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Dam Safety Association Presents Annual Awards

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At each annual conference, the Association of State Dam Safety Officials recognizes individuals who have made outstanding contributions to the field of dam safety. This year's award winners were recognized on September 11th, at the 2007 ASDSO Awards Banquet in Austin, Texas.

2007 National Rehabilitation Project of the Year: Cobble Mountain Dam Outlet Works Rehabilitation Project; Springfield Water and Sewer Commission, Springfield, Massachusetts

ASDSO recognized the Springfield Water and Sewer Commission, Camp Dresser & McKee, and R.H. White Construction for an innovative plugging system installed at the Springfield Water and Sewer Commission's Cobble Mountain Reservoir Dam, located in Granville, Massachusetts. The dam was completed in 1931, and for the past 75 years the reservoir has served as the primary drinking water source for the City of Springfield and surrounding communities.

In 2001, the Commission hired Camp Dresser & McKee (CDM) of Wethersfield, Connecticut to design a rehabilitation project for the diversion tunnel high-pressure outlet works facility, which operates under 200-ft of static head. The project included replacement of two 42-in x 30-in Larner-Johnson differential needle valves and rehabilitation of two 40-in Escher Wyss rotary (ball) style guard valves.

In 2005, R.H. White Construction of Auburn, Massachusetts was awarded the contract to rehabilitate the guard valves and replace the needle valves. R.H. White replaced the needle valves with 30-in diameter US Bureau of Reclamation style jet-flow gates, which discharge directly into the 1500-ft-long, 12-ft diameter diversion tunnel.

There were no isolation gates installed upstream of the guard valves in the original design of the dam and tunnel, so the valves could not be dewatered prior to disassembly. These conditions required the design of a unique non-entry mechanical plugging system, which allowed insertion of a 40-in diameter pneumatic

bulkhead plug, from the gate chamber (in the dry), through the guard valve and into the upstream conduit. This was accomplished while the system was under 200-ft of static head. After the plug was inflated within the conduit, and mechanically restrained in the gate chamber, the guard valves could be dewatered and disassembled for rehabilitation in the dry. The plugging system and jet-flow gates were built by Steel-Fab, Inc., of Fitchburg, Massachusetts, and installed in the outlet by R.H. White Construction in November 2006. The new jet-flow gates and rehabilitated guard valves were put into service in August 2006.

The Commission, CDM, and R.H. White Construction were pleased with the success of many aspects of the project, including:

- 1) Innovative design solutions that showed resourcefulness in planning and execution;
- 2) Use of a unique non-entry pneumatic bulkhead plugging device for the application;
- 3) Replacement of potentially dangerous needle valves with jet-flow gates, the first installation of its type in New England;
- 4) Safer and more reliable service of the outlet works for the Commission;
- 5) A savings of \$1.6 million dollars because divers were not needed;
- 6) Zero injuries in a high-risk confined space;
- 7) The protection of the water supply, which continued to provide water service to 250,000 consumers throughout the project; and
- 8) Unique partnering capabilities of a proactive water utility, an engineering consulting firm, a general contractor, and a metal fabricating contractor.

2007 National Award of Merit: Former Representative Sue W. Kelly (R-NY)

The extraordinary efforts of Congresswoman Sue W. Kelly (R-NY) enabled the Dam Safety Program to be reauthorized at the end of the 110th Congress in December 2006. Representative Kelly, a longstanding dam safety advocate, had just lost her bid for re-election to the 110th Congress and was preparing to leave her Congressional office. The Dam Safety Act of 2006 (HB 4981) had advanced to the House floor; however, there was no time remaining for a floor vote and the Bill seemed doomed even though it was so close to passage. Sue Kelly recognized the months of hard work that had enabled the Bill to advance to the floor, and spent considerable time and extraordinary effort to move it through a procedural maneuver to enable last-minute passage. Even though her bill, the Dam Repair and Rehabilitation Act of 2006 (H.R. 1105) would not be passed in 2006, she advanced dam safety in the United States by ensuring

passage of the Dam Safety Act of 2006, continuing the necessary work of the National Dam Safety Program.

Northeast Region Award of Merit: Mount Mansfield Company/Stowe Mountain Resort, Stowe, VT

Mount Mansfield Company, owner of the Stowe Mountain Resort (Stowe), demonstrates distinctive leadership in promoting dam safety.

In 2003 and 2004, Stowe constructed and now owns and operates a 340 acre-foot pumped storage snowmaking reservoir in Stowe, Vermont. This 60-foot high zoned earthfill embankment reservoir is a high-hazard potential impoundment situated at the base of Spruce Peak with a design pool at approximately 140 feet above the adjacent river valley. The reservoir is surrounded by an 18-hole golf course constructed on and beside the embankments.

Stowe has embraced the elements of dam safety practice. Stowe's mountain operations team members have attended annual ASDSO-sponsored seminars for dam owners, and have actively overseen dam safety practices on a day-to-day basis. In concert with the Town of Stowe, the Vermont Dam Safety office and regional emergency response forces, Stowe Mountain Resort has developed a comprehensive Emergency Action Plan and "exercises" the plan regularly.

Stowe has made dam safety an integral part of the business of operating their world class ski area. The snowmaking system operators are trained to monitor reservoir conditions and remain alert to warning signs at the reservoir. For example, last year an unusually wet period in early summer caused a small downstream slope slough near the left abutment. Stowe personnel responded immediately upon discovering the slough, contacting the design engineer, and immediately lowering the reservoir pool until closer evaluation revealed that the slough was non-critical and in a transition area between landscaped fill for the surrounding golf course and the dam proper.

This culture of dam safety awareness developed from leadership by key management. Rod Kessler, Vice President of Mountain Operations until this past spring, was the senior manager overseeing design, construction, and initial reservoir operations. He embraced the responsibilities of dam ownership, giving personal attention to design and construction oversight. This attention was contagious, with assistant mountain operations coordinator, Michael Manley, and Rod's successor, Scott Reeves, continuing to

embrace dam safety awareness. Leadership in dam safety awareness at Stowe was undoubtedly fueled by Hank Lunde, president of Mount Mansfield Company, and a civil engineer.

Stowe Mountain Resort sets an example for dam owners in all arenas. By their active participation in both ASDSO and ski industry associations, they communicate the value of dam safety awareness to the recreation industry on a regional and national level.

Southeast Region Award of Merit: Spartanburg Water System, Spartanburg, SC

Spartanburg Water System (SWS) is a regional supplier of drinking water to approximately 121,000 customers in Spartanburg County. Integral to the supply of safe drinking water is the ownership and maintenance of three dams and reservoirs: Lake Bowen, Reservoir #1, and Lake Blalock, as well as two water treatment plants. ASDSO's Southeast Region recognizes SWS for its work related to improving Lake Blalock, protecting the public, and ensuring a plentiful water supply for its customers.

Lake Blalock was constructed on the Pacolet River as an earthen embankment dam in 1983 for the purpose of supplying drinking water. In 2004, in order to increase the safe yield of the reservoir and increase the safety of the dam to current Type I (High Hazard) standards, the dam was upgraded. The Lake Blalock Improvement project consisted of overlaying the existing earthen dam with a layer of roller-compacted-concrete (RCC) and constructing a new RCC stilling basin. The existing spillway was upgraded by furnishing and installing three hydraulically operated spillway crest gates, constructing a new cast-in-place concrete ogee crest, and constructing a bridge across the spillway. Additionally, a fixed-cone valve was installed as a low-level outlet. Construction of the upgrade to the dam was recently completed.

This project not only doubled the capacity of the existing reservoir, it increased the safety of the dam by:

- ensuring that a PMF storm event could be handled,
- ensuring personnel access for the entire dam with the addition of a bridge over the spillway; and
- providing limited lake level control with the addition of spillway crest gates and low-level outlet control.

Additionally, SWS has taken the initiative to develop a model Emergency Action Plan, with the dual purpose of reducing the risk of human life loss or property damage, and serving as a model plan that would promote dam safety in South Carolina. In developing the EAP, SWS solicited the input of various

stakeholders, including neighboring counties, state and county emergency coordinators, the National Weather Service, and the South Carolina Dam Safety Office. SWS worked Spartanburg County to integrate inundation mapping into the county's reverse 911 system, and arranged EAP training sessions in three parts: orientation, tabletop exercises, and functional exercises.

Midwest Region Award of Merit: James R. Hegarty, P.E., Prein & Newhof, Grand Rapids, MI

James R. Hegarty, a project manager and Board of Directors member for consulting engineering firm Prein & Newhof, has been very active in the design and study of dam removals for communities struggling with dam safety issues.

Mr. Hegarty's first such project began in 1994 in the City of Big Rapids, Michigan, which owned the remnant of a former hydropower dam on the Muskegon River that had claimed at least three lives in the decade prior to its removal in 2001. With the help of Mr. Hegarty, Big Rapids obtained full funding for the \$1,500,000 project from environmental organizations.

Following the Big Rapids project, Mr. Hegarty began working in 2001 with the Village of Lyons, Michigan (pop. 724). The Village owns a 150-year-old dam on the Grand River, which has been cited since 1987 by the Michigan Dam Safety Unit as having serious safety issues; it was also the site of a dramatic rescue in 2005. The citizens of Lyons agreed to remove its dam at an estimated cost of \$750,000, but, due to lack of funding, were not able to proceed with the removal. Mr. Hegarty devised a plan to raise awareness of the plight facing Lyons and similar small communities across Michigan, with the ultimate goal of developing a state-wide funding mechanism to assist dam owners in addressing known dam safety hazards. Through Mr. Hegarty's urging, Lyons' inability to fund the removal of its dam has been exposed on a regular basis in the local press. Further, as a past president of the Michigan Section of the American Society of Civil Engineers, Mr. Hegarty used the occasion of the release of ASCE's 2005 Report Card on America's Infrastructure to hold a press conference at the Lyons Dam to make the point about the interrelated issues of safety and funding. The ensuing interviews were shown both on TV news programs in Lansing and Grand Rapids, and published in the press.

Ironically, in 2005 Michigan's Governor Jennifer Granholm, in an attempt to balance the state's budget, axed all funding for Michigan's Dam Safety Program. Mr. Hegarty wrote to the Governor and used his position as Editor of the Michigan *Civil Engineer* to publish an article that first appeared in the *Muskegon Chronicle* criticizing the Governor's decision to eliminate the Dam Safety Program. The Dam Safety

Program's funding was later restored, albeit at only about 70% of its previous levels. The ASCE Michigan Section was honored at the October 2005 ASCE national convention in Los Angeles with its Governmental Relations Award for its efforts to save Michigan's Dam Safety Program.

Perhaps the most significant outcome of Mr. Hegarty's frustration over the lack of funding for communities facing dam safety issues was the April 2007 publication of a landmark report, *The Growing Crisis of Aging Dams: Policy Considerations and Recommendations for Michigan Policy Makers*. The purpose of this report was to create momentum for the establishment of a state fund for dam repair, rehabilitation or removal of aging dams that no longer serve a useful purpose. Mr. Hegarty pitched the idea for this report in 2003 at a meeting in Lansing with MDEQ's Dam Safety Unit, MDNR's Fisheries Division, consulting engineers Prein & Newhof, and Public Sector Consultants (PSC), a Lansing-based public policy "think tank." PSC managed the grant-seeking effort for the development of the report, and was successful in obtaining \$90,000 in funding from two private sources. Mr. Hegarty authored a "sneak preview" of this study in *Pipeline*, the official publication of the Michigan Association of County Drain Commissioners, and spoke on the subject at MACDC's annual meeting in Summer 2007.

Mr. Hegarty also served as project manager for the removal in 2006 of the Hersey Dam, a dangerous, 150-year-old dam on the Hersey River, a designated trout stream in northern Michigan. He is currently active on project teams for the removal of the Rice Creek Dams in Marshall, MI and the Boardman Dams Study in Traverse City. He often speaks on his experiences with dams to civic and professional organizations.

West Region Award of Merit: Upper Brushy Creek Water Control and Improvement District, Round Rock, TX

When the 23 dams in the Upper Brushy Creek watershed, Williamson County, Texas were built by the U.S. Soil Conservation Service in the 1950s and 1960s, they met all safety standards for earthen dams in sparsely populated areas. Now those same dams provide flood control for densely populated Austin suburbs and are rated as high-hazard potential. The Upper Brushy Creek Water Control and Improvement District (WCID) has developed innovative and cost-effective methods to confront the challenge to public safety posed by these low-to-high hazard potential dams.

The District's program has become a model for development and management of a comprehensive dam safety program, demonstrating outstanding accomplishments in prioritizing improvements and

coordinating activities of multiple municipalities and agencies. Noteworthy efforts and recent accomplishments in dam safety include:

- Innovation in the first application of the “cafeteria plan” concept developed by the state of Texas. The plan addresses safety issues with a combination of dam improvements and early warning systems;
- Extraordinary management and cost-effectiveness. The District’s most recent report shows that 91 percent of annual expenditures were directed to capital improvements.
- Coordination among five municipalities, the county, and area emergency management and response officials in developing emergency action plans and development of early warning systems.

Starting in 1956, the original Brushy Creed WCID partnered with the federal government to build 46 earthen structures for flood control in the then-rural area north of Austin, which is highly prone to flooding. Since 1960, the population of Williamson County jumped from 35,000 to 250,000, an increase of 700 percent. Residential development spread downstream of the dams, which now needed improvement to protect public safety.

The Upper Brushy Creek District is one of two formed from the original WCID, and encompasses part of Austin plus the cities of Leander, Cedar Park, Round Rock and Hutto. In 2002, voters in the newly formed Upper Brushy Creek WCID, which lies entirely in Williamson County, approved a tax of up to two cents per \$100 of property valuation for the purpose of dam safety improvements and modernizations.

Though the District now had some revenue, it could not finance improvement of all 23 dams to pass the 24-hour PMF of 44 inches. Encouraged by 1998 recommendations by state regulators for a flexible “cafeteria plan” for dam safety, the District obtained the first such variance granted for dam safety regulations, winning approval in May 2003.

The cafeteria plan represents a pragmatic approach that allowed the District to start making improvements immediately. Under the District’s cafeteria plan, some dams will be raised to pass the PMF, while others will be improved to pass a 22-inch rainfall event—that is, 50 percent of the PMF. A comprehensive inspection of each facility provided data for prioritizing the improvements.

As part of the District's proposed cafeteria plan, the Texas Commission on Environmental Quality (TCEQ) required the District to implement early warning systems (EWS) at any dam unable to safely pass 100% of the PMF. A typical EWS dam installation consists of devices a gauge lake levels, system status and rainfall; a central processing unit that converts this data into digital format; a two-way radio system; radio tower and solar arrays. Data is sent every five minutes to the District's base stations and is shared with local emergency management and response officials.

The District also is working with the five cities, Williamson County and local emergency management service providers to develop Emergency Action Plans (EAPs) for each dam location. The goal is a system that will give reliable warning within an hour and a half of the beginning of critical storm events.

The cities, county and emergency management service providers have responded so enthusiastically to the District's early warning system plans that the District's board of directors decided to equip all the reconstructed dams with EWS components, including dams that can safely pass 100% of the PMF. This system of lake level and rainfall gauges blanketing the upper Brushy Creek watershed provides a powerful tool to protect lives during extreme flooding events.

Honorary Member: George E. Mills

Citing 20 years of extraordinary service to ASDSO, the ASDSO Board of Directors named George E. Mills of Pickering, Ohio as an ASDSO Honorary Member. Mr. Mills served on the Board of Directors for six years, from 1991-1997, and served as president in 1995-1996. Since that time, Mr. Mills has continued to contribute his time and expertise to ASDSO, chairing the Dam Owner Outreach Committee since its inception and sitting on the Peer Review and Affiliate Member Advisory committees. He has also participated in the Model Dam Safety Program Update Committee, the Annual Conference Program Committee, the Scholarship Committee, the Website Development Task Force, and the Task Force that developed the *Dam Financing Solutions* report. He co-authored the *National Performance of Dams Program Guidance Manual* and the *National Dam Safety Program Hazard Potential Classification System for Dams* report, and has made numerous presentations at ASDSO conferences. Prior to his retirement, Mr. Mills was the administrator for the Ohio Dam Safety and Water Engineering Branch within the Department of Natural Resources. He worked for the State of Ohio from 1969 through 1996 and authored the state's manual for owners on dam operation, maintenance and inspection and other owner brochures. He is also a member and very active within the Water Management Association of Ohio. Mr. Mills was presented with ASDSO's National Award of Merit in 2001.

Hampton Award

The Terry L. Hampton Medal was established by ASDSO's Affiliate Member Advisory Committee to recognize Mr. Hampton's lifetime achievements in the field of hydrology and hydraulics and his many contributions to ASDSO and the AMAC, which he chaired from 1998-2002. The first Hampton Medal recipient, Dr. Art Miller, is retired as a Distinguished Professor of Civil and Environmental Engineering at Pennsylvania State University and is now with Watershed Concepts in State College, PA. He has taught courses in Hydrologic and Hydraulic Engineering to university undergraduate and graduate students. He has taught over 100 of these courses on topics ranging from fundamental hydraulics, open channel flow, to hydrologic processes. He has participated in the Interagency Performance Evaluation Task Force (IPET) for post- Katrina review and evaluation of the levees. Dr. Miller is a long time member of ASDSO, a member of the AMAC, a frequent presenter at ASDSO conferences and seminars, a member of many task forces and committees, a Fellow of ASCE and many other professional organizations and a registered Professional Engineer who is internationally known for his expertise in hydrology, hydraulic engineering, and dam safety.

President's Award

The President's Award is awarded annually by the outgoing ASDSO president to recognize extraordinary contributions to ASDSO. For the 2007 President's Award, outgoing president Jim Gallagher tapped Ken Smith, Assistant Director of the Indiana Department of Natural Resources Division of Water. Mr. Smith served as ASDSO president in 2005-2006. Besides serving on the ASDSO Board of Directors, Smith has also been a dedicated member of the National Dam Safety Review Board, the chair of ASDSO's Strategic Plan Update Committee and past chair of the Finance Committee. He has served on many committees and task groups including the Educational Outreach Committee and the Task Group which develop the Report on Financing Solutions for Dam Rehabilitation.

The Association of State Dam Safety Officials (www.damsafety.org) is a national, non-profit organization founded in 1984 and dedicated to improving dam safety through research, education and communication.