



LEVEE SAFETY UPDATE

A Warm Welcome to Phoebe Percell, P.E., Chief Dam and Levee Safety Engineering Branch

By Jamie L. McVicker, P.E., HQ Levee Safety Program Manager



Ms. Phoebe Percell

Although it may not feel like springtime in certain parts of the country, it's finally here. With the change of seasons, you'll find the USACE Levee Safety Program in perpetual motion.

New Levee Safety Program policies and procedural guidance are on the horizon and we extend a warm welcome to the new Dam and Levee Safety Engineering Branch Chief, Ms. Phoebe Percell.

Ms. Percell is a registered professional engineer and graduate from the Colorado School of Mines with a Master's Degree in Civil/Structural Engineering and a Bachelor's Degree in both Mechanical and Civil Engineering. While working in private industry, Phoebe served as a senior technical advisor for civil works projects, leading quality control and oversight for design, analysis and feasibility studies. Prior to her work in the private sector, Phoebe spent approximately 17 years with the Bureau of Reclamation. During her last position with the Bureau, serving as the deputy director for security, safety and law enforcement, Ms. Percell was responsible for the operations of six program offices. In that capacity, Phoebe led risk management activities for an inventory of approximately 450 dams and their appurtenant structures. Her background and experience include advising other agencies on risk-based decision-making, mentoring engineering staff with risk analysis and project management, leading research initiatives, facilitating the efforts of multi-disciplinary teams on a variety of technical assignments and supervising technical staff.

Since 2017, Ms. Percell has served on the United States Society on Dams (USSD) Board of Directors, contributing to the organization through her involvement with various committees and conference planning. She has authored and contributed technical content for several professional publications affiliated with the USSD and the International Commission on Large Dams.



In her spare time, Phoebe is a cross-fitter, enjoys world-wide travel with her husband and likes relaxing with their two dogs, Wednesday and Valentino.

As Phoebe gets acclimated this spring to her new position in Washington D.C., expect that she will be striving to meet with as many Dam and Levee Safety Program professionals as possible. (Community of



Valentino (l) & Wednesday

Practice with nearly 400 members). Please take every opportunity to meet Phoebe in the coming weeks and months, welcoming her to our organization.

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Courtesy photos

Levee Vegetation Management Review Update

By Steve Fink, Vegetation Management Policy Lead

Section 3013 of the Water Resources and Recovery Development Act (WRRDA) of 2014, Vegetation Management Policy, directs USACE to carry out a comprehensive review of the USACE guidelines for management of vegetation on levees in order to determine whether current Federal policy relating to levee vegetation is appropriate for all regions of the United States.

The primary source of these guidelines is the information contained in Engineer Technical Letter (ETL) 1110-2-583 Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams and Appurtenant Structures, 30 April 2014. ETL 1110-2-583 is scheduled to expire on April 30, 2019.

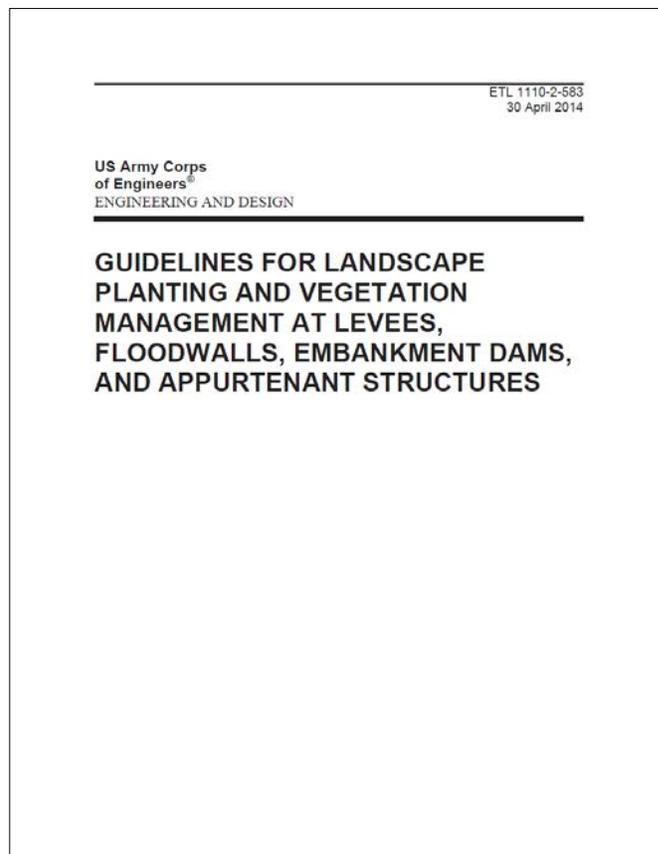
The review mandated by Section 3013 is in progress, but will not be complete before ETL 1110-2-583 expires. In order to maintain the status quo while the review mandated by Section 3013 is completed, the information from ETL 1110-2-583 is being published in Engineer Pamphlet (EP) 1110-2-18.

Conversion from ETL 1110-2-583 to EP 1110-2-18 consists of formatting changes only. No policy or substantive changes have been incorporated in EP 1110-2-18.

This action allows for continuation of the existing vegetation policy and guidance until the USACE vegetation policy review required by Congress is completed and the guidelines are revised based on the results of the review consistent with Section 3013

A project management plan was prepared that defines USACE path forward for performing the levee vegetation policy review. Phase 1 is in progress consists of three tasks:

- Communicate intent and approach to interested external stakeholders, tribes, and sponsors for their awareness of USACE plan for undertaking this effort and how they can provide feedback on the effort.
- Provide a common foundation of understanding across USACE, U.S. Fish Wildlife Service (USFWS), NOAA and key independent experts about updates in technical knowledge regarding vegetation and levees through a consolidation of research and published articles.
- Identify policy adjustments necessary to translate current policies into more risk-informed approaches and comply with WRRDA analytical requests, primarily focused on ETL 1110-2-583 (EP 1110-2-18) and the draft Policy Guidance



Letter (PGL), Process for Requesting a Variance from Vegetation Standards for Levees and Floodwalls (published for public comment in the Federal Register, February 17, 2012).

The communication and engagement plan is nearly complete, pending the outcome of the meeting with the Services, a literature review is nearly complete with efforts to identify recent research that focuses on levee vegetation benefits and risks, and review of the ETL and PGL are completed and the results are being compiled in a technical paper.

A key and integral component of this effort is coordination with the USFWS and National Marine Fisheries Service (Services). A HQ level meeting is being arranged among leaders from USACE and the Services. The purpose of this meeting is to discuss USACE environmental coordination priorities, including the WRRDA 2014 directed Levee Vegetation Management review. No date has been set but progress is being made.

Baltimore District and local levee sponsors and partners hold three successful public meetings

By Levee Safety Programs Public Awareness and Communications Team

The North Atlantic Division, Baltimore District (NAB) recently worked with local levee sponsors and partners to hold three successful public meetings. The purpose of these meetings was to present information to local communities on nineteen different levee systems within the District's area of responsibility and the risks and benefits associated with living or working behind those systems. NAB and sponsors sought to improve public understanding of levee safety activities and flood risk, promote actions to reduce and manage flood risk, and build a foundation for shared responsibility in developing and implementing flood risk management solutions for levee systems. In planning and implementing the meetings, NAB worked to support and empower the local levee sponsors – including Prince George's County, MD; New York State; and the National Park Service (in Washington, D.C.) – to take the lead in communicating results to their public stakeholders.

NAB, local sponsors and partners worked together closely to prepare for the meetings, including the development of presentations and handouts. In a November presentation to other Districts, NAB outlined several key lessons-learned including:

- Early planning and coordination between the sponsor and District are essential. The sponsor should have the primary role if possible.
- Tailor each meeting based on levee system(s) and stakeholders. (i.e. primary flood-related local concerns, local high-water mark references)
- Include an "Open House" where staff from various local, state and federal levee risk management agencies (i.e. FEMA/ county emergency management agency) can meet face to face with the public and answer individualized questions.
- Ensure presentations use simple visuals and many photos and total no more than an hour.
Include:
 - * History of flooding
 - * Who is responsible: what agency built the system and why, and what agency now maintains it
 - * How residents/stakeholders can help avoid impacts to levee



Jehu Johnson, Baltimore District Levee Safety Program Manager, presents during the DC Potomac Park Levee Outreach meeting held at the Westminster Presbyterian Church in Southwest Washington, DC, October 30, 2018. Photo by John Sokolowski, USACE Baltimore District

- * What residents need to know to reduce their flood risk
- * How residents will receive information, including evacuation orders, during a flood emergency
- Think through how to clearly explain technical terms and figures. Prepare information and anticipate potential questions (make sure all partners use the same terminology).
- Publicize the public meeting using active engagements at least two—three weeks in advance of the meeting. Consider how residents typically receive information and notices (i.e. emails, mailed flyers, social media, press release, placing flyers in community areas).

Overall, the public meetings were a success, not only engaging local residents, business owners, community organizers and others to increase their awareness of flood risk, but also building and strengthening the relationships that NAB has with its sponsors.

For questions regarding these public meetings or to obtain copies of publicly available materials, please feel free to contact Stacey Underwood at:
Stacey.M.Underwood@usace.army.mil

International view of levees during high water gives professional insight for both sides of the Pond

By Sue Casseau, Public Affairs Specialist, St. Louis District



Members of the Rijkswaterstaat of the Netherlands get an update from Cody Isbell, USACE Geotechnical Advisor at the Yazoo levee in Tunica, Mississippi. Photo by Sue Casseau

Flood fight Subject Matter Experts from the Netherlands came to USACE Memphis District the first week in March to share and collect information about how so many resources work together in flood fight.

USACE and the Rijkswaterstaat (the Ministry of Infrastructure and Water Management of the Netherlands) have a Memorandum of Understanding to promote sharing of information and experiences among professionals in each country.

The agreement was the basis for an international flood response exercise held in the Netherlands in 2016, where USACE invited the Dutch colleagues of Rijkswaterstaat and the Regional Water Authorities to observe USACE flood fighting techniques, which is why the contingent came to Memphis during high water.

The group toured sites with Levee Safety Program Manager Nick Bidlack and Geotechnical Chief Cory Williams, who explained the design and decision process that produced the results currently holding back floodwaters.

“We are 5,000 miles apart with comparable problems,” says Cory Williams, “and we’ve arrived at similar solutions by very different routes.”

With so many miles of levees, dikes and seawalls, the Netherlands has a public community culture of levee

awareness and everyone has a lifetime of personal commitment to it.

“We are all very passionate about protecting our people,” says Levee Safety Program Manager Nick Bidlack, “and it was great to know that our counterparts around the world also take government responsibilities so very personally.”

“This is a wonderful opportunity for real-life observations of the processes and practices used here in Memphis, to build on our own experiences and skills,” says Bart Vonk of the Rijkswaterstaat, the Ministry of Infrastructure and Water Management in the Netherlands.

Members of the Rijkswaterstaat visited three of the eight areas involved in Phase II flood fight during their four-day assignment. The Dutch team consists of seven subject matter experts on crisis management, levee inspection and levee engineering.

Memphis District Commander Colonel Ellicott expressed his support for the international visit, stating “This sharing of knowledge and skills builds continued confidence that the very best in systems and resources are being used in the protection of the people in both our nations.” Ellicott continued, “Memphis District is proud to share the many successes we face in the District, and we look forward to the continued study and dialogue among these very qualified peers.”



Members of the Memphis EOC February Flood Fight Team joined by the delegation of flood fight experts from the Netherlands overlooking the Mississippi River. This photo opportunity capped a 3-day trip that included visits to field sites and the Emergency Operations Center, as well as time to share experiences and lessons learned. Photo by Vance Harris

Levee Inspection System Pilot Inspections

By Cory Williams, Chief of Geotechnical Branch, Memphis District
Nick Bidlack, Levee Safety Program Manager, Memphis District



Left to right: Randy Rabb, Jacksonville District; Micah Wiggins, Mobile District; John Bass, Mobile District; Joel Gaillard, Jacksonville District; Trent Ferguson, South Atlantic Division; Almur S. Whiting, IV, Jacksonville District; at the South Atlantic Division Pilot Inspection on the Rome Levee System in Rome, Georgia, recently. Photo by Cory Williams

Exciting changes are coming to the Levee Inspection Checklist, Levee Inspection System (LIS) and the National Levee Database (NLD). In short, new inspection software and hardware are being developed to allow for more efficient collection of data and report preparation using the NLD and the new checklist. Like all new things, these tools must be field tested prior to a nationwide rollout. As part of the Quality Assurance effort, one District from each USACE Division is assisting by conducting a pilot inspection using the new LIS and new levee inspection checklist that will be part of the ECB entitled “Procedures for Site Visits and Inspections for Levees within the USACE Portfolio”.

These pilot inspections started in early November 2018 and will conclude in the spring of 2019. The purpose of the pilot inspections is to 1) verify that the revised inspection checklist is field appropriate and easily understood, 2) test the functionality of the improved LIS software and 3) assess the capability of synchronizing data between the LIS and NLD and 4) check all of the new NLD Inspection report features.

Rich Varuso, Jamie McVicker, Rick Hauck and Cory Williams were on the team that revised the inspection checklist criteria and Brian VanBockern, Cathi Sanders, and Patrick Kline are leading the team to provide an improved LIS and update the NLD. The improved LIS uses state-of-the-art hardware and software and works directly with information housed in the database.

Teams from six districts, including Dallas Russell from Kansas City District, Jehu Johnson from Baltimore District, Kristen Bedolla and Cynthia Wong from Los Angeles District, Lacey Venhaus and Rachel Lopez from St. Louis District, Jordan Holmes from Tulsa District and John Bass and Almur Whiting from South Atlantic Division, have hosted pilot inspections with the new LIS and provided valuable feedback. The pilot teams tested the new LIS, data migration process to and from the NLD, the use of the new checklist, and generation of an enhanced levee inspection report. Lessons learned and feedback from participants of these pilot inspections is being considered in the finalization of the LIS, inspection checklist, and Levee Inspection ECB. The NLD team is currently working on implementing the comments provided through the pilot inspection and additional teams will pilot the improvements from the first go round. The update from the NLD team is scheduled to be completed by the end of March.

In general, the teams that tested the LIS system thought the updates to the system, the use of tablets rather than the tough pads, and the connection to the NLD were drastic improvements from the previous set up. The pilots to date have been successful in identifying opportunities to improve the new system. There were also a number of technical issues “bugs” identified during the pilots that have since been addressed by the contractor.

Although not all of the pilot inspections are complete, those performed to date have already resulted in several positive outcomes. First, the pilots confirmed that proposed Android Tablets were appropriate for inspection and commented on positive aspects of size, cost and function. Second, the pilots confirmed that the revised inspection checklist is ready for prime time. Only minor adjustments were made to the revised checklist as a result of the pilots. Technical issues, “bugs” and areas for process improvement were identified in the software during the pilots. These issues and preferences collected from the participating district/division have been compiled and are being evaluated as to how to best serve the majority. Finally, the pilot inspections allowed face to face questions and answer sessions with District and Division LSPMs, LSOs and other District staff. The pilots allowed the team to address individual concerns. Hopefully this kind of communication will translate to a smoother transition during the final rollout.

In conclusion, the pilot inspections have been a successful soft launch of the levee inspection checklist, LIS and NLD. The Checklist, LIS and NLD are better products and continue to improve based on the feedback received during the inspections. A full launch of the new inspection tools is expected in the Fall of 2019.

Tracking and Maintaining USACE Levee Portfolio Data

By Catherine Sanders, NLD Program Manager
Jacob Nienaber, P.G., Great Lakes and Ohio River Division LSPM

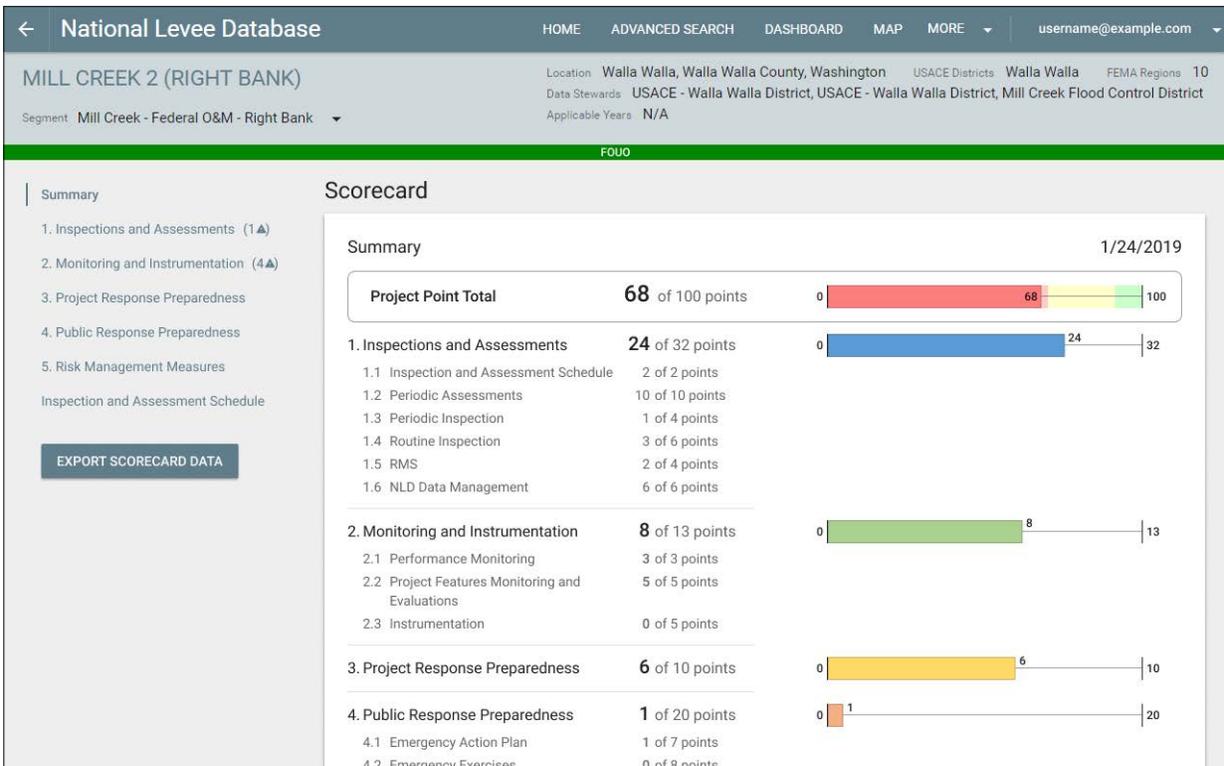
Since the launch of the public facing National Levee Database (NLD) last summer, the NLD team has shifted focus to create internal tools for the Levee Safety Program. The goal of this effort is to consolidate levee information into not just another database, but promoting a better understanding of the District/Division programmatic statistics and instilling a streamlined approach to data-driven decisions from individual project risk to overarching budget considerations. In the coming months, internal resources in the NLD will include a mandatory data fields tab, performance data tab, and metrics tracking dashboards. Additionally, online report generation will be available for inspections, levee system summary and other upcoming documents.

These new NLD internal tools use existing data fields to the extent possible to reduce entry of the same data in multiple places or multiple forms. The power of the dashboards also provides succinct views of data and information for Districts/Divisions to help manage their levee portfolio. As we move forward capitalizing on the power of the NLD to use information, it becomes critical to ensure quality data exists in the NLD. The metrics dashboard is key in keeping the NLD up to date by incentivizing recurring updates to maintain

accurate metrics. Online editing is another great tool that should assist Districts/Divisions in quality control of NLD data as well as documents for sponsors to use such as the Levee Risk Management Summary. The NLD team looks forward to rolling out these internal tools and as always, appreciates feedback on how to make the NLD a better experience for the public and our stakeholders as well as USACE.

This new technology in the NLD is part of a program wide movement towards tracking and maintaining up to date information about the USACE levee portfolio from USACE to Division to District viewpoints. The metrics dashboard is tentatively set to be available by fall 2019 in a phased approach. The first launch is intended to allow the USACE community to use and get familiar with the new dashboard or scorecard. The metrics dashboard or scorecard uses the power of the NLD data set to generate and compile information regarding progress on risk management efforts including risk communication efforts as well as standard levee safety practices within the organization. Inspections, assessments, communication with stakeholders, and key monitoring/performance activities are included to help USACE, Division, and District manage their levee portfolio.

Examples of early prototypes for the dashboard



National Levee Database | HOME | ADVANCED SEARCH | DASHBOARD | MAP | MORE | username@example.com

MILL CREEK 2 (RIGHT BANK) | Location: Walla Walla, Walla Walla County, Washington | USACE Districts: Walla Walla | FEMA Regions: 10
 Data Stewards: USACE - Walla Walla District, USACE - Walla Walla District, Mill Creek Flood Control District
 Segment: Mill Creek - Federal O&M - Right Bank | Applicable Years: N/A

FOUO

1. Inspections and Assessments 24 of 32 possible points

1.1 Inspection and Assessment Schedule

1.1.1 Is a 10 fiscal year Inspection and Assessment schedule for the levee established? Yes 2 of 2 points

1.1.1.1 Last Routine Inspection 6/2/2017

1.1.1.2 Last Periodic Inspection (if applicable) 6/2/2017

1.1.1.3 Last Risk Assessment 6/2/2017

1.1.1.4 Last Periodic Assessment 6/2/2017

1.1.1.5 Routine Inspection Intervals 3

1.1.1.6 Periodic Inspection Intervals 5

1.1.1.7 Periodic Assessment Intervals 10

1.1.1.8 Next Routine Inspection 2024

1.1.1.9 Next Periodic Inspection 2019

National Levee Database | HOME | ADVANCED SEARCH | DASHBOARD | MAP | MORE | username@example.com

MILL CREEK 2 (RIGHT BANK) | Location: Walla Walla, Walla Walla County, Washington | USACE Districts: Walla Walla | FEMA Regions: 10
 Data Stewards: USACE - Walla Walla District, USACE - Walla Walla District, Mill Creek Flood Control District
 Segment: Mill Creek - Federal O&M - Right Bank | Applicable Years: N/A

FOUO

Monitoring and Instrumentation 8 of 13 possible points

2.1 Performance Monitoring

2.1.1 Are levee surveillance, monitoring, and flood fighting procedures/actions established and documented in Project O&M Manual? Yes 1 of 1 point

2.1.2 Was performance and instrumentation data collected during the last flood event greater than a 25% loading? Yes 2 of 2 points

2.2. Project Features Monitoring and Evaluations

2.2.1 Have project features (e.g. pipes, closures, pump stations, relief wells, etc.) been inspected and/or tested per Project O&M manual? Yes 2 of 2 points

2.2.2 Are all project features including instrumentation functional, and none needs replacement? Yes 3 of 3 points

2.3. Instrumentation

2.3.1 Adequacy of instrumentation (type, schedule of readings, etc.) has been evaluated as part of the PA AND is considered adequate for levee hazards Select... 0 of 2 points

Mandatory Data Fields in the National Levee Database

By Corby Lewis, P.E., Modeling, Mapping & Consequence Center,
Levee Program Technical Coordinator

The National Levee Database (NLD) has steadily become a more important tool for understanding and managing levee infrastructure in the country, and that trend will continue. Following the update of the National Levee Database website in the summer of 2018, levee information that USACE shares with the public became more visible and therefore made the quality of the data even more important.

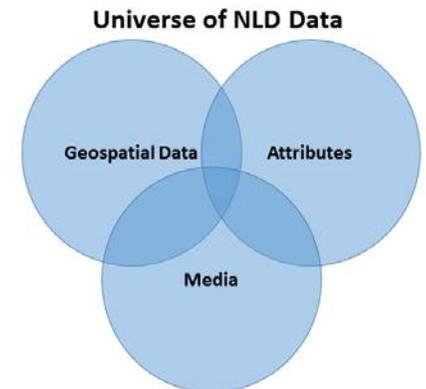
USACE districts worked hard to ensure that the Project Description, Risk Characterization and Levee Safety Action Classification fields were fully populated and accurate in the NLD prior to the new website going live. This exercise was a great first-step in ensuring that the NLD data for USACE-portfolio levees is complete, accurate and fresh.

As discussed in draft Levee Safety EC 1110-2-218, USACE District LSPMs own all of the NLD data for levee systems within their district portfolios and are responsible for the maintenance of the data. The EC also states that the HQ LSPM is responsible for maintaining a list of NLD "Mandatory Fields" to ensure a minimum standard for NLD completeness. In the near future, the completeness, quality and freshness of the

NLD data will be measured for each district for use as a key Levee Safety Program Metric.

Next Steps: Changes are coming to the NLD website that will allow a summary view of the key fields ("Mandatory Fields") for each levee system, allowing efficient identification of missing data. The process for editing the key fields through the website will also be streamlined.

When development is complete, USACE will lay out the specifics of mandatory field requirements, and conduct a webinar to disseminate the how-to and mechanics of data maintenance.



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.

First Round Screening Level Risk Assessments for Levees in the USACE

Portfolio

By Trent Ferguson, South Atlantic Division

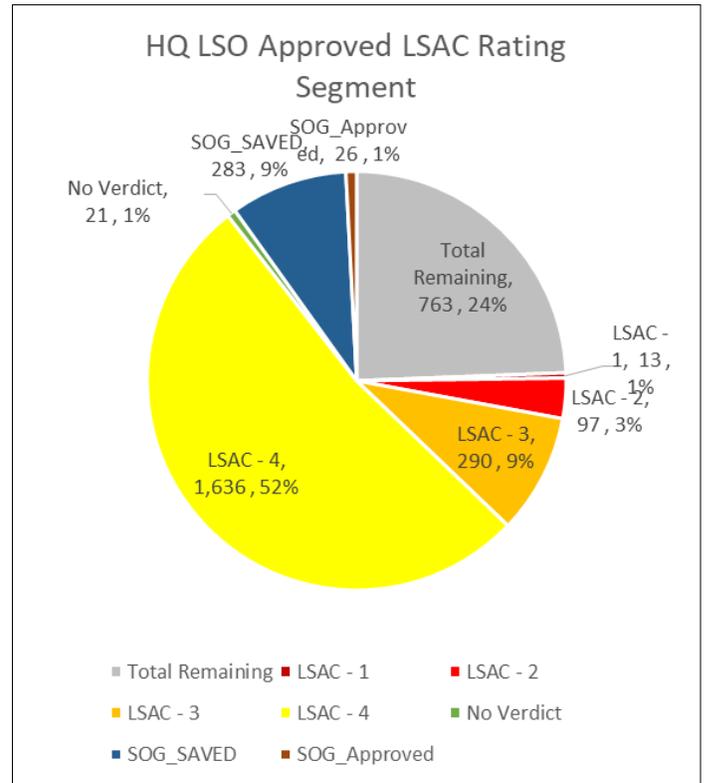
Ben Caldwell, Levee Safety Center

USACE continues to work toward completing the first round Screening Level Risk Assessments (SLRA) for levees in the USACE portfolio (3,130 segments) through Headquarters (HQ) Levee Safety Officer (LSO) approval and the assignment of the Levee Safety Action Classification (LSAC). As of March 1, 2019, 66 percent (2,058 segments) have been approved by the HQ LSO/assigned LSAC. The 2019 levee safety metric for the Directorate Management Review (DMR) is to have all non-project segments (482 segments) HQ LSO approved by the end of fiscal year. As of March 1, 14 percent (47 segments) of the non-project segments have been HQ LSO approved. With the completion of the non-project segments all segments/systems in the USACE portfolio should then have an approved LSAC.

To assist Districts with the completion of the SLRA for the non-project segments the Levee Safety Center (LSC) is providing assistance to the Districts.

In January 2019 the LSC put out a data call to all Levee Safety Program Managers (LSPM) to determine the status of ongoing SLRAs for non-project segments and to verify if any District would need assistance in completing their work. Approximately eight Districts responded to the data call requesting assistance in meeting the schedule for the non-project segments. The LSC contacted the Inventory and Review (I&R) Technical Teams to determine their availability to help out other Districts.

Three I&R Technical Teams from Chicago, New Orleans, and Vicksburg Districts have stepped forward to assist. These three technical teams were matched with three Districts that requested assistance. Will McRae, technical team lead for Vicksburg District, will travel to Portland District to teach them the Levee Screening Tool and guide them through the SLRA process. Also, Huntington and Nashville Districts have stated their availability to help and each have been paired with a District needing assistance. Huntington District



will support the Philadelphia District. The remaining work for any District requesting assistance will be contracted by use of an Architect Engineer (A-E) task order.

Other Districts willing to help another District with SLRAs on non-project segments, should contact Ben Caldwell, LSC, at ben.s.caldwell@usace.army.mil.

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/>