Douglas F. Wolf, P.E.

EDUCATION: B.S., Civil Engineering, Dec. 1988 – University of New Mexico

REGISTRATION: Professional Engineer, New Mexico #12341

PROFESSIONAL AFFILIATIONS: American Society of Civil Engineers,
National Society of Professional Engineers

Mr. Wolf is Principal Engineer and Senior Project Manager for Wolf Engineering. He has been project manager or engineer on projects involving habitat restoration, flood hazard delineation, design of hydraulic structures, river mechanics, channel morphology, and sediment transport. He has served as consultant or/and project manager on projects for the U.S. Corps of Engineers, Bureau of Reclamation, Natural Resources Conservation Service, and U.S. Fish and Wildlife Service, as well as numerous local governments and consulting firms. He was office manager and senior hydraulic engineer with Tetra Tech for 4 years before leaving to work full time with his own firm. His experience in hydraulics and hydrology includes: flood hazard prediction; hydraulic analysis of flood containment structures; design of mitigation measures; watershed rainfall/runoff simulation; hydrographic data collection; stream gage analysis; post-event flood damage assessment; and computer simulation of water floods, and debris flows. Prior to becoming a consultant in 2001, Mr. Wolf was a senior hydraulic engineer with the Corps of Engineers, Albuquerque District. He successfully completed numerous water resources projects during a twelve year tenure at the Corps.

Mr. Wolf has gained a unique perspective on the Rio Grande by having participated in, and serving as principal-in-charge, on numerous hydrographic data collection projects between Cochiti Dam and Elephant Butte Reservoir. This field experience along with significant FLO-2D and HEC-RAS model development on the same reaches give him a strong knowledge of river mechanics and river response to varied hydrologic and geomorphic conditions. In addition, he has vast experience in manipulating digital data and post processing complex computer model results providing stakeholders clear, concise, eye appealing presentations.

In addition to his extensive background with public sector engineering, Mr. Wolf has completed many smaller projects for private clients. This works includes grading and drainage plans for residential and small commercial developments in Bernalillo and Valencia counties, site drainage assessments, retaining wall design, and geo-hydrologic investigations.

Mr. Wolf is known for his responsiveness and pro-active approach to problem solving, as well as his unsurpassed technical ability in civil design, problem solving and creative methods of cost effective and efficient resolutions to water resource engineering challenges. He is proficient with HEC-HMS, HEC-GeoHMS, HEC-RAS, HEC-GeoRAS, Microstation, InRoads, FLO-2D, ArcGIS, and many other civil engineering/water resources software packages.

SUMMARY OF RELATED EXPERIENCE:

- ***ESA Collaborative Program: Isleta Reach Habitat Restoration -*** As a consultant to Parametrix, Inc. Wolf Engineering completed the planning and preliminary engineering study for the Rio Grande from Isleta, NM to San Acacia Dam. Wolf is assisting with planning level GIS analysis for site selection of channel and floodplain restoration alternatives. After site selection Wolf was responsible for preliminary engineering on all selected restoration sites. Wolf produced plans, profiles, and details for each selected site along with preliminary construction specifications and cost estimates. In addition Wolf accomplished "with project" surface water modeling and geomorphology

on all proposed conditions to evaluate net depletions for each site. The work was successfully completed in April of 2008.

- ***ESA Collaborative Program: San Acacia Reach Habitat Restoration –*** As a consultant to Parametrix, Inc. Wolf Engineering completed the planning and preliminary engineering study for the Rio Grande from San Acacia Dam to San Marcial, NM. Wolf provided oversight, and assisted with the selection and assignment of specific restoration projects and locations in the project reach. Wolf was responsible for preliminary engineering on all selected restoration sites. Wolf produced plans, profiles, and details for each selected site along with preliminary construction specifications and cost estimates. In addition Wolf accomplished "with project" surface water modeling and geomorphology on all proposed conditions to evaluate net depletions for each site. The work was successfully completed in the fall of 2007.

- ***Bitter Creek Hydrology Study: Red River, NM –*** As a consultant to a home owner's association Wolf, along with William J. Miller Engineers, completed a site assessment and detailed hydrologic analysis of a small mountainous watershed to determine the probable maximum flood. The probable maximum flood is then routed through two small reservoirs to evaluate their dam safety performance. Work on this project involved the development of an HEC-HMS computer model, review and analysis of model results, consultation with the NM Office of the State Engineer and preparation of a final report.

- ***Hydrologic Investigation of the Rio Pueblo de Taos Watershed, Taos Pueblo, NM*** - As a consultant to Riada Engineering, Wolf Engineering completed a detailed hydrology study for the 64 square mile drainage area above Taos Pueblo along the Rio Pueblo de Taos. Wolf made extensive use of existing digital orthophotography, and digital terrain data provided by the client to complete the HEC-HMS model. Wolf Engineering used Microstation, InRoads and ArcGIS in the accomplishment of this work. Over 20 scenarios, involving different storm frequencies, durations, and watershed conditions, were simulated.

- ***Northern N M Community College Hydrology & Hydraulic Investigation, Espanola, NM –*** As a consultant to William J Miller Engineers, Wolf Engineering completed over 40 supplemental cross section surveys to support the development of a HEC-RAS model for an arroyo bisecting the campus in Espanola, NM. In addition, Wolf Engineering assisted with the development of the HEC-RAS model itself and completed a frequency analysis on a nearby stream gage and applied regional frequency equations to basin parameters in support of the hydrology for the project.

- ***Site Drainage Assessment – 38 Acre Parcel – Grants, NM -*** Mr. Wolf completed a comprehensive site assessment report for the potential development of a 38 acre tract of undeveloped land in Grants, NM. The focus of the study was site drainage. Two arroyos flow near/onto the site. Wolf developed detailed hydrology using a combination of NRCS methodology along with NMDOT procedures to determine peak discharge and volume entering the site for four different frequency events. Wolf developed preliminary plans to safely address flood flow through the property.

- ***New Mexico Interstate Stream Commission: Ute Reservoir Hydrologic Investigation*** – As a consultant to William J Miller Engineers (WJM), Wolf Engineering completed a detailed, comprehensive hydrologic investigation for the watershed contributing to Ute Reservoir. Over 11,000 square miles of drainage area were studied. Wolf developed an HEC-HMS for the entire watershed, which entailed a rainfall analysis, unit hydrograph development, soils loss rate determination, and flood routing. Wolf made extensive use of ArcGIS to automate and expedite the project.

- ***Engineering Division Indian Health Service: Jemez River Flood Hazard Analysis –*** In 2007 Wolf Engineering successfully completed a hydrologic and hydraulic analysis for a two mile reach of the Jemez River through Jemez Pueblo, New Mexico. This was a collaborative project between the Office of Environmental Health and Engineering of the Indian Health Service (IHS) and the Pueblo of Jemez. The goal of the study and analysis is to quantify the potential for, and predict the magnitude of, flooding along the River. Four hydrologic scenarios were developed and associated floodplains computed and presented. The hydrology for the study follows methods outlined in "Guidelines for Determining Flood Flow Frequency, Bulletin 17B" of the Interagency Advisory Committee on Water Data. The hydraulics (floodplains) are computed using the U.S. Army Corps of Engineers River Analysis System (HECRAS). Wolf produced a detailed project report documenting all assumptions and displaying study results.

- ***Grading, Drainage & Stormwater Pollution Prevention Plan – Commercial Property Bernalillo County, NM -*** Mr. Wolf served as project engineer for this effort, which involved calculating off-site and on site runoff for the expansion of a commercial development in the South Valley of Albuquerque. Mr. Wolf developed the grading plan and designed detention storage facilities on site to mitigate the additional runoff resulting from developed conditions. In addition, Wolf completed a comprehensive SWPP in compliance with EPA, State of NM, and Bernalillo County regulations for the construction activities.

- ***New Mexico Interstate Stream Commission: Acequia de Chamita Rehabilitation –*** As a consultant to WJM, Wolf Engineering performed a site characterization survey and supplemental topographic survey of an area along the north bank of the Rio Chama near the ditch heading. The work accomplished will aid the hydraulic and civil design for the rehabilitation of the currently enclosed section of this acequia.

- ***U.S. Army Corps of Engineers - URGWOM Reach 17 FLO-2D Model Development, 2006-2008*** As a consultant to Mussetter; Wolf Engineering is responsible for a significant portion of this surface water flood routing project. The project is on the Rio Grande and extends from American Dam in El Paso to Fort Quitman, TX. Wolf is the project manager and is responsible for; coordinating and conducting field surveys for 100 cross sections, preparing a detailed data collection report, performing a hydrologic analysis including the development of an HEC-HMS model of the contributing watersheds; developing various FLO-2D input files, conducting and calibrating FLO-2D simulations, and providing significant final project report material. The project is currently about 3/4 complete. Final deliverables from Wolf will be completed in February of 2007.

- ***U.S. Army Corps of Engineers - URGWOM Reach 16 FLO-2D Model Development 2005*** As a consultant to Tetra Tech, Wolf Engineering was responsible for compiling and displaying results for various flood inundation simulations along a 100 mile stretch of the Rio Grande below Caballo Dam in southern, NM. The work involved data interpretation, report compilation, database development and management, and the production of over 30 full size final graphics supporting the project.

- ***Save our Bosque Task Force – Conceptual Restoration Plan for the Active Floodplain of the Rio Grande San Acacia to San Marcial, NM*** **(TT)** ***2004 –*** Mr. Wolf was the principal-in-charge and project manager for the *Conceptual Restoration Plan for the Rio Grande - San Acacia to San Marcial New Mexico.* The non-profit Task Force made of public and private concerns within the Socorro Valley of Central New Mexico is developing a comprehensive, conceptual restoration plan for 45 miles of the river. Tetra Tech was engaged to analyze and prioritize the potential for improvement to the river and riparian ecosystem through the reach. Mr. Wolf served as project manager and senior engineer on the project. Specific tasks include data collection and analysis, site reconnaissance & photography, hydraulic modeling, coordination and consultation with a 25-member oversight committee, and project GIS development. The end product will serve as a guiding

plan for the implementation of restoration activities that will promote a naturally functioning river and riparian corridor.

- ***United States Bureau of Reclamation Hydrographic Data Collection/Hydraulic Engineering Services, Upper Colorado Region*** **(TT) 2001-2004 –** Mr. Wolf was the project manager and senior engineer for this multi-year project including hydrographic data collection and hydraulic engineering services in Reclamation's Lower Colorado Region. To date, delivery orders have included stream restoration design, floodplain restoration, and habitat evaluation, hydrologic simulation of complex water resource systems, hydraulic analysis, sediment transport analysis, cross-section surveys, discharge measurement, and sediment sampling. The work has occurred on the Rio Grande in central and southern New Mexico.

- ***New Mexico Interstate Stream Commission – Red Bluff Steam Gage Analysis (TT) –*** Mr. Wolf was principal-in-charge for this effort which included a detailed site visit and detailed review and analysis of the USGS procedures and methodologies for the estimation of April 2004 flood on the lower Pecos River. Dr. Jim O'Brien was the principal engineer for the work. This work was accomplished on a tight schedule and was successfully accomplished within the original project budget. Dr. O'Brien and I presented our findings to the Pecos Bureau Chief and two of his staff in February 2005.

- ***New Mexico Interstate Stream Commission – Calibration of Middle Rio Grande FLO-2D model*** **(TT) –** Mr. Wolf served as the project manager for this effort, which involved detailed application of the FLO-2D model and acquisition and interpretation of USGS stream gage data through central New Mexico. The project resulted in a comprehensive, calibrated flood routing model extending from Cochiti Dam to Elephant Butte Reservoir.

- ***United States Army Corps of Engineers Albuquerque District – Overbank Monitoring Study – Rio Grande, NM*** **(TT) 2003–*2004*** Mr. Wolf was project manager for this study involving the development of a database of existing hydraulic modeling efforts and spatial data sets along a 170-mile stretch of the Rio Grande through central New Mexico. In addition, the project will develop a detailed plan for the logistics required to coordinate field data collection of hydraulic data for flows exceeding "bankfull" discharge along this stretch of the river. Details in this plan will include optimal locations, methods and equipment needed, and temporal sequence of proposed activities. This project is funded by the Corps of Engineers but involves a collaborative effort with the U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, the State of New Mexico, and other stakeholders within the Middle Rio Grande in New Mexico.