GOMATHISHANKAR PARVATHINATHAN

EDUCATION

- Texas A&M University, Kingsville, TX
  PhD in Environmental Engineering, 2007
- Texas A&M University, Kingsville, TX
  MS in Environmental Engineering, 2002
- Bharatihyar University, India
  BE in Chemical Engineering, 1999

PROFESSIONAL LICENSES AND SOCIETIES

- Registered Civil Engineer in California, 82819

EXPERIENCE

2015–Present	MBK Engineers Engineer
2008–2015	MWH Americas, Inc., Sacramento, CA Water Resources Modeling Specialist
2000-2007	Texas A&M University Research Assistant

PROJECTS

Sacramento San Joaquin River Delta Emergency Response Tool Development Project for Flood and Seismic Catastrophic Events, California Department of Water Resources, California.
Dr. Parvathinathan was the main developer of the Central Valley Project (CVP) and State Water Project (SWP) Operations Model in the Delta Emergency Response Tool (DERT). DERT has been developed under the direction of the California Department of Water Resources Flood Management Group with the objective of providing rapid analysis of potential impacts from levee damage in the Sacramento San Joaquin Delta. Dr. Parvathinathan developed the DERT model with the focus on providing the decision makers, a flexible tool that can be used easily and effectively to simulate real time forecast operations scenarios. The Operations Model consists of simplified CVP/SWP operations logic that has been validated using historical data to produce reasonably accurate simulation of the project operations. The DERT CVP/SWP Operations model simulates the upstream reservoirs and Delta export operations for meeting Delta salinity standards during an emergency levee breach scenario in the Delta.

Upper San Joaquin River Basin Storage Investigation, Bureau of Reclamation (Reclamation), Mid-Pacific Region, CA (2012-2015)
Dr. Parvathinathan, the project engineer is using CalSim II to evaluate feasibility of new surface water storage in the upper San Joaquin River watershed. Dr. Parvathinathan was actively involved in the planning process and in the development of project alternatives with the focus on improving water supply reliability and flexibility for agricultural, urban, and environmental uses; and enhancing San Joaquin River water temperature and flow conditions to support anadromous fish restoration efforts. He has developed a separate mathematical routing model of the San Joaquin River, Delta Mendota Canal and California aqueduct to evaluate the performances of each project alternative on deliveries only to contractors located south of the Delta. He also applied DSM2 to evaluate the impacts of project alternatives on the water quality in the Delta and summarized the impacts in the DEIS.

North Bay Aqueduct Alternate Intake Project, DWR, California (2012-2015)
Dr. Parvathinathan, the project engineer performed a key role in the operational modeling using CalSim II for evaluating the feasibility of North Bay Aqueduct (NBA) Alternate Intake Project (AIP). Project alternatives explore constructing an alternate intake on the Sacramento River for the North Bay Aqueduct system. His activities included quality assurance and quality control on water supply and CVP/SWP operations modeling and associated impacts of the project alternatives on hydrodynamics and water quality in the Delta. He also co-authored the water supply and water quality impact analysis chapters and was instrumental in the technical analysis using CalSim-II and DSM2.

Shasta Lake Water Resources Investigation, Bureau of Reclamation (Reclamation), Mid-Pacific Region, CA (2012-2015)
Dr. Parvathinathan was primary author of water quality chapter for EIR which involved performing hydrodynamic and water quality modeling using DSM2 and summarizing the impacts of project alternatives. A major task in the project is to evaluate the benefits of project alternatives under projected climate changes in the future which required simulating water operations using CalSim II and temperature changes in the Shasta Reservoir and upper Sacramento River. Dr. Parvathinathan also assisted in responding to several public comments on the DEIS related to CVP/SWP operations and Delta water quality.

Water Supply Reliability Analysis using GoldSim, Stockton East Water District, (2013)
Dr. Parvathinathan developed Stockton Water Allocation Model (SWAM) on GoldSim platform to simulate surface water supply availability from the Calaveras and Stanislaus rivers to the Stockton Metropolitan Region. He led the technical team in the model development task which included a user-interface for the stakeholders to perform several customary model simulations to guide them in the decision making process. Model development task included collection of input data related to regional water demands, water allocation logic, water contracts and entitlements, reservoir evaporation and other losses, stream inflows, river seepage and evaporation losses and other physical constraints after a thorough research. SWAM uses the Index Sequential Method, a stochastic sampling method for generating multiple hydrologic sequences conditions to address various uncertainties in the simulation of future conditions.

SEWD Technical Support for Water Right Application, Stockton East Water District, California (2012)
Dr. Parvathinathan performed water operations modeling using CalSim II, hydrodynamic and water quality modeling for evaluating the beneficial use of flood releases (surplus flows) from New Hogan Reservoir to the Calaveras River and Farmington Reservoir flood releases to Rock Creek and Littlejohns Creek for groundwater banking. The purpose is to arrest critical over-drafting of the East San Joaquin Sub-basin of the San Joaquin Valley Groundwater Basin through an integrated watershed management approach (Proposed Project). The task included analyzing the modeling outputs and summarizing resulting and methodology.

Validation of Central Valley Planning Area Model (WEAP) using CalLite, DWR, California, CA (2012)
Dr. Parvathinathan validated the management responses representation in WEAP using the CalLite model. The task required a strong understanding of how CVP/SVP system operations logic and Sacramento-San Joaquin Delta regulations are implemented in CalLite and to validate the performance of WEAP model in simulating key water resources management actions. Multiple CalLite and WEAP runs were performed using different assumptions of contract limits on diversions to evaluate the sensitivity of the models. The task also included improvements to the existing WEAP model calibration, model hydrology and other spatial data inputs and presentation of model results.

Calibration of Agricultural Water Use and Snowmelt and Rainfall-runoff Processes in the California Planning Area Model (WEAP) , DWR, California, CA (2012)
Dr. Parvathinathan calibrated agriculture water use and snowmelt and hydrologic processes in the California Planning Area model (WEAP Model) using historical land use, consumptive use and climate data. Calibration processes involved generation of area-weighted climate data for each catchment from one-eighth gridded data set and data on unimpaired flows from upstream watersheds, crop acreages and irrigation data for 20 different crops in 11 planning areas covering the entire Northern California. An analysis was performed to identify the most sensitive calibration parameters root zone conductivity, soil water capacity and irrigation efficiency) through several iterative simulations performed programmatically.

Validation of DSM2 Model, Metropolitan Water District, CA (2010)
Dr. Parvathinathan was the primary investigator in evaluating the ability of Sacramento-San Joaquin Delta Simulation Model (DSM2) in simulating the transport of various cations and anions based on observed data at different locations in the Delta. The study required collection of historical water quality data for the boundary conditions and for validating the model results. He was also the primary author in the validation effort that included a range of metrics to assess model performances at different hydrologic and seasonal conditions in the Delta.

Delta Simulation Modeling Support and DSM2 Model Interface Development, Metropolitan Water District, CA (2010)
Dr. Parvathinathan was in-charge of providing key technical support for applying DSM2 in evaluating hydrodynamic and water quality changes in the Delta. This project mainly focused on providing essential support in the form of tools and interfaces to help MWD transition to DSM2 from the Fischer Delta Model (FDM). MWH developed a DSM2 modeling framework for streamlining the data connectivity with the DSM2 model at both input and output ends of the model.

Farmington Recharge Program, U.S. Army Corps of Engineers Sacramento District, CA (2009)
The Farmington Recharge Program is a master planned conjunctive management program designed to appropriate surplus surface water flows, and deliver them to the region to recharge the critically over-drafted Eastern San Joaquin Groundwater Sub-basin. Dr. Parvathinathan played a major role as a modeler in the assessment of the impacts of flood flow diversions from San Joaquin and Calaveras River on the water quality and hydrodynamics in the Delta. He performed a historical simulation using Delta Simulation Model DSM2, and also investigated changes in dissolved oxygen concentrations under the project conditions in the Stockton deep water ship channel.

San Joaquin River Restoration Program PEIS/R, Reclamation, Mid-Pacific Region, CA (2009)
The San Joaquin River Restoration Program (SJRRP) is a comprehensive long-term effort to restore flows to the San Joaquin River which required an assessment of the changes water resources operations in the region, temperature dynamics in the river and reservoir and an investigation of subsequent impacts of restoration flows in the Delta. Dr. Parvathinathan performed temperature modeling for Millerton Lake and the San Joaquin River for the PEIS/R using HEC-5Q, and helped analyze and present the modeling results. He applied CalSim-II to understand the implications of various water management scenarios and also conducted a Delta water quality investigation using DSM2. Dr. Parvathinathan assisted in the analyses of impacts to surface water supply, water quality and facilities operations for Program alternatives using CalSim-II and DSM2 for the Programmatic EIS.

CalSim-III Hydrology Development Project, Department of Water Resources, CA (2009)
Dr. Parvathinathan supported development of the CalSim-III model, a refinement of the CalSim II representation for the Sacramento River and San Joaquin River valleys. His contribution in the development of CalSim 3 model also includes development of hydrologic input data for the model. He helped immensely in the development of the Yuba system in CalSim III and compared with the water operations model developed by Yuba County Water Agency.

Los Vaqueros Reservoir Expansion Investigation Feasibility Study, Bureau of Reclamation (Reclamation), Mid-Pacific Region, CA (2008)
Dr. Parvathinathan served on the hydrologic modeling (CalSim-II) team and water quality modeling (DSM2) team investigating project impacts Statewide and in the Delta. Dr. Parvathinathan applied the CalSim-II model, which represents Contra Costa Water District's (CCWD) existing Los Vaqueros Project system, and future potential facility configurations.

PUBLICATIONS

- Chang, N. B., Srilakshmi K. R., and Parvathinathan, G.,"Comparison of Models of Simazine Transport and Fate in Subsurface Environment in a Citrus Farm," Journal of Environmental Management, 2006, doi:10.1016/j.jenvman.2007.11.020.
- Chang, N. B., Parvathinathan, G., and Dyson, B., "Multi-objective Risk Assessment of Freshwater Inflow on Ecosystem in San Antonio Bay, Texas,"Water International, Vol. 31, No. 2, pp. 169-182, 2006.
- Chang, N. B., Parvathinathan, G., and Breeden, J. B., "Combining GIS with Fuzzy Multiple Attribute Decision Making for Landfill Siting in a Fast Growing Urban Region," Journal of Environmental Management, doi:10.1016/j.jenvman,2007.
- Chang, N. B., Skaria, M., Parvathinathan, G., and Srilakshmi K. R., "Pesticide Health Impact Assessment via Soil and Groundwater Monitoring in the Lower Rio Grande River Basin, Texas," Journal of Environmental Monitoring and Assessment, Feb., 2007.
- Uddameri, V. and Parvathinathan, G.,2007.Climate Change Impacts on Water Resources in South Texas. In: J. Norwine and J. Kuruvilla (Editors), The Changing Climate of South Texas 1900-2100: Problems and Prospects Impacts and Implications (Book Chapter).