

MICHAEL CLOUGH, P.E.

ENGINEERING SUPPORT INTERNATIONAL
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Areas of Demonstrated Ability

Water Distribution Design
Sewer Collection System Design
Water and Sewer Treatment Plant Design
Land Grading Design
Irrigation System Design
Pump Station Design
Hydraulic Analysis of Water Distribution Networks
Water and Wastewater System Permitting
Environmental Permitting of Developments
Surface Water Permitting
Governmental Approvals

Education

BS Agricultural Engineering,
Texas A&M University

Licenses

Professional Engineer, Civil
Florida and Arizona
Professional Engineer, Agricultural
Arizona
Professional Engineer, Civil
Texas

Professional Affiliations

American Society of Civil Engineers
-Past President, SW Florida Branch
American Society of Agricultural and Biological Engineers
-Past President, Arizona Section
Inter-American Association of Sanitary and Environmental Engineering (AIDIS)
-Director-at-Large, USA
United States Committee on Irrigation and Drainage (USCID)
-Member
National Society of Professional Engineers
-Member

Software Proficiency

AutoCAD – Land Development and Civil 3D
WaterCAD and WaterGEMS
Irricad
HEC-2

Other Abilities

Spanish – Reasonably Fluent
TSP Provider for the NRCS in Florida

General Qualifications

Michael Clough has worked at the project management level in many different types of water resources projects. He has over 25 years experience in potable water, reuse water, wastewater, irrigation and drainage system planning, design and owner representation during construction.

He uses advanced computer design applications to perform analysis and design of many types of water resource projects. As President of Engineering Support International, he is responsible for client interaction, technical design and workflow control for projects.

SELECTED PROJECT EXPERIENCE

Potable Water

Project Manager for the design and permitting of a water distribution system for Nokomis, Florida. The project involved the design of potable water distribution to over 2,000 residences and businesses to connect them to the Sarasota County system. These users historically relied on wells for water.

Preparation and submittal of a preliminary design report for the water distribution system for the Midtown Estero Village project in Estero Florida. The project included layout of the water system, demand calculations, hydraulic analysis of the distribution system for normal and fire flows. The report was submitted to Lee County for review and approval.

Project Manager for the replacement of the water and sewer utilities in the Iona-McGregor area of Fort Myers Florida. His participation included the design and permitting of the water distribution system as well as the coordination of the design teams for the street improvements, drainage improvements, sewer replacement to produce a coordinated complete package of construction plans.

Preparation and submittal of a preliminary design report for the water distribution system for the West Estero project in Estero Florida. The project included layout of the water system, demand calculations, hydraulic analysis of the

distribution system for normal and fire flows. The report was submitted to Lee County for review and approval.

Preparation and submittal of a preliminary design report for the water distribution system for the West Estero project in Estero Florida. The project included layout of the water system, demand calculations, hydraulic analysis of the distribution system for normal and fire flows. The report was submitted to Lee County Utilities for review and approval.

Project Manager for the site design of an addition to a Shell Creek Water Treatment Plant in Punta Gorda, Florida. Tasks included coordination with other consultants, drainage system layout and management of the preparation of the civil plans.

Preparation and submittal of a preliminary design report for the water distribution system for the Savannah North project in Lehigh Acres Florida. The project included layout of the water system, demand calculations, hydraulic analysis of the distribution system for normal and fire flows. The report was submitted to Florida Government Utilities Authority for review and approval.

Analysis of the water distribution system for the Shell Point Retirement Village. The community was experiencing pressure problems and Mr. Clough performed a hydraulic analysis on the Lee County water distribution system to determine the cause of the problems. Using fire hydrant flow test results in the hydraulic model, the problem was traced to a couple of bad line valves, saving the community the need to construct a water storage tank.

Preparation and submittal of a preliminary design report for the water distribution system for the Midtown Village Delray project in Delray Beach Florida. The project included layout of the water system, demand calculations and the hydraulic analysis of the distribution system for normal and fire flows. The report was submitted to Delray Beach Utilities for review and approval.

Project Engineer for the construction of a new 10MGD water treatment plant in North Fort Myers. Tasks included the management of construction plan preparation, coordination with

other subconsultants, design of yard piping and site drainage and site permitting.

Wastewater

Project Engineer for design and construction monitoring for an equilibrium tank and pumping project for the Collier County South County Water Reclamation Facility. This fast-track project was for the addition of equilibrium pumping for the facility to equalize inflow to the facility. Mr. Clough managed the drawing production, met with the client and subconsultants and performed site permitting for this project.

Project Engineer for the expansion of the Collier County South County Water Reclamation facility to 16 MGD. Tasks included management of construction plan preparation, stormwater permitting, environmental permitting and coordination with subconsultants.

Preparation and submittal of a preliminary design report for the Midtown Estero Village residential development in Estero Florida. Tasks included the design of the gravity sewer system and sewer lift stations. The Lee County Utilities force main system was analyzed with a hydraulic computer model to determine the effect on the existing lift stations. The report was submitted to Lee County Utilities for review and approval.

Project Engineer for the expansion of the Collier County North County Water Reclamation facility to 32 MGD. Tasks included management of construction plan preparation, stormwater permitting, environmental permitting and coordination with subconsultants.

Preparation and submittal of a preliminary design report for the West Estero residential development in Estero Florida. Tasks included the design of the gravity sewer system and sewer lift stations. The Lee County Utilities force main system was analyzed with a hydraulic computer model to determine the effect on the existing lift stations. The report was submitted to Lee County Utilities for review and approval.

Project Manager for a wastewater interconnect project for Collier County. The project included a planning study to design force mains and lift stations to connect the north and south sewer collection systems. The study was performed by hydraulically modeling the systems with the addition of the interconnect lift stations and force

mains. The design project included the design of two lift stations and over four miles of force mains. Tasks included management of plan preparation, coordination with subconsultants, permitting and oversight of construction.

Preparation and submittal of a preliminary design report for the Savannah North residential development in Lehigh Acres Florida. Tasks included the design of the gravity sewer system and sewer lift stations. The Florida Government Utilities Authority force main system was analyzed with a hydraulic computer model to determine the effect on the existing lift stations. The report was submitted to Florida Government Utilities Authority for review and approval.

Preparation and submittal of a preliminary design report for the Midtown Delray Village residential development in Lehigh Acres Florida. Tasks included the design of the gravity sewer system and sewer lift stations. The Delray Beach Utilities Authority force main system was analyzed with a hydraulic computer model to determine the effect on the existing lift stations. The report was submitted to Delray Beach Utilities for review and approval.

Reuse Water

Project Manager for a reuse interconnect for Collier County. The project included the installation of a reuse pipeline and connection to a storage tank to connect the north and south reuse service areas. The project included the preparation of construction plans, specifications, bid documents and oversight of construction.

Project Manager for seven large customer reuse water connections for the Collier County Utilities Department. The project involved the sizing and layout for seven customer connections that included pressure sustaining valves, magnetic flowmeters and remote control and monitoring through telemetry. Services included preparation of construction plans and coordination with subconsultants during design and oversight of construction.

Preparation of a report to describe the infrastructure necessary to connect Sloanes Gate, a residential development, to the North Fort Myers reuse water distribution system. The study included predicting water requirements, sizing of a storage tank and pumps and a cost estimate of the project.

Performed a study of disposal of water from a slurry station for the Alumbrera copper mine in Tucuman Argentina. The copper mine was required to clean up the discharge water from the slurry station prior to disposal. As an alternative to chemical and physical treatment, Mr. Clough studied the feasibility of using the water to irrigate a poplar forest. The study included design and cost estimation of the transmission pipelines and pump stations, as well as the irrigation system and life-cycle analysis of the forest.

Earthwork Design

Project Manager for the design of a 200-acre earthworks project for a heap-leach project at the Mantoverde copper mine in Chile. The foundation of the heap leach project was carved out of the side of a mountain and was terraced to save earthworks. The foundation had to conform to strict slope requirements to allow drainage.

Project Manager for the design of a 500-acre earthworks project for a heap-leach project at the Mantos Blancos copper mine in Chile. The foundation had to conform to strict slope requirements to allow drainage. The project included coordination with geotechnical design of the ore heap.

Project Engineer for the design of over four square miles of surface-irrigated farmland. Gila River Farms, a business entity for Gila River Indian Community in Sacaton, Arizona. Design used the latest computer design software to lay out fields, canals and access roads.

Irrigation

Performed a water resources study for a 200-acre state-owned arboretum. The study included water supply analysis, irrigation system capacity, efficiency analysis and recommendations for future design improvements and cost estimates of future capital projects.

Design of drip irrigation, microsprinkler irrigation and frost protection systems for berry, citrus and other crops in Florida. Designs are performed using Irricad, a computer design program which allows highly efficient hydraulic designs of the systems.

Design of micro-sprinkler irrigation system for a 1,000 acre orchard for the Fort McDowell Indian reservation near Scottsdale Arizona. Design elements included pump stations, pipelines,

roads, fences, and irrigation system. The design also included coordination with government agencies to obtain environmental and archeological clearances.

Project Engineer for the design of canals, ditches and structures for the development of a 10,000 acre farm in Sacaton Arizona. Mr. Clough supervised a team of designers in the preparation of ten sets of construction plans for the construction of canals, field ditches, structures and subsurface drains. Mr. Clough also worked with subconsultants in the preparation of environmental and archaeological assessments.

Project Manager for the design of subsurface drip irrigation systems on over 600 acres of farmland in Central Arizona.

Permitting and Governmental Approvals

Assignment for Texas Water Development Board to manage projects for State Revolving Funding (SRF). Projects were rehabilitation and construction of facilities for municipal water and wastewater systems. Review and approval included assurance that projects met state design requirements as well as federal contracting requirements.

Environmental Assessments for farm developments in Arizona.

Applications for funding of farming projects in Arizona through the Bureau of the Reclamation, Department of the Interior.

Environmental Resource Permit for the expansion of the Collier County South County Water Reclamation Facility.

Environmental Resource Permit for the expansion of the Collier County North County Water Reclamation Facility.

Environmental Resource Permit for the development of the Lee County North County Water Treatment Plant.

Charlotte County zoning change for expansion of Shell Creek water treatment plant.

Site Development Plan for the expansion of the Collier County South County Water Reclamation Facility.

Development Order for the Lee County North County Water Treatment Plant.

Construction Certifications for utility systems for multiple commercial developments in Collier County.

Construction Certification for the utility systems, roadway and drainage system for the Linda Park Residential development in Collier County.

Publications

Clough, M. and A.J. Clemmens. 1994. Field Evaluation of Level-Basin Irrigation. ASAE 1994 International Summer Meeting. Kansas City, Missouri. June 1994.

Clough, M. 1993. Computerized Irrigation Project Earthwork Design. ASCE National Conference on Irrigation and Drainage Engineering. Park City Utah. July 1993