INDEPENDENT EXTERNAL PEER REVIEW PANEL

for the

AMITE RIVER AND TRIBUTARIES
EAST OF THE MISSISSIPPI RIVER
LOUISIANA

FEASIBILITY STUDY

The U.S. Army Corps of Engineers submits the following information per requirements in the Water Resources Reform and Development Act of 2014, Section 1044(c)(4)(B).

Entity Conducting the Review	
Outside Eligible Organization:	Battelle 505 King Avenue Columbia, OH 43201
Dates of Review	
Review Initiation:	25 November 2019
Type I IEPR Final Report Submittal:	5 February 2020
Reviewer Names and Qualifications	
Lewis Hornung, P.E.	**Planning Formulator/Economist**

Mr. Hornung is a planning expert with DR Reed & Associates, Inc., in Jupiter, Florida, specializing in the planning, economics, design phase, and operation of integrated water resources and public works projects. He earned his B.S. in civil engineering from the University of Houston. His 40-year career includes 19 years with USACE, 7 years with the South Florida Water Management District (SFWMD), and 14 years with architectural/engineering firms. Mr. Hornung has worked on dozens of USACE Civil Works projects since 1977 and is very familiar with applying USACE Principles and Guidelines. He has taken part in previous IEPR panels for Battelle as an economist/Civil Works planning expert.

Mr. Hornung has direct experience in USACE plan formulation processes, procedures, and standards. He spent more than 12 years in the Planning Divisions of the Galveston and Jacksonville Districts. He then moved to Project Management, where he continued to lead planning projects, including the Kissimmee River Restoration Feasibility Study and the Comprehensive Everglades Restoration Plan Feasibility Study. In both cases, he managed the projects during the planning phase through Congressional authorization.

Mr. Hornung has applied the USACE six-step planning process, governed by Engineer Regulation (ER) 1105-2-100 (Planning Guidance Notebook), for dredged material management plans, reconnaissance studies, feasibility studies (FSs), limited reevaluation reports, general reevaluation reports (GRRs), major rehabilitation reports, and continuing authority studies. He has experience evaluating whether adequate information was available and appropriate technical analyses were completed to support selection of a tentatively selected plan (TSP) within the context of the risk-informed decision-making process for these types of studies.

Mr. Hornung's experience includes structural and non-structural flood risk management projects; water quality; inland, deep-, and shallow-draft navigation; and water supply studies. Relevant studies include the C-111 GRR, Jacksonville District; the C-51 West GRR; the Lake Okeechobee Watershed FS; the Herbert Hoover Dike Major Rehabilitation Report; the Alexandria to the Gulf of Mexico Flood Control FS, New Orleans District; and the North West El Paso Flood Risk Management FS, Albuquerque District.

Mr. Hornung also has more than 30 years of experience conducting traditional National Economic Development (NED) benefits analyses associated with flood risk management and inland navigation projects. This experience includes applying the Hydrologic Engineering Center Flood Damage Reduction Analysis (HEC-FDA) model for the Alexandria to the Gulf Flood Risk Management FS, the C-111 GRR (flood risk management), and the Northwest El Paso Flood Risk Management FS.

Mr. Hornung has applied the HEC-FDA model using HEC River Analysis System (HEC-RAS) model results on many projects, including Alexandria to the Gulf (2012), Pajaro River (2016), and Northwest El Paso (2017). In addition, Mr. Hornung served on the IEPR Panel to evaluate the NED analysis that was performed using the HEC-RAS and HEC-FDA models for the West Sacramento Flood Risk Management GRR (Sacramento District) and the Middle Mississippi River Study (Albuquerque District). His extensive experience conducting NED evaluations reflects his capability in evaluating traditional NED plan benefits associated with hurricane and coastal storm risk management projects.

Mr. Hornung has more than ten years of experience working with HEC-FDA modeling software for many USACE studies. His 2006 involvement in the Alexandria to the Gulf of Mexico FS for the New Orleans District illustrates his experience with HEC-FDA. As a consultant to the New Orleans District, he used HEC-RAS to simulate the complex system of primary and secondary flood control canals in the town of Alexandria and downstream areas, and then applied an innovative application for automating data input to HEC-FDA, which was used to calculate flood damages for the without- and with-project alternatives. The application was so successful that he later managed a contract with HEC to modify the application for broader use.

Paul Looney **Environmental Law Compliance Specialist**

Mr. Looney, Senior Scientist at Scalar Consulting Group Inc. in Pensacola, Florida, has 39 years of professional experience, 30 of them as an ecologist. He has an M.S. in coastal zone studies/biology from the University of West Florida and is a Certified Environmental Professional, a Senior Ecologist, and a Senior Professional Wetland Scientist. The theme for his Master's thesis was research and documentation of the environmental impacts related to deposition of dredged material in a coastal environment.

Mr. Looney has extensive experience with the Clean Water Act (including permitting in coastal environments) and is expert in wetland delineation, assessment, and permitting. He has completed numerous Essential Fish Habitat (EFH) assessments in Louisiana, Alabama, and Florida as part of his normal National Environmental Policy Act (NEPA) compliance project documentation and has experience using the EFH Mapper tool. He has completed both formal and informal Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) concerning listed species impacts for coastal and transportation projects in the same states.

Mr. Looney has broad experience in water resource environmental evaluation and NEPA compliance in coastal environments. He was the lead scientist for the Alabama Port Authority Environmental Impact Statement (EIS) for the creation of a container port in Mobile, Alabama. In addition, for the Alabama Port Authority, Mr. Looney worked closely with the USFWS, National Marine Fisheries Service (NMFS), USACE, U.S. Environmental Protection Agency (EPA), and

Alabama Department of Natural Resources to develop an accepted wetland assessment technique for natural resource impact surveys of nearby wetlands and threatened and endangered species. He developed a coastal wetland evaluation model, based on the Hydrogeomorphic Model, for the evaluation of coastal fringing wetlands and tidal flats associated with the Choctaw Point Container Port EIS, Mobile, Alabama. The model was used for a multi- agency (Federal and state) evaluation of all impacted wetlands and was agreed upon after intensive collaboration among all agencies.

Mr. Looney is an active member of the National Association of Environmental Professionals (NAEP) and is a published scientific author with seven publications in recognized scientific journals. He has also been the main author on three papers concerning projects he has managed. These papers were published as part of the proceedings from the NAEP's Annual Meetings and were presented by Mr. Looney at the meetings.

Larry Fluty, Ph.D., P.E., CFM **H&H Engineer**

Dr. Fluty has 41 years of experience managing and designing civil engineering facilities involving H&H solutions for water resources, flood control, stormwater drainage, detention/retention basin design, low impact design with non-structural solutions, flood warning systems, and flood-proofing measures. He earned his Ph.D. in civil engineering/water resources from Grant University in 2012 and is a registered professional engineer in Florida, Kentucky, Ohio, Virginia, and West Virginia. Additionally, he is an Association of State Floodplain Managers Certified Floodplain Manager. Dr. Fluty has an extensive engineering background in hydraulic studies for levee design, erosion control measures, environmental compliance and restoration, stream geomorphology, climate change impacts, flood control, stream stabilization, low-impact design and non-structural alternatives, urban hydrology, waterway and wetland permitting, water control structures, and hydraulic safety audits and studies.

In his previous role as the Director of Water Resources for Cardno, Dr. Fluty was responsible for all water resource and drainage discipline projects. He was also responsible for planning, design, permitting, and construction administration for water resource projects, as well as all aspects of H&H modeling. As such, he is experienced with the USACE HEC model series (including HEC-RAS [2D] and HEC Hydrologic Modeling System). He is highly experienced with various integrated 2D modeling used for watershed evaluations and flood impact. Dr. Fluty's experience includes Federal Emergency Management Agency (FEMA) floodplain analysis and mapping, master drainage plans, watershed management plans, and water quality improvement plans for large-scale regional and urban watersheds. He has also completed watershed projects involving low-impact development analysis and design, evaluation of structural and non-structural alternatives, flood warning systems including evacuation alternatives, and development of advanced and automated geographical information systems (GIS) for water resources. He has used these models on such studies as the SH-130 drainage improvements for the Texas Department of Transportation (DOT), where he evaluated variable storm durations and critical storm determinations for several watersheds in order to ensure no impacts upstream or downstream of all conveyance crossings; the Redwood Master Drainage Plan, Josephine County, Oregon, where he evaluated locations, source, extent, and depth of flooding (including providing alternative flood protection measures); and the Broadway & Rural Drainage Master Plan, Tempe, Arizona, where project goals included development of protective measures, use of structural and non-structural alternatives, and development of comprehensive alternatives to prevent flooding in the urban watershed. Dr. Fluty has specialized experience in river engineering and sediment transport as well as in geomorphology evaluations, including the Curlew Creek geomorphology assessment and natural channel design, Pinellas County, Florida. The project involved evaluation and development of hydro-modifications involving cross vanes with pools for energy reduction, sediment transport, and development of watershed-specific standards.

Dr. Fluty's 40+ years of experience includes preparing watershed management plans and studies that involve rural and urban watersheds, open-channel systems, and riverine systems. Watershed studies often require the evaluation of minimizing erosion impacts using low-impact development strategies involving structural and non-structural approaches. Dr. Fluty has also conducted riverine floodplain H&H studies that involved evaluating floodplain impacts; identifying flood zone hazard areas, sediment transport, and erosion; and evaluating flood reduction and control measures such as the design and analysis of water control structures and non-structural approaches.

Dr. Fluty's related project experience includes producing more than 1,000 FEMA map panels, completing six county-wide Digital Flood Insurance Rate map studies, and completing H&H modeling and mapping of more than 25,000 miles of streams. Dr. Fluty has also completed canal and riverine capacity assessments of existing riverine and canal systems. These evaluations included field inspection, survey, sediment sampling, and assessment of erosion potential, including sediment transport analysis.

Dr. Fluty is highly capable and experienced in addressing the requirements necessary for performing USACE Safety Assurance Reviews (SARs) and in completing and presenting risk management requirements per ER 1105-2-101 (Risk Assessment for Flood Risk Management Studies) and related guidance. This experience includes performing SARs for the Nolichucky River Watershed, Nashville District, and the L-40 Levee Conveyance Reconnaissance Study for the SFWMD and USACE Jacksonville District.

Dr. Fluty is very familiar with the impact of other disciplines on the outcome on flood risk management and flood reduction projects. He has worked with environmental professionals on impacts on natural systems, and he has collaborated with planners to evaluate future land use and with geotechnical engineers to evaluate potential constraints on hydraulic structures. Dr. Fluty has also worked with interdisciplinary project teams; for example, he served as the project manager on the SFWMD Everglades Protection Area Bc87(3) Project, West Palm Beach, Florida, and the Trinity River Restoration Project, Trinity County, California.

Dr. Fluty has experience evaluating risk for flood, damages, and life/safety aspects. Working with the USACE Jacksonville District and the SFWMD, he participated in peer design conferences, evaluated the H&H models developed by the project team, and reviewed and modified the proposed operating manuals to ensure consistent and compatible performance of the project components with the existing Central and Southern Florida Flood Control Project. Dr. Fluty also conducted risk management assessment of the alternatives and final project for flood risk impact, life and safety, and other criteria as specified by ER 1105-2-101.

Dr. Fluty is a member of the American Water Resources Association, the American Society of Civil Engineers, the Association of Engineers, the Association of State Floodplain Managers, and the Society of American Military Engineers. He served as the H&H engineering IEPR panel member for the Rio Grande de Arecibo, Puerto Rico; Leon Creek Watershed FS, San Antonio, Texas; Aliso Creek Mainstem, Orange County, California; Middle Rio Grande Flood Protection Project, Bernalillo to Belen, New Mexico; and DuPage River IEPR, Cook, DuPage and Will County, Illinois.

Robert Chantome, P.E. **Civil/Structural Engineer**

Mr. Chantome has worked for 28 years as a geotechnical and structural engineer. His experience includes development of geotechnical investigation programs; geotechnical designs of slopes and foundations; structural designs of retaining walls, floodwalls, hydraulic structures and gates; and geotechnical and seismic designs of slopes and foundations. In addition, he performs foundation

analyses, scour potential evaluations, and seismic engineering services. He is well-versed in the use of a variety of computer software programs, including AutoCAD, GROUP, GEOPAK, and InRoads. Mr. Chantome holds both a B.S. (1989) and M.S. (1990) in civil engineering from the University of Illinois- Urbana, and is a professional engineer in Kentucky, Iowa, and Missouri. In Illinois, he is a registered structural engineer.

Mr. Chantome served as the structural/geotechnical engineer for a flood protection system for the West Side Phase I project in Cedar Rapids, Iowa, during which he completed structural and foundation design for 850 feet of permanent T-type floodwall founded on battered H-piles with a sheet pile cutoff wall. He also completed constructability assessments for a wall under an arch bridge with 1-inch clearance between the low chord and the top of the wall.

For the Nature Conservancy's Emiquon Preserve Water Control Structure Planning, Design and Construction Services in Illinois, Mr. Chantome was the lead structural engineer responsible for design of a water control structure within the net levee section, pedestrian bridge, and appurtenant sampling structures, which included the design of pump discharge penetrations and the riser structure wall, outlet channel improvements, integrated foundations for cranes on top of the water control structure, and sheet- pile cut-off walls and numerous other components to enhance the management of the 5,200-acre wetlands/fisheries restoration project. The wetland restoration area is surrounded by a 20-foot-high levee, and the water control structure and pump station are critical for managing water levels for the aquatic ecosystem.

For USACE's New Orleans District's Task Force Guardian Hurricane Protection Restoration project, Mr. Chantome provided geotechnical engineering expertise for monitoring and recording quality control and quality assurance (QA/QC) test results on multiple levee and flood gate construction projects in Plaquemines Parish, Louisiana. Also, for the USACE New Orleans District, he was a geotechnical/structural engineer for the West Closure Complex, Plaquemines Parish, providing design, review, and QA to the support team. Further, for the USACE New Orleans District's Task Force Hope Cost Estimate Study, Mr. Chantome served as a geotechnical engineer on a multidisciplinary team responsible for preparing a cost estimate of all Hurricane Protection System projects in Southeast Louisiana following Hurricane Katrina and also served on a Lake Pontchartrain and Vicinity Levee Value Engineering Workshop. He was the geotechnical engineer on a multidisciplinary team that proposed value engineering alternatives for four levee and floodwall projects along the south shore of Lake Pontchartrain.

For the Illinois Department of Natural Resources Stratton Lock and Dam project, Mr. Chantome served as the lead structural engineer for the lock wall extension and a civil/structural engineer for the replacement flow control gate structure. The project improved three main components of the existing lock and dam facility: the boat lock was extended in the downstream direction on the river to double the current locking capacity; a new flow control gate structure upstream replaced the existing structure; and the berm on the west side of the Fox River was rehabilitated to correct erosion problems. The new gate structure required staged construction with temporary and permanent channel modifications to maintain the flow of the Fox River throughout construction, reducing the risk of upstream flooding.

For USACE, St. Paul District, Mr. Chantome provided geotechnical engineering support for the design documentation report (design and analysis computations) for 8 miles of roads adjacent to Devil's Lake, North Dakota, that were impounding water due to the flooding of Devil's Lake. He completed the design of the alignments and features and documented the design analysis, including

designing an embankment to minimize future construction costs. Mr. Chantome also assisted in developing standards for utility and infrastructure features crossing the embankments.

Douglas Spaulding, P.E. **Geotechnical Engineer**

Mr. Spaulding is a Principal and geotechnical/civil engineer with Spaulding Consultants, LLC, responsible for flood risk management projects involving dam, levee, and floodwall design and inspection. He earned his M.S. in geotechnical engineering from Purdue University and is a registered professional engineer in Wisconsin, Minnesota, and Michigan. He has 50 years of experience in the design, evaluation, and inspection of water-retaining structures.

During his long career, Mr. Spaulding has provided geotechnical design and evaluation services for flood risk management levees, embankments, and hydroelectric projects in a 23-state area. His experience includes 10 years with USACE, where he served as Chief of the Levee and Channel Design Section for the St. Paul District. In that capacity, he managed the design of the Pembina levee project in North Dakota and provided geotechnical/civil design services for over $200 million worth of local flood protection projects in Wisconsin, Minnesota, and North Dakota. The Pembina project and the Mankato and Winona flood control projects in Minnesota all included extensive sections of floodwall (both I-wall and T-wall configurations). In addition, for the Winona project, Mr. Spaulding supervised the evaluation of underseepage using a drainage trench. He also served as the Program Manager for the National Dam Safety Program in Wisconsin and Minnesota. He has experience with lock structures in Minnesota and Michigan and served on the design team for the rehabilitation of Lock and Dam No. 1 and No. 2 on the Mississippi River. He also managed the design of several hydroelectric projects at dams on the Mississippi and Red River in Louisiana.

Mr. Spaulding's geotechnical background includes evaluating the stability of levee sections founded on soft clay foundations. His experience also encompasses geotechnical design of bridge foundations, cellular sheet pile structures, sheet pile tieback walls, conventional gravity walls, and pump stations founded on sand and soft clay deposits. He has provided design services for embankments using preload fills to strengthen underlying foundation deposits. He recently served as a consultant to evaluate the instability caused by a sanitary landfill founded on more than 100 feet of soft lacustrine clay. All the local flood control projects for which Mr. Spaulding has provided design services have involved at least several gatewells to accommodate gravity drainage.

As part of his experience, Mr. Spaulding applied USACE risk-informed approaches to the evaluation of safety issues at USACE navigation, flood control, and hydroelectric projects. From 1988 to 2010, he also provided dam safety training for USACE operations personnel at navigation and flood control projects. Over the last 10 years, Mr. Spaulding has participated in more than 75 Potential Failure Mode Analysis (PFMA) evaluations of dams and hydroelectric projects. As a facilitator of PFMA evaluations authorized by the Federal Energy Regulatory Commission (FERC), Mr. Spaulding has directed more than 50 evaluations for embankment dams, concrete gravity structures, and arch dam structures.

In addition, Mr. Spaulding has served as a civil/geotechnical member of IEPR review panels dealing with local flood protection projects such as levees, channels and floodwalls, dam remediation, dam replacement, and seepage control system upgrades. This experience has given him an extensive background in USACE's SAR requirements. Mr. Spaulding has provided peer review services on two reaches of hurricane protection projects in the New Orleans area. In 2008, he peer-reviewed the geotechnical design of the New Orleans Group 1 to Group 3 pump stations. In 2010, Mr. Spaulding also served on the IEPR team reviewing the Olmsted Lock and Dam structure on the Ohio River. In 2014, he served on the IEPR evaluation team for the Pine Creek dam remediation in Oklahoma, assessing proposed methods to control internal embankment seepage around an existing conduit that

had created large internal voids in the 50-year-old dam. In addition, Mr. Spaulding currently serves on two FERC- appointed Boards of Consultants reviewing the design of two major hydroelectric projects and was appointed to the U.S. Department of Energy (DOE) peer review panel to evaluate ongoing DOE- sponsored research related to dams and hydroelectric generation. He recently served on a Bureau of Reclamation review panel for the Folsom Dam spillway addition. Mr. Spaulding is a lifetime member of the American Society of Civil Engineers. He is also a member of the Minnesota Geotechnical Society, the National Hydropower Association, and the Construction Panel for the Minneapolis section of the American Arbitration Association.