Understanding Potential Life Loss from Flooding - Shining a Light into the Black Box that is HEC-LifeSim – Speaker Bios

Woodrow "Woody" Fields

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Woodrow Lee Fields is a Consequence Specialist with the USACE Risk Management Center (CEIWR-RMC). Woodrow is the lead developer of HEC-LifeSim which is a detailed consequence modeling system for estimating economic damages and life loss through simulated warning and evacuation combined with flood wave propagation. He is also a national cadre consequence team member whose directive is to recommend levee safety action classifications for the USACE national portfolio of levees. Woodrow has obtained a B.S. in Environmental Science from Portland State University in 2005 and an M.S. in Civil & Environmental Engineering from the University of California, Davis in 2009.

Joanna Leu, P.E.

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Joanna Leu is a Senior Water Resources Engineer at HDR, working in the Sacramento, CA office. She has B.S. and M.S. degrees in Civil and Environmental Engineering from the University of California at Davis. Joanna is a registered Professional Engineer in the state of California. Her expertise is in hydraulic numerical modeling, integration of GIS with hydrology and hydraulic studies, including floodplain mapping using HEC-RAS and GIS-based modeling systems, and the Corps risk management process, including risk analysis, risk assessment, risk communication, and flood consequence analysis. She has project management responsibility for all work performed in the risk analysis sector. She also has project and research experience in water management analysis, environmental restoration, technical analysis related to flood protection, and water quality analysis. She is an expert user of hydrologic and hydraulic software tools such as HEC-HMS, HEC-RAS, FLO-2D, HEC-GeoRAS, HEC-FDA, and HEC-LifeSim.

Joanna has over 20 years experience in diverse complex water resources planning and modeling projects. For seven years she worked at HDR in Folsom, CA where she gained experience in hydrologic and hydraulic modeling for both local agencies supporting design and floodplain mapping, leading work with FEMA on digital flood insurance rate map production. Joanna worked the next 12 years for David Ford Consulting Engineers in Sacramento, CA where she worked on multiple flood risk assessment projects quantifying flood damage and estimating life risk mainly using HEC-FDA. For the past 2 years Joanna has continued her work in flood risk assessments, back with HDR in Sacramento, CA where she recently has applied HEC-LifeSim to

estimate life risk in several studies within the CA Central Valley and also assisted the RMC with development of the HEC-LifeSim Technical Reference Manual.

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Jason Needham is the senior Consequence Specialist for the USACE Risk Management Center (RMC). He holds a B.S. degree in Civil Engineering from New Mexico State University, an M.S. degree in Engineering from the University of California at Davis, and is a registered Professional Engineer in the state of California. Jason specializes in risk analysis and consequence estimation, and he leads the USACE research and development efforts focused on understanding the potential loss of life from flooding.

He has been a practicing Hydraulic Engineering and flood-related consequence estimation for over 20 years. Five of those years were with David Ford Consulting in Sacramento, CA where he worked with industry standard hydrologic and hydraulic software programs and developed and installed flood warning systems for various groups. Six years were with the Hydrologic Engineering Center (HEC) in Davis, CA where he led development of HEC-FIA, including adding the ability to perform GIS-based calculations and estimate potential loss of life from flooding. He transferred to the RMC 10 years ago where he continues to be involved in guiding research, development and application of the consequence estimation tools in support of risk assessments. He also is a lead developer of the USACE Levee Screening Tool and vice chair for the USACE Levee Senior Oversight Group.

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Paul is a senior water resources engineer with more than 18 years of experience including dam and levee infrastructure projects, flood risk analysis, hydrologic and hydraulic modeling, and specializing in consequence modeling. Paul leads various water resources projects for government agencies with a focus on flood impacts, embankment breach erosion, and floodplain modeling. Previously, Paul spent 9 years with USACE, where he was a member of the national levee screening review cadre and participated in many dam and levee safety risk analyses. He researched historic dam and levee breach floods and built data sets for testing and development. He also developed HEC analysis tools for HEC-LifeSim and HEC-RAS and risk analysis methods on extreme hydrology, breach erosion hydraulics, and flood fatality estimation for USACE-RMC. Paul is a frequent teacher of these methods to government and industry. He has a Bachelor's in Civil Engineering from the University of Michigan and a Master's in Hydraulic Engineering from UNESCO-IHE, Delft.