



Profile

- Principal water resources engineer with extensive **rainfall-runoff, flood modelling** and **project management** expertise
- Managed water resources services with **flood simulation and mapping** across Australia for a \$2 billion international consulting firm
- 20-year technical career with diverse, **international experience** in numerical modelling, hydraulic design, and construction of flood protection structures
- Comprehensive background in teaching, training, mentoring, and managing **professional development** through academic partnerships and internship programs

Employment History

- *Western Australia Civil Engineering Lead.* MWH Global / Stantec, Perth. 2014-2016.
- *Director of Water Resources.* Tetra Tech Australia, Melbourne and Perth. 2009-2014.
- *Project Manager/Civil Designer.* Tetra Tech, Inc., California, Arizona, Oregon, Washington, USA. 1996-2009.
- *Architectural Designer.* Architekturbüro Spengler. Nürnberg, Germany. 1993.

Education

- *Master of Engineering in Environmental Water Resources.* Department of Hydraulic and Coastal Engineering, School of Civil Engineering. University of California at Berkeley, 1996.
- *Bachelor of Engineering with University Honours, Magna cum Laude, Civil and Environmental Engineering.* Timpanogos University, 1995.

Affiliations

- *Engineers Australia*
- *Project Management Institute*
- *Australian Water Association*
- *Australian National Committee on Large Dams*
- *American Society of Civil Engineers*

Professional Highlights

- Completed over 200 **surface water management plans**, including rainfall-runoff, hydraulic modelling, and flood mapping services across Australia, New Zealand, and the United States.
- Supervised **benchmarking studies** comparing the results of industry standard hydrological and hydraulic models for hundreds of 1-dimensional, 2-dimensional, and coupled 1D/2D model runs.
- Facilitated and conducted over 100 worldwide, multi-day **hydraulic modelling training courses**, including flood mapping, dam break, and sediment transport.
- Developed **scope of work, basis of design, and risk register** documents; led proposal submittals and won panel appointments, master services agreements, competitive bids, and sole-source awards with new private, commercial, industrial, and government clients for global consultancies.
- Extensive **software development** experience, including code-writing, compiling, beta testing, and troubleshooting, and editing user manuals for industry-standard hydraulic and sediment transport modelling software.
- Selected for numerous **quality control**, expert consultation, third-party peer review, and independent **design verification** services based on international experience and technical expertise.
- Served as lead designer for over 100 constructed projects and **managed interdisciplinary project teams** in the analysis, design, and implementation of large-scale civil works with a consistent, successful track record of profitability.
- Served as an invited **keynote speaker** at industry forums and presented research and findings at over fifty international conferences, with results published in proceedings and industry journals.
- Published **academic theses**, including an assessment of large-scale greywater recycling operations and the calibration of automated hydraulic control structures for U.S. Bureau of Reclamation evaporation ponds.
- Authored or co-authored over fifty technical papers, including award-winning, **peer-reviewed papers** on hydraulic structures, stormwater management, dam decommissioning, and construction methods.

Technical Skills

- Hydrologic, hydraulic, groundwater, sediment transport and water quality modelling
- River mechanics and geomorphic assessment
- Surface water management plans
- Mine closure planning and rehabilitation design
- Construction plans, specifications, material quantity take-offs, and cost estimates
- Proposal and capability statement production
- Water reclamation and water-sensitive urban design
- Options analysis and optimisation modelling
- Scour assessment and erosion control
- HAZID and HAZOP risk workshop facilitation
- Conference and stakeholder workshop moderation for clients, regulators, and technical specialists

Design Experience

- Flood control levees, sluice gates, and floodways
- Weirs, spillways, fish passage structures, river diversions, and energy dissipation structures
- Culverts and bridge piers, footings, and abutments
- Dam decommissioning and sediment removal
- Coastal revetments, piers, berths, dykes, jetties, bulkheads, seawalls, groynes, and breakwaters
- Bank stabilisation and slope drainage control
- Scour protection and erosion control features
- Multi-use detention basins, slurry pipelines, sedimentation basins, and reservoirs
- Mine haul roads, pit wall stabilisation, ROM pads, closure bunds, and waste rock landforms

Awards and Recognition

- **Environmental Excellence Award**, U.S. Army Corps of Engineers, Ponca State Park Restoration Project (Project Manager)
- **Outstanding Project of the Year**, Society of Military Engineers, Goldsborough Dam Removal Project (Project Engineer).
- **Best Paper Award**, American Society of Civil Engineers, Rocky Mountain Conference
- **Magna Cum Laude and University Honours**, Timpanogos University

Work Eligibility

- Australian citizen with full working rights

Undergraduate Courses

- Engineering Hydrology
- Fluid Mechanics
- Hydraulic Engineering
- Structural Analysis
- Highway Engineering
- Engineering Materials
- Engineering Geology
- Engineering Surveying
- Soil Mechanics
- Structural Materials
- Thermodynamics
- Engineering Graphics
- Engineering Systems
- Computational Methods
- Technical Writing
- *Honours Thesis*: Evaporation Modelling in the Bear River Migratory Bird Refuge

Graduate Courses

- Environmental Fluid Mechanics
- Engineering Project Management
- Coastal Processes
- Marine Structures
- Wind and Wave Forces
- Surface Water Hydrology
- River Mechanics
- Hydraulic Structures
- *Masters Project*: Greywater Recycling in Santa Clara County

Professional Courses

- **Project Management Professional Training**, Project Management Institute.
- **Australian Rainfall and Runoff**, Engineers Australia.
- **Soil and Groundwater Pollution**, National Centre for Groundwater Research and Training.
- **Contaminant Transport**, National Centre for Groundwater Research and Training.
- **Value Engineering**, U.S. Army Corps of Engineers.
- **Fish Passageways and Bypass Facilities Design**, U.S. Fish and Wildlife Service.
- **Cold Regions and Arctic Engineering**, University of Alaska, Anchorage.
- **MicroStation**, WesTech College.

Selected Software Proficiency

- *Hydrology/Hydraulics*: RORB, HEC-HMS, XPRAFTS, TUFLOW, HEC-RAS, FLO-2D, SWMM
- *GIS*: QGIS, ArcGIS/ArcHydro, Spatial/3D Analyst
- *CAD*: AutoCAD, MicroStation
- *Civil Design*: InRoads, Civil3D, 12D

Selected Projects

- **Adaptive Stormwater Management, City of Greater Bendigo, Mount Alexander, and Hindmarsh Shire Council, Victoria** – Appointed as expert consultant for guidance to city and shire councils across Victoria to investigate stormwater harvesting and reuse options, identify and model stormwater system upgrades, develop options, and provide engineering guidance for design development with participation in workshops to encourage community involvement in the planning process.
- **Riverbank Collapse Hazard Expert Panel, South Australia Department for Water** – Project manager and client manager for the Riverbank Collapse Hazard Expert Panel, a technical advisory group established by the Department for Water to provide expert advice on issues related to riverbank collapse along the Murray River.
- **Northern Highway Realignment, AWM and Main Roads WA** – Project manager responsible for the detailed design and construction of a realignment of the Great Northern Highway, including drainage plans, floodway design, construction quantities, costs, specifications, road safety audits, and coordination of Main Roads WA deliverables.
- **Silvergrass Mine Closure and Caves Creek Channel Relocation, Rio Tinto Iron Ore** – Project manager and lead technical specialist responsible for the options assessment, flood mapping, sediment transport modelling, and detailed design of channel excavation, levee construction, and rock armouring using 12D and Civil3D. Hosted stakeholder workshops to develop innovative alternatives for river diversion and pit configurations for baseline, operational, and post-closure conditions.
- **Solomon, Nyidinghu, and Chichester Projects, Fortescue Metals Group** – Developed detailed designs for re-establishment of drainage over pit backfill, geomorphological investigations, flood control levees, and channel designs using 1D and 2D hydraulic modelling software, 3D civil design software, and Australian Rainfall and Runoff methodologies.
- **Kenai Bluff Stabilisation and Port of Anchorage Marsh Projects, Army Corps of Engineers, Alaska** – Project manager and lead engineer for the design of a \$20 million armour rock revetment, dyke and inlet system for retaining tidal inflows.

Selected Projects

- **Fitzroy River Erosion Study, Fitzroy Crossing** – Project manager and lead engineer for the provision of engineering designs to protect infrastructure from eroding river banks. Evaluated alternatives and developed calibrated hydraulic models, CAD designs, material take-offs, and cost estimates.
- **Homestead Creek and Mining Area C Diversion Alternatives, BHP Billiton Iron Ore** – Project manager and lead engineer for design simulations and options assessments for alternative creek diversion and closure scenarios, including geomorphological assessments of a land bridge concept to route surface drainage over a partially backfilled pit.
- **Statewide Culvert Inventory and EIS Support, Department of Transportation, Oregon**. Supervised fieldwork for the survey of 6,000 culverts. Responsible for field crew safety and report submittals, including determination of culvert capacity. Coordinated stormwater runoff sampling efforts during severe rainfall events along highway corridor.
- **Goldsborough Creek Dam Removal, Simpson Timber, Washington**. Prepared final construction bid set for thirty weirs constructed to replace Goldsborough Dam. Received Tetra Tech's award for Outstanding Surface Water Project of the Year and Project of the Year award from the Society of American Military Engineers.
- **Section 206 Environmental Restoration Projects, Army Corps of Engineers, Oregon** – Lead engineer responsible for modelling, civil design, and cost estimating for a series of projects including hydraulic flood control structures, removal of three dams, construction of channels through former reservoirs, replacement of existing culverts and bridges, placement of rip rap bank protection, and stabilisation of eroding slopes.
- **Ponca State Park Excavation Project, Army Corps of Engineers, Nebraska** – Project manager and lead designer responsible for coordinating multi-office team of specialists in evaluating alternatives and preparing construction plans for a \$5 million Corps of Engineers rehabilitation projects. including coordination with regulatory agencies and subconsultants. Received the Corps of Engineers Environmental Excellence award.

Publications and Presentations

- **Advancing Australian Riprap Sizing Approaches.** Hydrology Water Resources Symposium Proceedings, Engineers Australia. September 2021
- **Rethinking Hydrologic Design Criteria for Mine Closure.** International Mine Water Association Proceedings. June 2020.
- **Advances in 1D and 2D Hydraulic Modelling: Results of HEC-RAS and TUFLOW Benchmarking.** Hydrology and Water Resources Panel, Engineers Australia. Perth, Western Australia.
- **Evaluation of Modelling Approaches to Assess Long-term Impacts of Valley Floor Mining.** 18th International Riversymposium, International River Foundation. Brisbane, Queensland, Sep 2015.
- **Geomorphic, Hydraulic, and Sediment Transport Modelling for Mine-Related Channel Realignment.** Hydrology and Water Resources Symposium Proceedings, Engineers Australia. Perth, Western Australia, February 2014.
- **Practical Stormwater Planning for Small Rural Townships following an Extreme Flood Event.** Hydrology and Water Resources Symposium Proceedings, Engineers Australia. Perth, Western Australia, February 2014.
- **Gatun Dam and Lake: Preparing for Expansion.** Australian National Committee on Large Dams, 2013 Conference Proceedings. Rotorua, New Zealand, November 2013.
- **Rainwater Harvesting for Agriculture: Public Perception and Water Quality Challenges.** 16th International Riversymposium, International River Foundation. Brisbane, Australia, September 2013.
- **Using Submerged Weirs to Prevent Cold Water Pollution from Reservoirs: Fort Peck Dam Case Study.** Australian National Committee on Large Dams, 2012 Annual Conference Proceedings, Perth, Western Australia, November 2012.
- **Cutting to the Core: Conservation in the Panama Canal Watershed.** 15th International Riversymposium, International River Foundation. Melbourne, Australia, September 2012.
- **Impacts of Climate Cycles on the Economic Performance of Stormwater Harvesting and Reuse Systems.** Australian Water Association, OzWater 2012 Proceedings. Sydney, New South Wales, 2012.

Publications and Presentations

- **Action-Reaction: Impacts of New Orleans Flooding on the Reconstruction and Maintenance of Flood Control Works.** Australian Water Association, OzWater Proceedings. Sydney, NSW May 2012.
- **Incorporating Environmental Values into Established Operations for U.S. Army Corps of Engineers Reservoir Master Plans.** Australian Water Association, Ozwater 2011 Proceedings. Adelaide, South Australia, May 2011.
- **Modelling Studies to Design and Assess Decommissioning Actions for a Seismically Unsafe, Concrete Arch Dam.** Australian National Committee on Large Dams, 2011 Conference Proceedings. Melbourne, Victoria, October 2011.
- **Integrating Environmental Restoration with Flood Control Upgrades in Hurricane Katrina's Aftermath.** 14th International Riversymposium, Australian Rivers Institute. Brisbane, Australia September 2011.
- **Balancing Flood Risks against Environmental Benefits in Removing or Maintaining Vegetation on Levees.** 14th International Riversymposium, Australian Rivers Institute. Brisbane, Australia, September 2011.
- **Construction for Destruction: Downriver Diversion Dam Modifications Required for Matilija Dam Decommissioning.** Australian National Committee on Large Dams, 2010 Annual Conference Proceedings. Hobart, Tasmania, November 2010.
- **Reconnecting Historical Side Channels to Oregon's Willamette River.** 13th International Riversymposium, Australian Rivers Institute. Perth, Western Australia, September 2010.
- **Every Last Drop: Reservoir Operations Modelling in the Arid Southwest United States using RiverWare.** Australian Water Association, OzWater 2010 Proceedings. Brisbane, Australia May 2010.
- **Reconnecting the Missouri River to its Historical Floodplain.** 12th International Riversymposium, Australian Rivers Institute. Brisbane, Australia, September 2009.
- **Restoring Ecosystem Habitat in the Arid Southwestern United States: Lessons Learnt.** 12th International Riversymposium, Australian Rivers Institute. Brisbane, Australia, September 2009.

Publications and Presentations Continued

- **The Role of Climate Change in Alaskan Bluff Erosion.** Association of State Floodplain Managers, Annual Conference Proceedings. Orlando, Florida, June 2009.
- **Erosion Trends in Alaskan Coastal Communities: Correlation to Climate Change.** American Water Resources Association, Climate Change Conference Proceedings. Anchorage, Alaska, May 2009.
- **Wetland Creation on Disconnected Floodplains Using Impoundment Berms: Oregon Case Study.** River Restoration Northwest, Annual Conference Proceedings. Skamania, Washington, February 2009.
- **Kelley Creek Dam Removal and Stream Restoration.** River Restoration Northwest, Annual Conference Proceedings. Skamania, Washington, February 2009.
- **Engineering Support during Construction of River and Wetland Restoration Projects: Case Studies for Optimisation.** American Society of Civil Engineers, Environmental Water Resources Institute, World Water Congress Proceedings. Honolulu, Hawaii, May 2008.
- **Optimising the Consulting Process for Restoration Projects by Non-Profit Organisations.** Network of Oregon Watershed Councils, Conference Proceedings. Hood River, Oregon, November 2007.
- **Evaluating Constructed Backwater Habitat and Sandbar Islands on the Missouri River.** American Society of Civil Engineers, Environmental Water Resources Institute, World Water Congress Proceedings. Tampa, Florida, May 2007.
- **Habitat Creation in Tidal Zones: Hydrologic Issues in West Coast Applications.** American Society of Civil Engineers, Environmental Water Resources Institute, World Water Congress Proceedings. Kansas City, Missouri, May 2006.
- **Wetland Conversion on Agricultural Land in the Northwest United States.** American Society of Civil Engineers, Environmental Water Resources Institute, World Water Congress Proceedings. Anchorage, Alaska May 2005.

Publications and Presentations Continued

- **Dealing with Change: Recreating Missouri River Floodplains.** American Society of Civil Engineers, Environmental Water Resources Institute, World Water Congress Proceedings. Salt Lake City, Utah, June 2004.
- **Reconnecting the Eugene Delta Ponds to the Willamette River.** American Society of Civil Engineers, Environmental Water Resources Institute, World Water Congress Proceedings. Salt Lake City, Utah, May 2004.
- **"What's mud got to do with it?" Environmental Impacts of Reservoir Sediment Removal Scenarios.** American Society of Dam Safety Officials, Annual Conference Proceedings. Salt Lake City, Utah, September 2001.
- **Reverse Engineering: Environmental Aspects of West Coast Dam Removal Projects.** American Society of Civil Engineers, Environmental Water Resources Institute, World Water Congress Proceedings. Reno, Nevada, August 2001.
- **Goldsborough Dam Removal and Stream Restoration.** American Society of Dam Safety Officials, Annual Conference Proceedings. Portland, Oregon August 1999.
- **Cost Analysis of Residential Greywater Systems.** American Water Works Association, Annual Conference Proceedings. Seattle, Washington August 1997.
- **Economic Assessment of Greywater Recycling in San Jose, California.** University of California at Berkeley Journal of Graduate Research. Berkeley, California, April 1996.
- **Evaporation Losses in the Bear River Migratory Bird Refuge.** Brigham Young University Journal of Undergraduate Research. Provo, Utah, August 1995.
- **Water Losses in Provo Irrigation Canals.** American Water Resources Association, Annual Conference Proceedings. Salt Lake City, Utah, June 1995.
- **Economic Assessment of Irrigation Canal Lining Methods.** American Society of Civil Engineers, Rocky Mountain Conference Proceedings. Denver, Colorado, April 1995.

Professional References

Joel Voortman

Online Training Coordinator
Water Research Australia
Teaching Client

250 Victoria Square
Adelaide SA 5000
(08) xxxx xxxx
xxxx@xxxx.com.au

Iain Rea

Superintendent Water Engineering
BHP Billiton
Client

30/125 St Georges Tce
Perth WA 6000
(08) xxxx xxxx
xxxx@xxxx.com.au

David Westwater, Ph. D.

Principal Water Engineer
FMG
Client

87 Adelaide Terrace
East Perth WA 6004
(08) xxxx xxxx
xxxx@xxxx.com.au

Robert Keller, Ph. D.

Professor of Hydraulics
R. J. Keller and Associates
Teaching Associate

PO Box 2003
Edithvale VIC 3196
(04) xxxx xxxx
xxxx@xxxx.com.au

Johan van Rensburg

Principal Hydrologist
Rio Tinto
Supervisor

152-158 St Georges Tce
Perth WA 6000
(08) xxxx xxxx
xxxx@xxxx.com.au

Mark Pearcey

Superintendent Hydrologist
Rio Tinto
Client

152-158 St Georges Tce
Perth WA 6000
(08) xxxx xxxx
xxxx@xxxx.com.au