USCID NEWSLETTER

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The U.S. society for irrigation and drainage professionals

Vancouver SCADA Conference a Success

by Conference Chairman Charles M. Burt, California Polytechnic State University, San Luis Obispo, California

SCADA and Related Technologies for Irrigation District Modernization was the theme of a USCID Conference, held October 26-29, in Vancouver, Washington. The emphasis was on realistic applications of SCADA technologies, and nearly 40 oral and poster presentations and 20 exhibits were featured. It was a very dynamic event, with the active participation of the audience, exhibitors and speakers. An excellent mix of consultants, manufacturers, government agencies, irrigation districts, universities and

(continued on page 25)

Boise, Sacramento

Conferences Planned for 2006, 2007

USCID Members and other water resources professionals should look forward to two USCID Conferences. A Call for Papers was recently issued for the 2006 Conference, ***Ground Water and Surface Water Under Stress: Competition, Interaction, Solutions***, to be held October 25-28, in Boise, Idaho. According to Conference Chairman **Dennis Wichelns**, the response to the Call foretells an outstanding Conference.

The international irrigation community is eagerly awaiting the fall of 2007, when hundreds will gather in Sacramento for the **58th ICID**

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Managing the Florida Everglades: Changing Values, Changing Policies

by Dorota Haman, University of Florida, Gainesville (dzhaman@ifas.ufl.edu); and Mark Svendsen, Water Resource Consultant, Philomath, Oregon (marksvendsen@aol.com)

The Historic Everglades

The Florida Everglades area has been inhabited for over 10,000 years, perhaps even 20,000, with some evidence of a substantial native population as long as 4,000 years ago. About 200 years ago, Europeans begin to settle the coastal areas of the Everglades. The Florida Everglades, as it existed 200 years ago, was a rich and complex natural ecosystem covering some 20,000 km^2 of porous marine limestone. Its lifeblood was a 100-kilometer-wide sheet of water which spilled over the southern lip of Lake Okeechobee and flowed southwest to the Gulf of Mexico, 160 kilometers away, called "grassy water" by the local Indians.

The great Everglades "river" began at an elevation of six to seven meters and flowed at depths ranging from a few centimeters to perhaps half a meter. Its flow rate was

(continued on page 1)

Prez

The Beijing ICID Congress in September was a well-organized success and enjoyed excellent participation from USCID. Approximately 35 people comprised the USCID delegation, including Reclamation Commissioner John Keys, who gave a plenary address to the Congress. Highlights of that talk are included in this Newsletter. We had a fine Chinese buffet dinner for USCID attendees, with the Australian contingent as invited guests. That turned out to be an excellent decision, as the Aussies always liven things up. **Bert Clemmens** gave the N. D. Gulhati Memorial Lecture, which he reprised at the USCID conference in October (the lecture was also featured in the Spring 2005 issue of the *USCID Newsletter*). The Gulhati Lecture is an invited lecture delivered at each Congress and is named for a respected and visionary Indian engineer who spearheaded the founding of ICID in 1950. He served as its first Secretary General, and later as a Vice President and as President of the organization.

The following month, USCID staged an excellent technical conference in Vancouver, Washington, just across the

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Inside . . .

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The United States Committee on Irrigation and Drainage is a National Committee of the International Commission on Irrigation and Drainage.

Mission Statement

The Mission of the United States Committee on Irrigation and Drainage is to foster sustainable, socially acceptable and environmentally responsible irrigation, drainage and flood control systems and practices for providing food, clothing and shelter to the people of the United States and the World.

USCID Newsletter and Membership

The *USCID Newsletter* is published in Winter, Spring and Fall for USCID Members. News items and technical articles of interest to the irrigation community are invited. Contact USCID for advertising rates and media information. Membership information is available on the USCID website.

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Integrated Land and Water Resources Management ..... Mark Svendsen
Sustainable Use of Natural Resources for Crop Production ..... Travis P. Teegarden
On-Farm Irrigation Systems ..... J. Mohan Reddy
Comprehensive Approaches to Flood Management ..... Bruce C. Moore
Development and Management of Irrigation Systems ..... Thomas E. Mitchell
Drainage ..... James E. Ayars
Environmental Impacts of Irrigation, Drainage and Flood Control ..... Dennis Wichelns
History of Irrigation, Drainage and Flood Control ..... Johannes J. DeVries
Capacity Building, Training and Education ..... Dorota Haman
Use of Poor Quality Water for Irrigation ..... W. Martin Roche
Irrigated Agriculture Under Drought and Water Scarcity ..... Robert H. Edwards
Socio-Economic Impacts and Policy Issues ..... Anisa J. Divine
Urban Irrigation and Recycled Water .....
Application of GIS in Irrigation Projects ..... Guy Fipps
Rehabilitation, Modernization and Maintenance of Irrigation and Drainage Systems While in Service ..... Arnold K. Dimmitt

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ICID News and Activities

ICID·CIID

Global Climate Change Work Body

ICID recently created a new **Working Group on Global Climate Change and Irrigation**. USCID President **Mark Svendsen** has been named the interim chairman of the Working Group.

According to Svendsen, Global Climate Change has profound implications for the distribution and use of the world's water. These implications include:

- Changes in plant growth rates as a result of changes in temperature and CO2 concentrations
- Changes in crop growing seasons
- Changes in availability of natural precipitation
- Increased incidence of drought
- Increased incidence of flooding
- Increased "flashiness" of snow-fed streams and rivers
- Changes in annual catchment yields
- Changes in groundwater recharge
- Seawater inundation of low-lying agricultural areas

The primary objective of the Working Group will be the organization of three workshops on Global Climate Change during the next ICID meetings in Kuala Lumpur, Sacramento and Lahore.¤

Beijing Reports

(Editor's note: USCID Members attended meetings of several USCID work bodies during the Congress week. Meeting reports follow; additional reports will be included in the next issue. More detailed minutes are on the ICID website, www.icid.org.)

Comprehensive Approaches to Flood Management

by Maurice Roos (mroos@water.ca.gov))

It is estimated that, worldwide, one billion people live in areas at risk for flooding. On the heels of Hurricane Katrina, floods were a hot topic during the Congress. The first activity of the Flood Management Working Group was an all-day workshop on flood management organized by Chairman Dick de Bruin of The Netherlands. Eleven talks were scheduled, beginning with a keynote address and presentation by Dr. Bart Schultz, past president of the ICID. This was followed by presentations from the U.S., Japan, Delft Hydraulics, Hungary, The Netherlands, Spain, Iran and the UK. Planned speakers from China and India were delayed; their talks were presented at the Working Group meeting two days later. My talk, as the U.S. contribution, was on flood management in Northern California, a multi-pronged approach consisting of floodplain management, physical works, flood warning and flood fighting.

The Working Group has produced two reports: (1) *Manual on Non-Structural Aspects of Flood Management*, 1999, and (2) *Manual on Planning of Structural Approaches to Flood Management*, 2005. The new report is about 120 pages; it is available from ICID for $20 plus shipping. Dr J. van Duivendijk, past chairman of the Working Group, is the author. Topics include the relationship between flood parameters and inundations; flood parameters and damages; desired level of protection; and use of hydrodynamic mathematical models for flood management.

There was discussion about contributing to the 4th World Water Forum in Mexico City in March 2006, where flood issues would fit under their theme of risk management. The chairman will put some thoughts together to submit to the Forum. I presented a draft statement on forecast-based reservoir flood operations for consideration as a possible future committee report. The session concluded with the two papers on flood management in China and India which had not been available for the earlier workshop

The next meeting of the Working Group will be during the 57th International Executive Council Meeting in Kuala Lumpur, September 2006.¤

Environmental Impacts of Irrigation, Drainage, and Flood Control Projects

by Dennis Wichelns (dwichelns@csufresno.edu)

Vice Chairman Alain Perrier (France) opened the session with a lengthy discussion of water cycles and irrigation. There was lively discussion regarding empirical observations involving rainfall patterns and irrigation. The Working Group also discussed its efforts to enhance understanding of the impacts of climate change on irrigation and drainage. Hu Heping of China was elected as the new Vice-Chairman of the Working Group.

American Regional Working Group

by Dennis Wichelns (dwichelns@csufresno.edu)

Luis Rendón Pimentel (Mexico) convened the meeting of representatives from the Americas. The group discussed plans for holding an election for chairperson and secretary. Due to the absence of several members, the group decided to postpone elections. The Working Group plans to meet again during the 4th World Water Forum in Mexico City, during March 2006. If attendance is sufficient, elections will take place at that time. The Working Group could then begin discussing its work plan.

Integrated Land and Water Resources Management

by Mark Svendsen (marksvendsen@aol.com)

This meeting was the seventh meeting of the Working Group. Two new members were admitted — Ezzalolla Farhadi of Iran and Mark Svendsen (replacing **William A. Price**).

The primary activity of the Working Group was hearing presentation of four case studies by WG members.

- U.S. Country Experience (the Florida Everglades) by Dorota Haman and Mark Svendsen (see page 1 report)
- Canadian Country Experience (an overview of recent policy changes) by Russell Boals
- Integrated Water Resources Management (a case study of successful basin management reform in the Heithe River Basin in North China) by Yuansheng Pei
- A presentation on the Lake Chad Commission by M. S. Adamu of Nigeria

WG Chairman Alain Vidal described recent additions to the WG website and other resources available on the web. The four case studies presented to the WG in Beijing will be added to the WG website. The Global Water Partnership has posted a handbook on Catalyzing Change covering concepts of IWRM and coordinated decision making. There is a link to the handbook on the WG website. The UNDP has posted information on transboundary basin water management on its website. A brochure describing the information available is posted on the WG website.

A European Commission-funded project, NEWATER, addresses "adaptive water management under uncertainty." The CGIAR Challenge Program on Water and Food, a large international research program, focuses on nine large river basins, most of them transboundary (www.waterforfood.org/).

Professor Quast of Germany reported on the discussion of ILWRM at the 21st European Regional Conference held during May 2005. Papers presented are available on a CD.

Vidal noted that the normal duration of an ICID WG is six years, and that this was the 7th meeting of the WG-ILWRM. To conclude its activities, the WG will review the presentations made by members to the WG and select the best ones for publication in the ICID Journal, *Irrigation and Drainage*, or another journal. A team consisting of Alain Vidal, Russell Boals and Mark Svendsen was named to review the presentations and select several for publication.

Capacity Building, Training and Education

by Dorota Z. Haman (dzhaman@ifas.ufl.edu))

The ICID Working Group on Capacity Building, Training and Education (WG-CBTE) met on September 12, 2005 and held a workshop on September 14.

The group reviewed and confirmed minutes of last meeting of the WG, held in Moscow in 2004, and reviewed the membership of the Working Group.

Inputs to the 4th World Water Forum (WWF) to be held March 16-22, 2006, in Mexico City, were discussed during the meeting. Tom Frank reported that Paul van Hofwegen, Senior Water Management Expert, World Water Commission, expressed his hopes in a letter to the WG Chairman, that this will be a good opportunity to link the workshop on September 14, 2005, with the preparatory work for the WWF. Jan Luijendijk and Peter Hollanders of UNESCO-IHE were contacted for the WG's involvement in the preparatory process for the September 14 workshop.

The Working Group has created a page on the ICID website. It contains information about the membership of the WG, Agenda and Minutes of the previous WG meeting held in Moscow, brief conclusions of the workshop on *Capacity Needs Assessment in Agricultural Water Management*, held in Moscow during 2004, and a link for Education and Training Courses in Irrigation, Drainage and Flood Control by FAO and ICID's WG-CBTE. The members may give their ideas for further improving the web page and suggest what other information could be uploaded to make it more informative.

The Working Group on Capacity Building, Training and Education held the third in its series of workshops on September 14. The workshop was sponsored by IPTRID-FAO. The workshop focused on *Strategies for Planning and Implementing Capacity-Building* and featured a keynote paper, together with seven case studies from around the world. In addition, there was a keynote presentation from UNESCO-IHE on the baseline document *Capacity-Building and Social Learning*, which is being prepared for the 4th World Water Forum in Mexico. IPTRID-FAO is in the process of preparing a printed version of the Proceedings.

The Proceedings of the *Workshop on Capacity Building in Irrigation and Drainage: Issues, Challenges and the Way Ahead*, organized by WG-CBTE in cooperation with IPTRID/FAO and held in Montpellier, France, during 2003, has been published by IPTRID/FAO.

Use of Poor Quality Water for Irrigation

by W. Martin Roche (wmroche@usamedia.tv)

The Work Team on the Use of Poor Quality Water for Irrigation (WT-PQW) held its 10th meeting in Beijing, China, on September 12, 2005.

The Work Team is planning to hold a workshop on *Use of Desalinized Water for Irrigation Purposes* in Sacramento, California, in October 2007 during the 58th IEC Meeting and USCID Fourth International Conference on Irrigation and Drainage. One of the post-conference tours will include drainage and salinity management projects in California's San Joaquin Valley.

Other activities of the Work Team include the development of a web page; the publication of *Guidelines on Use of Saline and Brackish Water* and *Management of Poor Quality Waters for Irrigation*; and the organization of a study of *The Environmental Consequences of Using Poor Quality Water*.

Ragab Ragab of the United Kingdom chairs the Work Team. Other members represent Iran, Egypt, South Africa, India, Mexico, China, Japan, The Netherlands, Pakistan, Australia, Morocco, the United States, France, Chinese Taipei, Nigeria and Israel. A permanent observer to the Work Team represents the United Nations Food and Agriculture Organization.¤

Triennial Congress Held in Beijing

The **19th ICID Congress** and **56th International Executive Council Meeting** were held in Beijing, China, September 10-18, 2005. The U.S. delegation of about 35 participants and guests was headed by USCID President **Mark Svendsen.** More than 500 delegates from 56 countries and several international organizations participated in the Congress and associated activities, including meetings of the ICID work bodies, workshops, symposia and tours.

During the IEC Meeting, Svendsen was elected as an ICID Vice President. Also elected to Vice President posts were F. B. Reinders (South Africa) and Gao Zhanyi (China). Peter S. Lee (United Kingdom) was elected President. The Republic of Azerbaijan was accepted as a new ICID National Committee.

Albert J. Clemmens delivered the N. D. Gulhati Memorial Lecture (reprinted in the Spring 2005 issue of the *USCID Newsletter*). **Bureau of Reclamation** Commissioner John W. Keys III gave a plenary presentation. Several USCID Members presented papers during the Congress.

Delegates attending a reception hosted by USCID had the opportunity to view a short video presentation promoting the **58th IEC Meeting** and **USCID Fourth International Conference on Irrigation and Drainage**, to be held in Sacramento, California, September 30 - October 5, 2007. The Second Announcement and Call for Papers was also distributed during the Congress.

The 20th ICID Congress will be held in Lahore, Pakistan, October 2008.¤

19th ICID Congress and 56th IEC Meeting

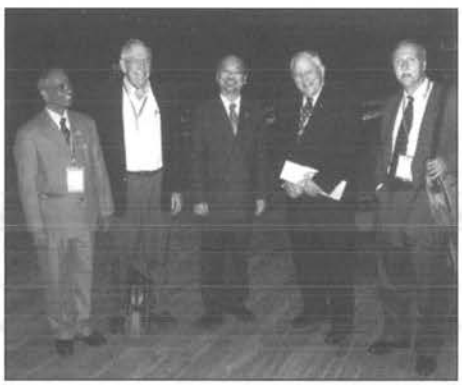
Maury Roos and Anisa Devine enjoy the USCID reception.

Bill and Mary Ann Johnston.

The Malaysian National Committee hosted a reception to promote the 2006 IEC Meeting.

Former Vice Presidents Frank Dimick and Darell Zimbelman participate in the Beijing IEC Meeting.

Bert Clemmens receives the Gulhati Award while ICID President Keizrul bin Abdullah looks on.



Enjoying the Opening Ceremony are (left to right) Secretary General Gopalakrishnan, Larry Stephens, President Keizrul, John Keys and Dick Ives.

Beijing, China — September 2005

Bert Clemmens visits with ICID Secretary General Gopalakrishnan and Mrs. Gopalakrishnan.

Dorota Haman enjoys the Congress closing banquet.

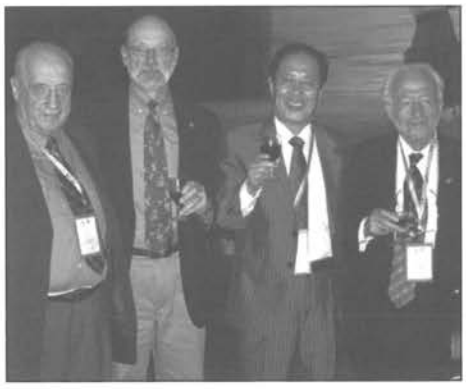
Newly elected ICID Vice President Peter Lee (left) receives congratulations from Saeed Nairizi, Iran.

Bruce and Mary Moore.

USCID Members (left to right) Willem Vlotman, Ian Tod, Mark Svendsen and Maury Roos discuss the Congress during the closing banquet.

Mark Svendsen, head of the USCID delegation, makes a point during the IEC Meeting, as Peter Kovalenko, Ukraine, observes.

Jan and Martin Roche.



Current and former Vice Presidents (left to right) Victor Dukhovny, Uzbekistan; Mark Svendsen; YooMan Huh, Korea; and Constantino Fasso, Italy.

Kyung-Hee and Herve Plusquellec.

Working in Cooperation for Multiple Benefits

by John W. Keys III, Commissioner, Bureau of Reclamation, Washington, DC

(Editor's note: Following is the text of Commissioner Keys' remarks during the 19th ICID Congress, September 15, 2005, Beijing, China)

I would like to extend my thanks to ICID President Keizrul and the Chinese National Committee on Irrigation and Drainage for the invitation to speak here today. I am happy to be in China and to address this important ICID Congress. The conference program is top rate. It addresses many of the world's most pressing issues related to irrigation and drainage. You have the right topics and the right people to lead the discussions.

For many years, Reclamation has strongly supported both USCID and the International Commission on Irrigation and Drainage by providing technical and financial assistance. Since Reclamation's early days, our engineers have been involved with many projects throughout the world, including the Three Gorges dam project here in China. I'm excited to have the chance to visit that magnificent project early next week.

Reclamation was established in 1902 to irrigate the desert lands of the western United States and make them productive for farming. Reclamation's success was proven by the increasing number of people who have continued to move westward when water was made available.

The American West has changed dramatically in 100 years. Agricultural irrigation remains a focal point, but we have a number of different demands on our water supplies. My remarks today will center on some of our responses to the challenges we face in providing water for irrigation and for other uses.

Background on Reclamation

Today, we continue to carry out our core mission of delivering water and generating power. Reclamation is the largest wholesale water supplier in the United States. We bring water to more than 31 million people and provide one of five farmers (140,000) with water to irrigate four million hectares of farmland. Reclamation is also the United States' seventh largest power utility and second largest producer of hydroelectric power. Our facilities provide other benefits as well, such as flood control, wildlife habitat and opportunities for recreation.

Today's Challenges

Our greatest natural resource challenge is that the supply of water is finite, but the demands for water are continually growing. Agricultural irrigation consumes the greatest share of the water we deliver. This was not a problem in the early days, when we did not have the competition for water that we have today. But now we have a growing population competing for water, and we have demands for different uses — agricultural, urban, environmental.

The western part of the United States is the fastest-growing part of the country. Between 1990 and 2000, the population in the state of Nevada increased by more than 60 percent. Arizona's population increased by more than 40 percent, and the populations in Utah, Colorado and Idaho increased by more than 30 percent. When you add to these demands requirements of water for environmental needs, such as fish and wildlife habitat, water supplies may not be enough to meet demand. And, competing demands can create conflict.

An additional problem that has drawn much of our attention over the past five years is a major drought. It has affected most of our western states. The Colorado River basin experienced the worst five-year drought period in 500 years. Despite the years of record drought, the system of dams and reservoirs built by Reclamation has been doing an amazing job of keeping us out of crisis.

Drought is only one of many challenges that we must address. Drought is the norm in the western United States. We're prepared to deal with drought. What we are most concerned about is — what happens when droughts break, but water supplies are still not sufficient to meet demand? We believe that the most immediate, the most effective approach that we can take is to stretch the water supplies that we already have. This goes for drought years and normal years alike.

A Comprehensive Approach to Water Management: Water 2025

One of the most effective ways we have to stretch water supplies is through our Water 2025 program. Water 2025 looks over a span of 25 years. It focuses our response to a number of water management challenges, and, most important, it facilitates the stretching of our water supplies. Water 2025 identifies five realities the western United States faces:

- Population is growing explosively
- Water shortages are frequent
- Watersheds are over-allocated
- Facilities are aging
- Crisis management is not an effective way to deal with these issues

Water 2025 uses four key tools to address these realities and prevent conflict and crises:

- Conservation, efficiency and markets
- Collaboration
- Improved technology
- Increasing cooperation between agencies

A major focus for us in stretching water supplies is improvements in technology to increase efficiency. In developing and implementing these improvements, we have found working in partnership to be essential — partnerships enable us to leverage our resources, and they enable sharing of ideas.

Results: Challenge Grants

A great way to see what these tools can produce is by looking at the heart of Water 2025 — the Challenge Grant program. The program is a 50-50 cost-share, with the federal government contributing half of the funding and local water and irrigation districts contributing the other half. Projects stretch water supplies through water conservation, efficiency and water marketing.

We're in the second year of the program, and it is demonstrating how leveraging the federal investment can provide tremendous benefits. Over two years, $14 million in federal grants is contributing to 62 projects that are returning $57.5 million in on-the-ground improvements. That's a return greater than four-to-one on the federal investment. The Challenge Grant projects that were selected in the first two years of the program anticipate water savings of more than 350 million cubic meters each year. That will provide water for about one million people. And, the projects can be completed within 24 months, so we will see the benefits quickly.

The projects that have received Challenge Grants have included technology to improve delivery and monitoring, such as the lining of canals and installation and improvement of measurement devices. Other projects have developed market-based innovations, such as water banks. Improvements bring such benefits as the ability to continue farming during droughts and an increase in the length of the irrigation season. The increased efficiency and water savings are a great benefit to agricultural irrigation. And they also stretch water supplies for use in urban areas and for fish and wildlife needs. Whenever we conserve water in one area of need, we benefit the others by making water potentially available to them.

A very high proportion of our Challenge Grant projects involve the lining of canals — the lining of previously unlined canals, improvements to existing linings, and the study of materials to make linings more effective. Improvements in canal lining decrease seepage and increase the efficiency of water deliveries. Decreased seepage also reduces the need for drainage. Some canal lining projects are isolating drinking water from agricultural saline ground water seepage.

For many years, Reclamation has strongly supported both USCID and the International Commission on Irrigation and Drainage by providing technical and financial assistance.

Automation is another area where the Challenge Grant projects are making an impact. Automated and remote-control gates enable water managers to respond to demands and maximize efficient water use.

Some projects involve flood control, such as the installation of alarms that will protect against crop and home damage. Other projects involve the creation of water banks, where water can be saved and then drawn upon in times of need.

The cooperation brought about by the Challenge Grant program enables us to prevent the crises that pit neighbor against neighbor and the environment against future economic prosperity.

Other Work to Stretch Supplies and Improve Irrigation

Aside from the Challenge Grant projects, Reclamation is involved in a number of other activities that center on improved irrigation. We have demonstrated a system we call Landscape Irrigation Simplified, which improves the efficiency of landscape irrigation by homeowners. More efficient irrigation can cut by half the amount of water that is used. More efficient practices involve, among other things, scheduling based on evapotranspiration rates.

More efficient practice through scheduling of irrigation is also a big part of our AgriMet agricultural weather station network. We have also worked with partners in developing drip irrigation projects as an alternative to other irrigation practices.

Desalination

Another area we are excited about is our desalination research. What makes desalination so exciting is that it may be one of the few opportunities to create new water supplies. We want to research ways to make desalination more affordable and accessible. Bringing down the costs of energy and of disposal can reduce the costs of desalination and enable the desalination of ocean water and brackish groundwater. This can increase water available for irrigation and for other uses.

I hope that you can attend the ICID Meeting and the International Conference of the U.S. Committee on Irrigation and Drainage during September/October 2007, in Sacramento, California. You will get a chance to hear some great talks and to see some of the innovative water management in California's Central Valley, the most productive agricultural area in the world.

2005 Energy Bill

The progress we have made with irrigation also provides the potential for producing more hydropower. The Energy Bill passed this year by the U.S. Congress asks us to take a fresh look at all of our existing sources of hydropower and to look at the potential for expansion of these facilities and for new plants. The bill asks us to look for opportunities to develop additional power through cooperative efforts.

In the past, power projects were often infeasible because of the short irrigation season. Now, because the irrigation season is longer, these same projects may be able to work. In addition, our strong foundation of partnerships increases the likelihood that we can bring about cooperative power projects.

A Look to the Project of the Future

We have made tremendous headway in increasing the certainty of water delivery through some of the methods I have discussed today, and we are enthusiastic about the progress that we are making. I have often been asked whether the days of building large water supply projects are over. I answer with a resounding "No!"

There are still enormous water needs for our future well-being — drinking water for people, industrial water for factories, environmental water for our fish and wildlife. There will be a need for large projects. But they will be different from the large projects of the past. The dams may look the same. But the financing of the projects, and the ownership of the water, will be shared by multiple partners. And the projects may consist of things other than dams. They could be desalting plants, or water reuse/ recycling systems. Or something entirely new.

Remember, the only constant is change, and we must be innovative and flexible in order to meet the challenges that come at us.

Conclusion

These are exciting times for water management. We face significant challenges ahead, but we are continually developing responses to these challenges that improve what we had before.

Reclamation has emphasized partnerships, and I cannot stress the importance of partnerships enough. None of us can do the necessary work alone. Reclamation has made it a point to work cooperatively both within the United States and internationally. Our international involvement, like our engagement here at ICID, is very important to succeeding with water management in the 21st century.

I would also like to say that the offers of assistance to the United States from the international community after Hurricane Katrina are greatly appreciated.

What are the consequences of not working together? Simply put: greater conflict. Work in cooperation is enabling us to meet the needs of farms, cities and the environment.

Again, I would like to thank ICID and the CNCID for the opportunity to speak here today.¤

Prez (continued)

Columbia River from Portland, on SCADA technology. Conference attendance was about 165 and the 20 exhibitors played prominent roles in the Conference. **Charles Burt** and the organizing committee did a superb job of putting together the Conference, which consisted of a single technical track and a tight focus on the application of SCADA technology to managing water. The Conference received excellent reviews from participants and generated several new memberships in USCID.

In Beijing, the IEC approved a Technical Activities Committee recommendation to create a new Working Group on Global Climate Change and Irrigation. This Working Group, and the National Committees that support it, can play an extremely important role in generating thinking and discussion on the consequences of ongoing climate changes for irrigated agriculture. These consequences go well beyond the changing conditions for crop growth (temperature, rainfall, CO_2 concentrations) that have gained the most attention and extend to the effects of changes in precipitation variability and the loss of snowpack storage on irrigation water availability. I will act as the interim chair of the ICID Working Group, and look forward to convening a U.S. Working Committee meeting on this topic at our next Conference in Boise.

Mark Svendsen
President, USCID¤

New Publication

Hydraulic Canals: Design, Construction, Regulation and Maintenance, by José Liria Montañés. Intended for engineers with a good grounding in hydraulic engineering, this practical reference is a guide to the design, construction, regulation, management, modernization and maintenance of canals. It provides an in-depth study of the problems caused by seepage, an analysis of the various possible linings, the constraints posed by canals construction without linings, and relevant methods of calculation. The book presents effective maintenance and conservation methods to optimize good management and efficiency. 416 pages, $140. To order, call 800-634-7064, or go to www.taylorandfrancisgroup.com.¤

Conferences (continued)

International Executive Council Meeting and the **Fourth USCID International Conference on Irrigation and Drainage.** Associated activities will include ICID work body meetings, workshops, an exhibition and tours. Mark September 30 to October 5, 2007, on your calendars.

A short video presentation, prepared by the **Bureau of Reclamation**, was shown during the recent ICID Congress in Beijing. The *Second Announcement and Call for Papers*, printed by the **California Department of Water Resources**, was distributed in Beijing, and mailed to USCID Members this fall. The theme of the Fourth Conference is ***The Role of Irrigation and Drainage in a Sustainable Future***, and abstracts for papers are invited.

A list of Gold Sponsors and Cooperating Organizations is found on page 13.¤

Meetings and Conferences

The following meetings and conferences may be of interest to USCID Members.

AMTA/SCDA Joint Technology Transfer Workshop, February 8-9, 2006, Corpus Christi, Texas. Organized by the American Membrane Technology Association and the South Central Desalting Association, the Workshop theme is Advances in Technology & Operator Training. Information: www.membranes-AMTA.org.

Colorado Water Law: Water Supply Strategies and Beyond, March 6-7, 2006, Denver, Colorado. Presented by the Water Law Institute, the 5th Annual Conference features speakers from the City of Aurora, Denver Water, private consulting firms, the U.S. Department of the Interior and other agencies. Information: www.cle.com.

USSD 26th Annual Meeting and Conference, May 1-5, 2006, San Antonio, Texas. Sponsored by the U.S. Society on Dams, the Conference theme is *The Role of Dams in the 21st Century*. The Conference will feature the presentation of 60 professional papers, keynote and dinner presentations, a two-day exhibition, workshops and field tours. Information: www.ussdams.org.

Operations Management 2006: Operating Reservoirs in Changing Conditions, August 14-16, 2006, Sacramento, California. The Conference is sponsored by the Environmental and Water Resources Institute of ASCE, and will provide an opportunity for operations and management personnel of water resources projects to come together in a common forum to exchange ideas and share discussions on current issues, applications of new technology and the day-to-day challenges of operating and maintaining a water resources project. This includes projects with multiple reservoirs, with competing demands for the water, including water supplies for irrigation, domestic consumption, hydroelectric generation, recreation, water borne transportation, and the preservation of habitats and species. Information: www.asce.org/conferences/om06.

27th Annual International Irrigation Show, November 5-7, 2006, San Antonio, Texas. The Irrigation Association's annual show features an exhibition, certification exams, technical sessions, industry meetings, industry tours and business seminars. Information: www.irrigation.org.

Wetland Training Institute, 2006 Courses. The WTI schedule includes courses in Wetland Delineation, Wetland Construction and Restoration, and Plants. Information: www.wetlandtraining.com.¤

Burt, Zimbelman Honored by USCID

Darell D. Zimbelman and **Charles M. Burt** were recognized by USCID for outstanding contributions to USCID and to the profession. USCID Past President **Joseph I. Burns** presented the awards during the SCADA Conference on October 27.

Darell Zimbelman (left) is congratulated by Joe Burns.

Darell D. Zimbelman, Associate General Manager and Chief Engineer, Northern Colorado Water Conservancy District, received the **USCID Service to the Profession Award**. He was cited for his distinguished career in water resources engineering and for exceptional contributions to the irrigation and drainage profession. He served on the USCID Board of Directors from 1990 to 1995, including a term as President. He served as Chairman of the Long Range Planning and Conferences Committee for several years, and has been an active participant in ICID for more than 20 years, serving as a Vice President from 1996 to 1998. He has also been very active in the American Society of Civil Engineers. Previous recipients of the USCID Service to the Profession Award include **Marvin E. Jensen**, **Maurice L. Albertson**, **Richard G. Allen**, **Jack Keller** and **Walter J. Ochs**.

The **USCID Merriam Improved Irrigation Award** was awarded to Charles M. Burt, California Polytechnic State University, in recognition of distinguished service to USCID and the irrigation profession. He is a Professor in the BioResource and Agricultural Engineering Department, and Chairman of the Board of the Irrigation Training and Research Center. He was a student of **John Merriam**, who endowed the Award. Burt is considered a leader in the application of irrigation technology and has consulted on irrigation projects in more than 20 countries. Previous recipients of the Merriam Improved Irrigation Award include **Joseph B. Summers**, **E. Gordon Kruse**, **John A. Replogle**, **Grant G. Davids** and **Jesse Silva**.

Nominations for the 2006 Awards Program will be accepted next summer.¤

Charles Burt receives the Merriam Improved Irrigation Award.

58th IEC/Fourth International Conference

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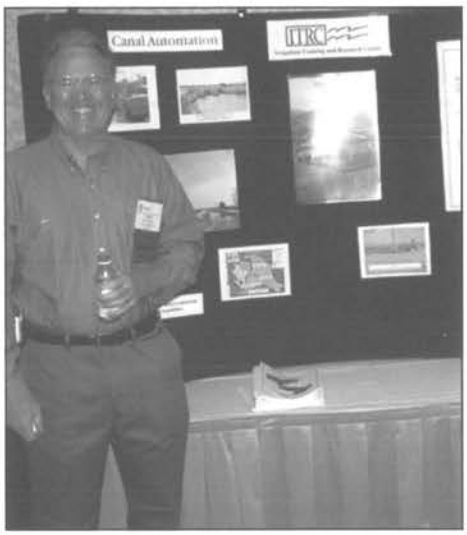
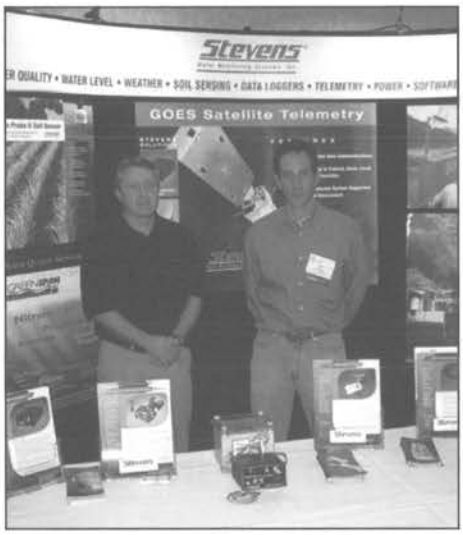
Sponsorships are still available. To be included, contact Larry Stephens at 303-628-5430, stephens@uscid.org.

USCID SCADA Conference



Charles Burt represents Cal Poly's Irrigation Training and Research Center, a Conference Sponsor and Exhibitor.

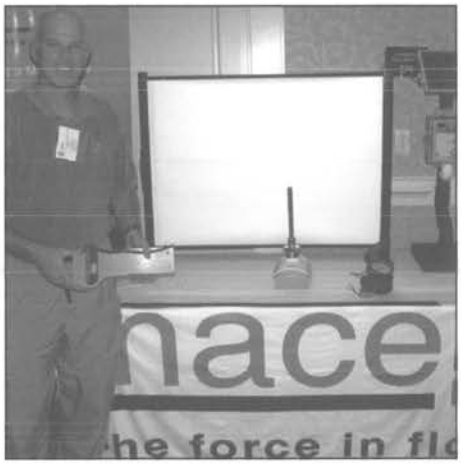


Fred Holloway (left) and Tom Greunig greet visitors to the Stevens Water Monitoring Systems exhibit.

Conference Sponsor and Exhibitor Rubicon Systems Australia is represented by Murray McCaig (left), Trevor Tennant and Kevin Clurey.

Jim Quist, Control Microsystems.

Francisco Avila (left), South San Joaquin Irrigation District, visits with participants from Spain Laura Cozar and Isabel and José Liria Montañés.



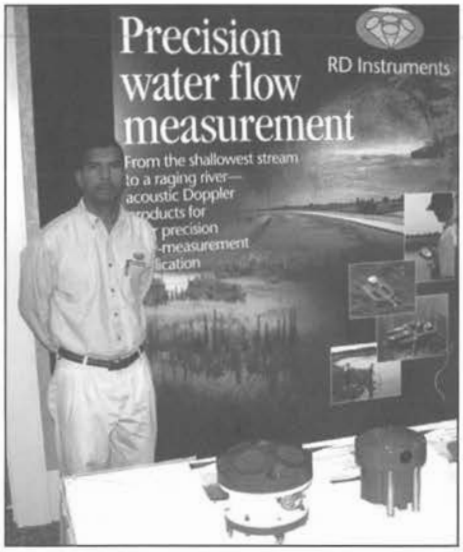
Tim Quinlin, Mace USA LLC.

Greg Roland (right), CH2M Hill, discusses his poster display with a Conference participant.

John Skaggs, Sutron.

Jeff Bradley (left) and Brian Wahlin, WEST Consultants.

Vancouver, Washington — October 2005



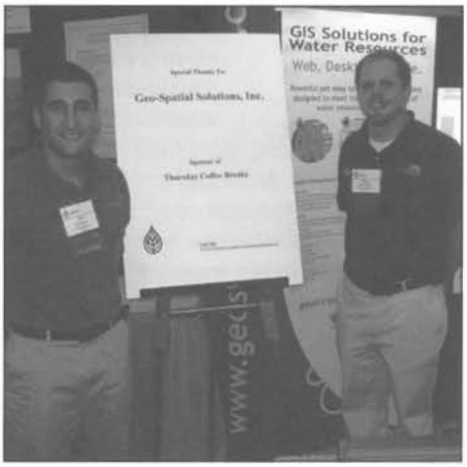
Dave Dalkin, Teledyne RD Instruments.

Boyd Bringhurst, Campbell Scientific.

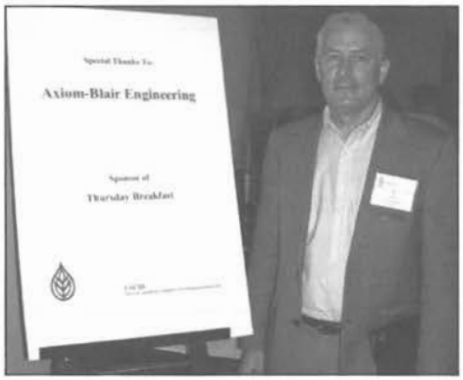
Craig Huhta and Dave Brooks, SonTek/YSI Incorporated.

John Heathcote, Firestone Building Products.

Maxine and Joe Burns enjoy wine tasting at Montinore Vineyard.



Geospatial Solutions, Inc., Sponsor of the Thursday coffee breaks, is represented by Jer Camarata (left) and Rusty Merritt.



Axiom-Blair Engineering, Sponsor of the Thursday breakfast, is represented by Al Blair.

Doug Suckow (left) and Peter May, Sensor Trek LLC.

Cliff Pugh and Tony Wahl, Bureau of Reclamation, visit during the Poster Session.

Everglades (continued)

an almost imperceptible 200 meters per day or so, and it took years for water from Lake Okeechobee to reach the open water of the Gulf of Mexico. This historic flow pattern is shown in Figure 1.

The Exploited Everglades

During the mid-1800s, an influx of settlers of European origin began arriving in large numbers from neighboring states, quickly overwhelming the Seminole population of about 5,000 (estimate as of 1821).

Figure 1. Historic flow patterns of the Everglades "river."

Understandably, these settlers saw the boundless expanse of impenetrable, mosquito-ridden swamp as a worthless wasteland and the state granted Everglades land cheaply to those willing to drain and settle it. At the same time, the east coast of the peninsula, with its warm winter-time climate and Atlantic exposure, was being developed very differently with railroads and hotels for northern tourists.

In 1905, Florida Governor Napoleon Bonaparte Broward introduced a state program to drain extensive portions of the Everglades, and over the next 20 years a network of canals, locks, dams and levees were cut through the wetlands. The reclaimed muck soils were fertile, and agriculture boomed, producing sugar cane, citrus and vegetables. For another 20 years after that, drainage and clearing proceeded and agriculture continued to expand.

These early efforts at water control, however, were often not a match for nature. In 1928, a massive hurricane hit South Florida, earthen levees failed and 2,000 people drowned. That caused the Corps of Engineers to encircle Lake Okeechobee with a dike to control releases from the lake. Then, during the drought of the 1930s, the heavy organic soils that had been drained for agriculture dried out in many locations, and the powdery organic material was blown off of fields or, in some cases, caught fire and burned for a long time, casting a pall of smoke over the area.

In 1947, hurricanes left much of southeastern Florida under water, which stood in some places for six months. This led the Congress of the United States, in 1948, to authorize the Central and Southern Florida Project to create a more durable water control system for South Florida.

Central and Southern Florida Project

The Central and Southern Florida Project (C&SF) was a multi-purpose project that provided flood control; water supply for municipal, industrial, and agricultural uses; water supply for Everglades National Park; protection of fish and wildlife resources; and prevention of saltwater intrusion. The primary system included about 1,600 kilometers of levees, more than 1,000 kilometers of canals, and almost 200 water control structures.

The C&SF Project resulted in the creation of the Everglades Agricultural Area (EAA) and several specialized water control areas. The new water management infrastructure had the ability to control 3.8 million cubic meters of water per day. Regulation schedules for utilizing this water control capacity were also developed as a part of this project.

As a result of these efforts, the flow of water through South Florida was altered such that 70 percent of the natural flow was diverted to estuaries on the Gulf and Atlantic coasts, rather than flowing southwest to the Gulf of Mexico as it had previously (Figure 2).

Figure 2. Current flow through and around the Everglades.

Although it achieved its water management goals, the project also contributed to the drastic decline of the south Florida ecosystem. As the Everglades ecosystem became degraded, normal water levels were altered and saltwater intruded into potable water supplies. This remains a serious problem in south Florida today. At the same time, re-directed flows of freshwater lowered the salinity of coastal waters on the eastern and western sides of the Florida peninsula, damaging inshore fisheries.

Management Units

The historic Everglades stretched from the south shore of Lake Okeechobee to the mangrove estuaries in Florida Bay in the Gulf of Mexico (Figure 3). However, more than half of this historical area has been lost to agriculture and development. Today, the Everglades consist of the Everglades Protection Area (EPA) that includes Everglades National Park, Big Cypress National Preserve, Florida Bay and the three Water Conservation Areas. The remaining Everglades, an internationally recognized ecosystem, covers approximately 9,000 km^2 in South Florida. It is the largest subtropical wetland in the United States.

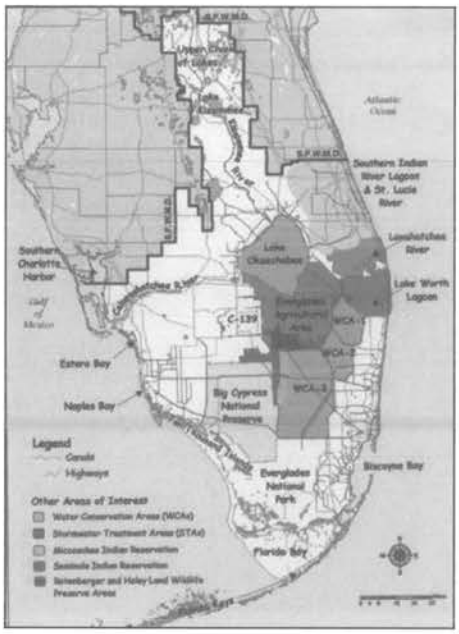


Figure 3. Greater Everglades.

Everglades National Park consists of 5,570 km^2 of freshwater sloughs, sawgrass prairies, marl-forming wet

prairies, mangrove forests and saline tidal areas at the south end of the Florida peninsula. The Park was formally established by Congress in 1934, to preserve the unique ecology of the Everglades.

In 1979, the Park was designated by the United Nations as a World Heritage Site. It has also been named a Federal Wilderness Area, an International Biosphere Reserve, and a Wetland of International Significance. It is the second largest national park in the United States and is one of the nation's 10 most endangered parks (SFWMD).

The Big Cypress National Preserve was established in 1974. It was created to protect Big Cypress Watershed, while allowing hunting, fishing, and oil and gas production. The area of the preserve is 2,280 km^2. This area is an ecological buffer zone and water supply for Everglades National Park. The Preserve serves also as a supply of fresh, clean water for the vital estuaries of the ten thousand islands area near Everglades City.

Florida Bay is a shallow inner-shelf lagoon located at the southern end of the south Florida watershed. It is an area where fresh water from the Everglades mixes with the salty waters of the Gulf of Mexico to form an estuary surrounded by mangroves forests. In the late 1980s, dramatic changes in the ecology of Florida Bay became evident. These changes included the widespread death of seagrass beds, turbid water associated with this die-off, large and sustained blooms of algae and population reductions in pink shrimp, sponges, lobster, recreational game fish and wading birds.

The three Water Conservation Areas (WCA-1,WCA-2 and WCA-3) are located south of Lake Okeechobee and west of heavily urbanized areas. These wetlands receive runoff from the Everglades Agricultural Area (WCA-2, WCA-3) and from the urban areas to the northeast (WCA-1) (a total watershed of approximately 3,400 km^2). Regulatory water releases from Lake Okeechobee may also be diverted to the WCAs.

Everglades Agricultural Area

The extremely rich soils of this area have long made the region attractive to farmers. During the period from 1906 to 1927, approximately 200 km^2 were farmed. Production soared during the agricultural boom of the 1950s.

The EAA was formally designated in the latter part of the 1950s and completed in 1962, covering an area of 3,059 km^2. It is located below the southeastern border of Lake Okeechobee and extends to WCA-1 (see Figure 3). Sugar cane is the primary crop grown in the EAA, with relatively smaller crops of winter vegetables, rice and sod. By 1973, there were 120 sugar cane farms which covered 809 km^2 and produced 726,000 metric tons of sugar. Today, approximately 2,327 km^2 of the EAA are farmed in sugar cane and produce more than 25 percent of U.S. sugar output.

Fifteen project canals and 25 control structures, all managed by the South Florida Water Management District, serve the EAA. The Rotenberger and Holey Land Wildlife Management Areas, as well as four Stormwater Treatment Areas (STAs), are contained within the EAA. Agricultural Storage Reservoirs are used to improve the timing of the environmental deliveries to the water conservation areas. The reservoirs provide water for irrigation, environmental demands and reduce loss of water to the costal areas before it can enter the Everglades National Park.

Runoff from the EAA once flowed slowly southward to the areas now known as the Water Conservation Areas (WCAs). Currently runoff from the EAA is quickly collected and moved into the WCAs for flood control purposes.

The EAA has altered the natural sheet flow and hydrology of the historic Everglades and negatively affected water quality. Crops in the EAA grow best when the water table is kept at a constant level; however, natural ecosystems were adapted to fluctuating water table levels. During the wet season, the EAA is kept drier than normal, and during the dry season, it is kept wetter than normal. The EAA's impact on water quality occurs through (1) increased nutrients in runoff resulting from subsidence of soil and application of fertilizers, and (2) the use of herbicides and pesticides.

The EAA is responsible for runoff containing high levels of fertilizer consisting of phosphorus, nitrite, nitrate and ammonia. The natural water outflow should be nutrient poor, as the natural Everglades was an oligotrophic system.

Soil subsidence is an additional problem in the EAA basin. Ground elevations in the EAA have decreased by one to three meters due to soil subsidence caused by compaction, peat erosion and organic soil oxidation. Soil subsidence is caused primarily by microbial oxidation of organic matter under aerobic conditions. Subsidence makes true restoration of the Everglades agricultural area technically impossible. In addition, plowing has destroyed the natural structure of the peat soil matrix, creating another significant barrier to restoration. Maintaining a water table close to or at the soil surface can reduce subsidence. Consequently, cultivating rice helps control subsidence and permits more water storage in the EAA.

South Florida Water Management District

Water use in Florida is planned and managed by five water management districts as shown in Figure 4. Each district is controlled by a governing board of at least nine district residents who are appointed by the governor for four years. The boards have statutory authority over consumptive use permitting and management and protection of water resources in Florida. They also have permitting authority for artificial aquifer recharge, projects related to management and storage of surface waters (e.g. dams), use of district works or land, and construction and repair of water wells.

Figure 4. Water Management Districts in Florida.

Water management district boundaries were defined in Florida's 1972 Water Resources Act and are based on natural, hydrologic basins rather than political limits — to allow for effective and efficient planning and management of regional water resources

The South Florida Water Management District's (SFWMD) boundaries, where the Everglades are located, extend from central Florida to Lake Okeechobee, and from coast to coast, from Fort Myers to Fort Pierce, south through the Everglades to the Florida Keys and Florida Bay. More than seven million people (SFWMD, 2005) live within this district, which covers a total area of 46,000 square kilometers.

To assess water quality within 16 south Florida counties, the South Florida Water Management District monitors surface water in a variety of locations, including canals, pumping stations, agricultural discharges, and many other types of aquatic environments. The District also monitors sediments and fish for a variety of pollutants, including nutrients, trace metals and pesticides, which can be conveyed by water.

Restoring the Everglades

By the early 1990s, the conclusion that something was seriously wrong with management of the Everglades was inescapable. Both the state of Florida and the federal government took action to reverse accumulated damage and restore traditional water flow patterns. Given the human uses of Everglades water that have developed since Governor Broward began encouraging them just 100 years ago, a complete restoration of the original ecosystem is impossible. What has emerged is a complex politically brokered set of incentives, constructions, reconstructions, rules, limits and management practices that attempt to strike a balance among competing interests. The intended result is a flow pattern like the one shown in Figure 5. Two major projects, one state and the other federal, have emerged to implement this new vision.

Figure 5. Intended future flow pattern of the Everglades.

Comprehensive Everglades Restoration Plan

In 1992, the Corps of Engineers was authorized to review the current Central and Southern Florida project and develop a Comprehensive Plan to restore and preserve south Florida's natural ecosystem, while enhancing water supply and maintaining flood protection. The resulting Central and Southern Florida Project Comprehensive Review Study — commonly called the Restudy — was led by the Corps of Engineers and the South Florida Water Management District. The Restudy was accomplished by a team of more than 100 ecologists, hydrologists, engineers and other professionals from more than 30 federal, state, tribal and local agencies. Unlike most previous studies, the Restudy took a system-wide look at water. It culminated in a Comprehensive Everglades Restoration Plan (CERP).

In the early 1990s, the interagency, inter-disciplinary process to develop the CERP was an open, collaborative partnership that involved participants with a diversity of backgrounds, interests and agency missions. The flexibility and openness of this process is continuing during implementation to allow for continual dialogue and improvements to the Plan. The Plan was submitted to Congress in April 1999, and was approved with overwhelming bipartisan support in December 2000. Implementation of the Plan began immediately.

The purpose of the Plan is to reestablish a more natural flow of water throughout South Florida, which includes the Everglades, as well as ensure reliable water supplies and provide flood control. The goal of the Plan is to restore, preserve and protect South Florida's ecosystem while providing for other water-related needs of the region, including water supply and flood protection.

The current CERP plan represents the single greatest, and quite likely the last, opportunity to dramatically improve the ecological health of the greater Everglades in south Florida. The Plan consists of 68 elements, will take more than 30 years to construct, and will cost an estimated $7.8 billion. The federal government will pay half the Plan's costs and an array of state, tribal and local agencies the other half.

The basic strategy of the restoration effort is to capture and store freshwater currently discharged to the ocean for use during the dry season; 80 percent of the captured water is to be used for the natural system, and 20 percent is for agricultural and urban uses.

CERP calls for removal of 380 kilometers of levees and canals and building a network of reservoirs, underground storage wells, and pumping stations that would capture water and redistribute it to replicate natural flow. More than 30 kilometers of the Tamiami Trail (Route 41) will be rebuilt on a bridge to allow a freer flow of water into the Everglades National Park. Most of this water will be captured and stored in new reservoirs, man-made wetlands and underground wells for use when needed to replenish the natural system. Restoration of America's Everglades is the largest environmental project of its kind in history.

Everglades Forever Act

The Everglades restoration plan (Everglades Forever Act) was passed by the Florida Legislature in 1994, signed by the Governor and endorsed by the U.S. Secretary of the Interior and Florida's two U.S. Senators. It changes the way water is managed throughout South Florida by doing the following:

- Requires farmers to pay 100 percent of the cost of cleaning the water leaving their farms — more than $232 million.
- Takes 16,000 hectares of farmland — about the size of the cities of Miami and Fort Lauderdale combined — for the construction of filtering marshes to treat runoff from both farm and urban communities.
- Splits the $720 million cost in a way that reflects the impact of population growth, development, and agriculture on the Everglades.

- Imposes on sugar farmers the most rigorous agricultural environmental regulations in the United States.
- Establishes for the first time a water quality standard for farm runoff. The initial standard is a maximum of 50 parts per billion of phosphorous.
- Increases the water flow to the Everglades by 28 percent, returning to the Everglades water that the South Florida Water Management District is dumping into the Atlantic Ocean to prevent urban flooding in South Florida.
- Establishes mechanisms to treat urban runoff from shopping malls, residential streets, commercial parking lots and businesses which has four times the phosphorus concentration of farm runoff and has been pouring untreated into the Everglades.
- Requires farmers to spend millions of their own money to implement special farming techniques to reduce the phosphorus leaving their farms.
- Declares the quantity, timing and distribution of fresh water to the Everglades and Florida Bay is as important as the quality of the water.
- Commits the Florida Legislature to preserve both the Everglades and the 40,000 jobs created by agriculture in South Florida.

Proposed Water Quality Standards

The long-term goal of environmental restoration is to provide adequate water to the Everglades for the protection and maintenance of a well-balanced population of fish and wildlife. The Department of Environmental Protection is proposing 10 ppb as the first-ever numeric criterion for phosphorus in the Everglades. The criterion is based on science which indicates levels of phosphorus above 10 ppb alter the natural plant and animal life of the Everglades. Compliance with the water quality standard is achieved by attaining the 10 ppb criterion or applying a moderating provision.

The proposed water quality standard has two moderating provisions:

- If polluted areas do not meet the criterion, compliance is achieved by implementing best available technology to reduce phosphorus. This moderating provision does not apply to non-polluted areas.
- If reestablishing water flow in non-polluted areas provides greater benefits to the natural system than impacts from elevated levels of phosphorus, the discharge is allowed and compliance is achieved by implementing best available technology to reduce phosphorus.

A moderating provision is a requirement in the permit that is authorized under state and federal law when natural conditions prevent attainment of the criterion or when existing technology is not available to achieve the criterion.

A natural phenomenon known as reflux will likely cause phosphorus levels to rise above 10 ppb criterion for years, perhaps even decades. Moderating provisions allow the permit applicant to achieve legal compliance with the water quality standard during the course of this natural cleansing process. Providing a mechanism for legal compliance in both the law and water quality standard is designed to limit the length and cost of court battles challenging permit decisions.

Best available technology, known as "green technology," includes improved farming practices to reduce phosphorus and man-made treatment marshes that filter pollution from water entering the Everglades. By 2006, these technologies will reduce phosphorus in water entering the Everglades by 90 percent from a decade ago.

The Everglades Protection Area Project consists of all three Water Conservation Areas (WCA1, 2, & 3), and is designed to monitor the physical, chemical and biological quality of the Everglades Protection Area. The water, sediment and tissue quality data obtained under this program will be used for evaluation, monitoring and assessment of the project.

Everglades Agricultural Area BMPs

The Plan requires the EAA basin as a whole to achieve a 25 percent reduction in total phosphorus discharge to the Everglades. Reduction is determined by comparing phosphorus discharges at the end of each water year (May 1 through April 30) with the pre-BMP base period of October 1, 1978, through September 30, 1988. The EAA has been in compliance since the first full year of implementation (1996).

Financial incentives are provided to growers who exceed the 25 percent minimum reduction. Approximately 45 percent of the growers have chosen an option called "early baseline." This means they must demonstrate a phosphorus reduction of 25 percent at the farm level and if the overall basin average does not meet the 25 percent reduction, the growers who chose early baseline do not have to implement additional BMP techniques.

In July 2001, the South Florida Water Management District reported a 73 percent reduction in phosphorus discharged from the Everglades Agricultural Area for the past year. This was the largest reduction in nutrients flowing off of EAA farms since passage of the Everglades Forever Act. The 73 percent reduction is nearly three times the reduction required by the EFA.

These reductions, which contribute significantly to the Everglades restoration by delivering cleaner water each year to Everglades marshes, are the result of BMPs developed by sugar farmers in the EAA. These water management practices, paid for by farmers, result in the nutrients being cleaned from farm water before it drains into canals that go south to the Everglades.

Storm Water Treatment Areas

To further improve water quality that is flowing toward Everglades, Stormwater Treatment Areas consisting of 19,000 hectares of synthetic wetlands built to remove phosphorus and other nutrients from drainage outflow, were created. These STAs rely on plant materials and microbes to remove nutrients and pollutants from the water. The six planned STAs will receive, on average, 1,730 km^3 per year of stormwater runoff from the EAA. Four of six planned STAs are completed and in operation and are treating stormwater before it enters the Water Conservation Areas

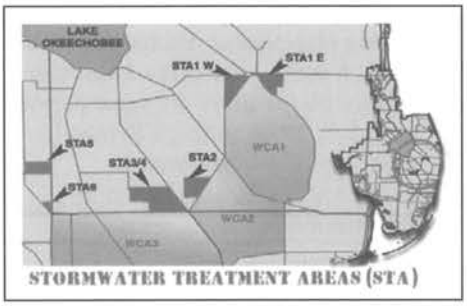


Figure 6. Location of first six Stormwater Treatment Areas.

(Figure 6). The treated discharge from these areas will improve water flow, timing, quantity and quality in the Everglades.

Agricultural Privilege Tax

An Agricultural Privilege Tax has also been implemented. This is an annual tax for the privilege of conducting an agricultural trade or business within the EAA. The tax supports maintenance and operation of the STAs and is set at from $61.50 to $86.50 per hectare from 1994-2013 and $25 per hectare after 2013. The agricultural privilege tax raises $12.8 million a year and, as of June 1999, about $60 million had been generated through this tax.

Seepage Management

Seepage Management projects prevent the loss of millions of liters of groundwater each year as seepage. Impervious barriers in the levee and pumps near the levee are used to redirect water back toward the Everglades.

Aquifer Storage and Recovery

Aquifer storage and recovery has also been considered. It would allow water to be stored during the wet season to be used in the dry season, thus decreasing loss of flow to the ocean and reducing water loss to the Everglades.

Timeline

1994 — The Florida Legislature passes the Everglades Forever Act, which directs the State of Florida to develop a phosphorus criterion for the Everglades Protection Area. The criterion numerically interprets an existing narrative standard, which states: "In no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora or fauna."

1996 — Farmers in the EAA implement Best Management Practices.

1997 —Agricultural BMPs reduce phosphorus amounts leaving the agricultural area basin by 51 percent. Phosphorus loadings are reduced from 240 metric tons to 122 metric tons per year. The South Florida Water Management District completes construction of the first of six filtering wetlands known as Stormwater Treatment Areas.

1999 — BMPs reduce phosphorus levels to 50 ppb.

2001 — The Florida Department of Environmental Protection proposes to set the first numeric ambient water quality standard for phosphorus in the Everglades at 10 ppb. In the fifth consecutive year of declining phosphorus levels, BMPs reduce phosphorus loads from the Everglades Agricultural Area by 30 percent more than is required by rule or statute.

2002 — BMPs reduce phosphorus loads from the EAA by 48 percent more than is required. STAs reduce phosphorus concentrations to less than 35 ppb, exceeding the initial goal of 50 ppb).

Conclusion

The history of the Everglades can be divided into three eras. The first is the period preceding 1900, when the natural ecosystem, with its human inhabitants, existed in a harmony determined by the ecosystem itself. The few human residents had little direct impact on the ecosystem, but lived on its bounty.

The second era, from 1900 until 1990, was a period of exploitation, settlement and modification of the natural environment for human ends. It involved massive civil works to drain land and channelize and reroute water flows, road construction, agricultural development and urbanization. This led to economic growth and huge increases in human population, along with a major contraction of the natural ecosystems which made up the Everglades. Preservation was attempted by setting aside a portion of the original Everglades as a national park. However, the intimate connection between land and water had been severed, with water rerouted to agricultural areas, away from urban areas, and away from the Everglades itself. In addition, quality and timing of the water reaching the natural ecosystem was severely altered. It eventually became apparent that the Everglades National Park, set aside as a jewel in a box, could not preserve the richness that once was the Everglades.

The third era, from 1990 onward, is one of reassessment, revaluation and reengineering. By 1990, society had reconsidered the relative values it had placed on resource exploitation and preservation of natural ecosystems. Scientific knowledge — and public awareness of that knowledge — had also advanced considerably, describing and quantifying the complex interlinkages that existed among land, water and biotic resources in the natural Everglades environment. Continuing decline in the health of the natural ecosystems led to major State and Federal government programs to reverse this decline.

The Federal re-assessment has led to a $7.8 billion re-engineering effort which is scheduled to last for 30 years. It will attempt to remap the flows of water throughout the southern third of the state to satisfy human needs and at the same time restore flows to the remaining Everglades that match the volume, quality and timing of those needed for a healthy ecosystem. The program was developed through a complex and participatory process involving the wide variety of institutions involved in resource management in the Everglades area.

The State program targets the major sugar and vegetable growing area carved out of the original Everglades by cultivators. This program focuses on phosphorous reduction in agricultural drainage outflows as its key target. To bring concentration of phosphorous down to background levels, the effort employs incentives and sanctions for farm-level best management practices, constructed wetlands to filter drainage water and resource use taxes to fund remedial activities.

Changing societal values, enhanced scientific understanding of complex natural ecosystems, and changed

economic circumstances have led to massive but belated efforts to reverse a century of human-caused environmental damage in the Florida Everglades. However, some of the changes which have occurred in the interim are irreversible. Likewise, the reality of large human populations living in and around the former Everglades will not change. The new vision for the Everglades area thus includes both human activities and restored Everglades ecosystems, albeit on a smaller scale. Whether this delicate balance can be struck in a sustainable way remains to be seen.

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Swift, D.R., (1981). Preliminary Investigation of Periphyton and Water Quality Relationships in the Everglades Water Conservation Areas. SFWMD, Tech. Pub. No. 81-5. (DRE-131).

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Web-based sources of information

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www.dep.state.fl.us/water/wqssp/everglades/

http://sofia.usgs.gov/publications/sir/2004-5142/index.html

www.evergladesplan.org/cerp_report/jan%202003/jan03.htm

www.sfrestore.org/links.html

www.sfwmd.gov/org/ema/envmon/wqm/index.html

www.ers.usda.gov/briefing/sugar/background.htm

The First National Conference on Ecosystem Restoration was held December 6-10, 2004 in Orlando, Florida. It enabled national and international information exchange on many issues involved in landscape-scale ecosystem restoration. Fellow scientists, educators, and restoration planners, managers and decision-makers met to discuss similarities and differences and successes and failures of ecosystem restoration programs throughout the country. For more information and proceedings, the reader is referred to http://sofia.usgs.gov/ncer.¤

Loan Reports

The following publications are available on loan from the USCID Denver Office.

Hydraulic Canals: Design, Construction, Regulation and Maintenance, 2005. José Liria Montañés.

Irrigation and Drainage Performance Assessment: Practical Guidelines, 2005. ICID Working Group on Performance Assessment of Irrigation and Drainage. Principal authors are M. G. Bos, M. A. Burton and **David J. Molden.**

Planning and Designing of Micro-Irrigation in Humid Regions, 2005. International Commission on Irrigation and Drainage.

Irrigation and Drainage in China, 2005. Chinese National Committee on Irrigation and Drainage.

Flood Control and Management in China, 2005. Chinese National Committee on Irrigation and Drainage.

History of Irrigation in Taiwan, 2002. Chinese Taipei Committee, ICID.

History of Irrigation and Flood Control in China, 2005. Chinese National Committee on Irrigation and Drainage

Water Operation and Maintenance Bulletin, June and September 2005. Bureau of Reclamation.

Water Conservation News, Spring/Summer 2005. California Department of Water Resources.

INCID News, April-June 2005. Indian National Committee on Irrigation and Drainage.

15th Annual Report, 2004-2005. Indian National Committee on Irrigation and Drainage.

Water International, September 2005. International Water Resources Association.

IWRA Update, July and October 2005. International Water Resources Association.

Colorado Water, August and October 2005. Water Center of Colorado State University.

Western Water, September/October and November/December 2005. The Water Education Foundation.

Water, Nature and People, Spring and Autumn 2005. Korea Water Resources Corporation.

Resources, Summer 2005. Resources for the Future.

Lake Powell Tapestry, Fall 2005. Friends of Lake Powell.¤

ICID Issues Reports

ICID launched the Country Policy Support Programme in 2002 to contribute to the development of effective options for water resources development and management to achieve an acceptable food security level and sustainable rural development. The program is implemented in five countries — China, India, Egypt, Mexico and Pakistan — and is funded by the Government of The Netherlands. The first six reports have been published and are available on loan from USCID:

- *Water Resources Assessment of Sabarmati River Basin, India*
- *Water Resources Assessment of Brahmani River Basin, India*
- *Water Policy Issues of India*
- *Water Resources Assessment of Jiaodong Peninsula Basin, China*
- *Water Resources Assessment of Qiantang River Basin, China*
- *Water Policy Issues of China*¤

Book Review

Modern Land Drainage

by William R. Johnston, Consultant, Grand Blanc, Michigan

Every now and then we need to take a fresh look at the planning, design and management of any infrastructure on which society depends. In this case, it is the planning, design and management of agricultural drainage systems. Lambert K. Smedema, **Willem F. Vlotman** and David W. Rycroft have smartly done just that in their recently published book ***Modern Land Drainage*** (2004 Taylor & Francis Group, London, UK). *Modern Land Drainage* is an updated version of the 22-year-old book *Land Drainage*, by Smedema and Rycroft, published by Batsford Ltd. UK (1983).

During the most recent ICID Congress held in Beijing China, Dr. Vlotman asked me if I would review his new book. It is not always easy to fairly critique a friend's work product. However, after thinking about it, I agreed to review *Modern Land Drainage* as I had not recently read a book focused specifically on agricultural drainage. Over the years, during my career as a drainage engineer, I have read, studied and used a number of books on general drainage topics and specifically on agricultural drainage. Many of these books focused on one or another aspect of drainage for a particular climate or a specific area of the world, but were frequently lacking in the development of a complete discussion of the agricultural picture. Some were, in my opinion, not really suitable as text books. However, I was pleasantly surprised by the thoroughness that *Modern Land Drainage* covers worldwide agricultural land drainage issues. Sufficient detail makes this an excellent text book for college or university level students. In this work, there are well written discussions on the drainage of humid rainfed land, arid and semi-arid irrigated land, and of humid tropics land.

Modern Land Drainage covers all hydrologic and soil-water relationships necessary to provide the reader or student a well founded understanding of the basics needed to appreciate the science behind well designed agricultural drainage systems. All aspects of planning, design and management of surface and subsurface agricultural drainage systems are also presented in this new book in sufficient detail for the reader to understand the complexity of land drainage necessary for the production of agricultural crops.

Since much of my professional work in agricultural drainage has been related to drainage problems in saline arid and semi-arid land, I was particularly interested in the discussion on soil salinity and its control. *Modern Land Drainage* describes the causes of soil salinity; problems related to different types of salt; plant toxicity problems; salinity classification; and the analysis of these topics very well. Recently developed salinity monitoring and mapping techniques are also discussed, along with remote sensing methods for dealing with saline soils. Soil salinization and plant-soil-water relationships are introduced to give the reader a good understanding of the importance of maintaining salt balance in any soil, in order to produce high yielding agricultural crops.

Special topics such as Drainage of Rice Lands and Computer Applications, plus discussions on field and laboratory work necessary to survey and investigate drainage problems make *Modern Land Drainage* unique from other books on agricultural drainage in that it covers most aspects of all topics necessary to inform the reader about the complexities and intricacies of the drainage of agricultural land.

In summary, I believe *Modern Land Drainage* is a well written book and a needed addition to the literature on the topic of agricultural drainage. If I were to teach a course on agricultural drainage, I would choose *Modern Land Drainage* as my text book.

(Editor's note: Modern Land Drainage may be ordered from A. A. Balkema Publishers, orders@swets.nl, www.balkema.nl. 450 pages, $109.)¤

Mexico to Host World Water Forum

The **4th World Water Forum** will take place March 16-22, 2006, in Mexico City. The objective of the World Water Forum, an initiative of the World Water Council, is to raise the awareness of water issues throughout the world. As a premier international event on water, it seeks to enable multi-stakeholder participation and dialogue to influence water policy making at a global.

The theme of the 4th World Water Forum is *Local Actions for a Global Challenge*. The organizers of the 4th Forum share the belief that, regardless of their root causes, water related problems have their greatest impacts at the local level. The organizers, in consultation with a host of key international, national and local water organizations, have designed a thematic content for the Forum that will serve as a framework for dialogue and deliberation throughout the Preparatory Process and the Forum in Mexico.

The thematic content addresses some of the most important challenges and problems faced by the global water polity (represented by the five **Framework Themes**) and also includes some of the processes and factors that have been considered by many to affect the unfolding of local actions worldwide (represented by the five **Cross-cutting Perspectives**).

Framework Themes:

- Water for Growth and Development
- Implementing Integrated Water Resources Management (IWRM)
- Water Supply and Sanitation for All
- Water Management for Food and the Environment
- Risk Management

Cross-Cutting Perspectives:

The Framework Themes of the Forum will be analyzed from the following five Cross-cutting Perspectives, which represent different factors directly influencing the feasibility of local actions.

- New Models for Financing Local Water Initiatives
- Institutional Development and Political Processes
- Capacity-building and Social Learning
- Application of Science, Technology and Knowledge
- Targeting, Monitoring and Implementation Assessment

Emphasis will be on exchanges between various stakeholders rather than unilateral views and presentations. Participants can therefore expect that they:

- Can bring in their own experience and learn from others
- Present their own local action to have others learn from them
- Find like-minded water managers and water experts or others to support policy changes
- Meet stakeholders from other sectors with different views on their issues

The 30 topic sessions per day are organized within the five framework themes and crosscutting perspectives with a regional orientation. Keynote speeches will be included in sessions as well as special keynotes by high level officials such as heads of state and presidents of world organizations. A typical day at the Forum will be structured as follows:

Morning

- Regional meeting (plenary session)
- Keynote speech (plenary session)
- Thematic plenary session
- Thematic parallel sessions

Afternoon

- Thematic parallel sessions
- Cultural events

Held in conjunction with the World Water Forum, the **World Water Expo** will be a major international exhibition showing technical solutions to water issues. Its goal is to present and promote better methods, as well as equipment and technological solutions, to contribute to solving world water problems.

For more information on the World Water Forum, visit www.worldwaterforum4.org.mx.¤

World Bank Seeks Success Stories

The Water for Food Group of the World Bank is in the process of identifying innovations that led to success stories in applying cost recovery. For many years, several countries have considered cost recovery as a tool for improving the financial sustainability and water use efficiency of irrigation and drainage systems. The results are diverse and dependant on the approaches, mechanisms and arrangements used at the national and local levels.

The objectives of the initiative are to compare notes with other sectors, disseminate good practices and promote policies that scale-up the success within the irrigation and drainage sector.

The Bank has requested that members of the ICID community provide brief descriptions of successful projects to Salah Darghouth (sdarghouth@worldbank.org) or Safwat Abdel-Dayem (safwat_cid@hotmail.com.)¤

ASABE Launches Job Board

The American Society of Agricultural and Biological Engineers has developed an interactive job board. Employers and recruiters can use the ASABE Career Center to quickly reach individuals interested in engineering and technology for biological, food and agricultural systems.

For job seekers, the ASABE Career Center offers database searchability, a confidentiality feature and automatic e-mail notification when new listings match their job search criteria.

The service, available at www.asabe.org/membership/careercenter.htm, is free to job seekers. Employers pay a nominal fee to post openings.¤

Former Reclamation Commissioner Dies

Dennis Underwood, former Commissioner of the **Bureau of Reclamation**, died recently following a long battle with cancer. Underwood served as Commissioner from 1989-1993 and most recently served as the Chief Executive Officer and General Manager of the **Metropolitan Water District of Southern California**.

Previously, Underwood served as the Executive Director of the Colorado River Board of California. He worked extensively with the seven basin states, the International Boundary and Water Commission, and various Federal agencies on developing and managing Colorado River water resources.¤

Missouri Basin Report

Drought maintains its grip on most of the upper Missouri basin, according to the Corps of Engineers. Storage in the six main stem reservoirs remained steady through October, despite extraordinary conservation measures.

The 2005 commercial navigation season was shortened by 48 days, the most since the system of reservoirs first filled in 1967. In addition, releases from the dams have been cut far below normal levels. The release rate at Gavins Point Dam was reduced 75 percent, from the average of 36,100 cubic feet per second to only 9,000 cfs.

The current runoff forecast for 2005 is 20 million acre-feet, compared to the normal of 25.2 MAF. System storage ended October at 36.3 MAF, 19.5 MAF below average.

The six main stem power plants generated 314 million kilowatt hours of electricity in October, 37 percent of normal, because of reduced releases from the dams. This was the second lowest October generation on record. The forecast for 2005 energy production is 5.5 billion kWh, compared to a normal of 10 billion kWh.¤

Corps Website to Provide Levee Data

The Corps of Engineers is publicly releasing available data relevant to the performance of the hurricane and storm protection system around New Orleans during Hurricane Katrina. Current data is posted at http://ipet.wes.army.mil. Additional data will be added to the web site as it becomes available.

Because the Corps of Engineers wants to find out what happened, from an engineering perspective, to the New Orleans protection system to ensure optimum designs for its reconstruction and for future projects, the Chief of Engineers commissioned an Interagency Performance Evaluation Task Force (IPET) to perform the engineering evaluation. An External Review Panel, organized by the American Society of Civil Engineers, will provide independent oversight of the IPET evaluation.

The data released will include design memoranda, dating back to the 1960s, and associated reports for the Lake Pontchartrain, Louisiana, and Vicinity High Level Plan. The information being released includes the project plan, hydrology and hydraulics, geology, foundation investigation and design (including the field exploration, soil borings and laboratory testing) and the structural design.

The IPET and several other engineering and professional organizations, including the University of California, Berkeley (funded by the National Science Foundation), are studying the performance of the levees and floodwalls during Hurricane Katrina. Hopefully, the data that is being publicly released will help all interested organizations in reaching engineering-based conclusions as to how the protective structures performed during the hurricane.

Much of the pre-Katrina documentation on the New Orleans levees and floodwalls was done before digital office equipment became available and includes large design and construction drawings and reams of paper related to contracts and other records. IPET personnel are working to digitally scan the documentation as quickly as possible.

The data collection teams have also been doing field work in the New Orleans area to secure as much data as possible related to the performance of the levees and floodwalls. Data collection efforts have been ongoing to gather as much data as possible before it was covered or destroyed by cleanup or reconstruction efforts.

The IPET is collecting pre-Katrina documentation (design and construction drawings, soil sample records, etc.), post-Katrina documentation (hydrographic surveys, soil samples, concrete cores, etc.) and other performance data (eyewitness accounts, photographs, etc.).

IPET will use collected data, laboratory testing and modeling activities in its analysis. Their final report will be released in June 2006. However, any important findings will be continually shared with those doing the New Orleans levee and floodwall reconstruction work.

The Secretary of Defense has also directed the Secretary of the Army through the Assistant Secretary of the Army for Civil Works to convene an independent panel of national experts under the direction of the National Academies to perform a high-level review and issue findings based on the IPET, ASCE panel and other data. This panel will release its report in July 2006.¤

SCADA (continued)

researchers attended — more than 165 participants, from six countries.

The format of this event was somewhat different from others in that the planning committee made a deliberate effort to spotlight the exhibitors. Each exhibitor had an opportunity to say a few words before the entire audience. Participants and exhibitors alike commented that the exhibitor participation enhanced the conference. A few manufacturers in attendance even mentioned that it was a shame that they didn't participate with an exhibit.

The enthusiasm during the Conference led to a brief session on Friday afternoon to discuss the overall Conference topic and to gauge interest in more conferences of this nature. The primary points gleaned from that well-attended session were (i) yes, this is definitely a high-interest topic; (ii) it would be timely to have another similar conference in three years, because of the rapid changes in technologies and the anticipated acceleration of modernization case studies in districts; and (iii) USCID members should plan now to present case studies of successful modernization and SCADA projects at this future conference.

The keynote speaker was Phillip C. Ward, Director of the Oregon Water Resources Department. **Albert J. Clemmens**, Director of the U.S. Water Conservation Laboratory, USDA-ARS, gave a dinner presentation.

The Conference began with a Wednesday morning field tour of Portland Water Bureau SCADA applications. An all-day field tour on Saturday included a visit to the **Bureau of Reclamation**'s Tualatin Project, west of Portland. Participants also enjoyed a tour of the Montinore Vineyards.

The 348-page Proceedings, including 34 papers, is available from USCID. The price is $30 for Members, $60 for others; shipping to U.S. addresses is included.¤

SCADA Conference Sponsors and Exhibitors

USCID appreciates the support of the following organizations for their sponsorship of activities and events during the SCADA Conference.

- Axiom-Blair Engineering
- California Polytechnic State University, ITRC
- Geo-Spatial Solutions Inc.
- Rubicon Systems Australia Pty. Limited

Conference Exhibitors were:

- Advanced Drainage Systems, Inc.
- Axiom-Blair Engineering
- Branom Instrument Co.
- California Polytechnic State University, ITRC
- Campbell Scientific, Inc.
- Control Microsystems
- Firestone Building Products Company
- Geo-Spatial Solutions Inc.
- International Water Screens
- ISCO Industries
- MACE USA LLC
- ROM Communications
- Rubicon Systems Australia Pty. Limited
- SensorTrek LLC
- Sierra Control Systems, Inc.
- SonTek/YSI Inc.
- Stevens Water Monitoring Systems, Inc.
- Sutron
- Teledyne RD Instruments
- Watch Enterprises
- WEST Consultants, Inc.

Lyman Willardson, 1927 - 2005

Lyman S. Willardson, Emeritus Professor, Utah State University, died October 4, 2005, in Logan, Utah. He was 78.

Dr. Willardson received B.S. and M.S. degrees in Civil and Irrigation Engineering from Utah State University. In 1952, he accepted employment as an irrigation engineer with the United Fruit Company in the Dominican Republic. He was later transferred to Honduras. In 1954, he joined the Agricultural Experiment Station of the University of Puerto Rico, where he did irrigation and drainage research until 1957. In 1957, he accepted a position with the USDA Agricultural Research Service at Utah State University as a Research Irrigation Engineer. After he received a Ph.D. in Agricultural Engineering in 1967 from Ohio State University, he was transferred to the Imperial Valley of California where he worked in irrigation and drainage engineering research until 1974. He resigned from ARS after 20 years of service to accept a position as Professor of Irrigation and Drainage Engineering at Utah State University, where he taught and conducted research through the spring semester of this year, well past his official retirement in 1994.

During his professional career, Dr. Willardson was active in national and international professional engineering societies. He served on the USCID Board of Directors from 1981 to 1986. He was the recipient of the Tipton Irrigation Award from the American Society of Civil Engineers and was elected a Fellow in that society. He was also elected to the International Drainage Hall of Fame located at Ohio State University. He had been an irrigation and drainage consultant in many countries for private, government and international agencies. He had 200 published articles related to irrigation and drainage and was co-author of a definitive book on drain envelopes.

He is survived by his wife Vivian and six children.¤

News of Members

David G. Cone has accepted a position as Water Resources Manager with the Kings River Conservation District, Visalia, California.

Robert O. Evans, Professor and Department Extension Leader, North Carolina State University, has been named a Fellow of the American Society of Agricultural and Biological Engineers. He was cited for outstanding contributions to soil and water engineering.

Max D. Goldenshon is now the ASE Senior Manager at Booz Allen Hamilton, McLean, Virginia.

Megh R. Goyal was honored as the "Father of Irrigation Engineering in Puerto" by the Puerto Rico Section of the American Society of Agricultural and Biological Engineers. He has served as a Professor at the University of Puerto Rico since 1979. Irrigation systems in Puerto Rico are designed, developed and managed based on Goyal's pioneering work on agroclimatiology, evapotranspiration and drip irrigation.

Ramesh S. Kanwar has been named a Fellow of the American Society of Agricultural and Biological Engineers for a distinguished career in soil and water engineering as a researcher, teacher, administrator and developer of water management programs worldwide. He is Professor and Department Chair, Iowa State University.

E. Gordon Kruse received a 2005 Presidential Distinguished Service Award from the American Society of Agricultural and Biological Engineers for his exceptional service to the Society by ensuring that all ASABE historic landmarks are properly recognized on the ASABE website.

John L. Merriam, Professor Emeritus, California Polytechnic State University, has been named a Fellow of the American Society of Agricultural and Biological Engineers. He was recognized for dedicated service and extraordinary contributions toward increased agricultural production in the U.S. and internationally through widely accepted irrigation water management programs.

RD Instruments is now a wholly-owned subsidiary of Teledyne Technologies Incorporated and is known as **Teledyne RD Instruments.**

W. Martin Roche, a private consultant, is currently providing services to ECO:LOGIC Engineering. He is the on-site inspector for a major upgrade to the Nevada City, California, wastewater treatment plant.

Wynn R. Walker received the 2005 Award for the Advancement of Surface Irrigation from the American Society of Agricultural and Biological Engineers. He was recognized for major contributions leading to worldwide improvement of surface irrigation systems and practices.¤

New Members

The following have joined USCID since publication of the last Newsletter:

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USCID Notes

by Executive Vice President Larry Stephens

As this issue of the *USCID Newsletter* goes to press, **your** society is completing one of its most successful years. Last April, we organized the *Third International Conference on Irrigation and Drainage*, held in San Diego. The Conference focused on water district governance issues and attracted participants from the U.S. and abroad. **Mark Svendsen** and **Dennis Wichelns** provided great leadership for the Conference.

Then, during the last week of October, we met in Vancouver, Washington, for a Conference on *SCADA and Related Technologies for Irrigation District Modernization*. While the San Diego event was a success, the SCADA Conference was exceptional. It is clear that SCADA (Supervisory Control and Data Acquisition) is a topic of great interest to everyone involved in water management. In fact, participants agreed that USCID should organize a follow up SCADA conference, probably in 2008.

Several factors contributed to the SCADA meeting success — **Charles Burt**, the Conference General Chairman, did an exceptional job of organization; 34 authors shared their successful applications of SCADA technology; these papers resulted in a Conference Proceedings that should prove to be a "best seller." Another reason for the success was an innovation which gave the 20 exhibiting firms more than the usual involvement in the Conference — a focused effort to ensure that participants and exhibitors would have plenty of opportunity to meet and discuss ways that SCADA (as well as other products and services) can be applied and used for water management. Our efforts to incorporate exhibitors into the Conference included a session during which a representative of each firm was introduced and given a few moments to tell what goods and services are offered by the organization, while a photo of the exhibit and staff was projected. Immediately following these presentations was an hour-long coffee break in the exhibit hall. During the two-day exhibition, we had two continental breakfasts, four coffee breaks, two buffet lunches and a reception in the exhibit room — giving exhibitors and participants plenty of time for discussions. Many people attending the Conference, exhibitors and participants alike, were quite pleased! Look for us to continue this practice at future USCID meetings.

Congratulations to **Mark Svendsen** for his election to a three-year term as Vice President of ICID. The election was held during the ICID International Executive Council Meeting in Beijing. Mark will help newly elected President Peter Lee lead ICID until the next ICID Congress in 2008.

During a reception for ICID participants in Beijing, USCID introduced a video presentation promoting the Sacramento ICID IEC Meeting and USCID's **Fourth International Conference** in September/October 2007. Also distributed in Beijing was the Sacramento *Second Announcement and Call for Papers*. Planning for the Sacramento meeting, under the leadership of **Bert Clemmens**, continues. Bert has an excellent Planning Committee but additional people are needed — USCID Members are invited to join. The next Planning Committee meeting will be held in Sacramento next February. Please contact me if you can participate.

Thanks to the Sacramento Cooperating Organizations, **California Department of Water Resources** and the **Bureau of Reclamation**. DWR printed the Second Announcement and Reclamation prepared the video presentation. And, thanks to **CH2M Hill** for recently becoming the eighth Sacramento Gold Sponsor.¤

USCID Meetings

October 24-29, 2006, Boise, Idaho. Ground Water and Surface Water Under Stress: Competition, Interaction, Solutions.

ICID Meetings

September 10-17, 2006, Kuala Lumpur, Malaysia. 57th IEC Meeting and 7th Micro Irrigation Congress.

May 2-5, 2007, Tehran, Iran. 4th Asian Regional Conference.

September 30 - October 5, 2007, Sacramento, California. 58th IEC Meeting, and Fourth USCID International Conference on Irrigation and Drainage.

October 2008, Lahore, Pakistan. 59th IEC Meeting and 20th Congress.

2009, Abuja, Nigeria. 60th IEC Meeting.