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Date: Wed, 19 Jun 2002 09:36:12 -0400
To: "Andrew J. Miller" <miller@umbc.edu>
From: "Louis F. Pitelka" <pitelka@al.umces.edu>
Subject: Re: CESU partnership letter
Cc: Ncastro@al.umces.edu

Andy,

The information you provided looks fine, except that you should add the names and areas of expertise of more faculty members if there are more whose areas of expertise could be relevant to the CESU.

You can move ahead as quickly as possible to have the letter and information formally sent to me.

Lou

At 06:38 PM 6/17/2002 -0400, you wrote:

Lou:

Attached is a draft that covers items 1 through 10. The list of names may change, I'm waiting for a few suggestions from a couple of our social science departments. The conversation we had clarified the whole issue about transfers of funds and the resulting text under items 8 and 9 reflects your comments in your last message. The rest of this is a bit long-winded but I thought it better to get everything in and then cut if necessary.

Once we are agreed on the language (which is also being run by our research office), then I will route this and get a letter signed to go with the itemized list. Let me know if you have any comments on what I've included here.

thanks,

Andy

Louis F. Pitelka, Director
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May 28, 2002

Dr. Louis Pitelka
Director, Appalachian Laboratory
University of Maryland Center for Environmental Science
301 Braddock Road
Frostburg, MD 21532-2307

Dear Dr. Pitelka:

Please accept this letter as a formal request from UMBC for inclusion in the Chesapeake Watershed Cooperative Ecosystem Studies Unit. Below you will find listed the items required as part of the application process.

[Note: the actual request will include a one-page letter from the President or from the Provost, together with a document that contains the rest of the information listed below.]

1) Contact person:

Dr. Andrew J. Miller, Associate Professor and Chair (until July 1)
Department of Geography & Environmental Systems
UMBC
1000 Hilltop Circle
Baltimore, MD 21250
410-455-3151 (phone)
410-455-1056 (fax)
miller@umbc.edu

2) Programs relevant to Federal land management, environmental and research agencies:

Centers and Research Institutes:

UMBC Center for Urban Environmental Research and Education (CUERE)

CUERE has initial funding from the Environmental Protection Agency and the Department of Housing and Urban Development. Research in progress also involves collaboration with the U.S. Geological Survey and U.S. Forest Service and with the NSF-funded Baltimore Ecosystem Study. The Center's mission is to promote an integrated understanding of the environmental, social and economic impacts of landscape transformation associated with urban and suburban development. CUERE conducts collaborative research; contributes to graduate and undergraduate education; and sponsors workshops and symposia. The Center provides a host environment for

forming problem-solving teams of scientists, policy researchers, and decision-makers required for addressing specific research issues.

Joint Center for Earth Systems Technology (JCET)

JCET operates under a cooperative agreement between the University of Maryland Baltimore County and the NASA Goddard Space Flight Center (GSFC). JCET meets the common interest of UMBC and GSFC to develop new technology for environmental remote sensing. Formed in 1995, JCET has grown to 25 Research Professors including four tenured faculty. JCET has an additional 12 Research Scientists and 3 Research Associates. JCET's research focuses on four themes: (i) atmospheric radiation, (ii) observations, (iii) clouds and precipitation and (iv) interdisciplinary studies. Each of these themes is led by a focus group.

A central requirement of JCET is the integration of the faculty into the academic life of the University. The faculty of JCET are expected to teach at least every other year and are active in advising students. JCET faculty are affiliated and teach in Physics, Geography, Mathematics/Statistics, and Computer Science and Electrical Engineering. JCET Faculty are leading the formation of UMBC's new Atmospheric Physics Program. Graduate students in JCET work both at the UMBC campus and on site at the Goddard Space Flight Center.

JCET faculty are active researchers as well. They are expected to function as Principal Investigators on funded research, to provide scientific leadership for the Center, and to provide service to the scientific community through peer review roles on journals, proposals, and research grants. JCET Faculty have been extremely successful in this regard and have generated over \$3.3 million in funding independently of their GSFC sponsors. During 1999, JCET faculty published over 114 peer reviewed journal publications.

Goddard Earth Sciences and Technology Center (GEST)

On May 11, 2000 the NASA Goddard Space Flight Center awarded the University of Maryland Baltimore County (UMBC) a Cooperative Agreement to create a center of excellence for the Earth Sciences in cooperation with the Earth Sciences Directorate at Goddard. Through this Cooperative Agreement UMBC and its partners--Howard University, Hampton University, Caelum Research Corporation and Northrop Grumman Corporation--are developing a collaborative research program responsive to the priorities of NASA's Earth Science Enterprise, providing continuity to Goddard's current collaborative research activities and planning growth in future years. This effort is collectively referred to as the Goddard Earth Science and Technology Center (GEST). The initial award funds GEST at the level of approximately \$15 million per year for five years.

Maryland Institute for Policy Analysis and Research (MIPAR)

The Maryland Institute for Policy Analysis and Research (MIPAR) provides a mechanism for linking the analytical resources of the University with public policy-makers in the region. MIPAR also serves as a University center for applied scholarly research on significant issues of public policy. MIPAR currently is working with CUERE on a State of the Region report for the Baltimore metropolitan area, including environmental as well as social and economic indicators of community condition.

Academic Programs

Faculty currently or prospectively affiliated with CUERE or with JCET are drawn from the following departments or programs: Economics, Geography & Environmental Systems, Civil & Environmental Engineering, Computer Science and Electrical Engineering, Mathematics and Statistics, Physics, Policy Sciences, Biological Sciences, Chemistry & Biochemistry, Sociology and Anthropology, and American Studies. The departments of Biological Sciences and Chemistry & Biochemistry grant B.A, B.S., M.S. and Ph.D. degrees (graduate student enrollments in 2001 were 67 and 58, respectively); Physics grants B.S., M.S. and Ph.D. degrees, including a program in Atmospheric Physics (32 graduate students enrolled in 2001). Computer Science and Electrical Engineering also grants B.S., M.S. and Ph.D. degrees. Mathematics and Statistics grants B.A. and B.S. degrees as well as M.S. and Ph.D. degrees in Applied Mathematics and Statistics (45 graduate students enrolled in 2001); the Statistics M.S. degree program includes a track in Environmental Statistics). Economics offers both B.A. and B.S. degrees and an M.A. in Economic Policy Analysis (11 graduate students in 2001), and Policy Sciences offers an M.P.S. and Ph.D. (151 graduate students in 2001). Faculty on campus are able to participate in the multi-campus University of Maryland MEES graduate program (6 enrolled in 2001). Geography & Environmental Systems offers B.A. and B.S. degrees in Geography and in Environmental Science and Environmental Studies. The Civil & Environmental Engineering graduate program is currently under development and there is also an ongoing effort to develop a proposal for an interdisciplinary graduate program involving collaboration in areas of environmental science, policy and engineering.

3) List and brief description of faculty with relevant interests:

Royce Hanson, Policy Sciences – urban sprawl, urban/environmental/legal policy
Timothy Brennan, Policy Sciences – antitrust and regulation, communications policy, law and economics, philosophy of social science, energy and electric power regulation
Virginia McConnell, Economics – economic analysis of development patterns, traffic and air quality
Brian Bradley, Biological Sciences – molecular biology/genetics, ecology, environmental/marine biology
Carl Weber, Biological Sciences – stream ecology

William LaCourse, Chemistry & Biochemistry – electrochemical detection in high performance liquid chromatography (HPLC); sensors for detection of environmental contaminants in soil

Robert Amey, Geography & Environmental Systems – environmental conflict, hazardous waste management, regional planning

Andrew Miller, Geography & Environmental Systems – flood hydrology, fluvial geomorphology, human impacts on stream channels and watershed hydrology

Eugene Parker, Geography & Environmental Systems – environmental geography, resource conservation, history of public land management

Erle Ellis, Geography & Environmental Systems - biogeochemistry, landscape ecology, managed ecosystems

Karin Readel, Geography & Environmental Systems – water quality, inquiry-based science education, economic botany and plant secondary metabolism

Youngsinn Sohn, Geography & Environmental Systems – GIS, digital image processing, landscape ecology, environmental history

Raymond Hoff, Physics and Director, JCET - optical properties of aerosols and gases in the atmosphere; pathways and fates of toxic chemicals in the environment

Mark Bulmer, JCET – mass movement dynamics, volcanology

Fred Huemrich, JCET – remote sensing, light interactions with vegetation, modeling

Forrest Hall, JCET – remote sensing, carbon cycle

Nagaraj Neerchal, Mathematics & Statistics – time series analysis, overdispersion models, environmental statistics, data analysis

Jin-Ping Gwo, Civil & Environmental Engineering – reactive flow and transport, computational hydrology and hydrogeology, subsurface characterization and remediation

Brian Reed, Civil & Environmental Engineering – physicochemical processes in water treatment, adsorption and remediation of organic and inorganic contaminants, environmental chemistry (appointment begins 8/02)

Upal Ghosh, Civil & Environmental Engineering - contaminated sediments, microscale characterization of surficial processes, and remediation (appointment begins 1/03)

4) Relevant facilities and equipment

CUERE operates a GIS lab with a server and data archive, plotters, scanners, and workstations, and shares space with the Baltimore Ecosystem Study, including a planned new wet-lab facility for sample processing. We anticipate that some of the samples to be processed will be collected as part of studies undertaken in partnership with USGS, USFS, and NRCS. Discussions are underway for collaboration with Civil & Environmental Engineering in equipping new analytical laboratories for measurement of both inorganic and organic constituents in water, soil and biological media. The campus has a 50-acre Conservation and Environmental Research Area, set aside as a teaching landscape, and plans are under discussion for installation of permanent field monitoring equipment for use in undergraduate and graduate education.

The Department of Geography & Environmental Systems has teaching labs for use in GIS and cartography, and construction of a new environmental science teaching lab will begin this summer; all of these facilities also support undergraduate research activities in collaboration with faculty projects. Development of the new degree programs will include extensive use of existing field research sites for both research and educational purposes, in collaboration with the Baltimore Ecosystem Study and CUERE.

The Physics building has a roof-mounted atmospheric lidar, which is used for profiles of atmospheric composition (including contaminants), and the Atmospheric Spectroscopy group in the Physics department also makes extensive use of measurements utilizing high spectral resolution measures from space, high altitude aircraft, and tall mountains. Their work focuses on understanding atmospheric behavior important for global climate change and weather forecasting.

State-of-the art laboratory facilities for analytical chemistry and sensor development are available in the Department of Chemistry and Biochemistry, and the recently-renovated Biological Sciences building has laboratory facilities for use in molecular biology, including DNA sequencing and proteomics – the latter with a focus on protein expression signatures indicating organismal response to environmental stressors.

5) Relevant experience in research and technical assistance education

Several educational and outreach initiatives related to environment and natural resources are already in progress and others are being planned or proposed for external funding. (i) A collaborative project with the EPA Mid-Atlantic Integrated Assessment team involves development and publication of a series of case studies documenting best practices in environmental management. The case studies are conducted as part of a team-taught seminar, led by UMBC faculty and EPA staff for graduate students and senior undergraduate students with cross-listing in Policy Sciences and in Geography & Environmental Systems. (ii) A series of summer short courses on various aspects of urban ecosystems and environmental analysis have been developed by Baltimore Ecosystem Study researchers, and these are offered through UMBC to secondary school teachers with the possibility of credit toward a graduate certificate in environmental education. (iii) UMBC's Education Department has a major federal grant in support of the Urban Teacher Education project, with the goal of creating a cadre of teachers who will gain graduate credit toward a Master's degree and who will make a commitment to work in schools that have a large contingent of at-risk students in high-poverty areas of Baltimore City. Several modules that are currently taught by UMBC faculty incorporate themes related to environment and resources, and there are additional opportunities for collaboration through CUERE to develop course modules based on some of the additional projects listed below. (iv) CUERE is developing a project on the Natural and Social History of the Baltimore Region. One of the objectives of the project is to provide a set of educational

materials based on and extending the project for use in middle and high school courses in environmental and social sciences. (v) Another CUERE project involves preparation of a triennial report on the state of the Baltimore region. The first objective is to track changes in environmental conditions as they relate to changes in the economy, demography, landscape, technology, and public policy. The data collected for this project will be shared with federal agencies and policymakers in the region and may also be used in developing educational materials (including materials posted to a web site) suitable for use in secondary school or college classes.

6) Current formal and informal relationships with Federal land management, environmental and research agencies

We currently have collaborative arrangements, including grants, contracts and memoranda of understanding, with the Environmental Protection Agency (and the MAIA team within EPA), the department of Housing and Urban Development, the U.S. Forest Service, the U.S. Geological Survey, and the Natural Resources Conservation Service. This includes a federal consortium known as "Mid-Atlantic Federal Partners for the Environment," with a strong focus on urban sprawl and its consequences. We would like to bring several of these collaborations (most immediately with the U.S. Forest Service and the U.S. Geological Survey) under the umbrella of CESU.

7) Services provided to federal agencies and federal employees

We anticipate broadening our collaboration with Federal partners on grant proposals and on workshops and roundtable discussions. Federal employees can be given adjunct faculty status, access to library and computer systems, and working space (where adequate space is available). Student interns will be encouraged to work on projects with federal agencies and federal employees. We are in the process of developing a robust set of working relationships with federal agencies and partnership in CESU will enhance these relationships.

8) Overhead rate

Overhead and indirect costs will be charged at a rate not to exceed 15% of total direct costs, with the difference between UMBC's established rates and 15% contributed as part of the cooperative effort.

9) Administrative support

UMBC will not charge overhead on subcontracts to other CESU partners for projects in which UMBC also is involved.

10) Other relevant information

Faculty and staff time involved in collaborative planning efforts with CESU partners to generate new projects, curriculum or information exchanges with the general public will be considered an in-kind contribution to support our mutual goals.