LUIS PARTIDA

Research Scientist – Numerical Modeling

Luis Partida, research hydraulic engineer, brings more than 10 years of experience in hydrologic and hydraulic numerical modeling to The Water Institute team including extensive experience in coupled models. As a numerical surface water modeler, Luis works to develop unique modeling methods to produce a more comprehensive result as well as optimizing models to run more efficiently.

Luis received his bachelor's degree in civil engineering from the University of Arizona College of Civil Engineering and Mechanics. He was a senior water resources engineer with RPS where he worked on drainage plans for several Texas regions, performed hydrologic and hydraulic model reviews, and produced a number of hydraulic and hydrologic training modules. Luis was also a senior water resources engineer with AIA Engineers Inc./CONSOR where he managed multiple projects and served as the technical analysis lead for hydraulic and hydrologic calculations.

PROFESSIONAL EXPERIENCE

2022–Present: Research Scientist - Numerical Modeling, The Water Institute

2020–2022: Senior Water Resources Engineer, RPS

2018–2020: Senior Water Resources Engineer, AIA Inc./CONSOR

2014–2018: Water Resources Engineer, OMEGA Engineers Inc.

2014: Graduate Engineer, Walter P. Moore

ORGANIZATION ROLE

Research Scientist—Numerical Modeling

PROJECT ROLE / FOCUS AREAS

Hydrologic and hydraulic modeling

HEC-RAS

Project management

Model development

EDUCATION

BS Science in Civil Engineering, University of Arizona, college of Civil Engineering and Mechanics, 2013

A.L.A. Liberal Arts, Mohave Community College, 2010

PROFESSIONAL MEMBERSHIPS

E.I.T. registered in California July 11, 2013

E.I.T. registered in Texas October 25, 2017

American Society of Civil Engineers-Student Chapter, Member # 9145115

SELECTED PROJECTS

Louisiana Barrier Island System Management (BISM): Structured Decision Making. *CPRA (2019–2020).* Developing a conceptual framework for regional sediment management (RSM) in barrier island restoration, including inventorying available data for model development and identifying potential stake holder concerns.

FM 2100 Drainage Analysis Houston, Texas. TXDOT *(2019–2020*). FM 2100 is a roadway located within the Luce Bayou Watershed. The proposed roadway was to be widened requiring cut within the 500-yr floodplain. I analyzed the existing and proposed drainage network utilizing XPSWMM. The existing ditch network was to be changed to a closed conduit storm sewer network with 7 detention ponds requiring a no-impact result. The proposed network contains more than a hundred nodes and links. Once completed, I wrote the drainage report and created exhibits for the final submittal that was submitted to TxDOT.

Aberdeen Green Drainage Analysis Houston, Texas. ***HCED*****,** *(2019–2020*)**.** Aberdeen Green is a subdivision located in north Houston that sustained damages during Hurricane Harvey. Utilizing a 1D/2D XPSWMM hydraulic model and Atlas-14 rainfall data, I modeled existing conditions in order to determine the cause of flooding. The dynamic model allowed myself to determine the source of flooding, the time at which it occurred and to calibrate the model to a real time event. Proposed alternatives were modeled and presented to HCED. After the proposed solution was agreed upon based on its feasibility, the final product was presented to the Public including a power point presentation followed by an open forum question and answer session.

Meadow Hill Drainage Analysis Houston, Texas. ***HCED*****,** *(2019–2020*). Meadow Hill is a subdivision located in north Houston that sustained damages during Hurricane Harvey. Nearly 100 properties sustained damage. Utilizing a 1D/2D XPSWMM hydraulic model and Atlas-14 rainfall data, I modeled existing conditions in order to determine the cause of flooding. The dynamic model provided the opportunity to determine the source of flooding, the time at which it occurred and to calibrate the model to a real time event. Proposed alternatives were modeled and presented to HCED. After the proposed solution was agreed upon based on its feasibility, the final product was presented to the public including a power point presentation followed by an open forum question and answer session.

Parkway Mobile Homes Drainage Analysis Houston, Texas. ***HCED*****,** *(2019–2020*). Parkway Mobile Homes is a subdivision located in north Houston that sustained damages during Hurricane Harvey. Over 300 properties sustained damage. This project was unique in that it was adjacent to the Greens Bayou. The proposed solution to flooding was to utilize Atlas-14 rainfall data with the assumption that if the Greens Bayou was not allowing runoff to outfall. Utilizing a 1D/2D XPSWMM hydraulic model, I modeled existing conditions to determine the cause of flooding. The dynamic model allowed for the opportunity to determine the source of flooding, the time at which it occurred, and to calibrate the model to a real time event. Proposed alternatives were modeled and presented to HCED. After the proposed solution was agreed upon based on its feasibility, the final product was presented to the Public including a power point presentation followed by an open forum question and answer session.

SELECTED CONFERENCE PROCEEDINGS

ASCE Guest Speaker on 2-Dimensional Hydraulic Modeling of Junctions Biloxi, Mississippi – Invited to speak at the ASCE Conference regarding my findings in 2-Dimensional Hydraulics and its associations with junctions. This presentation was developed by comparing traditional 1-Dimensional Steady State and Unsteady State junction hydraulics with 2-Dimensional methods within the Hydraulic Software HEC-RAS

Creator of a HEC-RAS 2-Dimensional Unsteady State Workshop – Multiple techniques on modeling have not yet been written or discussed. If methodologies had been previously developed, there were large inconsistencies in the overall understanding of the hydraulic modeling software and processes. Luis is the sole author of a 2 (two) day workshop which include a written manual that also incorporates a hands-on workshop for students/professionals. The workshop has received praise and is a continual learning experience for what current industry standards and engineers have misunderstood from available documentation.

TxDOT El Paso Hydrologic and Hydraulic Methodologies – Presented to the TxDOT El Paso District's Head of H&H on the development of offsite peak flows and how they directly correlate to future modeling. The current Hydrologic Methods as defined by Tx.DOT have been underestimating peak flows. El Paso consists of unique terrains containing high sloping watersheds with short duration high intensity storms.