower limit of new housing in Madison was \$22,000. A remodeled structure in town with basically similar space and amenity features would compete with the suburbs if it were priced 15-20% less. Since a 235 rehab loan program subsidizes the monthly cost to acquire, the FHA appraisal could also favor the cost squeeze of the rehaber without significantly distorting the monthly shelter cost of the home buyer. Thus the proper measure of resale value should have been judged by how much capital value could be commanded by a housing budget of a probable buyer relative to that buyer's alternatives in the suburbs and recognizing that old properties suffer some discount relative to new properties in buyer preference pattern.

1144 Jen. Single + 1 Br.up	1103 Gilson Single	1845 Fisher Duplex	1845 Fisher Duplex + Eff.
21,000	16,000 +	23,000 4,000* 27,000	29,500 4,000* 33,500
<u>13,000</u>	<u>8,000</u>	<u>18,500</u>	<u>18,500</u>
8,000	8,000	8,500	15,000
<u>-1,050</u>	<u>- 800</u>	<u>-1,350</u>	<u>-1,675</u>
6,950	7,200	7,150	13,325

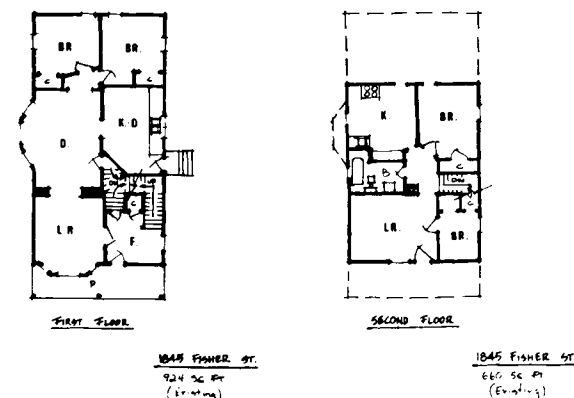
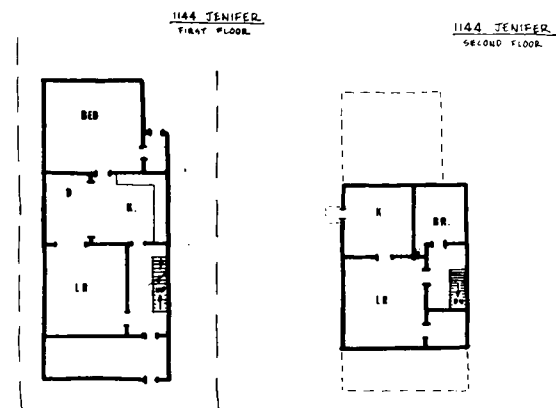
* Sale of adjoining lot included in purchase price

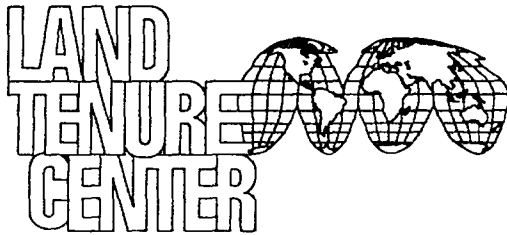
The ultimate buyers of 1406 and 1408 were expected to have a housing cost after subsidy not to exceed \$125 per month. A curve was projected (Illustration 4.3) indicating the value added per dollar invested on a sales comparison approach as opposed to an FHA appraisal of market value sensitive to actual monthly housing cost under 235. Thus, the upper limit of value was tied to subsidized purchasing power while the desirability at that value was a direct function of dollars invested in surface treatment.

C. Negotiation to Purchase

The first property on which the students agreed to make an offer (despite indications the spread was not equal to the cost to remodel) was the property "1144 Jenifer." which could have been remodeled into a 3-bedroom single family home, a flat with a 2-bedroom unit downstairs and efficiency upstairs, or a duplex with two 1-bedroom apartments. Resale of a single family home was based on comparable sales while resale of the duplex alternative reflected gross rent multipliers and the capitalized income approach based on market rent. The owner was anxious for an offer but when the class finally delivered a formal offer to purchase, the husband and wife could not agree on whether to accept the offer. The class then decided that the duplex or triplex at 1845 Fisher offered considerable design potential and an adequate spread for remodeling costs. This property was complicated by several factors. It included an empty lot to the south while the structure encroached on the lot to the north owned by Madison Redevelopment Authority which could have sold enough footage to correct the encroachment. The structure had been designated for conservation and a schedule of mechanical and structural needs established by MRA with a proposed grant for rehabilitation by an owner. When BRC did not qualify for a grant in aid from F.H.A. as a non-resident owner in this conservation neighborhood, the asking price seemed unreasonable, and the second proposal fizzled.

To conserve time an option had also been negotiated on 1103 Gilson Street but at a price \$2500 above the expected negotiated price. Reinspection of the property indicated some serious structural problems with the roof and foundation and when the owner feigned indignation at the BRC offer, negotiations were dropped. Student morale sagged as the designers chafed under the constraint of solvency and the appraisers were hard pressed to





LAND TENURE CENTER
University of Wisconsin-Madison
1300 University Avenue
Madison, WI 53706

Cable Address: LANTENCEN, Madison, WI
Telephone: 608/262-3657
Telex: 265452—Attn: Land Tenure

November 30, 1986

Ms. Barbara Barrett Foster
Training Officer
Office of Housing and Urban Programs
U.S. Agency for International Development
Washington, D.C. 20523

Dear Ms. Foster:

I am writing in response to your request for preliminary proposals for training programs to take place in the summer of 1987. The Land Tenure Center would welcome the opportunity to organize and conduct a course dealing with urban land issues in developing countries, and I believe that the Center and its parent institution, the University of Wisconsin-Madison, have both the staff and the resources that would enable us to provide an excellent training course. As you suggested in a recent telephone conversation with one of our staff members, this is a very preliminary statement of interest, one that describes the Land Tenure Center and its facilities rather than proposes a specific schedule of topics and activities we would include in the course.

In the almost twenty-five years that the Land Tenure Center has been working with AID on land tenure issues, we have had the opportunity to look into many aspects of land tenure in Latin America and the Caribbean, Africa, and, to a lesser extent, Asia. Much of our work has been centered on rural development, but we have also had occasion to focus on urban land tenure and have become increasingly impressed by the importance of land questions in the provision of urban shelter and services and as part of the wider context of urban development.

Urban land issues are not, of course, identical from one country to another, but there are many similarities even across continents, and these complementarities can be usefully addressed in the context of a training program that brings together participants from a variety of fields and countries. The Land Tenure Center has designed a number of successful short-term, non-degree training programs for AID and other international donors that focus on land issues and prospects for their solution, and this experience would enable us to be effective in putting together a course on urban land issues. Our programs have been attended by trainees from a wide range of countries, including Nepal, Turkey, Nicaragua, Ecuador, Swaziland, and the Dominican Republic, and have been carefully planned to provide the specialized instruction appropriate for each group of trainees. In organizing and teaching these courses, we have been able to draw upon not only the staff and facilities of the Land Tenure Center but also those of the broader University community. One of our major advantages has been our ability to provide, even for relatively brief training programs, a remarkably broad range of expertise.

Several of the staff members at the Land Tenure Center have had the opportunity to focus on urban land issues, and their experiences would be very pertinent for a training course. Dr. Carol Dickerman, an economic historian by training, is a specialist in urban land issues, and her work in Bujumbura, Burundi, has included a close look at changing patterns of urban land use and legal regulation. Another staff member, Dr. Peter Bloch, is an economist who has looked at, among other issues, urban employment and investment patterns in both Asia and Africa. Dr. Randy Stringer's special area of expertise is also economics, and he is at present undertaking research on land titling in St. Lucia in the Caribbean with regard to the creation of a land registry. My own training is in law, and I have recently done work for AID/Botswana on land tenure issues and housing policy in secondary urban centers in that country and a consultancy on a World Bank team looking into land administration in Banjul, The Gambia. We would all be very interested in participating in the training course.

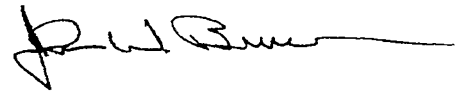
In addition, I have spoken with a number of faculty members of the School of Law, the School of Business, the Department of Urban and Regional Planning, the Department of Civil Engineering, and the Center for Land Information Studies who have expressed interest in the proposed two-week training program. Their collective knowledge of urban land issues and international experience is very wide indeed, and I am sure that their participation would make for a very successful program. In the School of Law, I have spoken with Dean Cliff Thompson, Professor Charles Irish, Professor Joseph Thome, and Mr. Zebron Gondwe. Dean Thompson has been a member of the law faculty at the University of Khartoum in the Sudan, a co-founder of the Faculty of Law at the University of Zambia, and Dean of the School of Law at Haile Sellassie University in Ethiopia; among his fields of research and teaching are property law and comparative law. Professors Charles Irish and Joseph Thome are particularly knowledgeable about land law in Latin America and the Caribbean. Professor Thome has worked for the Center planning a research and training program in Nicaragua and, most recently, has headed an LTC project in Panama; Professor Irish has just returned from a consultancy in the eastern Caribbean, where he looked into tax issues with regard to urban land. Mr. Gondwe, who is from Tanzania, has recently received his LL.M. degree from the School of Law and is completing a dissertation on housing problems in Dar es Salaam and the range of possible solutions.

I have also contacted Professors James Clapp and Alan Vonderohe of the Department of Civil Engineering and the Center for Land Information Studies (CLIS), which focuses on the technical and institutional problems associated with the development of land information systems. Professor Vonderohe has recently been associated with the LTC in a titling and registration project in Honduras. Professor James Graaskamp of the School of Business and Professor Ved Prakash of the Department of Urban and Regional Planning have expressed their willingness to participate in the training course as well. Professor Graaskamp's particular expertise is in the area of urban land appraisal, while Professor Prakash has concentrated on the fields of public finance and public investment planning in urban areas in developing countries. I am enclosing resumes, which provide further information on the research and teaching interests of all the people I have described, and several pamphlets which describe special programs of the University of Wisconsin.

In addition to the professional capabilities of these faculty and staff members, a training program at the Land Tenure Center would be able to draw on other resources of the University of Wisconsin such as library and conference facilities. The Land Tenure Center's own library has collected material on land issues in developing countries for over twenty years; many of the materials it contains are unavailable elsewhere in the United States. Other collections on campus are similarly rich, the reflection of the University's strong area studies programs in Latin America, Africa, and Asia. All of these facilities would, of course, be available to program trainees, as would the use of residential and dining facilities on campus. Madison in summer is an especially pleasant venue for such a training exercise.

Let me conclude by saying that the Land Tenure Center would be delighted to have the opportunity to design a two-week program on urban land issues and that I believe we could organize a very successful program. We would welcome the opportunity for the exchange of information and insights which such a course would provide. Carol Dickerman will be in Washington on December 4th and 5th for the seminar on urban land issues at USAID and will call you then to discuss this proposal further.

Yours sincerely,

A handwritten signature in dark ink, appearing to read "John W. Bruce", with a long horizontal flourish extending to the right.

John W. Bruce
Director



SCHOOL OF FAMILY RESOURCES & CONSUMER SCIENCES

University of Wisconsin • 1300 Linden Dr. • Madison, WI 53706

OFFICE OF THE DEAN 608 262-4847

OFFICE OF THE ASSISTANT DEAN FOR STUDENT AFFAIRS 608 262-2608

PROGRAM AREAS:

Child & Family Studies - 263-2381

Consumer Science - 263-5675

Environment, Textiles & Design - 262-3190

Home Economics Communications - 262-1464

Home Economics Education - 262-2660

February 18, 1986

MEMO TO: Jim Graaskamp
Mike Hunt
Bruce Kieffer
Mike Smith

FROM: Bob Bartholomew *RB*

RE: Revised Facilities Management Proposal

Attached is a revised version of the curriculum structure being proposed for a joint facilities management graduate program. In addition, a description of the facilities management field, justification and objectives.

Please alter, add, etc. to it and return to me by February 26. I will put together a revision based on any suggestions. I will also arrange a meeting between us. Please attach a listing of the best times for a meeting to the draft that has your suggestions when you return it to me.

RPB/11m

Attachments

Call about 851

Background

Facility management is an emerging profession focused on the coordination of physical facilities, usually in a corporate structure. Facility management functions are frequently found in insurance, banking and manufacturing companies, usually positioned in the middle management level.

As such, facility management is included in real estate (building selection, leasing) decisions, space management, maintenance, security and interior design. The facility manager may also integrate the services of engineering or architectural consultants into the functions of facilities management as well. Space is an important and expensive institutional and corporate asset. Employees are an expensive part of a business operation which is accentuated by the recent emphasis on office productivity as a major corporate issue.

Facility managers tend to be from other fields including architectural and interior design. The development of a supporting body of knowledge through research efforts plus clearly identified abilities and skills pertinent to the field are beginning to emerge as the profession matures. There are a few universities and colleges offering programs in facility management at both the graduate and undergraduate level.

Proposal

To develop a graduate level facilities management program on the UW-Madison campus integrating Real Estate, Industrial Engineering plus Environment, Textiles and Design courses.

The proposed program will be at the master's level initially and possibly the PhD level later. Certification is an issue being broached now in facility management field and it may eventually have educational implications.

Objectives

Provide professional preparation for the facilities management field.

Provide an opportunity to pursue a specialized area within facilities management.

Develop research efforts related to facility managements.

Justification

The graduate program is an effective way to provide training for the field, building on a student's anticipated prior background, e.g., architecture, interior design, business, engineering. The flexibility of graduate level programs at UW encourages interchange between schools, while allowing for a more intense focus within one of the cooperating schools. There is no additional budget, staff or facilities requirement anticipated at this time to support such a program here, though there may be the potential for industry support. Opportunities exist for interdisciplinary research between participating departments and is possible that there will be interest in research support from companies that provide products or services for buildings.

Having the program as a graduate offering may give a competitive edge to our program for research support, and recruitment of mature students with a substantial background in a related area plus the potential for a PhD level program. This latter aspect may give us an advantage in preparing faculty for emerging educational programs in facilities management.

If a masters thesis is required, it should have a problem solving focus at providing a bigorous writing experience, and merging together the coursework with the thesis as a focus. It will also demonstrate application of specific abilities, provide a "portfolio" to show to employers, or a "case study" of specific areas of specialization. The number of students participating initially in the program will be small, probably 6-8 students, so there should not be an interference of this program with existing department enrollments. There is potential for growth of graduate programs in all the participating departments, including out-of-state students. Faculty who have a primary responsibility in the program include:

Environment, Textiles and Design

Robert Bartholomew, Commercial Interior Design
Michael Hunt, Environment/Behavior Building Evaluation
Bruce Kieffer, Computer-Aided Drafting and Design, Architectural
Technology

Industrial Engineering

Michael Smith, Human Factors, Office Systems

Real Estate

James Graaskamp, Appraisal, Finance and Feasibility Analysis

Creating specialties within facility management is possibility here, utilizing hospital administration, educational administration, etc. course. This may provide the program with a unique advantage compaired with other university facility management programs.

Participating Departments

Environment, Textiles and Design

Interdisciplinary program focused on the immediate human environment integrating aesthetic, historic, scientific and technological perspectives.

Industrial Engineering

A technical field with the emphasis on the role of people in the design and operation of systems.

Real Estate

Multi-disciplinary study merging finance, public policy, physical design and regional science.

Program Development

If approved at the school level, one of the next steps will be to confer with IFMA (International Facility Management Assn) members concerning the curriculum content and structure. Other organizations such as BIFMA (Business and Institutional Furniture Manufacturers Assn), the Institute of Business Designers and Building Owners and Managers Intitute International may be helpful in offering advice concerning the program.

Another potential facet of the program is the offering of workshops or short courses or a more extensive program similar to the Banking Institute sponsored by the Business School each summer. This could culminate in the awarding of a certificate at the completion of the program. The Professional Engineering Department is already offering courses related to facilities management. Other steps include organizing an advisory group to provide guidance for the facilities management program plus a steering committee made up of representatives from the participating departments.

There has been an expression of interest in program participation by Construction Administration (Agricultural Engineering). Other potential UW-Madison participant members in this consortium program are Landscape Architecture and Preventive Medicine.

RPB7-101

MASTER'S STUDY
IN
FACILITY MANAGEMENT
AT THE
UNIVERSITY OF WISCONSIN-MADISON

FORMAT:

The Facility Management specialty will be offered within one of three existing Master's programs: Industrial Engineering; Business (BS); and Environment, Textiles, and Design. All three graduate programs require 30 credits of coursework. A thesis is optional in I.E. and Business, but required in ETD.

CORE:

All students in the Facility Management specialty must complete a 6 course core of courses (2 courses in each of I.E., Business, and ETD). Students may receive credit toward the core requirements for coursework taken previously.

CONCENTRATIONS:

Three concentrations can be offered in the Facility Management specialty. The three concentrations represent different facility types: commercial - office and retail facilities; institutional - hospitals and educational facilities; and residential - housing developments for special populations, i.e. the elderly.

Concentrations are developed in a student's curriculum via the additional Facility Management related courses offered throughout the UW-Madison campus.

DEGREE REQUIREMENTS:

Specific degree requirements are determined by the graduate program in which the student is enrolled, i.e., I.E., Business, ETD.

FACILITY MANAGEMENT CURRICULUM AND SPECIALTY OPTIONS	Residential	Institutional Hospitals Educational Facilities	Commercial Office Facilities Retail Facilities
** Changes from Jan 21 meeting (Bartholomew, Hunt, Kieffer, Smith) • Changes from conversations with J. Grewcham <i>GRASKAMP</i>			
<u>FACILITY MANAGEMENT CORE</u> (Required of all Facility Management students)			
Environment, Textiles and Design			
ETD 221/521* Environment and Behavior	X	X	X
ETD 223/523* Architectural Technology	X	X	X
Business			
• Bus 550/709 Real Estate Process	X	X	X
• Bus 555 Commercial Property Development and Management	X	X	X
Industrial Engineering			
Gen Eng 397 Technical Writing	X	X	X
** IE 466 Theory of Design or IE 349 Intro. to Human Factors	X	X	X
<u>FACILITY MANAGEMENT RELATED COURSES</u> (Examples of courses to select)			
Environment, Textiles and Design			
ETD 630 Housing for Elderly	X		
ETD 501 CAD	X	X	X
ETD 501 Advanced CAD	X	X	X
ETD 501 Advanced Environment and Behavior	X	X	X
ETD 501 Facility Planning Studio	X	X	X
ETD 501 Behavioral Evaluation of Buildings	X	X	X

	Residential	Institutional Hospitals Educational Facilities	Commercial Office Facilities Retail Facilities
Business			
Bus 532 Organization and Management Process			X
Bus 559 Construction Enterprise Management	X	X	X
Bus 554 Residential Property Development and Management	X		
Bus 555 Commercial Property Development and Management			X
° Bus 597 Urban Economics: Structure & Dynamics			
Bus 601 Health Care Cost Containment		X	
° Bus 757 Real Estate, Market Analysis			
° Bus 851 Real Estate Administration			
Industrial Engineering			
**IE 313 Engineering Economic Analysis			
**IE 315 Production Planning and Control	X	X	X
IE 349 Human Factors	X	X	X
IE 549 Human Factors Engineering		X	X
IE 610 Program Evaluation		X	X
IE 652 Sociotechnical Systems		X	X
**IE 653 Organization and Job Design			
**IE 691 Special topics (Human Factors and Office Automation)			
Other			
Prev Med 662 Intro to Health & Medical Systems		X	
Prev Med 726 Operations Analysis for Health Services Administration		X	
Consumer Science 371 Housing	X		
Educ 526 Educational Facilities		X	
Educ 702 Organization & Operation of American Educational Enterprise		X	
**Pol Sci 443 Intro. to Public Administration			
**Pol Sci 461 Organizational Theory and Practice			
ETD REQUIREMENTS			
Statistics - 3 credits	X	X	X
Thesis - 6 credits	X	X	X
Research Methods - 3 credits	X	X	X

THE REFINE GROUP
FACILITY MANAGEMENT CONSULTANTS
post office box 194
blacksburg, virginia 24060
(703) 552-3000

March 7, 1986

Professor James Graaskamp
202A Breeze Terrace
Madison, Wisconsin 53706

Dear Jim:

Nancy and I had the opportunity to review Bob Bartholomew's proposal for a facility management program. We thought you might be interested in our observations.

1. The typical description of this professional area is facility management. Bob has used a variety of labels to describe it in the proposal.
2. Facility management has a very heavy business component including the presentation of long-range and strategic planning considerations. The proposal does not give sufficient weight to this topic.
3. In the justification section, he states that no additional budget or staff will be initially available. As we have mentioned in previous discussions, we are confident that there are considerable funds available through corporate sponsors if a continuing education component is included in the initial proposal. It might also be desirable to have a letter of support from several of the facility management organizations stating the importance of this proposed degree, continuing education effort, and possible faculty research efforts.
4. This graduate program needs to be in its own academic area (a separate center) rather than being put at jeopardy by being distributed between three academic departments. The degree could very easily end up being the "bastard stepchild" that never gets any attention. A facility management center would also provide an excellent vehicle for continuing education and research.

5. The concentrations listed in the working draft seem to cover all the appropriate areas. It's our opinion that this broad based support should help in funding and graduate placement.
6. There were several omissions from the suggested course curriculum. They included courses in data base management, building cost estimation, and architectural drawing (I don't necessarily believe that a CAD computer course can substitute for an architectural drawings course).

Bartholomew has done a fine job in putting together this proposal. Our opinion is that the time is right both academically and professionally for a facility management center. Please keep us informed on your progress in this area.

Yours truly,



James C. Canestaro, AIA

JCC:vwr



SCHOOL OF FAMILY RESOURCES & CONSUMER SCIENCES

University of Wisconsin • 1300 Linden Dr. • Madison, WI 53706

OFFICE OF THE DEAN 608 262-4847

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PROGRAM AREAS:

Child & Family Studies - 263-2381

Consumer Science - 263-5675

Environment, Textiles & Design - 262-3190

Home Economics Communications - 262-1464

Home Economics Education - 262-2660

March 10, 1986

MEMO TO: Jim Graaskamp ✓
Mike Hunt
Bruce Kieffer
Mike Smith

FROM: Bob Bartholomew *Bob*

RE: Facility Management Program

Attached is the revised version of the Facilities Management Program description. Please review it and the proposed schedule listed below for our next meeting. The best time to meet is 3:00 p.m. on Tuesday, March 18 in Jim Graaskamp's office (Room 118 Business).

Proposed Schedule

3-18 Decide on final description and curriculum

By April 4 send program to Dean's of schools represented in facilities management. Committee members to meet with their dean to discuss. Check on procedure for program approval.

By April 21 meet to discuss Dean's reaction and include representatives from LA, Construction Administration, Preventive Medicine.

By mid-May initiate program publicity and student recruitment.

Fall 1986 begin operation of program.

RPB/llm

Background

Facility management is an emerging profession focused on the coordination of physical facilities, usually in a corporate structure. Facility management functions are frequently found in insurance, banking and manufacturing companies, usually positioned in the middle management level.

As such, facility management is included in real estate (building selection, leasing) decisions, space management, maintenance, security and interior design functions or departments. The facility manager may also integrate the services of engineering or architectural consultants into the functions of facilities management as well. It is an inter-disciplinary field by its mode of operation. Space is an important and expensive institutional and corporate asset. Employees are an expensive part of a business operation which is accentuated by the recent emphasis on office productivity as a major corporate issue.

Facility managers tend to be from other fields including architecture and interior design, real estate, office management, building maintenance, manufacturing plant design and property development or management. The development of a supporting body of knowledge through research efforts plus clearly identified abilities and skills pertinent to the field are beginning to emerge as the profession matures. There are few universities and colleges offering programs in facility management at both the graduate and undergraduate level.

Proposal

It is proposed to develop a graduate level facilities management program on the UW-Madison campus integrating Real Estate, Industrial Engineering plus Environment, Textiles and Design courses.

The proposed program will be at the master's level initially and possibly the PhD level later. Certification is an issue being broached now in facility management field and it may eventually have educational implications.

Objectives

Provide professional preparation for the facilities management field.

Provide an opportunity to pursue a specialized area within facilities management.

Develop research efforts related to facility management.

Justification

The graduate program here is an effective way to provide training for the field, building on a student's anticipated prior background, e.g., architecture, interior design, landscape architecture, or construction administration. The flexibility of graduate level programs at UW encourages interchange between schools, while allowing for a more intense focus within one of the cooperating schools. There is no additional budget, staff or facilities requirement anticipated at this time to support such a program here, though there may be the potential for industry support. Opportunities exist for interdisciplinary research between participating departments and it is possible that there will be interest in research support from companies that provide products or services for buildings.

Having the program as a graduate offering may give a competitive edge to our program for research support, and recruitment of mature students with a substantial background in a related area plus the potential for a PhD level program. This latter aspect may give us an advantage in preparing faculty for emerging educational programs in facilities management.

If a masters thesis is required, it should have a problem solving focus at providing a vigorous writing experience, and merging together the coursework with the thesis as a focus. It will also demonstrate application of specific abilities, provide a "portfolio" to show to employers, or a "case study" of specific areas of specialization. The number of students participating initially in the program will be small, probably 6-8 students, so there should not be an interference of this program with existing department enrollments. There is potential for growth of graduate programs in all the participating departments, including out-of-state students. Faculty who would have a primary responsibility in the program include:

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Robert Bartholomew, Commercial Interior Design
Michael Hunt, Environment/Behavior Building Evaluation
Bruce Kieffer, Computer-Aided Drafting and Design, Architectural
Technology

Industrial Engineering

Michael Smith, Human Factors, Office Systems
Olov Ostberg, Human Factors, Equipment Design

Real Estate

James Graaskamp, Appraisal, Finance and Feasibility Analysis

Creating specialties within facility management is a possibility here, utilizing hospital administration, educational administration, etc. course. This may provide the program with a unique advantage compared with other university facility management programs, which are largely oriented.

Participating Departments

Environment, Textiles and Design

Interdisciplinary program focused on the immediate human environment integrating aesthetic, historic, scientific and technological perspectives.

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A technical field with the emphasis on the role of people in the design and operation of systems.

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Multi-disciplinary study merging finance, public policy, physical design and regional science.

Program Development

If approved at the School level, one of the next steps will be to confer with IFMA (International Facility Management Assn) members concerning the curriculum content and structure. Other organizations such as BIFMA (Business and Institutional Furniture Manufacturers Assn), the Institute of Business Designers and Building Owners and Managers Intitute International may be helpful in offering advice concerning the program. A Steering Committee consisting of representatives from each cooperating department, will guide curriculum and promote interdisciplinary research plus reviewing student composition and program progress. An advisory group, comprised of facility managers, representatives from the merged fields will provide counsel concerning future program planning.

Another potential facet of the program is the offering of workshops or short courses or a more extensive program similar to the Banking Institute sponsored by the Business School each summer. This could culminate in the awarding of a certificate at the completion of the program. The Professional Engineering Department is already offering courses related to facilities management. Other steps include organizing an advisory group to provide guidance for the facilities management program plus a steering committee made up of representatives from the participating departments.

There has been an expression of interest in program participation by Construction Administration (Agricultural Engineering). Other potential UW-Madison participant members in this consortium program are Landscape Architecture and Preventive Medicine.

Revised March 1986

working draft
comments solicited
12/13/85
Mike Hunt
ETD

MASTER'S STUDY
IN
FACILITY MANAGEMENT
AT THE
UNIVERSITY OF WISCONSIN-MADISON

FORMAT:

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CONCENTRATIONS:

Three concentrations can be offered in the Facility Management specialty. The three concentrations represent different facility types: commercial - office and retail facilities; institutional - hospitals and educational facilities; and residential - housing developments for special populations, i.e. the elderly.

Concentrations are developed in a student's curriculum via the additional Facility Management related courses offered throughout the UW-Madison campus.

DEGREE REQUIREMENTS:

Specific degree requirements are determined by the graduate program in which the student is enrolled, i.e., I.E., Business, ETD.

FACILITY MANAGEMENT
CURRICULUM
AND
SPECIALTY OPTIONS

	Residential	Institutional Hospitals Educational Facilities	Commercial Office Facilities Retail Facilities
** Changes from Jan 21 meeting (Bartholomew, Hunt, Kieffer, Smith) ° Changes from conversation with J. Graaskamp			
<u>FACILITY MANAGEMENT CORE</u> (Required of all Facility Management students) Environment, Textiles and Design ETD 221/521* Environment and Behavior ETD 223/523* Architectural Technology Business ° Bus 550/709 Real Estate Process ° Bus 555 Commercial Property Development and Management Industrial Engineering Stat 312 Intro to Math. Statistics IE 549 Intro. to Human Factors	X X X X X X	X X X X X X	X X X X X X
<u>FACILITY MANAGEMENT RELATED COURSES</u> (Examples of courses to select) Environment, Textiles and Design ETD 630 Housing for Elderly ETD 501 CAD ETD 501 Advanced CAD ETD 501 Advanced Environment and Behavior ETD 501 Facility Planning Studio ETD 501 Behavioral Evaluation of Buildings	X X X X X X	X X X X X	X X X X X

	Residential	Institutional Hospitals Educational Facilities	Commercial Office Facilities Retail Facilities
Business			
Bus 532 Organization and Management Process			X
Bus 559 Construction Enterprise Management	X	X	X
Bus 554 Residential Property Development and Management	X		
Bus 555 Commercial Property Development and Management			X
° Bus 597 Urban Economics: Structure & Dynamics			
Bus 601 Health Care Cost Containment		X	
° Bus 757 Real Estate, Market Analysis			
° Bus 851 Real Estate Administration			
Industrial Engineering			
**IE 466 Theory of Design	X	X	X
**IE 315 Production Planning and Control	X	X	X
IE 476 Indus. Engr. Design	X	X	X
IE 610 Program Evaluation		X	X
IE 652 Sociotechnical Systems		X	X
**IE 653 Organization and Job Design			
**IE 691 Special topics (Human Factors and Office Automation)			
IE/PM 691 Special Topics (Ergonomics)			
IE 559 Special Seminar in Human Factors			
Other			
Prev Med 662 Intro to Health & Medical Systems		X	
Prev Med 726 Operations Analysis for Health Services Administration		X	
Consumer Science 371 Housing	X		
Educ 526 Educational Facilities		X	
Educ 702 Organization & Operation of American Educational Enterprise		X	
**Pol Sci 443 Intro. to Public Administration			
**Pol Sci 461 Organizational Theory and Practice			
ETD REQUIREMENTS			
Statistics - 3 credits	X	X	X
Thesis - 6 credits	X	X	X
Research Methods - 3 credits	X	X	X



SCHOOL OF FAMILY RESOURCES AND CONSUMER SCIENCES
University of Wisconsin-Madison, 1300 Linden Drive, Madison, WI 53706 608-262-2608

March 11, 1987

James R. McCue, PhD
President, BOMI International
P.O. Box 9709
1521 Ritchie Highway
Suite 3A
Arnold, MD 21012

Dear Mr. McCue:

I am pleased to learn of the BOMI plans to develop facilities management curriculum. Professor James Graaskamp, Chair of the Real Estate Department and one of the faculty members involved in the facility management emphasis here and myself will be very interested in meeting with you to discuss proposed BOMI Curriculum and our Facility Management Program here. In addition, I suspect other faculty members who are affiliated with the facility management emphasis here will also wish to participate in the meeting.

Is there a future date either this spring or next fall that you will be in the Madison area which will be desirable for a meeting here? I will look forward to your suggestions for possible dates and to meeting you.

Sincerely,

A handwritten signature in cursive script, likely belonging to Robert P. Bartholomew.

Robert P. Bartholomew
Professor
Environment, Textiles and Design

RPB/llm

cc: J. Graaskamp/
M. Hunt
B. Kieffer
M. Smith

March 19, 1986

To: Professor Robert Bartholomew

From: Professor James A. Graaskamp

Re: Development of Corporate Facilities Management

Following up on our discussion relative to development of a Corporate Facilities Management option, the Business School and Real Estate Department would be interested in cooperating and contributing.

Dean James Hickman has indicated that we could give priority to your majors for course enrollment in 705, 555, 851 and 554.

We have always had an interest in James Canestaro who is currently registered for a Ph.D. dissertation directed by Professor Graaskamp. He has taught for us in previous years and proven to be very effective.

Dean Hickman suggested that Business School financial support might be used to augment position funds available in Agricultural Engineering to replace Dick Stith. We would like to make a deal with Ag Engineering for 1/6 or 1/3 of Jim Canestaro's time if that would make it attractive for both Canestaros to relocate to Madison. Dean Hickman is aware of the need to find some funds in the Business School budget for such contingency but has not yet been able to firmly commit. One problem is that Jim Canestaro must remain an instructor until completing his dissertation since University policy prevents awarding a Ph.D. to someone on the tenure track.

Nevertheless we want to provide every encouragement for a joint effort at improving program alternatives for graduate students interested in Facilities Management.



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May 7, 1986

MEMO TO: Jim Graaskamp
Mike Hunt
Bruce Kieffer
Mike Smith

FROM: Bob Bartholomew 

RE: Facility Management Core and Publicity

Attached is the revised version of the Facility Management emphasis description, core and elective courses. Also attached is the summary of the April 29 meeting concerning the development of the facility management emphasis.

Please give me your reaction by Friday, May 16 as to whether there should be any changes in the attached materials. They will be the items you will likely be giving to your chairperson and/or dean to illustrate the formal linkage between our departments. Further, it may form the basis for developing publicity regarding the facility management arrangement we have developed here.

RPB/llm

Attachments

Background

Facility management is an emerging profession focused on the coordination of physical facilities, usually in a corporate structure. Facility management functions are frequently found in insurance, banking and manufacturing companies, usually positioned in the middle management level.

As such, facility management is included in real estate (building selection, leasing) decisions, space management, maintenance, security and interior design functions or departments. The facility manager may also integrate the services of engineering or architectural consultants into the functions of facilities management as well. It is an inter-disciplinary field by its mode of operation. Space is an important and expensive institutional and corporate asset. Employees are an expensive part of a business operation which is accentuated by the recent emphasis on office productivity as a major corporate issue.

Facility managers tend to be from other fields including architecture and interior design, real estate, office management, building maintenance, manufacturing plant design and property development or management. The development of a supporting body of knowledge through research efforts plus clearly identified abilities and skills pertinent to the field are beginning to emerge as the profession matures. There are few universities and colleges offering programs in facility management at both the graduate and undergraduate level.

Proposal

It is proposed to develop a graduate level facilities management program on the UW-Madison campus integrating Real Estate, Industrial Engineering plus Environment, Textiles and Design courses.

The proposed program will be at the master's level initially and possibly the PhD level later. Certification is an issue being broached now in facility management field and it may eventually have educational implications.

Objectives

Provide professional preparation for the facilities management field.

Provide an opportunity to pursue a specialized area within facilities management.

Develop research efforts related to facility management.

Justification

The graduate program here is an effective way to provide training for the field, building on a student's anticipated prior background, e.g., architecture, interior design, landscape architecture, or construction administration. The flexibility of graduate level programs at UW encourages interchange between schools, while allowing for a more intense focus within one of the cooperating schools. There is no additional budget, staff or facilities requirement anticipated at this time to support such a program here, though there may be the potential for industry support. Opportunities exist for interdisciplinary research between participating departments and it is possible that there will be interest in research support from companies that provide products or services for buildings.

Having the program as a graduate offering may give a competitive edge to our program for research support, and recruitment of mature students with a substantial background in a related area plus the potential for a PhD level program. This latter aspect may give us an advantage in preparing faculty for emerging educational programs in facilities management.

If a masters thesis is required, it should have a problem solving focus at providing a vigorous writing experience, and merging together the coursework with the thesis as a focus. It will also demonstrate application of specific abilities, provide a "portfolio" to show to employers, or a "case study" of specific areas of specialization. The number of students participating initially in the program will be small, probably 6-8 students, so there should not be an interference of this program with existing department enrollments. There is potential for growth of graduate programs in all the participating departments, including out-of-state students. Faculty who would have a primary responsibility in the program include:

Environment, Textiles and Design

Robert Bartholomew, Commercial Interior Design
Michael Hunt, Environment/Behavior Building Evaluation
Bruce Kieffer, Computer-Aided Drafting and Design, Architectural
Technology

Industrial Engineering

Michael Smith, Human Factors, Office Systems
Olov Ostberg, Human Factors, Equipment Design

Real Estate

James Graaskamp, Appraisal, Finance and Feasibility Analysis

Creating specialties within facility management is a possibility here, utilizing hospital administration, educational administration, etc. course. This may provide the program with a unique advantage compared with other university facility management programs, which are largely oriented.

Participating Departments

Environment, Textiles and Design

Interdisciplinary program focused on the immediate human environment integrating aesthetic, historic, scientific and technological perspectives.

Industrial Engineering

A technical field with the emphasis on the role of people in the design and operation of systems.

Real Estate

Multi-disciplinary study merging finance, public policy, physical design and regional science.

Program Development

If approved at the School level, one of the next steps will be to confer with IFMA (International Facility Management Assn) members concerning the curriculum content and structure. Other organizations such as BIFMA (Business and Institutional Furniture Manufacturers Assn), the Institute of Business Designers and Building Owners and Managers Intitute International may be helpful in offering advice concerning the program. A Steering Committee consisting of representatives from each cooperating department, will guide curriculum and promote interdisciplinary research plus reviewing student composition and program progress. An advisory group, comprised of facility managers, representatives from the merged fields will provide counsel concerning future program planning.

Another potential facet of the program is the offering of workshops or short courses or a more extensive program similar to the Banking Institute sponsored by the Business School each summer. This could culminate in the awarding of a certificate at the completion of the program. The Professional Engineering Department is already offering courses related to facilities management. Other steps include organizing an advisory group to provide guidance for the facilities management program plus a steering committee made up of representatives from the participating departments.

There has been an expression of interest in program participation by Construction Administration (Agricultural Engineering). Other potential UW-Madison participant members in this consortium program are Landscape Architecture and Preventive Medicine.

Revised March 1986

working draft
comments solicited
12/13/85
Mike Hunt
ETD

MASTER'S STUDY
IN
FACILITY MANAGEMENT
AT THE
UNIVERSITY OF WISCONSIN-MADISON

FORMAT:

The Facility Management specialty will be offered within one of three existing Master's programs: Industrial Engineering; Business (BS); and Environment, Textiles, and Design. All three graduate programs require 30 credits of coursework. A thesis is optional in I.E. and Business, but required in ETD.

CORE:

All students in the Facility Management specialty must complete a 6 course core of courses (2 courses in each of I.E., Business, and ETD). Students may receive credit toward the core requirements for coursework taken previously.

CONCENTRATIONS:

Three concentrations can be offered in the Facility Management specialty. The three concentrations represent different facility types: commercial - office and retail facilities; institutional - hospitals and educational facilities; and residential - housing developments for special populations, i.e. the elderly.

Concentrations are developed in a student's curriculum via the additional Facility Management related courses offered throughout the UW-Madison campus.

DEGREE REQUIREMENTS:

Specific degree requirements are determined by the graduate program in which the student is enrolled, i.e., I.E., Business, ETD.

FACILITY MANAGEMENT
CURRICULUM
AND
SPECIALTY OPTIONS

	Residential	Institutional Hospitals Educational Facilities	Commercial Office Facilities Retail Facilities
** Changes from Jan 21 meeting (Bartholomew, Hunt, Kieffer, Smith) ° Changes from conversation with J. Graaskamp			
<u>FACILITY MANAGEMENT CORE</u> (Required of all Facility Management students) Environment, Textiles and Design ETD 221/521* Environment and Behavior ETD 223/523* Architectural Technology Business ° Bus 550/709 Real Estate Process ° Bus 555 Commercial Property Development and Management Industrial Engineering Stat 312 Intro to Math. Statistics IE 549 Intro. to Human Factors	X X X X X X	X X X X X X	X X X X X X
<u>FACILITY MANAGEMENT RELATED COURSES</u> (Examples of courses to select) Environment, Textiles and Design ETD 630 Housing for Elderly ETD 501 CAD ETD 501 Advanced CAD ETD 501 Advanced Environment and Behavior ETD 501 Facility Planning Studio ETD 501 Behavioral Evaluation of Buildings	X X X X X X	X X X X X	X X X X X

	Residential	Institutional Hospitals Educational Facilities	Commercial Office Facilities Retail Facilities
Business			
Bus 532 Organization and Management Process			X
Bus 559 Construction Enterprise Management	X	X	X
Bus 554 Residential Property Development and Management	X		
Bus 555 Commercial Property Development and Management			X
° Bus 597 Urban Economics: Structure & Dynamics			
Bus 601 Health Care Cost Containment		X	
° Bus 757 Real Estate, Market Analysis			
° Bus 851 Real Estate Administration			
Industrial Engineering			
**IE 466 Theory of Design	X	X	X
**IE 315 Production Planning and Control	X	X	X
IE 476 Indus. Engr. Design	X	X	X
IE 610 Program Evaluation		X	X
IE 652 Sociotechnical Systems		X	X
**IE 653 Organization and Job Design			
**IE 691 Special topics (Human Factors and Office Automation)			
IE/PM 691 Special Topics (Ergonomics)			
IE 559 Special Seminar in Human Factors			
Other			
Prev Med 662 Intro to Health & Medical Systems		X	
Prev Med 726 Operations Analysis for Health Services Administration		X	
Consumer Science 371 Housing	X		
Educ 526 Educational Facilities		X	
Educ 702 Organization & Operation of American Educational Enterprise		X	
**Pol Sci 443 Intro. to Public Administration			
**Pol Sci 461 Organizational Theory and Practice			
ETD REQUIREMENTS			
Statistics - 3 credits	X	X	X
Thesis - 6 credits	X	X	X
Research Methods - 3 credits	X	X	X

Meeting April 29 in Room 318 Bob Bartholomew's office

Present: Bob Bartholomew, Mike Hunt, Bruce Kieffer, Mike Smith
(Jim Graaskamp was out of town)

Suggestion: Contact BIFMA to support the F.M. program.

F.M. offers each participating department a gain in expertise not available in all the departments separately. What will help research is a strong point in favor of the F.M. development. A consortium or package for research proposals can be a strong lever for funding. An architectural research consortium that Mike Hunt and Bruce Kieffer are checking into is one possibility.

It was agreed to contact Landscape Architecture, Preventive Medicine and Construction Administration to see if they wish to participate in the F.M. arrangement. At this point, those departments wouldn't be part of the F.M. core, but could have courses listed in the course elective listing.

It is envisioned that these departments will be "funnels" of students into the F.M. graduate program.

It was agreed to refer to the F.M. arrangement as an "emphasis" instead of a "program" to avoid the impression of expansion rather than the consolidation of separate departments.

It was also agreed to contact IFMA and BOMA concerning their assistance in developing our F.M. emphasis, particularly in helping to establish standards or a model for other graduate level F.M. programs.

RPB7-63

EMPHASIS IN FACILITY MANAGEMENT
AT THE MASTER'S LEVEL
AT
UNIVERSITY OF WISCONSIN-MADISON

FORMAT:

The Facility Management emphasis or specialty will be offered within one of three existing Master's programs: Industrial Engineering; Business (BS); and Environment, Textiles, and Design. All three graduate programs require 30 credits of coursework. A thesis is optional in I.E. and Business, but required in ETD.

CORE: All students in the Facility Management emphasis must complete a 6 course core of courses (2 courses in each of I.E., Business, and ETD). Students may receive credit toward the core requirements for coursework taken previously.

CONCENTRATIONS: Three concentrations can be offered in the Facility Management emphasis. The three concentrations represent different facility types: commercial - office and retail facilities; institutional - hospitals and educational facilities; and residential - housing developments for special populations, i.e. the elderly. Concentrations are developed in a student's curriculum via the additional Facility Management related courses offered throughout the UW-Madison campus.

DEGREE REQUIREMENTS: Specific degree requirements are determined by the graduate program in which the student is enrolled, i.e., I.E., Business, ETD.

FACILITY MANAGEMENT CURRICULUM AND SPECIALTY OPTIONS	Residential	Institutional Hospitals Educational Facilities	Commercial Office Facilities Retail Facilities
<u>FACILITY MANAGEMENT CORE</u> (Required of all Facility Management students) Environment, Textiles and Design ETD 221/521 Environment and Behavior ETD 223/323 Architectural Technology Business Bus 555 Commercial Property Development and Management Bus 550 Real Estate Process Industrial Engineering IE 349 Introduction to Human Factors IE 466 Theory of Design	X X X X X X	X X X X X X	X X X X X X
<u>FACILITY MANAGEMENT RELATED COURSES</u> (Examples of courses to select) Environment, Textiles and Design ETD 630 Housing for Elderly ETD 501 CAD ETD 501 Advanced CAD ETD 501 Advanced Environment and Behavior ETD 501 Facility Planning Studio ETD 501 Behavioral Evaluation of Buildings	X X X X X X	X X X X X	X X X X X

	Residential	Institutional Hospitals Educational Facilities	Commercial Office Facilities Retail Facilities
Business			
Bus 532 Organization and Management Process			X
Bus 559 Construction Enterprise Management	X	X	X
Bus 554 Residential Property Development and Management	X		
Bus 601 Health Care Cost Containment		X	
Bus 703 Organizational Behavior			X
Industrial Engineering			
IE 323 Operations Research	X	X	X
IE 324 Operations Research	X	X	X
IE 510 Facility Planning		X	X
IE 610 Program Evaluation		X	X
IE 652 Sociotechnical Systems		X	X
Other			
Prev Med 662 Intro to Health & Medical Systems		X	
Prev Med 726 Operations Analysis for Health Services Administration		X	
Consumer Science 371 Housing	X		
Educ 526 Educational Facilities		X	
Educ 702 Organization & Operation of American Educational Enterprise		X	
<u>ETD REQUIREMENTS</u>			
Statistics - 3 credits	X	X	X
Thesis - 6 credits	X	X	X
Research Methods - 3 credits	X	X	X
ID1-14			



SCHOOL OF FAMILY RESOURCES AND CONSUMER SCIENCES

University of Wisconsin-Madison, 1300 Linden Drive, Madison, WI 53706 608-262-2608

May 5, 1987

MEMO TO: Calvin Cramer
Jim Graaskamp
Jane Graff
Mike Hunt
Marty Kanarek
Bruce Kieffer
John Merrill
Don Schramm
Mike Smith

FROM: Bob Bartholomew *Bob*

Two representatives from BOMI (Building Owners and Managers Institute) will be here on Monday, May 11th to share views on facility management and possible ways of working together. This may include curriculum, continuing education, developing educational materials and possibly research projects. Their names are Ray Watkins and Dr. James McQue and they are arriving Sunday evening from Maryland.

Because of the facility management connection, arrangements have been made for a meeting involving faculty from the School of Business, College of Engineering plus Family Resources. This meeting has been set for 9:00 AM in Room 104 Business School. If any of you wish to meet with them at the 9:00 meeting or later in the day, please let me know.

The tentative schedule is as follows:

9:00 AM Conference with those who wish to attend (Room 104 Business School) to discuss curriculum, continuing education, development of educational materials and research.

Noon Conclusion of meeting. If anyone wishes to meet with them in the afternoon, I imagine that can be arranged; please let me know.

RPB/11m

cc: P. Mansfield
H. McCubbin

BOMI Agenda

The facility management program at UW-Madison

- its structure
- future expansion plans
- research potential
- continuing education

The interest in facility management by BOMI

- composition of its members
- continuing education
- preparation of educational materials

Future trends and major issues in Facilities Management from BOMI's perspective and that of the participating departments at UW-Madison

RPB5-99

June 24, 1987

TO: Real Estate Department Faculty and Staff

FROM: J.A. Graaskamp

RE: Concepts for revision of MS Degree in Real Estate Analysis
(note name change)

It may be desirable to restructure the MS Program to permit more emphasis on alternative career opportunity. At the same time, more rigorous prerequisites and a three semester program might reduce enrollments to manageable proportions.

A. Areas of emphasis would include:

1. Real Estate Appraisal
2. Real Estate Finance
3. Real Estate Development
4. Facilities Management

B. Prerequisite Real Estate courses for the MS Student:

1. Business 550/705
- *2. Business 552 - Real Estate Financial Markets and Institutions
3. Business 556 - Real Estate Appraisal
4. Business 557 - Urban Land Economics

C. Core courses common to all MS Majors:

- *1. Business 653 - Real Estate Site and Structural Analysis
2. Business 551 - Real Estate Financial Analysis
3. Business 857 - Business Problem Solving and Conflict Resolution
4. Business 652 - Real Estate and the Microcomputer
5. Business 757 - Real Estate Market Research

D. Advanced Courses in Real Estate Appraisal:

1. Business 856
2. Business 852
3. Nine (9) credits in Engineering and Surveying
4. Three (3) credit Seminar

E. Advanced Courses in Real Estate Finance:

1. Business 850 - Equity Investment
2. URPL - Public Finance of Infrastructure and Development Incentives
3. Six (6) credits of electives in Finance
4. One Course in Real Estate Law
5. Three (3) credit Seminar

F. Advanced Emphasis in Real Estate Development:

1. Business 554 - Residential Development
2. Business 555
3. Nine (9) credits of electives
4. Three (3) credit Seminar

G. Advanced Emphasis on Facilities Management:

1. Business 558 - Property Management
2. Business 851 - Facilities Management and Corporate Real Estate
3. Nine (9) credits of electives from related Arts and Industrial Engineering
4. Three (3) credit Seminar

*New Course

July 12, 1987

MEMORANDUM

TO: Prof. Bob Bartholomew
Prof. Mike Hunt
Prof. Bruce Kieffer
Prof. Mike Smith

FROM: Prof. James Graaskamp *JAG*

RE: Possible MS Curriculum With Facilities Management Option

The Real Estate faculty and Ph.D. students have initiated conversation on restructuring our MS to provide several options for emphasis in addition to a basic core of real estate analysis. The original document for discussion is enclosed. We are having a second departmental meeting on the 20th of July so that we have a definition of faculty needs and course restructuring for fall semester.

No indication as yet as to whether we will be funded for an additional assistant professor as a result of the new State budget.



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Meetings & Expositions

Esther B. Marshall, Program Director

Institute for Corporate Real Estate

Jana O'Neal, Director of Member Services

Martha G. Bagby, Executive Editor, Publications

October 15, 1987

Mr. James A. Graaskamp
Chairman/Real Estate &
Urban Land Economics
University of Wisconsin
Graduate School of Business
1155 Observatory Drive
Madison, WI 52706

Dear Chairman Graaskamp:

I am in receipt of your letter (10/6/87) indicating
that your research assistant, David Sharp, received my
personal copy of our CORPORATE REAL ESTATE HANDBOOK.

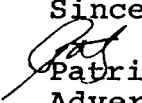
We are all very proud of this publication and I am
delighted that you appreciated the HANDBOOK too.

You indicated that the HANDBOOK will become part of
the required reading for your graduate program for
Facilities Management - Great !

Please consider my personal copy of the HANDBOOK as a
complimentary issue for yourself or your assistant.

Please feel free to contact me when you plan to
order the HANDBOOK and I will be happy to assist you
in any way I can or if you need any further
information, please feel free to call me at 305/683-
8111.

Sincerely,


Patricia M. O'Brien
Advertising Administrator

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