Eric Halpin, Chief Dam and Levee Safety Engineering Branch and Deputy Dam and Levee Safety Officer, Retiring

By Steven J. Fink, PE, HQ Levee Safety Program Manager

Mr. Eric Halpin, leader of the Levee Safety Program since its inception in 2007, is hanging up his cleats after 40 years of service with USACE. Eric has had a brilliant career with USACE, beginning as a Co-op student with Savannah District, with a stop along the way in Huntington District and ultimately in Washington, DC as the leader of both the USACE Dam and Levee Safety Programs.

During his tenure, the USACE Levee Safety Program has been in perpetual motion, emulating the Dam Safety Program, and evolving into a robust Community of Practice with more than 200 members, and multiple Centers of Expertise.

The National Levee Database, inspection processes, risk assessment processes, risk-informed decision making, risk communication, sponsor engagement, and evolution of the international partnership with the Dutch, UK, France, and other countries have continuously improved since their inception under his watch. He was a proud advocate for ensuring engineering decisions regarding dams and levees were well grounded and defensible. Eric challenged us all to be good stewards of public safety and to not forget that life safety is our top priority.

Eric is a big fan of the VENN diagram and the enterprise risk framework of risk assessment, risk management, and risk communication is prominently depicted as three interlocking circles with the commonality of sustainable levees.

His personal VENN diagram is:

Mr. Halpin may be leaving USACE, but he can rest assured he has left behind a strong Levee Safety Community of Practice foundation that will continue to evolve and improve.

We wish him well in all of his pursuits!

Eric to steal a quote from you – THANK YOU, Godspeed, and we’ll leave the light on for you!
Through the Years with Eric Halpin, aka #DamGuy
Districts Connect and Learn Through Levee Safety Risk Communication Tabletop Exercises—Part One of Four Part Series
By Mary Weidel, PE, CFM

In the pursuit of helping sponsors and communities address and communicate residual flood risk in a leveed area, four tabletop exercises were recently organized and conducted. These tabletop exercises were funded by the Levee Safety Program through a request for interagency implementation of Levee Safety Program communication and sponsor engagement strategies. The program funded projects that considered how interagency implementation support would further communication goals and lead to action geared toward risk reduction within leveed areas. The first tabletop exercise that will be covered in this four part series is the Huntington, West Virginia levee system.

The Huntington, West Virginia tabletop project focused on improving flood risk awareness and emergency planning efforts associated with levee breaching and overtopping in a very densely populated area. The levee tabletop exercise brought together 57 participants for a simulated flood experience using inundation mapping from the USACE Modeling, Mapping and Consequences (MMC) Production Center. The maps helped show what roads would be closed and plan for evacuation routes which directly impact life safety, especially near a critical facility (hospital).

Stakeholders left the exercise with a better knowledge of their own roles/responsibilities, emergency actions to take, and the proper chain to contact before, during, and after a flood event. It also helped everyone understand resource constraints that could occur during a major flood event and initiated collaborative efforts among the participants to address resource issues that came up. Notably, the levee system is in two counties which requires integrated efforts and planning for having one joint command office for flood events.

The exercise was under four hours long and facilitated by an experienced Emergency Management Institute instructor which was key to its success. The tabletop exercise even had an adjacent community member with a similar levee system, come in as an observer to bring back to their community lessons learned from the Huntington tabletop. Another benefit from the tabletop exercise, was the initiation of exercising installation of gate closures over busy sections of city roadways by the Huntington Stormwater Utility in conjunction with other stakeholders.

Risk assessments have become a cornerstone for application of risk-informed decision making within the Levee Safety Program. The Levee Safety program has worked hard over the last few years to complete and communicate the results of risk assessments for nearly 2,000 levee systems. The results of the risk assessments have helped to inform risk management decisions made by USACE, non-Federal sponsors, and local communities; however, comprehensive guidance has not been formally provided by USACE that requires risk assessments and risk-informed design be completed during planning, design, and construction of levee projects. The inclusion of risk assessments into the levee project design phases is the natural progression of risk-informed policies to more comprehensively achieve project objectives by identifying all risk drivers and understanding how to efficiently reduce incremental life safety risk (structurally and non-structurally) within the limits of the authorized project.

The opportunity to begin using risk assessments in all phases of risk management alternatives for levee projects has never been greater for USACE. USACE has been entrusted to deliver a significant investment in the nation’s infrastructure with the combination of our routine annual budget and the historic 2018 Disaster Relief supplemental appropriations (P.L. 115-123).
(Continued from page 4)

The decisions made during planning, design, and construction to deliver these missions will have a long-term impact on our nation.

A number of districts have already begun application of risk-informed design into delivery of supplemental projects by leveraging existing risk assessments and sometimes conducting new risk assessments. The initial step in any risk-informed design process is to conduct a Potential Failure Mode Analysis (PFMA) to clearly understand potential failure modes that drive risk. Combining a PFMA with a risk assessment allows the design project delivery team (PDT) to verify that known failure modes are being adequately addressed or to identify any risk-driving failure modes that were not previously considered for a project. A risk-informed design approach does not replace the need for traditional deterministic analysis and criteria, but rather informs the applicability of the standards to reduce the risk. The objective of risk-informed design is for the resulting project to ultimately meet Tolerable Risk Guidelines (TRG). One of the challenges in implementation of risk-informed design is having engineers and decision makers understand and use TRG. The Levee Safety program will continue to work closely with USACE PDTs, other Communities of Practice, and leadership to help work through these challenges.

Scalability of risk assessments is another critical concept that is applied to risk-informed decision making. The level of detail required depends on the decision to be made and what is necessary to address uncertainty in the results. Scaling risk assessments for planning studies is a significant challenge that requires thoughtful coordination between engineering and planning. Existing risk assessment data should always be used to the extent practical. Since the formal application of risk-informed design is a new concept, the application of risk assessments to current projects (particularly to the aggressive schedules of the supplemental work) will require scaling them to fit within the constraints of current schedules and budgets. In the future, risk assessments will be routinely scheduled and budgeted to be a part of all planning studies and pre-construction engineering and design (PED) activities.

Some benefits of implementing risk-informed design approach on levee projects include:

1. Help to ensure that the project does not increase the risk to the population and property above the risk the population currently experiences;

2. Informs decisions for risk management actions such that they are commensurate with the level of risk and to ensure wise federal investments.

3. Evaluate if traditional standards need to be up-scaled (made more conservative) or downscaled (made less conservative) to optimize risk reduction and

4. Consider a broad array of risk management measures (e.g., evacuation effectiveness, land use management) not just levee performance.

Several key USACE Levee Safety guidance documents are currently under development that will include incorporation of risk assessments into the planning, design, and construction of levee projects (including the EC 1165-2-218, “Levee Safety Program – Policy and Procedures” and EM 1110-2-193, “Evaluation, Design and Construction of Levees”). Since these key guidance documents will not be issued until later in 2019 and execution of the supplemental work is currently underway at a fast pace, interim guidance (“Interim Approach for Risk-Informed Designs for Dam and Levee Projects”) on implementation of risk-informed design is currently under development. Anyone interested in obtaining a draft copy of the interim guidance before it is issued, please contact Brad Arcement, P.E., with the Levee Safety Center (CEMVK-EC-PC), 601-631-5899, email: Brad.J.Arcement@usace.army.mil.

Example of Risk-Informed Design Process for a Levee Modification a Regarding Seepage Failure Mode.
Fiscal 2019 Training Opportunities

**Levee Safety Fundamentals PROSPECT Courses**
- Levee Safety Fundamentals 1  Kansas City, Missouri  May 7-9, 2019
- Levee Safety Fundamentals 2  Davis, California  Sept. 17-19, 2019

**Levee Inspection PROSPECT Courses**
- Levee Inspection Prospect Course  New Orleans, LA  Sept. 10th - 12th, 2019*
- Levee Inspection Prospect Course  New Orleans, LA  April 16th - 18th, 2019 - CANCELLED *

* The April 2019 Levee Inspection PROSPECT Course has been cancelled based on the current schedule for release and implementation of program updates to levee inspection tools and guidance. Program updates include revisions to the levee inspection checklist & software, release of a Levee Inspection Engineering and Construction Bulletin (ECB), and release of the Levee Safety Engineer Circular (EC). A course is being scheduled for September 2019 with planned updates to include the new tools and guidance. The USACE Levee Safety program will also be holding implementation training sessions with a focus on changes to the tools and guidance during this timeframe. The ULC will be coordinating placement of students in the September 2019 Course. Course attendance of the Sept. 10th to 12th, 2019 session will be evenly distributed across districts and divisions based on attendees enrolled in the initial two courses that were cancelled. Please contact the Course Lead, Mr. Rick Hauck, rick.l.hauck@usace.army.mil, 651-290-5750 with questions on course development.

### USACE Levee Safety Program Guidance Update

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<th>Title</th>
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*RMC is working a technical issue that requires resolution before moving forward with publication. "Once the issue is resolved, EM 1110-2-1913 will be sent to ACE-IT for final processing and publication."

*The Levee Safety Update is an unofficial publication of the U.S. Army Corps of Engineers Levee Safety Program and contains information about initiatives that are under development and may change in subsequent updates. It provides levee safety program information to levee safety officers, levee safety program managers, other communities of practice and others interested in levee safety. Questions or suggestions for future issues can be emailed to: HQ-LEVEESAFETY@USACE.ARMY.MIL. Please visit our website at: http://www.usace.army.mil/Missions/Civil-Works/Levee-Safety-Program/*