

**Broward County Water Preserve Areas (BCWPA)  
South Florida Everglades Ecosystem Restoration Program  
External Independent Technical Review Action Plan**

In accordance with E.C. 1105-2-408, Peer Review of Decision Documents, the Action Plan for the External Independent Technical Review (ITR) for the BC WPA Project is to review and document previous internal Jacksonville District ITR processes for effectiveness and issue resolution, identify and document significant technical flaws, and ensure compliance with of U.S. Army Corps management and ITR guidelines. In addition, the Final PIR/EIS generated by SAJ was completed by External ITR. The BC WPA project has also incorporated peer review by industry experts as the non-Federal partner, the South Florida Water Management District (SFWMD) has utilized design consultants (Parson's Brinkerhoff, Earthtek and Jacob's Engineering) to provide comment and feedback on design and cost estimates through completion of the Final PIR/EIS. In addition, the Comprehensive Everglades Restoration Plan (CERP) 2 x 2 model that was used in the analysis of BC WPA and other projects (Site 1 Impoundment) also utilized peer review.

**Background of ITR Review**

- Jacksonville District primary points of contact for External ITR will be as follows:
  - James Baker – Planning Division ITR Liaison
  - Jimmy Matthews – Engineering Division ITR Liaison
- Wilmington and Charleston's primary point of contact for External ITR is Noel C. Clay. Richard Lewis will ensure efficient and effective completion of individual ITRs. Kim
- Savannah's primary point of contact for External ITR is Rick Thomas.
- ITR teams will be staffed to provide the proper balance of qualifications, and ability and willingness to support project scope, schedule and funding needs, regardless of organization. To that end, individual teams may be composed of a mixture of reviewers provided by any logical combination of Jacksonville, Wilmington, Charleston and Savannah Districts.
- Issue resolution authority will be retained by Jacksonville District, the Vertical Team, with assistance, as needed, from the Ecosystem Restoration Center of Expertise (ECO-PCX).
- This BC WPA External ITR plan will be coordinated with the ECO-PCX thru SAD (Mike Magley).
- Ecosystem Restoration Center For Expertise Participation in SFEER External ITRs

The ECO-PCX will have substantial involvement in the BC WPA External ITR process. The PCX is to acquire peer review resources (using project funds) and manage the

external peer review process, following determination that an external peer review is required. The determination of need is to be made via a vertical team assessment followed by coordination with the PCX (regardless of whether or not the vertical team recommends completion of a peer review). The PCX model “certification” role will involve embracing models that already have documented peer recognition, support, and acceptance for use by others in ecosystem restoration projects. The PCX will directly participate in each project’s respective ITR. The PCX will attend via Video-conference (VTC) External ITR Kickoff Meetings, review External ITR comment and response packages for the Draft and Final Project Implementation Reports (PIR), attend In- Progress Review Meeting via VTC if they are held during the External ITR Process, and sign the ITR and PCX Certification Sheet.

The primary point of contact for the Ecosystem Restoration PCX is David A. Vigh, of the Mississippi Valley Division (MVD).

- Interagency Modeling Center (IMC)

The Interagency Modeling Center (IMC) is the modeling services single point of responsibility for the CERP and provides, coordinates or oversees the modeling needs and efforts of each Project Delivery Team (PDT) and RECOVER. The IMC has the primary organizational and production responsibilities for regional and sub-regional CERP modeling and is a clearinghouse for overseeing and coordinating all other project-specific modeling. Created as an equal partnership between its sponsoring agencies, the USACE Jacksonville District and the South Florida Water Management District, participation by other federal and state agencies is encouraged and to date has included staff support from USFWS, USGS and NPS within the Department of Interior. During the initial implementation phase, the IMC has been located within the headquarters facilities of the SFWMD in West Palm Beach, Florida. The CERP Guidance Memorandum (CGM 030.00 dated July 22, 2003) and the IMC Program Management Plan (dated January 2004) specify the responsibilities and roles of the IMC as follows:

*The Interagency Modeling Center (IMC) performs an ITR-like role by reviewing CERP hydrologic modeling applications (a project model is a specific application of the model code) provided by PDT’s and RECOVER. In addition to their ITR role, the IMC is developing a toolbox of previously peer-reviewed model codes, complete with supporting documentation, appropriate for CERP applications. The IMC can also coordinate the expert peer review of candidate model codes for potential inclusion in the toolbox. The expert peer review of the modeling code is akin to “model certification”.*

## **EXTERNAL ITR PROJECTS**

Milestones at a Glance Chart is updated monthly after the SAJ Project Review Board meeting in order to incorporate any approved Change Control Requests. This chart will be sent monthly to the SAW (Noel Clay) and SAS (Rick Thomas). This chart will then be distributed accordingly to the staff assigned to support the External ITR for the SFEER. Enclosure 1 is the most current Milestone at a Glance Chart for the BC WPA Project. At the time that External ITR was

implemented for the BC WPA Project, the project had advanced to preparation of the Final PIR/EIS.

The following Key External ITR Milestones for completion of the Final BC WPA Final PIR/EIS is:

Milestones	Date
External ITR funded	December 19, 2006
Kickoff meeting	January 4, 2007
In-Progress Update Meeting	January 11, 2007
Consolidated External ITR Comments Package Transmitted	January 26, 2007
Project Team Response to Comments Completed	February 7, 2007
Issue Resolution	February 7, 2007- February 13, 2007
Final External ITR Team Concurrence Package Transmitted	February 14, 2007
External ITR Certification (FPIR only)	February 19, 2007

### GENERIC COST ESTIMATES

Generic cost estimates were established to allow for an initial understanding of the approximate amount of resources necessary to perform the BCWPA External ITR. The cost estimates contained herein for all levels of decision documents, the F PIR applied to BC WPA.

1. BC WPA External ITR applied to F PIR
2. All External ITRs will be conducted in Wilmington, travel and per diem is not required, Walla Walla District was also utilized to provide a QA of the cost External ITR provided by Wilmington District.

#### External ITR Generic Cost Estimates

Task	Org. Code	Res. Code	Estimated Funding				Total
			FSM	AFB	DPIR	FPIR	
CESAJ-EN-TI Engineering Coord.	K3L0DB0	Labor	\$5,000	\$5,000	\$5,000	\$5,000	
CESAJ-PD-PW Planning Coord.	K3K0CA0	Labor	\$10,000	\$10,000	\$10,000	\$10,000	
CESAJ-EN-WI Interagency Modeling Center	K3L0AE0	Labor	\$3,000	\$3,000	\$3,000	\$3,000	
Cost Estimating	K7L8LE0	Labor	\$2,400	\$3,500	\$4,800	\$2,500	
Engineering/Design	K7L8LD0	Labor	\$2,400	\$3,500	\$3,000	\$3,500	
Environmental Restoration (Cost & Benefits)	K7L8KE0	Labor	\$2,400	\$3,500	\$4,800	\$3,500	
Geotechnical	K7L8LG0	Labor	\$2,400	\$3,500	\$4,800	\$2,500	
Hydraulics and Hydrology	K7L8LC0	Labor	\$2,400	\$3,500	\$4,600	\$3,500	
NEPA Compliance	K7L8KE0	Labor	\$2,400	\$3,500	\$4,800	\$3,500	
Plan Formulation/ITR Team Leader	K7L8KL0	Labor	\$5,000	\$7,500	\$10,000	\$7,500	
Real Estate	K6N0QB0	Labor	\$2,000	\$2,500	\$3,000	\$2,500	
Water Control/Assurances & Savings	K7L8LC0	Labor	\$2,400	\$3,500	\$4,800	\$3,500	
Water Control/Assurances & Savings	K7L8LC0	Labor	\$1,200	\$1,750	\$1,800	\$900	
<b>Subtotal Costs</b>			<b>\$43,000</b>	<b>\$54,250</b>	<b>\$64,400</b>	<b>\$51,400</b>	<b>\$213,050</b>

### EXTERNAL ITR STAFFING REQUIREMENTS

A flexible team is required that is able to be part of the solution, rather than part of the problem. Team members need to be willing and able to accommodate changeable schedules. Enough committed staff is required, within each technical area, to ensure availability of suitable reviewers for all technical specialties. The following table illustrates the typical mix of technical specialties required to perform a review. The table will be refined and customized for specific product reviews through coordination with reviewing organizations.

**Example Generic ITR Team**

<b>Task / Functional Area / Discipline</b>	<b>Organization</b>
CESAJ Planning ITR Liaison/Certification	CESAJ-PD-PW
CESAW Planning Formulation/ ITR Lead	CESAW
Environmental Analysis/NEPA/WQC	CESAW
Economics	CESAC
Construction/Operations	CESAJ-CO-CQ
Real Estate	CESAS
Legal	CESAJ-OC
CESAJ Engineering ITR Liaison/ Design Review	CESAJ-EN-TI
Cost Engineer	CESAC (SAD RTS)
Geotechnical Engineering – soils	CESAC (SAD RTS)
Geotechnical Engineering – geology	CESAC
Water Management/Control Plans	CESA
Engineering H&H	CESAW (SAD RTS)
Hydrologic Modeling	CESAJ-HI (IMC)

**Broward County Water Preserve Areas**  
**Recommended Plan**

**External ITR Team Experience**

**Plan Formulation / ITR Team Leader.** Richard Lewis currently serves as a Lead Planner (GS-12 Archaeologist) in the Wilmington District, Plan Formulation and Economics Section, with 29 years experience with Corps of Engineers. He graduated with a B.A. in History from Kent State University in 1973 and a M.A. Anthropology, Kent State University in 1977. He is a 1987 graduate of Board of Engineers for Rivers and Harbor’s Water Resources Planning Associate Program. He served as an Archaeologist for the Wilmington District from 1981 until 2001. Previous to that he was employed at the Buffalo District (1979-1981) and the Rock Island District (1977 - 1979). He is currently serves as a Lead Planner and is currently working on the John H, Kerr 216 Feasibility Study, the Philpott Lake 216 Feasibility Study, the Hatteras and Ocracoke Island Feasibility Study, the Wilson Bay Section 206 Feasibility Study, and the Dare County Beaches (Bodie Island Portion) Feasibility Study.

**Cost Estimating / Engineering.** John C. Caldwell currently serves as a Cost Engineer (GS-12) for the General Engineering Section, Wilmington District Corps of Engineers. He is a 1976 Graduate of North Carolina State University with a B.S. in Civil Engineering. He has 15 years of Cost Engineering for planning and design/construction phases for broad range of civil/military projects (Reserve Centers, Highway/Railway Bridges, Caisson Foundations, Recreation Area Buildings & Campsites, Environmental Habitats, Turbine Rehab, Navigation Channel

deepening/dredging, Beach nourishment, Fire Stations, Military Railway, Gantry Cranes, Periphyton Stormwater Treatment Areas-PSTA, Ortona Lock and Dam Repairs); COR and 8a construction contract RFP negotiations & documentation of technical/price analysis; and assistant to Value Engineering Officer. 9 years Construction Branch - General Engineer - Project Engineer/ARCO for military and civil construction projects. Responsibilities w/same duties as ACO w/exception of final monetary execution of modifications and final payment. Dual responsibilities as Project Engineer and Project Mgr for EPA Construction Grants. Environmental Engineer - Responsible for reviewing wastewater process design calculations, plans and specs to assure treatment of wastewater projects met effluent limitations for discharge to surface waters or to land application (spray irrigation and lagoons).

**Cost Estimating / Engineering:** James Henderson currently serves as Regional Technical Specialist for dredging projects (GS-0810 -13, Engineer) for the Wilmington Regional Engineering Center. . He graduated with a B.S. in Civil Engineering from Clemson University. Assignments involve work in a broad range of specialized activities related to cost engineering functions pertaining to pipeline, hopper, and mechanical dredging. Projects consisted of maintenance, new work/construction, and beach nourishment projects as well as projects that utilized drilling and blasting of hard materials before being excavated. Most recent project estimated was for the renourishment of Folly Beach, SC. Served on Independent Technical Review and Quality Assurance Teams providing technical direction, guidance and oversight. Most recent project reviewed was the Northeast Cape Fear River Deepening Project located in Wilmington Harbor, NC.

**Engineering / Design.** Larry Creech currently serves as a Senior Civil Engineer (GS-12) in the Design Section of the Engineering Branch of the Wilmington District Corps of Engineers. He has over 28 years experience and is a Registered Professional Engineer in the State of North Carolina. He graduated with a B.S. in Civil Engineering from North Carolina State University in 1974 and an obtained a M.E. from North Carolina State University in 1995. He has been involved in numerous Civil Works and Military projects of all types and served as lead Technical manager for numerous projects within the District. He has been involved in the preparation and design for numerous design memorandums, concept reports, and plans and specifications. His area of technical expertise consist of Site Design and Layout, Impoundments, Stream Restoration, Beach Renourishment , but has knowledgeable background in other technical areas of civil engineering. He has experience in the following areas: Utilities and Ground Improvements, Roads, Railroad and Bridges, Recreation Facilities, Wildlife Subimpoundments, Real Estate, Navigation Ports and Harbors, Disposal Dike Raising, Maintenance Facilities, Levees and Flood Walls, Lands and Damages, Flood Control and Diversion Structures, Environmental Restoration, Aquatic Ecosystem Restoration, Dams, Dike Repair, Cultural Resource Preservation, Channels and Canals, Building, Grounds and Utilities, Breakwaters, Revetments, Bulkhead and Sea Walls, Beach Renourishment, Bank Stabilization, Stream Restoration, Military Projects. He has Special Training in Flow in Open Channels; Foundation Engineering; Fundamentals of Dredging; Design Water and Wastewater Facilities; Project Management; InRoads/Insite Design Basics; Design of Biological Wastewater Treatment; Construction Productivity; Quality Engineering; Elements of Urban Stormwater Design; Construction Blasting and Risk Management; Leadership for Learning; Streambank Erosion and Protection.

**Environmental Restoration.** Charles (Chuck) Wilson is the Ecosystem Restoration Coordinator (GS-12 Biologist), for the Environmental Resources Section, Wilmington District - Corps of Engineers. He has 28 years experience as a Corps Biologist, with 14 years specialized experience in coastal ecosystem restoration. He is American Fisheries Society - Certified Fisheries Professional (12/04) and has a Certificate of Advance Study in Restoration Ecology from the University of Idaho (12/05) and a B.S. Degree in Marine Biology from the University of North Carolina - Wilmington, (12/78). He is a hands-on environmental restoration practitioner with experience in identification of restoration opportunities, habitat evaluation and incremental analysis; design, construction and monitoring of aquatic restoration projects. Completed projects have successfully restored a wide variety of habitats including; primary nursery, salt marsh, sea grass, oyster reef, or provided for anadromous fish passage and his PDTs have received numerous national awards. He currently serves as the Team Leader for Estuarine Resources on the Neuse River & Tar River/Pamlico Sound Watershed General Investigation Studies and also the Diadromous Fish and Downstream Habitat Team, on the John H. Kerr 216 Study. Mr. Wilson represents the District on several collaborative interagency work groups including the committee to examine and evaluate oyster restoration metrics for assessing ecological function, sustainability and success from New Hampshire to Louisiana, the cooperative monitoring restoration and research concerning aquatic vegetation habitat in coastal NC work group, and the NC Coastal Federation Oyster Restoration Steering Committee. He has served as the Restoration Planner/Environmental Scientist on the ITR team for the Louisiana Coastal Area, Louisiana - Ecosystem Restoration: Comprehensive Coastwide Ecosystem Restoration Study, and also participated in the ITR of ERDC's Review of Economic Values Associated with Construction of Oyster Reefs by the Corps of Engineers.

**Environmental Restoration.** Peter K Dodgion currently serves as a Supervisory Ecologists (GS-13), Corps of Engineers, Huntington District. He received a B.S. in Environmental Science from The Ohio State University in 1992. Mr. Dodgion's expertise includes: Ecology; Environmental Policy; Environmental Assessment/ Environmental Impact Statement; Natural Resources; Fish & Wildlife Mitigation; Water Quality Assessments; Environmental Planning and Design; Revegetation; Writing; Environmental Laws and Regulations, particularly National Environmental Policy Act, Clean Water Act, Endangered Species Act and Fish & Wildlife Coordination Act; National Historic Preservation Act, Wetland Delineation, Restoration & Creation; Ecosystem Restoration; Environmental Analysis; Preparation & Review of Construction Plans and Specifications; Wildlife Habitat Evaluation and Management; Scope of Work & Estimate Preparation; Environmental Studies; Environmental Impact Analysis; Cumulative Impact Assessment; Regulatory. Currently he is a Supervisory Ecologist, GS-13, US Army Corps of Engineers Huntington District (Environmental planning and compliance manager). He is the technical authority on environmental compliance and policy as they relate to the planning, design, construction, operation and maintenance of water resource development projects and programs. Lead the development of water resources projects informed by relevant ecological, cultural, economic factors and public/interagency consultation. From May 1996-Sept 2003, he served as an Ecologist GS-9-11-12, US Army Corps of Engineers Huntington District. From May 1993-May 1996 he served as an Environmental Specialist, Ohio Department of Transportation, Office of Environmental Services, Columbus, OH. From June 1992-May 1993

he served as the Watershed Project Administrator, Franklin Soil & Water Conservation District, Franklin County, OH.

**Environmental Resotration.** Ray Hedrick currently serves an Ecologist, GS-12/13, U. S. Army Corps of Engineers Nashville District. He received a B.S. in Wildlife Management from Arkansas Tech in 1973. Mr. Hedrick's expertise includes: Environmental Laws and Regulations, particularly National Environmental Policy Act, Clean Water Act, Endangered Species Act and Fish & Wildlife Coordination Act; Wetland Delineation, Restoration & Creation; Ecosystem Restoration; Environmental Analysis; Preparation & Review of Construction Plans and Specifications; Wildlife Habitat Evaluation and Management; Scope of Work & Estimate Preparation; Environmental Studies; Environmental Impact Analysis; Cumulative Impact Assessment; Regulatory; Ecology; Environmental Policy; Environmental Assessment/Environmental Impact Statement; Natural Resources; Fish & Wildlife Mitigation; Environmental Planning and Design; Revegetation; Court Witness; Litigation Input; Writing. Serves as technical authority on environmental resource and environmental compliance aspects during planning, design, construction, operation and maintenance of water resource development projects and programs. Also serves as Project Planning Branch Regulatory authority. Conducts, prepares and coordinates environmental resource inventories and surveys, studies, plans, investigations, reports, Environmental Assessments (EA), Environmental Impact Statements (EIS), mitigation plans, wildlife management plans, and environmental portions of reconnaissance and feasibility studies, design memoranda, construction plans and specs. Performs Independent Technical Review of above. Specific examples of experience include the following. Prepared EA's, testified, and was the Nashville District team member for the Tennessee-Tombigbee Waterway Supplemental EIS and Mitigation Study. Was District lead on 3 Regulatory EIS's; Commercial Sand and Gravel Dredging, Redstone Arsenal DDT Remediation, and Wood Chip Mills on the TN River. Was lead on EIS for Harlan KY Section 202 Flood Damage Reduction Project and on EA's for Clover Fork, Williamsburg and Middlesborough Section 202 Projects. Prepared environmental portions of plans & specs and O&M manuals for these projects, and performed field reviews throughout construction. Filled similar role as production team member for Black Fox, Nickajack Trace, Murfree Springs and Oakland Springs Wetland Restoration Project and Lower Cumberland Section 206 Ecosystem Restoration Project. Performed ITR on numerous Section 202 and CAP planning and NEPA documents. Was Environmental ITR Team Leader for Chickamauga Lock feasibility Study, and is continuing as an Environmental ITR Team member for the ORMSS. Currently, Technical Manager for the Section 7, Endangered Species Act Biological Assessment for O&M of the Tennessee and Cumberland Navigation System.

**Environmental Restoration.** Sue Ferguson currently serves Project Manager/Study Manager/Plan Formulator, GS-12, U. S. Army Corps of Engineers Nashville District. She received a B.S. in Civil Engineering from Tennessee Tech in 1974. Ms. Ferguson's expertise includes: all aspects of plan formulation, report writing, public involvement, and project management. She has managed large lock studies and small stream bank protection projects. She has taken all types of from inception through authorization, planning, design, Washington level review, real estate acquisition, and construction. Her greatest asset is her breadth of experience as a study and project manager for nearly 25 years. She has the ability to develop the story of a project at each phase. She believes that every project has a story and it is the plan

formulators job to sift through the data, evaluate its relevance, organize it, present it to the decision makers and the public, digest the feedback, adjust the plan and voila! You have an implementable project. She manages projects from inception through construction, including plan formulation. One current project has a high level of congressional involvement. Serves as account manager for two of the district's highly active sponsors. Planning and plan formulation expertise includes ecosystem restoration, streambank stabilization, flood damage reduction, hydropower, water supply, recreation and navigation. Acts as mentor and advisor to other project managers. Leads and directs interdisciplinary teams including both in-house and architectural and engineering consultants. Prepares project management and quality control plans, Congressional briefings, and fact sheets. Briefs local interest groups and city councils. Assures all real estate, financial, engineering and environmental requirements are met. Serves on ITR teams. Prepares and executes PCAs, FCSAs, and PED agreements.

**Geotechnical.** Tom Child is currently the Acting of Geotechnical Section, engineering Branch, Wilmington Center. Prior to that Tom was a Senior Geotechnical Engineer in the section. He has over 28 years of geotechnical experience with the Corps. He graduated from Clarkson University in 1974 with a B. S. in Civil Engineering, and received a Master's of Science degree in Civil Engineering, with a Geotechnical concentration, from Oklahoma State University in 1985. Tom has worked as the Geotechnical designer on numerous studies and projects ranging from flood reduction, dredge disposal dike design, dam rehabilitation, stream restoration, dredging of rivers, harbors, and channels, and numerous CAP projects. He has performed many ITRs and BCOE reviews.

**Geotechnical.** Wayne Bieganousky is currently the Regional Technical Specialist for Geotechnical Engineering in South Atlantic Division. He is part of the Wilmington Engineering Center located in Charleston, SC. Prior to his current position, Wayne was the Section Chief of the Geotechnical, Materials and Site Work Section in Charleston District for 20 years. Other experience included senior geotechnical engineer for the Vicksburg District, research assistant at the Waterways Experiment Station in the Earthquake Engineering and Soil Dynamics Division, and private consulting. He has 32 years of geotechnical experience with the Corps. He graduated from The Citadel in 1969 with a B. S. in Civil Engineering, and received a Master's of Science degree in Civil Engineering, with a Geotechnical concentration, from Purdue University in 1974. He also completed a second masters program in Geotechnical Engineering at University of California, Berkeley in 1982. Wayne's expertise includes: shallow and deep foundation design, slope stability analyses and slope stabilization, liquefaction analysis, embankment design, seepage analysis, lateral earth pressure on bulkheads, retaining walls and braced excavations, filter design for dams, roads and hydraulic structures, slope protection, dewatering analysis, settlement analysis, offshore beach renourishment investigations, characterization of navigation channel soils and rocks for dredging purposes, design of dredged material disposal area dikes, soil stabilization, site and soil improvement, geotechnical site investigations, preparation of design documents, plans and specifications, independent technical review and forensic engineering of failed structures.

**Hydraulics and Hydrology .** Hasan Pourtaheri currently serves as Lead Hydraulic/Hydrology (GS-13) Hydraulic/Hydrology Coastal Engineering, Wilmington District, Corps of Engineers. He graduated from the State University of New York, Buffalo (SUNY Buffalo) with B.S. in

Water Resources Engineering in 1973. He received an M.S. from SUNY Buffalo in Civil / Hydraulic Engineering in 1981. He attended SUNY Buffalo in pursuit of a Ph.D. Not completed, 1984 Civil / Hydraulic Engineering, State University of New York at Buffalo. He has 30 years of experience (14 years with the USACE) in Hydraulic/Hydrology, Coastal and Sedimentation, Environmental enhancement and restoration, physical, and numerical modeling.

**Hydraulic Model Certification , IMC.** Dr. Amir Gamliel, P.E., P.G. serves as a hydraulic engineer (GS-12) with the Interagency Modeling Center, Jacksonville District. He has 3 years of experience with Corps of Engineers as a hydrology/hydraulic modeler. Prior to working for the Corps, Dr. Gamliel worked 17 years as a lead engineer and project manager for aquifer restorations, design of earthfill dams and water reservoirs, stormwater management plans, pipeline systems, analysis of stream flows and floods, development of optimal management plans for of water reservoirs and aquifer systems, and development of numerical simulation codes and numerical scheme. Dr. Gamliel received a Ph.D. degree in civil and environmental engineering from the University of Michigan in 1989, M.S. degree in civil and environmental engineering from the Technion, Israel Institute of Technology, in 1980, a B.S. degree in mathematics and computer science from Kent State University in 1984, and a B.S. degree in Agricultural Engineering from the Technion in 1977. Dr. Gamliel served on the Colorado Water Search Task Committee in 2003, was a member of the Oak Ridge Environmental Quality Advisory Board in 1993-2001, and routinely reviews manuscripts for the Ground Water Journal. In addition, he is very active with Toastmasters international, where he organized division training events, served as an area governor and club vice-president of education.

**Hydraulic Model Certification , IMC.** Cary White serves as a hydraulic engineer (GS-12) in the Interagency Modeling Center (IMC), Jacksonville District. He has expertise in applications of the South Florida Water Management Model (8 years of “2x2” modeling experience) and is well versed in Linux, UNIX and PC computer platforms. He has extensive experience in performance measure development, implementation and evaluation. He is one of the original regional hydrologic modelers in the IMC. He has a Bachelor of Science Degree (Meteorology Thematic concentration) from San Francisco State University and a Master of Science Degree in Hydrology from The University of Arizona in Tucson, Arizona.

**Hydraulic Model Certification , IMC.** Dr. Jaime A. Graulau, P.E., serves as a hydraulic engineer (GS-12) in the Interagency Modeling Center, Jacksonville District Corps of Engineers. He is a Registered Professional Engineer in the State of Florida and the Commonwealth of Puerto Rico. He graduated with a B.S. in Civil Engineering in 1995 and an M.S. in Civil Engineering in 1997, both from the University of Puerto Rico. He also completed a PhD in Environmental Engineering from Michigan State University in 2003. Over the last three years he has been working as a hydrologic modeler in support of the Comprehensive Everglades Restoration Plan. His areas of expertise include hydrologic modeling, reactive pollutant transport in surface and sub-surface environments, stochastic hydrologic modeling and data management.

**Hydraulic Model Certification, IMC.** Dr. Maged Hussein, P.E., serves as a hydraulic engineer (GS-12) in the Interagency Modeling Center, Jacksonville District. He has 19 years experience of which 3 years have been with the US Army Corps of Engineers. He graduated

with a B.Sc. in Civil Engineering from The Suez Canal University, Egypt in 1987 and M.S. and Ph.D. in Civil Engineering from The Ohio State University in 1992 and 1997, respectively. He has been a registered professional engineer since 1995. He has been serving as a hydraulic engineer for the Jacksonville District since 2003. Prior to that he was involved in the Comprehensive Everglades Restoration Plan (CERP) since 2000 as an employee of the model development division of the South Florida Water Management District until 2002 and as a program manager for BEM Systems Inc. consultants to the SFWMD. Earlier in his career, he was involved in a number of modeling studies in support of ground water remediation, total maximum daily loads, oil spills, etc. both as a consultant working for HydroGeoLogic, Inc. and as a visiting assistant professor at the Ohio State University. He is currently involved in a number of regional modeling studies and subregional modeling reviews in support of CERP.

**Hydraulic Model Certification , IMC.** Ravindranath Ramnath serves as a hydraulic engineer (GS-12) in the Interagency Modeling Center, Jacksonville District. He has been employed by the U.S. Army for the past 17 years. He served as mechanical engineer for his first 12 years of service with the U.S. Army Armament Research, Development and Engineering Center (ARDEC) in New Jersey. There, he was involved in engineering, design and maintenance of munitions, weapons and survival equipment for military troops. He has been with the US Army Corps of Engineers (USACE), Jacksonville, FL, for the past 5 years. He served as a mechanical/environmental engineer for his first 2 years with the USACE and is currently serving as hydraulic engineer performing numerical modeling at the Interagency Modeling Center (IMC) in West Palm Beach, FL. Mr. Ramnath has a B.S. degree in Aerospace Engineering from Polytechnic University, Brooklyn, NY and an M.S. degree in Environmental Engineering from Stevens Institute of Technology, Hoboken, NJ. He also has a B.S. degree in Accounting from Lehman College of City University of New York, NY.

**Hydraulic Model Certification , IMC.** Dan Song, P.G., serves as a Hydraulic Engineer (GS-11) in the Interagency Modeling Center, Jacksonville District. He has 5 years of experience with the U.S. Army Corps of Engineers. He has graduate degrees in Hydrogeology and Civil Engineering. He is licensed in State of Nebraska as a Professional Geologist. He served as a Hydrogeologist II for Department of Environmental Resources Management in Dade County, Florida in late 90's. In addition to the hydrological modeling experience, He has served as a hydraulic engineer for Lower Mississippi River diversion project while working at the New Orleans District Office. He has coastal engineering design experience in addition to his hydraulic and hydrologic modeling capability.

**Hydraulic Model Certification , IMC.** Dr. Christiana Aguirre serves as a Hydraulic Engineer (GS-12) in the Interagency Modeling Center, Jacksonville District. She has a Ph.D. degree in Agricultural and Biological Engineering from Purdue University, West Lafayette, IN. She worked at Purdue University as a Post Doctorate Research Associate (2000-2002) doing research in stochastic finite element modeling of water flow and contaminant transport in the unsaturated zone. In 2003, she accepted a Senior Engineering position with South Florida Water Management District. She worked on developing a hydrodynamic and salinity model used to establish the minimum flows and levels for Biscayne Bay. Her current position at the Interagency Modeling Center includes regional model applications of the South Florida Water

Management Model and review of project-level modeling for the Comprehensive Everglades Restoration Project.

**NEPA Compliance.** Jennifer L. (Jenny) Owens currently serves as a Physical Scientist (GS-12) for the Environmental Resources Section, Wilmington District - Corps of Engineers. She has 19 years experience as a NEPA/Environmental Compliance Specialist. She graduated from the University of North Carolina at Wilmington with a degree in Geology. She completed Water Resources Planning Associates Program in 2005. During her tenure she has completed several NEPA documents for Federal projects. She has served on several ITR PDT's, including the Louisiana Coastal Area (LCA) Restoration project.

**Real Estate.** Rick Thomas is a Supervisor Realty Specialist (GS-13) Section Chief for the Purchase and PCA Section under the Savannah District Real Estate Division and has been with the Corps for 28 years. He began his career as a Forestry Technician working under the Real Estate Division's Timber Harvesting Program for seven years prior to changing careers as a Realty Specialist. He worked in leasing for 3 years and has been working in planning and acquisition for 17 years. He is responsible for all the Real Estate Military and Civil Works planning and acquisition functions for SAW, SAC and SAS Districts. His Section is responsible for providing real estate support for all Military and Civil Works planning documents and projects within the SAW, SAC and SAS Districts.

**Water Control / Assurances and Savings.** Stan Simpson currently serves as the Savannah River Water Control Manager (GS-13) for the Wilmington District Regional Engineering Center, US Army Corps of Engineers. He has 25 years of experience with Corps of Engineers, ten years in Hydrologics and Hydrology and fifteen years in water management. He received an AS in Architecture, from Miami Dade Community College in 1978.

**Water Control / Assurances and Savings.** Jason Ward is a hydrologist currently working in water management of the USACE reservoirs in the Savannah River Basin (GS-12) for the Wilmington District Regional Engineering Center, US Army Corps of Engineers. He has 5 years of experience with the Corps of Engineers, all of which have been in water management. He received a B.S. in Forest Resources with an emphasis in Hydrology and Environmental Systems, from the University of Georgia in 1999 and a M.S. in Hydrology in 2001. Jason has experience with water quality monitoring, stream gaging, reservoir design, hydrologic modeling, reservoir operation modeling, and water supply analysis. He has been involved in the Savannah River Basin Comprehensive Study (WRDA 1999) and the Sustainable Rivers Project in cooperation with The Nature Conservancy. Jason has been a member of the American Water Resources Association since 2002 and was lead author on publication of his thesis project in the Journal of the American Water Resources Association (JAWRA).