

## Chandra Sekhar Chilmakuri – Statement of Qualifications

### Education

Ph.D. Engineering and Applied Sciences (Environmental Hydraulics), 2005, University of New Orleans  
 M.S. Civil and Environmental Engineering, 2002, University of New Orleans  
 B.Tech. Civil Engineering, 2000, Jawaharlal Nehru Technological University, Hyderabad, India

### Professional Registrations

Professional Engineer: California C75273

### Professional History

Metropolitan Water District of Southern California, Principal Engineer, April 2018 - Present  
 CH2M HILL, Inc., Water Resources Engineer/Senior Project Manager, 2006 – March 2018  
 Waldemar S. Nelson Engineers, Civil Engineer, 2005

Estuarine hydrodynamics and water quality modeling, specifically related to the California Bay-Delta issues.

Experience in development and application of integrated suite of water supply, reservoir operations, hydrodynamics, water quality, temperature, aquatics, and power models.

Significant contribution to the formulation and implementation of the surface water modeling approach for the Bay Delta Conservation Plan/California WaterFix.

### Selected Related Experience

- **California WaterFix Water Right Change Petition; DWR; 2015 - 2018.** Assisted DWR and USBR attorneys and witnesses in developing the testimony for the change petition hearings and preparing for cross-examination as well as assisting with developing cross for opposing witnesses.
- **California WaterFix 2081(b) Permit; DWR; 2015 - 2017.** Worked with DWR in developing the 2081(b) permit application for the California WaterFix Project. Assisted in developing the operations criteria for the proposed action, performed the numerical modeling for the effects analysis, and worked with CDFW in resolving questions about operations and technical analyses resulting in the ITP.
- **Sites Reservoir Project DEIRS; Sites Project Authority; 2016 - 2017.** Led the technical work in developing and analyzing the Sites Reservoir project alternatives in support of the DEIRS. Led a team in performing operations, temperature, hydrodynamics, water quality, fisheries, power and economics modeling of the Alternatives in support of the impact analyses. Helped prepare the technical appendices supporting the DEIRS impact analyses.
- **California WaterFix (CWF) Biological Assessment; USBR; 2015 - 2016.** Worked on developing the CWF Proposed Action through an interagency coordination and helped evaluate several options. Performed modeling for evaluating effects related to CWF on CVP-SWP operations, hydrodynamic, water quality, particle tracking, temperature, and fisheries.
- **Bay Delta Conservation Plan (BDCP); DWR; 2007 - 2013.** Worked on developing the BDCP Proposed Project through an interagency/stakeholder coordination and helped evaluate several options. Helped in formulating the analytical framework for the hydrodynamic and water quality modeling for evaluating the Proposed Project that included use of multidimensional hydrodynamic and salinity transport models with DSM2 and CALSIM II. Modeling included evaluation of the proposed

isolated conveyance facility and large-scale habitat restoration areas under current and future climate and sea-level rise conditions. The analyses involved comprehensive hydrodynamic, water quality, and particle tracking analyses of the proposed physical and operational changes in the Delta. Continuing to provide assistance in obtaining permits for CWF from State and Federal agencies.

- **BDCP EIR/EIS; DWR; 2008 - 2017.** Worked with the lead agencies on the development of assumptions and performed modeling of identified alternatives for the BDCP EIR/EIS. The models included CALSIM II for CVP-SWP system operations, DSM2 for Delta hydrodynamics and water quality, SRWQM for Sacramento River water temperature, SWP Power and LT-Gen for SWP and CVP hydro-power impacts. Lead the coordination with the EIR/EIS impact assessment teams and provided the necessary modeling results for various alternatives to evaluate effects of the preferred plan and its alternatives on fisheries, aquatic, water supply, surface water, groundwater, water quality, and agricultural resources. Primary author of the BDCP EIR/EIS Modeling Technical Appendix, and contributed to Water Supply and Surface Water Resources impact analyses chapters.
- **Coordinated Long-term Operation Remand EIS; Reclamation; 2014 - 2015.** Reviewed the latest reservoir and river water temperature models for the Sacramento and San Joaquin Rivers and their tributaries and integrated with the CalSim II model enabling it to use in the evaluation of the temperature effects of the EIS alternatives.
- **BDCP Baselines Development; DWR; 2009 - 2010.** Calibrated and validated the Department of Water Resources' Delta Simulation Model II (DSM2), a one-dimensional model that simulates hydrodynamics and water quality in the entire Delta region. Developed the planning version of this model, incorporating the assumptions from the Biological Opinions from USFWS and NOAA Fisheries.
- **Historical Delta Hydrodynamics Modeling, USFWS; 2011 - 2016.** Used DSM2 PTM model to hindcast the potential effect of Delta hydrodynamics on the movement of the Delta Smelt under historical flow and tidal conditions in the Sacramento-San Joaquin Delta, in support of the Delta Smelt Life Cycle Model development by the USFWS.

### Publications and Presentations

- Greenwood, M., Chilmakuri, C., Jones, G. 2017, *Potential Interacting Effects of Freshwater Inflow, Climate Change, and Habitat Restoration on Juvenile Salmonid Entry into a Low Survival Migration Pathway of a Large West Coast USA Estuary*, in: 147<sup>th</sup> AFS Annual Meeting, Tampa, FL.
- Chilmakuri, C., 2014, *Using DSM2 in Support of Delta Smelt Life Cycle Modeling* in: Annual Meeting, California Water and Environmental Modeling Forum, Folsom, California.
- Chilmakuri, C., Bair, L., Van Lienden, B., 2013, *Development and Application of Other CVP IRP Performance Assessment Models*, in: Annual Meeting, California Water and Environmental Modeling Forum, Folsom, California.
- Chilmakuri, C., 2010, *Calibration of DSM2 for the Bay Delta Conservation Plan*, in: Annual Meeting, California Water and Environmental Modeling Forum, Asilomar (Monterey), California.
- Chilmakuri, C., 2010, *Modeling of Dual Conveyance Operations*, in: Annual Meeting, California Water and Environmental Modeling Forum, Asilomar (Monterey), California.
- Chilmakuri, C., Winslow, K., Munevar, A., 2007, *DSM2 Analysis of Water Levels and Water Quality in the South Delta – Finger Printing and Particle tracking Analysis*, in: Annual Meeting, California Water and Environmental Modeling Forum, Asilomar (Monterey), California.
- Chilmakuri, C., McCorquodale, J.A., Georgiou, I., 2005, *The fate of Stormwater Runoff In An Estuarine Lake*, in: 33rd CSCE Annual Conference, Toronto, Canada.
- Georgiou, I., McCorquodale, J.A., Chilmakuri, C., 2005, *Numerical investigation of sediment-nutrient loading and algal bloom risk assessment* in a shallow estuarine lake, in: 33rd CSCE Annual Conference, Toronto, Canada.
- Miller, R.L., Chilmakuri, C., McCorquodale, J.A., Georgiou, I., McKee, B., D'Sa, E., 2005, *Using Multi-temporal*

*MODIS 250 m Data to Calibrate and Validate a Sediment Transport Model for Environmental Monitoring of Coastal Waters*, in: International Workshop on the Analysis of Multitemporal Remote Sensing Images, Biloxi, MS.

- McCorquodale, J.A., Georgiou, I., Chilmakuri, C., 2004, *Application of a 3-D Hydrodynamic Model for assessing the risk of an Algal Bloom*, in: Proceedings of the 6th International Conference on Hydro-Science and –Engineering, M.S. Altinakar, (eds), Volume VI, Brisbane, Australia.
- Chilmakuri, C., Georgiou, I., McCorquodale, J.A., 2004, *On the Development of a Predictive Model for Pathogens on the North Shore of the Lake Pontchartrain*, in: Seventh Biennial Basics of the Basin Research Symposium, New Orleans, LA.
- Chilmakuri, C., Georgiou, I., McCorquodale, J.A., 2004, *Water quality study and plume behavior modeling for the Lake Pontchartrain at the mouth of the Tchefuncte River*, in: Environmental State of the State IX Annual Conference, New Orleans, LA.