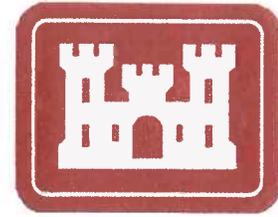




Department of Civil and  
Environmental Engineering



## MEMORANDUM OF UNDERSTANDING

between

Colorado State University (CSU)/International School for Water Resources (ISWR), Civil and  
Environmental Engineering Department (CEE),

and

The Institute for Water Resource (IWR), U.S. Army Corps of Engineers

WHEREAS, the parties signatory recognize the promotion of mutual interests in working together in providing partnership with national and international organizations in fostering the improvement of IWRM practices and in encouraging water systems of more economical, efficient, socially and environmentally sound water resources development and management;

Now, THEREFORE the parties simultaneously declare the following framework, terms, and conditions for partnership:

### ARTICLE I: The Parties

**1. The International School for Water Resources.** Most global water issues, particularly of the large part of the semi-arid developing world, reflect those of Colorado – rapid development, limited supplies, competition between human and natural needs, transboundary disputes, and the search for workable paradigms for water management. In Colorado these issues have unfolded for over a century, and the state has depended on CSU for knowledge-based solutions delivered through the Land Grant model. Colorado and CSU have been in the forefront of developing practical solutions to these rapidly emerging problems, and in the training of countless engineers and planners from the developing world.

Key issues throughout the research and teaching in the University revolve around sustainability, water scarcity, conflict and vulnerability. The solution requires integrated water resources management (IWRM) in an uncertain future while maintaining the environmental quality that underlies economic prosperity. Sustainability requires balanced water supplies for humans and the environment, protection of water sources, and resolution of water conflicts at scales ranging from local to global. Water stress and scarcity require new technologies and institutions for water sharing and efficiency, while conflict is best mitigated by knowledge of shared benefits. Vulnerability requires improved security against natural and human caused threats. Colorado State University currently has the institutional capacity and the faculty expertise for a world-class presence in integrated water resources management, especially in the context of a broader framework of cooperating institutions.

The target audiences are undergraduate and graduate students at CSU, national and international water professionals needing additional education to keep their skills current and water user organizations needing new skills to address future water issues.

The international water program strategy includes:

- Providing a visionary leadership structure to support faculty and department collaborations and innovative programming,
- Building disciplinary depth in concert with multidisciplinary breadth to understand focused problems and communicate across disciplines.
- Creating an innovative educational program and enhanced effectiveness of outreach programs
- Forming internal and external partnerships with international and federal agencies, and the private sector
- Facilitating research and education that influences both the scientific understanding of the resources and how they are managed, and the decision-making processes used to address competing societal values.
- Encouraging faculty hires across programs/departments to meet critical programmatic needs
- Educating students to effectively address global water resource issues of the 21<sup>st</sup> Century
- Support existing faculty led activities and help facilitate greater entrepreneurship by CSU water faculty
- Creating mechanisms to meet the educational and professional needs of international water professionals, scholars and alumni.

CSU employs over 100 faculty in 22 separate departments that apply their disciplines to water and water-related topics. CSU 'water' faculty continue to work at the leading edge of water management science and technology, including specific topics as irrigation water conservation, institutional arrangements for sustainable water management, water quality management, sociology of water utilization, transboundary water management, salinity mitigation practices, decision support systems, and defining water requirements for healthy ecosystem maintenance. CSU provides one of the most, if not the most, water 'rich' research and educational settings available anywhere in the world. The faculty teach over 150 water-related courses at the senior and graduate levels. In addition faculty present water-related workshops and training courses both in the USA and worldwide. Fort Collins and CSU are the home to six major Federal natural resource research laboratories including the USDA-ARS Water Management Unit.

The CSU/CEE Department has a long list of alumni who excel in water resources planning and management all over the planet. Various ministers of the water resources in Europe, Africa, and Asia are graduates of the water resources program. Similarly, numerous Ph.D alumni teach and conduct research in various Universities, especially in Southeast Asia, the Middle East, Latin America, Africa and all over the European Union. Strong ties also exist with private companies and special international organizations. Special seminars, the annual Hydrology Days meetings, continuous contacts with alumni, and bilateral exchanges strengthen collaboration with an emphasis on combining policies and IWRM.

**2. The Institute for Water Resources** of the U.S. Army Corps of Engineers (being hereinafter referred to as IWR) supports the U.S Army Corps of Engineers Civil Works mission by developing, through applied research and development programs, policy analysis and applying new water resources planning, policies, and regulations; along with hydrologic engineering methods, technical manuals and analytical procedures; and managing national data bases and statistical systems.

*The mission of IWR is to develop and promote 'best management practices' for integrated water resources management, both within the Corps of Engineers, and in concert with other federal, state and local agencies, and to collaborate with international aid and development institutions and scientific organizations to create a uniform, consistent, understandable and comprehensive approach to IWRM.*

IWR directly serves the contemporary and evolving water management needs of the domestic and international programs of the U.S. Army Corps of Engineers, as well those of other USG agencies, such as the USAID and the Millenium Challenge Corporation. Through its numerous practical applications in planning, operating, regulating and maintaining a broad array of water management infrastructure, IWR has been in the forefront of the development of new methods for risk and uncertainty analysis, climate change impact analysis, environmental benefits assessment, economic analysis, ecosystem restoration techniques, conflict resolution, sustainable development and IWRM.

IWR has also been closely working with numerous international organisations, such as the World Water Council, UN Decade for Water, UNESCO's various programs such as IHP, HELP, IFI, WWAP and an active engagement with UNESCO's Centers that are in the forefront of training and capacity-building. IWR has developed a multi-university Master's degree program for mid-level career professionals that can serve as a platform for long-term training for professionals from developing countries.

## ARTICLE II. Areas of Collaboration and Cooperation

CSU and IWR are especially interested in pursuing opportunities in the following general areas of common interest and commitment:

1. Enhancing procedures and methods for IWRM
2. Adaptation to global climate changes and their impacts on water resources
3. Methods for understanding and managing extreme hydrological events and related natural hazards and disaster preparedness
4. Infrastructure development and water security
5. MCDA and implementation of DSS in the context of risk analysis and vulnerability assessment
6. Water policy and institutional aspects of watershed management
7. Transboundary water resources and questions of hydrodiplomacy
8. Capacity building and joint training and education in order to enhance competency in the various themes of the partnership
9. Consensus building, conflict management, and alternative dispute resolution
10. Aridity, drought and desertification as special planning and management areas

11. Dependable and safe drinking water and irrigation as well as expansion of water supplies through efficiency, reuse and better management
12. Surface and groundwater, conjunctive water use and related challenges of water quality

ARTICLE III

Each party will designate a Principal Representative to serve as the primary point of contact between all parties and on all matters under the Partnership Document.

ARTICLE IV

Any cooperative activity undertaken between the parties shall only be done under the authority of the laws, guidelines, regulations, and policies governing each party individually.

ARTICLE V

This partnership document shall become effective when signed by both Colorado State University – Civil and Environmental Engineering Department/International School for Water Resources and USACE – IWR.

  
ROBERT A PIETROWSKY  
Director, IWR

7 Jan 2008 DATE

  
LUIS A GARCIA  
Chair, CEE/CSU

January 7, 2008 DATE