



October 13, 2004

Nancy Mathews Castro
CW CESU Program Coordinator
Appalachian Laboratory UMCES
301 Braddock Road
Frostburg, MD 21532

Re: JMU's Proposal to the Chesapeake Watershed Cooperative Ecosystem Studies Unit (CESU)

Dear Ms. Castro:

James Madison University hereby requests admission as a Partner Institution to the Chesapeake Watershed (CW) CESU. We are pleased to express James Madison University's acceptance and complete support for participation in the CW CESU. We have reviewed the general CESU descriptive materials and CW CESU Cooperative and Joint Venture Agreement, and agree to abide by all of the responsibilities and expectations of partner institutions.

James Madison University (JMU) has a great deal to offer the CW CESU. As a general university of over 15,000 students, we have strong departments in all major disciplines, especially including both science and social science. We place a high value on student research and experiential learning, and have strong relationships with several federal agencies that help our faculty and students apply their knowledge. There are some particular attributes of JMU which I think make it especially worthy of consideration.

Shenandoah River Valley

JMU is located in the heart of the Shenandoah River Valley, approximately 10 miles from the head of the south fork of the Shenandoah River (where it is formed by the confluence of the North, Middle, and South Rivers near Port Republic, Virginia). As a major contributor to the Chesapeake watershed, our biogeographical region is critical to the health of the Chesapeake. We have also integrated the Shenandoah watershed into our curricula, scholarship, and service over the years, developing important relationships with various state and local agencies, non-governmental organizations, and landowners. These relationships have proven to be very helpful in our work for the federal government. We would be, I believe, the only CW CESU member located within the Shenandoah watershed, and with such extensive knowledge, experience and connections within this critical contributor to the Chesapeake watershed. Opportunities for other CESU members to conduct work here would be significant.

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Division of
ACADEMIC AFFAIRS

Broad Environmental Focus

As indicated by membership in our Institute for Environment (described below), nearly 10% of JMU's faculty have a professional interest in the environment. This group is distributed across disciplines, including natural science, social science, business, and the humanities. Environmental issues are recognized by our administration as central to JMU's identity.

Conservation Law Enforcement Experience and Expertise

We have faculty with direct experience in conservation law enforcement, something which I believe is relatively uncommon. This has allowed us to carry out projects for the federal government (notably NPS and the Federal Law Enforcement Training Center) which would be less accessible to others. It has also allowed us to contribute to the work of these agencies in a more powerful way because we understand the peculiar context of their work. This has recently been enhanced by the creation of the Institute for Conservation Law Enforcement (ICLE), hosted at JMU, at the express request of the highest levels of law enforcement in the National Park Service. This Institute focuses on research in an area which we believe is not being conducted elsewhere.

Prominence in Environmental Information Systems

We have developed a significant presence in environmental information systems. While we do have an active GIS program (as do other members of the CESU), our EIS program extends well beyond GIS to include such technologies as decision support systems, relational data management, intelligent systems, multimedia systems, and simulation techniques. We offer a minor in EIS, and host and run the National Park Service's *Synthesis Support Center*, which supports park units nationwide in their data management and multimedia development needs.

Ten Elements

Our response to the ten elements in the original "Program Announcement and Request for Proposals for Establishing a Third Round of Cooperative Ecosystem Studies Units" (15 April 2000) is as follows.

1) *a contact person, along with their title, address, phone number, fax and e-mail address:*

Dr. Steven P. Frysinger
Professor, Integrated Science and Technology Department
Director, Environmental Management Program
Director, Environmental Information Systems Program
Director, Center for Environment, Health and Safety
James Madison University
College of Integrated Science and Technology
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701 Carrier Drive - MSC 4102
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2) *a list of programs relevant to Federal land management, environmental and research agencies, including the degrees offered and number of graduate students in each program:*

James Madison University has five colleges, and most of these have directly participated in research activities involving Federal land management agencies:

- College of Integrated Science and Technology
- College of Science and Mathematics
- College of Arts and Letters
- College of Education
- College of Business

These colleges represent JMU's 15,000+ students. While we do have several graduate programs, we are primarily an undergraduate institution and routinely engage our undergraduate students in sponsored research with great effect. JMU programs which have been or may be involved with Federal land management agencies include:

- American Studies - minor
- Anthropology - BA/BS
- Biology - BS/MS
- Chemistry - BS
- Economics (Environmental and Natural Resource Economics) - BS
- Environmental Information Systems - minor
- Environmental Management - minor (BS proposed)
- Environmental Studies - minor
- Geographic Science - BA/BS
- Geology - BS
- History - BA
- Integrated Science and Technology (Environment and Energy) - BS/MS
- Sociology - BA/BS

Some other relevant JMU programs are delineated below.

Center for Environment, Health and Safety

The Center for Environment, Health and Safety acts as a clearinghouse resource for businesses and agencies in the Shenandoah Valley, concentrating on both compliance and beyond-compliance techniques for industrial environmental management in the region.

Environmental Education Center

The Environmental Education Center (EEC) is headquartered on the 30-acre JMU Farm, which has 1000 feet of frontage on the North River, less than a mile upstream of the start of the Shenandoah River. The EEC is being developed as a community center intended to educate farmers and non-farmers alike about the environmental issues facing the region. It has also proved to be an outstanding location for conducting research on agricultural impacts on surface water quality and riparian restoration.

Environmental Information Systems program

The Environmental Information Systems (EIS) program offers a minor in EIS to students combining environmental science and information science. Related projects include environmental management databases, decision support systems, and geographic information systems for environmental analysis and management.

Environmental Management program

The Environmental Management program offers a minor (with a major planned) allowing students to learn and apply environmental science to practical problems. Students may concentrate in either Natural Resources or Industrial Systems.

Fuels Diversification Program (formerly the Alternative Fuel Vehicles program)

The Fuels Diversification Program conducts research and advocacy surrounding the use of alternatives to petroleum for transportation and heating. They are a partner in the University-National Park Energy Partnership Program (UNPEPP), working in such areas as the use of fuel cells for remote power, biodiesel for tour buses, and hybrid vehicles for park staff. This program has recently achieved the conversion of the JMU vehicle fleet to a biodiesel blend, as well as the beginning of the conversion of the Harrisonburg Transportation buses to a similar blend.

Geographic Science program

The Geographic Science program offers both a major and a minor in Geography, with concentrations in Environmental Studies, Global Studies, and Applied GIS. The Environmental Studies concentration emphasizes the spatial interaction between humans and the natural environment, including policies affecting the interface.

Institute for Environment

The Institute for Environment (IFE) is a collegial association of environmental faculty from JMU, crossing departmental, college, and academic program boundaries. The IFE promotes synergism and faculty/student collaboration in environmental research, projects, and degree programs, helping to ensure that JMU is identified as an institution with a world-class environmental presence which is both coordinated and diverse. The IFE membership consists of over 60 JMU faculty with active teaching and/or research programs pertaining to the environment.

Integrated Science and Technology program

The Integrated Science and Technology (ISAT) program is a unique program in applied, interdisciplinary science. Among its seven concentrations, two will be of most interest to the CW CESU: Environment and Energy. This program has produced hundreds of graduates who have gone on to careers in natural and industrial environmental management, alternative energy implementation, and environmental policy.

Pure Water 2000 Forum

The Pure Water 2000 Forum was formed by a group of interested regional businesses and agencies to promote protection of the Shenandoah Valley's surface water resources. Their primary approach is educational, and they sponsor a variety of informational and educational projects. They are hosted by JMU and led by a JMU faculty member.

Synthesis Support Center

The Synthesis Support Center was created at JMU by the National Park Service to support Parks as they set up and use the *Synthesis* data management software. Among other applications, the Center has been involved with conservation law enforcement data management and general management planning. The Center is now branching into support for the *Views of the National Parks* project, wherein multimedia computer technology is used to tell each Park's story in an individualized and engaging interpretative style.

3) *a list and brief description of faculty with expertise in disciplines and interdisciplinary work relevant to Federal land management, environmental and research agencies (do not submit vitae):*

A complete listing of such faculty is impractical, because this list would be so large. For example, our Institute for Environment (IFE) is a collegial association of JMU faculty with professional interests and activities relating to the environment, and the IFE roster numbers over 60 faculty and staff (see www.jmu.edu/InstituteForEnvironment/). The following subset will serve to illustrate the breadth of our faculty resource:

Dr. Robert Kolvoord

Dr. Kolvoord has an active partnership with the Shenandoah National Park (SNP) Education staff and they've been partners in winning \$100K+ of state grants over the last three years. Briefly, their work has focused on connecting field study in SNP with classroom technology, such as GIS and GPS, to help extend student's understanding of earth science concepts. The staff at SNP have developed a curriculum guide for park visits called "Exploring Earth Science in Shenandoah National Park" and we've been working to develop supporting GIS-based materials. The key to this effort has been involving local teachers and supporting them in their use of SNP and of technology.

Drs. Carole Nash and Clarence Geier

Drs. Nash and Geier, in the Department of Sociology and Anthropology currently have two cooperative agreements with the National Park Service, one w/Shenandoah National Park and one with Spotsylvania/Fredericksburg/Chancellorsville. For Shenandoah, they have received \$127,000 for work at Big Meadows and ca. \$20,000 for other projects.

Dr. Reid Harris

Dr. Harris has a National Science Foundation (\$266,000, 2/1/01-2/1/04) to conduct research in population dynamics. The factors that affect growth and decline of populations in nature remain elusive, in part because the importance of social interactions has been underestimated. The purpose of this study is to investigate joint nesting behavior in a salamander species and relate that behavior to changes in population size over time.

Dr. Tom Benzing

While most of his sponsors are local governments, Dr. Benzing is a certified Nutrient Management Planner with extensive experience in watershed delineation and protection.

Dr. Jack Gentile

Dr. Gentile has had many and various projects with the federal government, such as:

- National Park Service, Fredericksburg Area Battlefields, 2001-Present, GPS Mapping of Historic Civil War Sites, \$30,000.
- National Park Service, Shenandoah National Park, 1998-1999, GPS and Inventory Appalachian Trail, \$10,000.00.
- National Park Service, Shenandoah National Park, 1997-1998, GPS and Inventory All Trails in SNP, \$64,000.00.
- National Park Service, Shenandoah National Park, 1997, GPS Training Course, \$5,000.00.
- National Park Service, Shenandoah National Park, 1997, Roads Inventory and GPS Mapping, \$9,500.00.
- U.S. Forest Service Challenge Grants, Wilderness Research in Virginia. Seven grants between 1989-1993, \$91,000.00.

Dr. Steve Frysinger

Dr. Frysinger has also had a wide variety of projects with the federal government, mostly with the National Park Service, with total funding exceeding \$250,000. These include:

- Development of a multimedia computer game (“Gaia’s Guard”) designed to help middle school students understand natural resource management as practiced in the Parks;
- Creation of a national center to support Parks in their use of the Synthesis data management system;
- Participation in a three-park project focusing on eco-region management of medicinal plant poaching (Shenandoah National Park, Blue Ridge Parkway, and Great Smokies National Park);
- Digitization and structuring of documents and data for a variety of Parks using Synthesis, including Petersburg, Fort Sumter, Shenandoah, New River Gorge, and Lava Beds;
- Investigation of intelligence gathering methods by uniformed law enforcement rangers;
- Information systems support of the Federal Law Enforcement Training Center;
- Development of the Institute for Conservation Law Enforcement.

All of these projects involve students and faculty working together in professional teams.

Dr. Gene Tucker

Dr. Tucker is a retired US EPA researcher and an expert in air quality issues. He has also served as an officer in the US Public Health Service.

4) *a list and brief description of relevant facilities and equipment:*

Biology, Chemistry, Environmental Science, Geology, and Physics laboratories

JMU has a full range of teaching and research laboratories, equipped with state-of-the-art analytical instrumentation.

Environmental Education Center

JMU owns a 30-acre farm with 1000’ of river frontage on the North River, immediately upstream of the confluence forming the South Fork of the Shenandoah River. This property, along with it’s farm house and pavilion, is being developed and used as an environmental education center focused on student and community education about regional environmental issues, with special emphasis on land use and water quality interactions.

Mobile Environmental Laboratory

JMU’s Department of Integrated Science and Technology has constructed and deploys a Mobile Environmental Laboratory. Based on a four-wheel drive truck platform, this vehicle allows sophisticated sampling and analysis technology to be brought into the field by students and researchers.

5) *a list and brief description of relevant experience in research, technical assistance education linked to CESU Network objectives (such as previous grants, special projects awards and so forth):*

In the past five years (since 1 July 1998) JMU has secured significant funding from a variety of Federal agencies for environmental or ecosystem related projects.

National Park Service	\$1,406,014
Shenandoah National Park	\$256,155
US Forest Service	\$367,615
US Environmental Protection Agency	\$16,049
Federal Geographics Data Committee	\$38,965

NASA (environmental projects only)	\$191,800
NSF (environmental projects only)	\$574,357
US Department of Agriculture	\$415,371
US Department of Energy	\$381,096
US Department of Interior	\$21,750
US Fish and Wildlife Service	\$3,000
US Geological Survey	\$9,000
US Army Corps of Engineers	\$3,503
Total:	\$3,684,675

6) *a list and description of current of current formal and informal relationships with Federal land management, environmental and research agencies:*

A few of the agreements in which we participate are described briefly below.

Institute for Conservation Law Enforcement

At the suggestion of the NPS law enforcement organization, JMU has recently established a collaborative Institute for Conservation Law Enforcement to conduct applied research of special relevance and value to natural and cultural law enforcement officials within Federal agencies.

NPS Northeast Region Cooperative Agreement

Most of our other projects for the NPS are conducted under a cooperative agreement with Dr. John Karish, Chief Scientist of the NPS Northeast Region.

Shenandoah National Park

We have an on-going cooperative agreement with Shenandoah National Park through which various projects, with various faculty PIs, have been conducted. Our proximity to the park makes us a natural resource for SHEN.

Synthesis Support Center (NPS)

JMU has set up and operates the Synthesis Support Center at the request of and with funding from the Natural Resources Information Division (NRID). This center assists National Park Units with their data management needs, including the use of the Synthesis Information Management System and development of Views of the National Parks modules.

USFS Aquatic Ecologist (Eastern US)

JMU is the host university to Dr. Mark Hudy, US Forest Service Aquatic Ecologist for the eastern United States. Besides providing physical and organizational resources to Dr. Hudy, we have a cooperative agreement that facilitates the conduct of projects with the USFS.

7) *a description of services to be provided to the participating Federal agencies and Federal employee(s) by the university:*

James Madison University is prepared to continue offering world class research, development, and service to the Federal government through this agreement. The effort and ingenuity of JMU faculty and students will be made available to the various agencies with the express goal of achieving the mission of the CW CESU.

8) *a description of the actual assessed overhead rate (not to exceed 15%) to be charged and cost items to which the rate is applicable for activities conducted through the CESU, including research, technical assistance and educational services:*

The University fully acknowledges and accepts all CESU guidelines and will limit its indirect cost recoveries to 15% of the total modified direct costs.

- 9) *a description of administrative support, including the ability (and administrative charges, if any) to transfer, subcontract and receive funds between CESU partners and through the national CESU Network:*

JMU's Office of Sponsored Programs (OSP) will make its full resources available to facilitate the arrangement of agreements and contracts and the movement of funds within the CESU network.

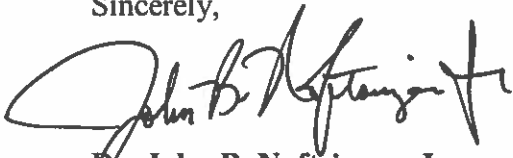
- 10) *staff, faculty time, educational services and other commitments the university wishes to offer the CESU, including the amount, kind, dollar value and duration of assistantships, work-study funds, clerical support, and so forth:*

JMU faculty engaged in CESU projects will be fully supported by administrative staff. They will have full access to university research resources (such as libraries and laboratories), and will be permitted to recruit undergraduate and graduate research assistants as necessary to execute projects carefully and efficiently.

Conclusion

James Madison University would be proud to be a member of such an important body as the Chesapeake Watershed Cooperative Ecosystem Studies Unit and looks forward to productive cooperation with the federal agencies and partners involved in the CESU.

Sincerely,



Dr. John B. Noftsinger, Jr.
Associate Vice President of Academic Affairs
for Research and Public Service