International Affairs
Annual Report 2016
Introduction

The Bureau of Reclamation (Reclamation) has long been active internationally, and is known worldwide for its breadth and depth of expertise. Reclamation has a comprehensive international program featuring activities such as technical assistance, training, visitor programs, seminars/workshops, and technology exchanges.

The Native American and International Affairs Office serves as the main point of contact for all international activities for Reclamation, with the exception of regional transboundary water management activities. Reclamation makes its expertise in water resources management available to support U.S. foreign policy goals, assist nations in managing their water resources, and cooperate with others to exchange technical information and expertise.

Technical Assistance Updates

Technical assistance programs typically involve the assignment of Reclamation experts overseas on a short-term basis. Each program is designed to address the specific needs of the requesting agency and all costs are fully reimbursable.

In 2016, over 40 Reclamation employees visited nine different countries to attend conferences and meetings, and to conduct training, technical assistance and inspections. These countries include India, Oman, South Africa, Thailand, and Vietnam, among others.

Tehri Dam Comprehensive Inspection, India

In June 2016, four engineers and one engineering geologist from Reclamation’s Technical Service Center (TSC) traveled to New Tehri and Rishikesh, India, to provide dam safety principles and programs training to Tehri Hydro Development Corporation India Ltd. (THDCIL) employees, and to inspect Tehri Dam—India's highest dam and the fifth highest dam in the world.

THDCIL, a joint venture of the Indian national government and the state government of Uttar Pradesh, operates two large dams on the Bhagirathi River, one of the two main tributaries of the Ganges.

Reclamation conducted a comprehensive review of Tehri Dam—inspecting the entirety of the dam; providing a detailed review of design, analysis, and construction history; and conducting a dam-safety risk analysis. The engineers provided THDCIL with the draft final report in December 2016, to be followed by a final report in 2017.

THDCIL has requested that Reclamation provide a similar comprehensive review for the second dam in their system. “The safety of dams training and the comprehensive review of Tehri Dam went very well. We are satisfied with the
Bureau of Reclamation team,” said THDCIL Executive Director H.L. Arora. “All experts are very experienced and have excellent knowledge.”

**Smart Infrastructure for the Mekong, Laos and Vietnam**

Reclamation engineers are using their expertise to support environmental safeguards for infrastructure projects in the Lower Mekong region by contributing to a multiyear “Smart Infrastructure for the Mekong” (SIM) initiative in both Laos and Vietnam. SIM is funded through the United States Agency for International Development (USAID). Reclamation participates through the Department of the Interior’s International Technical Assistance Program (DOI-ITAP).

In January 2016, two Reclamation engineers partnered with the U.S. Army Corps of Engineers (USACE) to conduct a 5-day Dam Safety Inspections and Monitoring workshop for personnel of the Laos Ministry of Energy and Mines. Workshop participants unanimously agreed that carrying out an actual comprehensive dam safety evaluation, assisted by USACE and Reclamation training personnel, is the best next step for this program.

In July 2016, a DOI-ITAP team, including a Reclamation engineer from the Mid-Pacific Region, traveled to Vietnam to conduct two Rapid Dam Safety workshops. Each workshop had more than 70 participants from over 20 provinces. Both workshops were well-received and the participants saw the value in implementing workshop topics within their dam safety program. The team has been invited to return to Vietnam, beginning in 2017, to provide dam inspection training to dam tenders throughout the country over the next two years.

**National Water Agency of Brazil**

Reclamation worked under a Memorandum of Understanding (MOU) between Brazil’s National Water Agency (ANA) and the U.S. Geologic Survey (USGS) to conduct a series of webinars. The series covered a variety of topics, including floodplain mapping for dam breach studies, operation and control of large water transfer systems, emergency action plans, and dam safety risk assessments. The webinars were very well-received by ANA and will be followed up in 2017 by a series of in-country visits and study tours through the same USGS MOU.

**Middle East Desalination Research Center, Oman**

In June 2016, a TSC chemical engineer traveled to Muscat, Oman, to attend the Middle East Desalination Research Center’s (MEDRC) country technical representative and executive meetings.

Since 1998, the U.S. Department of State (State Department) has supported MEDRC activities that enhance the desalination capabilities in the Middle East and North Africa. Reclamation has interagency agreements with the State Department and USAID, who fund this technical assistance.
MEDRC was established under the Multilateral Middle East Peace Process Working Group on Water Resources and promises to increase water supply through desalination technologies. MEDRC addresses two of the most pressing global and regional challenges: water and peace.

American Institute of Taiwan

The technical assistance and cooperation for water resources program between the American Institute in Taiwan and the Taipei Economic and Cultural Representative Office has been active for nearly 30 years. This year, four Reclamation TSC employees traveled to Taiwan to give a two-and-a-half-day training to Taiwan’s Water Resources Agency (WRA) on dam safety and best practices in risk analysis. They also provided consultation on specific water resource projects in Taiwan. The team visited four sites, evaluating a range of issues such as reservoir re-operation to increase storage capacity, reservoir first-filling monitoring, and embankment construction for a new off-channel reservoir. The team prepared a technical report to document their findings and recommendations.

Students are measuring for the fouling potential of water in reverse osmosis systems, 2015. Photo courtesy of Middle East Desalination Research Center.

Puerto Rico Electric Power Authority

Reclamation has engaged with water resource entities in Puerto Rico since the 1960s and is currently providing technical assistance funded by the Puerto Rico Electric Power Authority for various dam safety issues, with studies ranging from initial evaluations to risk analyses, and at all levels of design.

In 2016, Reclamation concluded a preliminary dam safety evaluation and engineering analysis for Toa Vaca and Cidra dams. Recommendations were also provided for Patillas Dam to limit reservoir levels until

For more than ten years, Reclamation staff have also been collaborating with WRA to develop a number of advanced numerical models to solve many water resource issues such as river restoration, turbidity currents, basin and reservoir sediment management, and dam and levee breaching. These activities are funded by Reclamation’s Science and Technology Program and Taiwan’s WRA. In 2016, Reclamation engineers continued to develop several such models related to turbidity currents, flow and sediment in river systems, and dam breaching. These models will be tested in the field in 2017 and will look at issues such as river restoration, sediment management, turbidity current, and dam and levee breaching.

In November 2016, Reclamation hydraulic engineer Yong Lai and two professors from the University of Iowa traveled to Taiwan to provide multi-day technical training to WRA engineers, visit field sites where studies may be carried out in 2017, and present Reclamation study results that were carried out earlier in 2016. The team visited several dams and weirs, with a focus on evaluating erosion and sediment mitigation. The team also conducted a two-day training course on stream stability, erosion, sediment, nutrients, and flood forecasting. The team concluded by presenting the 2016 progress of the Reclamation technical assistance works and discussing activities to be done in 2017, which is the 30th anniversary of cooperation.
seismic dam safety risks associated with its hydraulic fill embankment can be addressed through structural modifications. This work is planned to continue in 2017. Guayabal Dam is a slab and buttress concrete dam (an Ambersen dam) that also has seismic dam safety deficiencies. As a result, appraisal level designs are being developed by the TSC to address the seismic risks.

SEED Seminar 2016

From June 6 to 14, 2016, Reclamation hosted its annual Safety Evaluation of Existing Dams (SEED) seminar and study tour. Reclamation welcomed 33 participants from nine countries: Brazil, Finland, Ghana, India, Korea, Paraguay, Spain, Sweden, and Taiwan. Participants attended a week of training at the TSC and then participated in a study tour in the State of Washington.

The first week in Denver included lectures, case histories, and structured discussions covering all aspects of a dam safety examination program led by Reclamation engineers and geologists with extensive experience and knowledge in the areas of design, construction, operation, maintenance, and dam safety. The course outlined the hydrologic, seismic, geotechnical, electrical, mechanical and structural considerations of dam safety as well as operations, maintenance, surveillance, and emergency preparedness.

Training, Visitor, Seminar, and Workshop Updates

Reclamation provides reimbursable technical training, workshops, and visitor programs for foreign visitors to the United States. Programs are tailored to fit each request and vary in length. Programs usually combine office assignments and training with field visits or study tours to Reclamation’s Denver, regional, and area offices and facilities.

In fiscal year 2016, Reclamation hosted 466 visitors from 74 countries, including Australia, Ghana, India, and Mongolia, among others.

The study tour brought participants to Washington’s Yakima project, including site visits to Cle Elum, Kachess, and Easton Diversion dams. The SEED seminar has been offered since 1983 and over 1,200 people from 90 countries have participated.
World Bank and Nile Basin Officials Attend Colorado River Study Tour

From August 8 to 9, 2016, a delegation from the Nile Basin counties, hosted by the World Bank, visited Reclamation’s Lower Colorado Region. The high-level delegation included ministers from Egypt and Ethiopia. Reclamation staff held discussions about the operations of Hoover Dam. There were also presentations on international relationships and negotiations, water accounting, river operations, and hydropower generation.

Visiting Scholar Dr. Baekenaz A. Zeidan of Egypt

In February 2016, the Mid-Pacific Region hosted a visiting scholar from Egypt, Dr. Bakenaz A. Zeidan. She met with staff on a range of topics, including operations at California dams and reservoirs, hydrologic design of dams, hydropower, flood and drought management, and water security. Dr. Zeidan is a Professor of Dams and Water Resources at the Engineering Tanta University in Egypt and is currently a visiting scholar at the University of California, Berkeley. She received a fully funded fellowship from USAID. Dr. Zeidan was appreciative for the visit to Reclamation and said that it was a milestone in her career.

Government of India Central Water Commission

The Central Water Commission (CWC) of India is implementing a Dam Rehabilitation and Improvement Project in four states in India with World Bank assistance. A total of 223 large dams will receive substantial rehabilitation under this project. This year, Reclamation developed a training program for CWC staff to attend in the United States. In addition to attending the 2016 SEED seminar, Reclamation organized a post-seminar study tour for the 19 CWC participants. This included visits to O'Sullivan and Grand Coulee dams in the State of Washington.

Visiting Scholar Mr. Hajrudin Dzafo of Bosnia

Mr. Hajurdin Dzafo, a doctoral candidate at the University of Sarajevo spent the month of August at Reclamation’s Hydraulics Investigations Laboratory in Denver, Colorado. Mr. Dzafo studied the application of computational fluid dynamic (CFD) modeling and the flow of water in a Coanda-effect intake. Reclamation staff benefited from Mr. Dzafo’s expertise and ability to stimulate Coanda-effect screen performance. Many opportunities were identified using CFD modeling to gain new insight.
Water Resources Agency of Taiwan Visits TSC and Lower Colorado Region

Four engineers from Taiwan’s Water Resources Agency visited the United States in October 2016. The delegation met with TSC staff. They discussed ongoing projects under Reclamation’s agreement with the American Institute of Taiwan. Technical staff also provided demonstrations in Reclamation’s Hydraulic Investigation Laboratory. The delegation also visited Estes Park Powerplant and Rueter-Hess Dam in Colorado. They concluded with a tour of Hoover Dam and a visit to the Grand Canyon.

Equipment Inspections

Much of Reclamation’s equipment needed for repairs and power plant upgrades is manufactured by companies abroad. To ensure products are manufactured as specified, Reclamation’s technical staff conducts equipment inspections and witnesses factory testing prior to the equipment being delivered to our facilities.

In 2016, 20 Reclamation experts traveled to ten different countries to perform inspections and witness factory testing. This included visits to Austria, Brazil, Mexico, the Netherlands, South Korea, and Switzerland.

Travel Processes

Traveling abroad for work in 2017? Our processes were recently updated to be more streamlined and efficient. We have updated the request-for-international-travel-memo template and developed a new travel checklist. Please contact Catie Nugent at cnugent@usbr.gov for any information you may need regarding the international travel process. You can also visit our website for more information:

http://intra.usbr.gov/international/travel/index.html

The Year Ahead: 2017

2017 promises to be another exciting and productive year for international work at Reclamation. 2017 will mark the 30th anniversary of collaboration between Reclamation and Taiwan, which will be commemorated in Taiwan at our annual meeting. The annual SEED seminar and study tour will take place from June 5 to 14, 2017. The study tour will be in the Upper Colorado Region, including a tour of Rocky Mountain National Park and visits to Starvation, Upper Stillwater, Jordanelle, Echo, East Canyon, and Hoover dams. A group of Reclamation engineers may perform safety inspections on
Koteshwar Dam, the second dam in THDCIL’s system in India. Reclamation will also strengthen collaboration between ANA Brazil, where a series of study tours in the United States and in-person training and tours in Brazil are anticipated.

If you are interested in receiving more news about Reclamation’s international affairs program, please fill out the form to join our email list: http://goo.gl/forms/TnFn9hDMeD