



GARY M. WANTLAND, P.E.

Principal Engineer

YEARS OF EXPERIENCE:

30

EDUCATION:

University of Houston: M.S., Civil Engineering, 1979

Florida Institute of Technology: B.S., Ocean Engineering, 1976

ACTIVE REGISTRATION:

Registered Civil Engineer, Florida, #44614, Aug. 1991 (expires Feb. 2009)

Registered Civil Engineer, South Carolina, #17833, Oct 1996 (expires Jun 2008)

Registered Civil Engineer, Tennessee, #103619, Aug 1997 (expires Aug 2009)

Registered Civil Engineer, Illinois, #62-055513, Mar 2002 (expires Nov 2007)

Registered Civil Engineer, Alabama, #21532, Jan 1997 (expires Dec. 2007)

PROFESSIONAL HISTORY

Mr. Wantland is a Principal Engineer with MWH Americas, Inc. He has over 30 years of consulting, engineering, design and construction oversight experience. In his career he has worked on hundreds of civil and environmental engineering projects. Mr. Wantland has provided civil and geotechnical engineering services to the U.S. Army Corps of Engineers, the Florida Department of Environmental Protection (FDEP), local water management districts and numerous private sector clients in the mining, electric power, chemical, waste disposal, and forest products industries.

For over 20 years Mr. Wantland's professional career has been focused on earth structure engineering, design, construction and evaluation of performance. His geotechnical experience includes earth structures for water retention, flood control and tailings management. Mr. Wantland's experience includes site investigations, characterization of subsurface conditions, engineering analyses, conceptual and detailed design, management of construction activities and monitoring of performance. This experience includes development of design criteria, preparation of plans and specifications, generation of construction cost estimates, construction engineering, and project management.

Mr. Wantland's geo-environmental experience includes successful design of numerous liner systems, cover systems, and collection systems for landfills and surface impoundments. This experience includes design of new facilities, retrofitting existing facilities, and closure of existing units employing composite liner systems, including HDPE geomembranes, geosynthetic clay liners, geonet drainage systems, and geotextiles. Mr. Wantland has designed more than 15 hazardous waste landfills; seven of these units were constructed under his supervision. Mr. Wantland also has extensive experience in the design, construction, and evaluation of compacted clay liners. He has managed the



successful evaluation and construction of several test fills using a sealed double ring infiltrometer.

RELEVANT PROJECT EXPERIENCE

DAMS, LEVEES, RESERVOIRS AND IMPOUNDMENTS

South Florida Water Management District, Comprehensive Environmental Restoration Program, JM/JV Acceler8 Projects, West Palm Beach FL. – Member of senior Design Review Team (DRT) and geotechnical lead for evaluation of several Acceler8 design projects including the 170,000 Acre-foot capacity C-43 Reservoir located in Hendry County, FL., the EAA Conveyance and Regional Treatment project and the L-8 Reservoir Pumping Station. Review activities include evaluation of the proposed design basis as well as the construction plans, specifications and the opinion of probable construction cost with respect to the criteria and technical guidance provided in the Design Criteria Memorandums developed by the Acceler8 technical team for these projects.

Peace River Manasota Regional Water Supply Authority (PRMRWSA), Sarasota, FL. - Construction Quality Assurance Manager overseeing construction of Reservoir Number 2 at the existing PRMRWSA Water Treatment Facility in Desoto County, FL. Construction of this 18,500 ac-ft above ground water storage facility will involve a combined work-force consisting of several construction contractors, and three subcontract engineering firms for construction oversight.

Tampa Bay Water Regional Water Supply Authority, Clearwater, FL. – Principal Engineer for a preliminary land acquisition study to locate potential sites for an above grade, off-line water storage reservoir within the Tampa Bay Water service area. This evaluation includes use of a geographic data base to identify, evaluate and select potential sites for further consideration.

Peace River Manasota Regional Water Supply Authority (PRMRWSA), Sarasota, FL. – Principal Engineer and Task Leader responsible for a preliminary siting study to locate up to three off-line surface water storage reservoirs. This evaluation includes the identification and development of selection criteria for evaluation of potential reservoir locations. In addition this study included a preliminary evaluation of the proposed reservoir configuration including embankment alignment, cross section configuration and reservoir capacity. The scope of work will include an evaluation of potential borrow materials for embankment construction development of an Opinion of Probable Construction Cost.

Sarasota County, Utility Planning and Environmental Management, Sarasota, FL. – Project Manager for the evaluation of an existing sand and gravel mine under consideration for conversion to a raw water storage reservoir in Sarasota County, FL. The scope of work for this study includes a preliminary analysis of the proposed reservoir configuration including embankment alignment, cross section configuration and reservoir capacity. The scope of work also includes an evaluation of potential borrow materials for embankment construction and development of an Opinion of Probable Construction Cost.



Southwest Florida Water Management District, Ft. Myers, FL. - Project Manager and lead reviewer under contract to the Southwest Florida Water Management District to provide engineering and technical services focused on the evaluation of integrity and stability of the proposed Peace River Regional Reservoir Expansion. This 6 billion gallon (18,500 ac-ft) off-line raw water storage reservoir will include approximately 4 miles of perimeter embankment construction and is proposed to be located in Desoto County Fl.

FPL Manatee Cooling Pond, Parish, FL. – Project Manager for the evaluation of an existing closed cycle seepage collection and stormwater management system surrounding an 45,000 acre-foot cooling pond with approximately 48,500 feet of perimeter dikes. The scope of work for this project included evaluation of current conditions, development of recommended changes to the collection systems as well as development of an engineer’s construction cost estimate.

ACOE Jacksonville District, Herbert Hoover Dike Evaluation, Okeechobee, FL. - Project engineer for seepage and stability evaluation of 90 miles of levee surrounding Lake Okeechobee in South Florida. Scope of work included review of existing data, back calculations of insitu material properties, model calibration and evaluation of seepage and stability of the dike. The objective of this assignment was to perform an independent technical review of the ACOE Major Rehabilitation and Repair Report on the Herbert Hoover Dike.

ACOE Jacksonville District, Herbert Hoover Dike Value Engineering Study, Okeechobee, FL. – Project engineer for the evaluation of potential alternatives to address potential excessive seepage and piping from Reach 1 of the Herbert Hoover Dike. Qualitative and quantitative evaluations were performed to compare alternative solutions to the approach selected by the JAXCOE. Stability and seepage evaluations were performed for the 22 mile segment to evaluate alternative solutions for rehabilitation of the dike. Recommendations were issued on three alternative cost-effective solutions.

ACOE Jacksonville District, Herbert Hoover Dike Detailed Design Report, Okeechobee, FL. – Project engineer for the detailed evaluation of selected remedial alternatives to address excessive seepage and piping from Reach 1A of the Herbert Hoover Dike. Qualitative and quantitative evaluations were performed on the selected measure in support of the design documents. Stability and seepage evaluations were performed for the 5 mile segment.

Solutia Dike 15 Evaluation, Columbia, TN. – Project manager for evaluation of a 200-foot high, 3,500 foot long earthen dam constructed in several lifts from 1966 to 1978 used to impound phosphatic waste clays. The project was to evaluate the feasibility of converting this structure to a raw water storage impoundment proposed to store up to 12,000 acre-feet of water. Analyses of earth dam stability under static and earthquake loading conditions as well as spillway structure performance for the proposed service conditions were completed.

Lake Bob Sandlin Reservoir, Mount Pleasant, TX. – Project engineer for investigation and stability analysis of a 45 foot high earthen embankment impounding greater than

20,000 acre-feet of water. This assignment was an independent technical assessment of the structure's stability for the Texas Water Commission. Pore pressures instruments were installed in the dam to define the phreatic surface and facilitate a stability analysis. Evaluations indicated the dam met state standards for stability.

Southwest Florida Water Management District Dam Evaluation, Hillsborough and Polk Counties, FL. - Project manager for the investigation of two embankment failures located in Hillsborough and Polk Counties. Both failures were attributed to overtopping of the embankments during an El Nino storm event. Our scope of work included subsurface investigation of the embankment alignment within and outside the areas of emergency repair, in addition to seepage and slope stability evaluations as well as construction oversight of the proposed berm restoration. Evaluation of the existing culverts located at each site resulted in design of a replacement structure to manage the calculated design storm flows.

Solutia Sanitary Pond Dike Evaluation, Pensacola Facility, Pensacola, FL. – Project manager for the investigation of the stability of an existing pond dike that had seepage breakout at the toe of the levee. Our services included subsurface drilling and sampling, modeling of seepage and stability of the dike, as well as generation of proposed repair measures to increase the observed factor of safety calculated for the conditions evaluated.

Lake DeSmet Abutment Repair, Buffalo, WY. – Construction oversight and inspection during installation of a concrete backfill, bentonite slurry wall. Slurry wall was designed to intercept seepage into the left abutment of the dam through a formation of highly desiccated clay (clinker) in the abutment. The highly pervious formation was discovered after a 50-foot raise of the dam's crest elevation. The wall was successfully installed in the abutment and in the centerline of the dam to a depth of 100 feet.

MINING SERVICES

Gabriel Resources Ltd. / SNC-Lavalin Engineers and Constructors, Toronto, Ontario, Canada – Task Leader for Geotechnical Engineering and Tailings Facility Design for the proposed Rosia Montana Gold Mine Project located in western Romania. Scope of services includes engineering evaluations and detailed design services for the proposed facilities.

Mosaic Phosphates Clay Settling Area O-2, Hardee County, FL. – Project manager for the permitting support, design and construction oversight of 23,500 feet of dam to be located in Hardee County, Florida. This structure will be 50 feet above grade and impound over 660 flooded acres. Our scope of work includes analyses of seepage and stability using SEEP/W and UTEXAS to evaluate the proposed loading conditions on this structure. Engineering evaluations included evaluation of geohazards (karst activity), effective stresses and potential for piping at the downstream toe as well as design of the two spillways and appurtenant structures for the impoundment. Construction drawings, specifications and bidding documents will be generated for contractor use during construction. A final report was generated summarizing our observations and measurements upon completion of construction.

Mosaic Phosphates Clay Settling Area L-1, Hillsborough County, FL. – Project manager for the permitting support, design and construction oversight of 20,000 feet of compacted earth dam located in Hillsborough County, Florida. This structure will be up to 40 feet above grade and impound over 500 flooded acres. Slope stability and seepage evaluations using UTEXAS and SEEP/W were performed to evaluate the proposed loading conditions on this structure. Engineering evaluations included evaluation of geohazards (karst activity), effective stresses and potential for piping at the downstream toe as well as design of the two spillways and appurtenant structures for the impoundment. Stress path evaluations were also performed to independently evaluate calculated factors of safety.

IMC Phosphates Clay Settling Area F-3B, Manatee County, FL. – Project manager for the permitting support, design and construction oversight of 20,000 feet of dam located in Manatee County, Florida. This structure is 60 feet above grade and impounds over 600 flooded acres. Slope stability and seepage evaluations using UTEXAS and SEEP/W were performed to evaluate the proposed loading conditions on this structure. Engineering evaluations included evaluation of geohazards (karst activity), effective stresses and potential for piping at the downstream toe as well as design of the two spillways and appurtenant structures for the impoundment. Stress path evaluations were also performed to independently evaluate calculated factors of safety.

IMC Phosphates Clay Settling Area F-4, Hillsborough County, FL. – Project manager for the permitting support, design and construction oversight of 26,000 feet of compacted earth dam located in Hillsborough County, Florida. This structure is 60 feet above grade and impounds over 960 flooded acres. Slope stability and seepage evaluations using UTEXAS2 and SEEP/W were performed to evaluate the proposed loading conditions on this structure. Engineering evaluations included evaluation of geohazards (karst activity), effective stresses and potential for piping at the downstream toe as well as design of the two spillways and appurtenant structures for the impoundment. Stress path evaluations were also performed to independently evaluate calculated factors of safety.

IMC-Agrico Clay Settling Area HL-3, Hillsborough County, FL. - Design and construction quality assurance of a 13,500 foot long compacted earth dam located in eastern Hillsborough County. This structure impounds approximately 260 acres. Slope stability and seepage evaluations using UTEXAS and SEEP/W were performed to evaluate the proposed loading conditions on this structure. Engineering evaluations included evaluation of geohazards (karst activity), effective stresses and potential for piping at the downstream toe as well as design of the two spillways and appurtenant structures for the impoundment. Stress path evaluations were also performed to independently evaluate calculated factors of safety.

IMC-Agrico Clay Settling Area K-10, Hillsborough County, FL. - Project manager for the permitting level evaluation and design of 42,000 feet of compacted earth dam located in Hillsborough County, Florida. This structure will be up to 50 feet above grade and impound approximately 1100 flooded acres. Slope stability and seepage evaluations



using UTEXAS and SEEP/W were performed to evaluate the proposed loading conditions on this structure.

IMC-Agrico Semi Annual / Annual Dam Inspections, Hillsborough County, FL. - Project manager for the evaluation of several of IMC Agrico's clay settling area dams located in Hillsborough County. These inspections were performed in accordance with the requirements of 62-672 Florida Administrative Code and Rules of the Hillsborough County Environmental Protection Commission Chapter 1-5.

Inspection reports were based on site observations and review of operating records for each facility.

IMC-Agrico Road Setback Evaluations, Hillsborough County, FL. - Project manager for evaluation of alternative setback distances for several IMC mining units located in Hillsborough County. Investigation and analyses performed for these projects included subsurface drilling and sampling, seepage analysis and stability evaluations. The investigations also included evaluation of county requirements for maintaining groundwater within 3 feet of pre-mining levels. Our results were used as the basis for requesting and successfully obtaining alternative right-of-way setback criteria for each mining unit.

IMC-Agrico HL-3 Setback Evaluation, Hillsborough County, FL. - Project manager for evaluation of an alternative setback distance for the IMCA mining unit located north of Clay Settling Area HL-3 in Hillsborough County. Investigation and analyses performed for this project included subsurface drilling and sampling, seepage analysis and stability evaluations. Our results were used as the basis for requesting alternative right-of-way setback criteria for this mining unit.

Cargill South Ft. Meade Facility Clay Settling Area SFM-1 Setback Evaluation, Polk County, FL. - Project Manager for evaluation of an alternative setback distance for the Cargill mining unit located adjacent to an existing active clay settling area in Polk County. Investigation and analyses performed for this project included subsurface drilling and sampling, seepage analysis and stability evaluations.

Cargill Ft. Meade Facility, S. Bowlegs Site, Polk County, FL. - Project manager for the evaluation of a proposed dragline walkpath and mine site development located next to an active clay settling area in southern Polk County. Our investigations included subsurface drilling and sampling of the proposed walkpath and proposed mining area. Evaluations included settlement of the dragline on the walkpath, seepage, and slope stability for the proposed mining area. Minimum criteria were established for mining activities adjacent to the clay settling area. These included groundwater level management via dewatering and excavation techniques to minimize exposed cut slopes.

Cargill South Fort Meade Washer Train Expansion, Polk County, FL. - Project Manager for the investigation and engineering recommendations for proposed foundations for the expansion of a beneficiation plant washer. Scope of work included field and laboratory testing and engineering analyses and recommendations for the proposed foundations of the structure.



Cargill Warehouse Investigation, Riverview Facility, Riverview, FL.— Project Manager for the investigation and engineering recommendations for proposed repairs to the foundations and floor slab for this structure. Scope of work included field and laboratory testing and engineering analyses and recommendations for the proposed repair methods.

Cargill County Line Road Setback Evaluation, Polk and Manatee Counties, FL. - Project Manager for evaluation of an alternative setback distance for the Cargill mining unit located north of County Line road between Polk and Manatee County. Investigation and analyses performed for this project included subsurface drilling and sampling, seepage analysis and stability evaluations. This investigation included evaluation of Manatee County requirements for maintaining groundwater within 3 feet of pre-mining levels. Our results were used as the basis for requesting alternative right-of-way setback criteria for this mining unit.

USAC Peeples Road Relocation, Polk County, FL. – Senior Geotechnical engineer responsible for identification and evaluation of soft clay zones beneath the proposed alignment for Peeples Road. Lead efforts to evaluate alternative measures to stabilize the subsurface materials. An instrumented preload was selected by the client which proved successful in improving the subsurface materials within the projects tight schedule. Our efforts saved this client approximately \$ 600,000 during construction of the road.

IMC Phosphates Gypsum Stack P-4 Closure, Polk County, FL.— Project manager for the detailed design and construction oversight of “pre-rule” gypsum stack closure. This 300 acre stack is located in Polk County, Florida. This structure is approximately 25 feet above grade and consists of gypsum disposed into old mine cuts at this facility. Hydrologic / hydraulic calculations, slope stability evaluations and a material balance were performed in support of the design. A detailed design for site grading and spillway construction was generated.

Engelhard Phase IV Nitrate Facility Design, Attapulugus, GA. – Permitting, design and construction quality assurance of a 250,000 cubic yard nitrate waste disposal facility constructed above and below grade. The design of this facility included a below grade interceptor trench to manage a high volume perched water zone seeping into the landfill cell. Seepage and stability evaluations were performed to evaluate the performance of a 100 foot high excavated slope that will be exposed for several years prior to completion of site development.

SLOPE FAILURE EVALUATION AND REPAIR

Gulf Coast Waste Disposal Facility, Texas City, TX. – Evaluation and design of repair measures for a slope failure within an active below grade industrial waste landfill. Insitu measurements of pore pressure and back calculated values of shear strength were used to design the repairs for this cell. Reconstruction of the slope included the use of dewatering and selective excavation of failed soils to restore the storage capacity of the cell.

Amoco Chocolate Bayou, Texas City, TX. – Evaluation of slope failure within a stormwater surface impoundment. Piezometers installed in the failed slope were used to identify the phreatic surface for post failure conditions. Information gathered was used to design repair measures for the slope.

Engelhard Phase II Nitrate Landfill Slope Failure Attapulcus, GA. - Investigation and reconstruction of a failed compacted fill slope. This investigation included characterization of the phreatic surface within the slope and back calculations of stability to estimate compacted fill shear strength on the failure surface. The selected strength values were used to design the stabilization measures for the reconstructed slope.

duPont Beaumont Works, Beaumont, TX.- Failure of the embankment for a waste effluent disposal pond occurred during a raise of the dike. Very soft subsurface clays required the failure be repaired by replacing the earth berm with light-weight concrete U-sections to reduce the applied stresses on the foundation soils. Project engineer for the investigation and design of repairs to the levee.

GATX Slope Failure, Galena Park Facility, Galena Park, TX. – Evaluation and design of repair measures for a 1000 foot wide slope failure adjacent to a high capacity dock located on the Houston Ship Channel. Characterization of the cause of failure included back calculations of shear strength and measurements of pore pressure and lateral movement on the failure surface. Information obtained during the investigation of the failure was used to design repairs to the slope and the dock. Remedial measures were successfully implemented over a year's time without taking the dock out of service.

PIPELINES

Williams Gas Pipeline (Transco), Central Florida – Project Manger responsible for an evaluation of several river crossings in Central Florida for the proposed Buccaneer pipeline. This study involved evaluation of Horizontal Directional Drilling (HDD) techniques to establish the viability of the approach and the appropriate depth for pipeline installation.

Williams Gas Pipeline (Transco), Central Florida – Project Manager responsible for a karst geohazard routing and siting evaluation for the proposed Buccaneer pipeline Central Florida crossing. This study involved evaluation of the probability of sinkhole development along the proposed pipeline alignment. This evaluation addressed the integrity and safety of the pipeline and identified mitigation measures to reduce the potential impacts.

Williams Gas Pipeline (Transco), Tarpon Springs, FL. – Project Manager responsible for engineering and design services to in support of Transco's development of the Anclote Water Separation Facility for the proposed Buccaneer pipeline in Central Florida. These services included geotechnical evaluations for foundations, bridge concept development, and architectural landscaping and site development / permitting support.

Gulfstream Natural Gas Pipeline, LLP, Hillsborough County, FL. – Project Principal responsible for construction monitoring of offshore segment of 36-inch diameter gas



pipeline in the near shore waters of the Gulf of Mexico and in Tampa Bay. Project staff performed water quality sampling during installation of the pipeline to ensure permit requirements for turbidity were maintained. Water quality monitoring services were also performed for restoration work performed in sensitive areas of the Bay.

Gulfstream Natural Gas Pipeline, LLP, Hillsborough County, FL. – Project Principal responsible for construction monitoring of on shore segment of 36 inch diameter gas pipeline in Central and West-Central Florida. Project staff were performing water quality sampling during installation of the pipeline at all river crossings and near all wetlands to ensure permit requirements for turbidity were maintained. Water quality monitoring services were also performed for restoration work performed in sensitive areas along the pipeline route. Additional services included installation of site restoration measures, design recommendations for compression station foundations and miscellaneous support during construction.

PUBLICATIONS/PRESENTATIONS

Wantland, Gary M., Deedra Allen and T. Anderson, "Performance Evaluation of Phosphatic Clay Settling Area Dam," Tailing Dams 2002, Association of State Dam Safety Officials / U.S. Society on Dams, Las Vegas Nevada, April 29 – May 1, 2002.

Wantland, Gary M., "Seepage and Piping for Dams," Florida Department of Environmental Protection, Dam Safety Technical Workshop, August 2001.

Wantland, Gary M. and B. Kent Merritt, "Replacement of a Failed Embankment Designed to Accommodate Large Settlements: A Case Study," Geotechnical Special Publication No. 40, Vertical and Horizontal Deformations of Foundations and Embankments. American Society of Civil Engineers; College Station, Texas; June 16-18, 1994.

Wantland, Gary M. and M.A. Gabr. "Overview of Landfill Design Practice," Hazardous and Industrial Wastes, Proceedings of the Twenty Fourth Mid-Atlantic Industrial Waste Conference. pp. 665-686. July 14-17, 1992.

Wantland, Gary M., W. Gardner, K. Kastman, R. Junkrowski, J. Seymour. "Technical Monograph on Liner and Cover Systems, Woodward-Clyde Consultants Professional Development Program, October, 1990.

Wantland, Gary M.; "Surface Impoundments" presented at Woodward-Clyde Consultants RCRA/SARA Seminar, 1988.

Wantland, Gary M.; "Test Fill Program", Texas Chemical Council Test Fill Subcommittee Symposium, April, 1988.

Wantland, Gary M.; "Landfill Design and the Minimum Technology Guidance," Proceedings of the Conference on Southwestern Groundwater Issues, National Water Well Association, Tempe, Arizona; October 20-22, 1986; pp. 319-331.

Wantland, Gary M. and Robert Junkrowski, "Design and Construction of a Double-Lined Hazardous Waste Facility," Proceedings, Central Symposium on Case Histories, Woodward-Clyde Consultants Professional Development Specialty Conference; St. Louis, Missouri, October 10-11, 1986.

Wantland, Gary M., L.A. Wolfskill; et. al. "Lessons Learned Implementing the Minimum Technology Guidance for Landfills;"



Proceedings Environmental Engineering Specialty Conference; American Society of Civil Engineers; Cincinnati, Ohio, July 1986.

Wantland, Gary M. and Robert Junkrowski, "Design and Construction of a Double-Lined Hazardous Waste Facility," Proceedings, Central Symposium on Case Histories, Woodward-Clyde Consultants Professional Development Specialty Conference; St. Louis, Missouri, October 10-11, 1986.

Wantland, Gary M.; W. Walls; S. Aldridge and L.A. Wolfskill; "Lessons Learned Implementing the Minimum Technology Guidance for Landfills;" Proceedings of the 1986 Specialty Conference on Environmental Engineering; American Society of Civil Engineers; Cincinnati, Ohio; July 8-10, 1986, pp. 394-400.

Wantland, Gary M., M. O'Neill; L. Reese and E. Kalajian; "Pipeline Lateral Stability in Soft Clay;" Journal of Petroleum Technology (SEP 8528); January 1982; pp. 217-220.

Wantland, Gary M.; M. O'Neill; L. Reese and E. Kalajian; "Lateral Stability of Pipelines in Clay;" Offshore Technology Conference, Paper No. OTC 3477; Houston, Texas; May 1979.