

United States Nuclear Regulatory Commission Official Hearing Exhibit

In the Matter of: Progress Energy Florida, Inc.
(Levy County Nuclear Power Plant, Units 1 and 2)

ASLBP #: 09-879-04-COL-BD01
Docket #: 05200029 | 05200030
Exhibit #: PEF302-00-BD01
Admitted: 10/31/2012
Rejected:
Other:
Identified: 10/31/2012
Withdrawn:
Stricken:



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HELPING CLIENTS MEET THEIR WATER RESOURCE NEEDS

William J. Dunn, Ph.D.

Principal Scientist/Founding Partner

Education

Ph.D., Systems Ecology: Center for Wetlands & Department of Environmental Engineering Sciences, University of Florida, 1989

M.S., Botany: Systematics & Ecology, University of Florida, 1982

B.S., Biology, Tufts University, 1976

Summary Qualifications

Background & Experience

- A founding partner and principal scientist, Dunn Salsano & Vergara Consulting, LLC.
- Founder, president and principal scientist for Watershed Connections, Inc. from June 2006 to October 2011
- Environmental science & water resource specialist with Gainesville FL office of CH2M HILL 1986 through 2006, specific technology leadership roles included:
 - Florida Director for Water Resources and Environmental Management services 2005-2006
 - Southeastern Regional Director for Water Resources and Environmental Management services 2001-2005
 - National Technology Leader for Wetland Science for 1998-2001
 - Assistant National Technology Leader for Wetland Science 1988-1998
- Senior environmental scientist, Environmental Services and Permitting, Inc, Gainesville FL 1984 to 1986
- Graduate research assistant, Center for Wetlands, University of Florida, 1981 to 1984
- Environmental Scientist, Breedlove and Associates, Gainesville FL, 1979 to 1981
- Graduate teaching assistant, Botany Department, University of Florida, 1977 to 1979
- Botanist, Department of Biology, Tufts University, Medford MA, 1976 to 1977

Current Projects

- Independent Scientific Peer reviewer for minimum flows and levels (MFLs) established by the St. Johns River Water Management District (SJRWMD); providing technical peer review oversight for District's program to set protective flows and levels for wetland and aquatic systems within the District. Peer review efforts have included review of MFLs for rivers (St. Johns, Ocklawaha, Silver, Wekiva and Blackwater), lakes (Geneva, Cowpen, Tarhoe, Poinsett, Apsahawa), and freshwater springs (Wekiwa, Rock, Silver, Green, Gemini, and Ponce DeLeon).
- Expert witness and litigation support services to Pillsbury Law firm in Washington, D.C. on behalf of Progress Energy's siting and permitting efforts for their proposed Levy Nuclear Plant, Levy County



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FL. Providing subject matter expertise for environmental, ecological and hydrological issues related to potential effects of construction and operation of the proposed nuclear facility.

- Expert witness and litigation support services to Office of General Counsel at the SJRWMD for the review of potential environmental impacts of water withdrawals for consumptive uses on the water resources of the District, in particular possible adverse effects on wetlands, lakes, rivers, freshwater springs and estuaries.

Other Recent SJRWMD Projects

- Project manager and principal scientist for Development of Protective Water Resource Criteria for Upper Santa Fe River
- Chair and facilitator for Volusia MFLs Prevention and Recovery Strategy Subgroup for District's 2010 Water Supply Plan
- Project manager for Ocklawaha River Basin Yield Analysis
- Project team member for District's 2010 Water Supply Plan
- Expert witness for District in Administrative Hearing for Seminole County's Yankee Lake consumptive use permit (CUP).
- Project team member for District's 2008 Water Supply Assessment
- Project team member for joint SF, SJR and SWF water management district's Central Florida Coordination Area (CFCA) evaluation of environmental impact criteria assessment
- Technical consultant for the District's St. Johns River Water Supply Impact Study (WSIS), which is assessing potential effects of surface water withdrawals from SJR on phytoplankton, macro invertebrates, fish and other vertebrate wildlife, protected species, wetland and aquatic vegetative communities and water quality.
- Facilitator for completion of consultant reports evaluating the level of protection of afforded human use and water resource values for MFLs set for springs in Volusia (DeLeon, Green and Gemini springs) and Seminole (Rock and Wekiwa springs) counties.
- Project manager for evaluation of likelihood for harm to native vegetation and lakes from projected future groundwater withdrawals in north Florida.
- Member of SJRWMD's technical review team for the Taylor Creek Reservoir/St. Johns River Water Supply Development project
- Project manager for MFL site selection prioritization assessment for east-central Florida
- Project manager for C-25 Basin surface water supply investigation in Indian River and St. Lucie counties
- Project manager for Nova Canal (Volusia County) surface water supply investigation
- Project manager for Crescent Lake (Flagler County) surface water supply investigation
- Project management support for the Lake Apopka Basin Water Resource Development Project.



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- Expert witness support to the District for legal challenges to the issuance of consumptive use permit to Orange County Utilities.
- Project manager and lead facilitator for Phases I and II of the Lower St. Johns River Value Analysis of Wastewater Treatment Plant TMDL Compliance and Reuse Options project.

SJRWMD Water 2020 Projects

- Development and implementation of four wetland water level augmentation demonstration projects for Water 2020 water supply planning program.
- Planning group leader/facilitator for Water 2020 water supply plan for East Central Florida (Orange, Seminole, and Lake County).
- Development and application of a wetland impact assessment and impact costing methodology for estimating District-wide costs of mitigating impacts to wetland and aquatic systems of water table drawdown due to groundwater pumping.
- Peer review of MFLs for Wekiva River system.
- Chair and lead facilitator of Wetland and Water Resources Constraints Subcommittee for Water 2020 water supply planning process.

Additional SJRWMD Projects

- Conducted 2005 assessment of constraint wetland and lake sites in Orange, Lake, Seminole, and Volusia counties.
- Development of Preliminary Evaluation Criteria in support of MFLs for Sandhill Lakes.
- Technical review of MFLs for St. Johns River at Deland.
- Assistance with ongoing assessment of cumulative impacts of groundwater withdrawals on wetland and aquatic resources in east central Florida.
- Project manager for adaptive management project for water resources.
- Technical lead for the development of regional water resource monitoring network.
- Expert witness support services for legal challenges to the District's issuance of a CUP to Orlando Utilities Commission in 2004.
- Expert witness for the District in the Fernberg Trade Secrets Case in 2000.
- Environmental scientist for evaluation of effect on City of Melbourne's surface water treatment system resulting from *Hydrilla* control measures on Lake Washington.

Additional Regional and National Clients

- CH2M HILL's senior environmental scientist for a series of project alternatives evaluation and conceptual design for the restoration of floodplain swamp and marsh systems of the Mississippi River in coastal Louisiana. Projects: Bayou Lafourche, Third Delta, and Coastal Monitoring Program.
- Consumptive use permitting services for City of Cocoa for separate CUPs for wellfield expansion and for Taylor Creek Reservoir (TCR). Work included expert witness services, project management,



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detailed water resource and ecological studies of potential resource impacts, minimum flows and levels, and development and implementation of ecological monitoring programs.

- CH2M HILL's lead ecologist for implementation of the baseline sampling of wetland monitoring sites at Tampa Bay Water's new surface water reservoir site.
- Project manager and lead scientist for bacterial source tracking investigations of urban creek system in Gainesville for Gainesville Regional Utilities.
- Lead environmental scientist for development of Loxahatchee River Basin Integrated Water Resources Management Plan for City of West Palm.
- Senior wetland scientist for design of 4,500 acre coastal marsh restoration project on Delaware River Estuary.
- Co-author of AWWA's handbook on wetland impact assessment and wetland mitigation banking.

General Description of Relevant Experience

Dr. Bill Dunn has a Bachelor of Science Degree in Biology from Tufts University, a Master of Science Degree in Botany from the University of Florida, and Ph.D. in Systems Ecology also from the University of Florida. He is a founding partner and principal scientist of Dunn, Salsano and Vergara Consulting, LLC.

He has 34 years of work experience as an environmental scientist and project manager. Since 1977 he has resided in Gainesville FL. From 1976 through 1986 he was a research assistant at Tufts University, graduate research and teaching assistant at the University of Florida, and was a staff scientist at two different environmental consulting firms in Gainesville. For 20 years, from 1986 through 2006, Dr. Dunn was a senior environmental scientist at CH2M HILL in its Gainesville office. At CH2M HILL Dr. Dunn's project assignments included water resource management projects on the east coast from Florida to New Jersey, and on the Gulf coast from Florida to Texas. During this tenure Dr. Dunn was a technology leader for wetland and aquatic sciences, watershed management, and water resource and environmental management services. Dr. Dunn started Watershed Connections, Inc. in 1986 to provide senior environmental sciences support to the St. Johns River Water Management District. Through a series of contracts Dr. Dunn has supported the District in water supply planning, water resource investigations, development of protective constraints for sensitive water resources, development and review of minimum flows and levels, development of mitigation and impact avoidance strategies, and litigation support as an expert witness.

Dr. Dunn is the president and senior scientist for Watershed Connections, Inc (WCI). WCI was incorporated in June of 2006. Through WCI Dr. Dunn recently completed a three year contract to the SJRWMD's Division of Water Supply Management as a senior environmental scientist. Under this contract Dr. Dunn served as a project manager, and provided senior technical support to the District for water supply planning, development of constraints to protect wetland and sensitive water resources, water resource investigations, assessment of the feasibility of developing new surface and groundwater sources, review and technical support for MFLs, support for inter-district coordination on long-term water supply planning (SJRWMD, SFWMD, and SWFWMD), and expert witness support.

From 1986 through 2006 Dr. Dunn was a senior environmental scientist and water resources specialist with at CH2M HILL. For the period of 2002 through 2005 he was the firm's regional director for water resources and



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environmental management services in an 11-state southeast region. From 1998 through 2002 he was the firm-wide director of wetland science services. In his latter role as CH2M HILL's regional director of water resources, his responsibilities include direction and coordination of a wide variety of water resources and ecosystem studies, environmental mitigation, and restoration studies, including:

- Water supply planning investigations and studies
- Water resource management investigations
- Review of the establishment of minimum flows and levels (MFLs)
- Engineering and feasibility assessment of major water resource development and watershed/ecosystem restoration projects
- Impact analysis and mitigation
- Watershed assessment and management
- Assessment of cumulative environmental impacts, and development of impact avoidance strategies
- Development and implementation of permitting programs for complex water resources, watershed, and infrastructure projects
- Environmental applications of geographic information systems (GIS)
- Design and implementation of large-scale mitigation and restoration projects
- Environmental data analysis and interpretation
- Project management

Summary of SJRWMD Experience

Dr. Dunn has been providing services for water supply planning and water resource investigations to SJRWMD for the past 15 years, working closely with District staff. He is currently assisting with several ongoing projects.

Dr. Dunn served as project manager and lead facilitator for a SJRWMD project that developed solutions to water quality problems in the lower St. Johns River (LSJR). This work will provide an optimized approach and list of point source projects and non-point load reductions that will meet the goal of meeting and exceeding the Total Maximum Daily Load (TMDL) and ultimately removing all point sources discharges from LSJR. SJRWMD may use the ranking of these projects as one factor in considering funding recommendations for grant and matching fund programs—to encourage cost-effective solutions that result in higher nutrient removal rates and reuse than might otherwise occur based strictly on Best Management Action Plan (BMAP) obligations.

Dr. Dunn has been developing and implementing field sampling for baseline characterization studies and impact monitoring programs for 30 years. He recently led SJRWMD's efforts to develop its District-wide adaptive management monitoring plan for water resources, and is currently assisting the District with design of its minimum flows and levels (MFL) monitoring network. The assessment includes integrating the District's water resources monitoring network in the upper and lower Floridan, intermediate aquifers, surficial aquifer system, lakes, wetlands, rivers and streams, and springs.

Dr. Dunn led efforts by SJRWMD to demonstrate wetlands augmentation as an approach for avoiding environmental impacts resulting from groundwater withdrawals. Four pilot projects are underway to assess the



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environmental performance and cost of wetland impact avoidance. Direct augmentation using raw ground water (two sites) and retained surface water (two sites) is being tested. Questions regarding the feasibility of full-scale wetland augmentation as a water management approach are being answered, including the:

- Volume of water required to maintain the hydrologic regime
- Most efficient means of applying water to wetlands, spatially and seasonally
- Ecological response of wetlands to augmentation
- Methods providing greatest ecological response for the cost

Dr. Dunn developed and implemented a hydrological and biological monitoring plan for each augmentation project. He directed the baseline sampling at each site and is currently overseeing the operational monitoring. For one of the augmentation projects, Bennett Swamp, a 3,000-acre forested wetland in Volusia County, Dr. Dunn's project team had to set rehydration. This was accomplished by evaluating current and historic hydrologic regimes in the swamp. Field measurements of vegetative and soil indicators of hydrology were compared to modeled stage-duration curves for historic conditions. Biological indicators of current water levels were shown to be well below historic levels. Historic impacts from surface water alterations and ground water withdrawal have shifted the stage-duration curve, with the greatest impact in the range of the frequent low to average portions of the curve. Comparison of modeled and field estimated curves provided a useful tool for hydrologic projects. In Bennett Swamp, a 1-foot increase in the stage curve was recommended as an initial rehydration target.

Dr. Dunn has also provided peer review of MFLs set by SJRWMD for the Wekiva and St. Johns Rivers. As part of this peer review process, he visited field monitoring sites and evaluated the effectiveness of the monitoring programs, data collection, data analysis, and interpretation.

Dr. Dunn was CH2M HILL's lead scientist for District-wide water supply planning with SJRWMD. The project was a comprehensive investigation of alternative water supply strategies for those areas of the District projected to have severe impacts to wetlands and other natural systems due to groundwater withdrawal within a 25-year planning period. Dr. Dunn led several key parts of the investigation: (1) development of impact assessment and mitigation costing methodologies for potential impacts of aquifer and water table reductions on wetlands and other natural systems, (2) development of projections of extent and degree of potential future impacts, (3) estimation of basin-wide wetland mitigation costs associated with projected future groundwater pumping scenarios, (4) development of strategies to avoid impacts to natural systems and development of strategies to mitigate for permitted and unpermitted impacts, and (5) design and implementation of four wetland water level augmentation demonstration projects.

Under the Water 2020 program, Dr. Dunn was one of CH2M HILL's key senior water resources staff to assist SJRWMD with future water supply planning efforts. The program goal was to identify sources and projects sufficient to meet year 2020 water supply needs for public and natural systems. On behalf of the District, Dr. Dunn led the facilitation efforts for the development of the water supply plan for the East Central Florida Planning area, which included Orange, Lake, and Seminole Counties. This area comprises the largest population center in the District.

In addition, under the Water 2020 program Dr. Dunn chaired the Environmental Constraints Subcommittee. This subcommittee developed approaches for incorporating withdrawal constraints to protect critical natural resources, MFLs, native vegetative communities, prevention of salt-water intrusion, and minimized effects on existing legal users. The water resources constraints are incorporated into an optimization and decision model that is linked to SJRWMD's integrated surface water/groundwater model.



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Dr. Dunn assisted SJRWMD with developing and implementing an adaptive management program for water resources management in the District. Water supply planning conducted by SJRWMD showed a finite limit to the amount of groundwater withdrawal that can be sustained without causing adverse impacts to the water resource and dependent natural systems. To be better prepared for managing water resources, SJRWMD adopted an adaptive management approach for water supply management. Dr. Dunn led the team that developed a regional water resource monitoring plan for the water resource caution areas.

Dr. Dunn served as an expert witness for SJRWMD on three occasions. His areas of expertise included water resources, lake and wetland ecology, lake and wetland hydrology, environmental monitoring, data collection and analysis, and effects of groundwater withdrawals on the surficial aquifer. In this capacity he reviewed documents and depositions, prepared summaries of technical issues, conducted field surveys and investigations, gave depositions and provided expert testimony in court and administrative hearings.

Summary of Additional Client Experience

Dr. Dunn has extensive experience with developing and evaluating water supply projects. He managed the supporting investigations for the Taylor Creek Reservoir consumptive use permit (CUP) for the City of Cocoa. After several years of investigations, the City received the CUP in 1993. In addition to managing the project, Dr. Dunn was the lead environmental scientist for the detailed ecological studies of the Taylor Creek watershed. These studies included documenting existing ecological conditions of vegetation, limnology, fish and wildlife resources, and protected species. In addition, he led detailed hydrological modeling efforts to evaluate the effect of proposed withdrawals on the reservoir, the downstream floodplain of Taylor Creek, and the St. Johns River. He also provided expert witness testimony for the City on these same issues. Working with SJRWMD staff, he helped develop an environmental monitoring program for the Taylor Creek Reservoir and downstream floodplain to detect adverse effects on selected wetlands within the wellfield.

On behalf of the City of Cocoa, Brevard County, Dr. Dunn established an extensive transect based monitoring network in Taylor Creek Reservoir (TCR), and the downstream floodplain of Taylor Creek extending down to the floodplain of the St. Johns River (SJR). Dr. Dunn designed the baseline sampling effort for Taylor Creek and SJR floodplain systems and the TCR reservoir that generated the information needed to support its consumptive use permit (CUP) application to SJRWMD for surface water withdrawals from Taylor Creek Reservoir. The City received its CUP, and CH2M HILL's design for the reservoir and floodplain monitoring network became the operational monitoring network for the permit. Subsequent to the issuance of the permit, SJRWMD established minimum flows for Taylor Creek and, in doing so, relied on the floodplain monitoring network set up by Dr. Dunn.

Also on the behalf of the City of Cocoa, Dr. Dunn served as an expert witness during administrative challenges filed against the issuance of the CUP for the now-permitted expansion of the City's well field in eastern Orange County. As part of his work in support of the CUP, Dr. Dunn worked with SJRWMD to investigate the potential effects of additional groundwater withdrawals on the existing land uses, wetland ecosystems, and surface water resources. As the result of these investigations, special conditions within the CUP were developed, which established an ecological monitoring program for selected wetland areas within the City's well field. This monitoring program to detect adverse effects on selected wetlands within the wellfield has been initiated and is presently under Dr. Dunn's direction.

Dr. Dunn was CH2M HILL's lead ecologist for baseline ecological studies of wetland monitoring sites at Tampa Bay Water's (TBW) surface water reservoir site in Hillsborough County, which provides an alternative supply source to the region. This effort included (1) characterization of vegetation in terms of species composition and



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vegetative health within each stratum (canopy, subcanopy, shrub, vine, and groundcover), (2) establishment of seasonal high and normal pool elevations using hydrologic indicators, (3) faunal inventory, and (4) characterization of hydric and non-hydric soils.

Dr. Dunn served as senior wetlands expert for a series of projects for Public Service Electric and Gas (PSE&G) under its Estuary Enhancement Program (EEP). The EEP project is restoring 14,000 to 15,000 acres of disturbed or altered salt marshes on the Delaware Bay. PSE&G has initiated construction activities for the project. Dr. Dunn's work within the EEP included oversight and direction for the following tasks:

- Development of a restoration site identification and prioritization program for land acquisition
- Performance of detailed baseline ecological inventories for acquired sites
- Development of conceptual restoration designs for 16 degraded coastal marsh sites
- Development of final restoration designs for six degraded marsh sites
- Implementation of restoration and management actions on 4,500 of altered saltmarsh

Dr. Dunn led a team of scientists and engineers that developed restoration plans for a 12,000-acre wetland complex south of Lake Pontchartrain. Over the last 20 years the property was adversely affected by erosion, land subsidence, and saltwater intrusion. The restoration plan is part of a feasibility assessment for restoration of the lower Mississippi River's delta.

As part of the dredged materials management program for the U.S. Navy's Trident submarine base at Kings Bay, Georgia, Dr. Dunn developed plans for vegetative community establishment on spoil islands and inland spoil disposal sites. The effort developed guidelines for materials deposition and grading, planting, monitoring, and maintenance for tidal salt marsh, and brackish and freshwater marsh communities. In other coastal areas of Florida, Dr. Dunn coordinated permitting and design efforts for mitigation of estuarine impacts through the creation of salt marsh and mangrove wetlands.

Dr. Dunn has over 25 years of experience working with constructed and natural wetland treatment systems. He has worked on over 20 projects, which have included feasibility studies, baseline characterization studies, design, permitting, construction monitoring and operational system monitoring. Several of these projects have won state and national awards for engineering innovation and excellence. He has conducted surveys for screening candidate wetlands; managed studies of wastewater effects on flora, fauna, soils, and water quality; participated in pilot-scale investigations for treatment system optimization; and worked on the design team of natural and constructed wetland treatment systems. These projects have taken place in Florida, Mississippi, Texas, South Carolina, Virginia, New Jersey, and New York.

Dr. Dunn was the project manager and lead scientist on an Everglades restoration research project for the South Florida Water Management District (SFWMD). The project tested a managed wetland treatment system (MWTS) for its ability to reduce phosphorus levels in agricultural runoff waters to less than 10 parts per billion of total phosphorus. The MWTS is a hybrid treatment system combining chemical treatment and solids handling with a constructed wetland treatment system. The MWTS project is one of six alternative technology evaluations currently funded under SFWMD's Everglades' restoration design program.

Dr. Dunn co-authored a handbook published by the American Water Works Association (AWWA), entitled *Expediting Water Projects: Benefits Assessment and Wetland Mitigation Banking*. Geared to water utility planners and managers, the handbook provides practical information for meeting the objectives of water resource development and environmental protection. The handbook specifically addresses two permit-related activities: (1)



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assessing the beneficial environmental effects of water supply development and (2) using wetland mitigation banking for all types of water resource development.

Dr. Dunn was the lead scientist on the Loxahatchee River Basin program for the City of West Palm Beach. This program focused on the long-term management of the 20,000 acres of wetland and aquatic habitat, which forms the headwaters of the Loxahatchee River. CH2M HILL assisted the City with development of an integrated resource planning (IRP) project, which included environmental resources management, water resource planning, reclaimed water management, and water supply development and management. Dr. Dunn developed project elements for environmental land management, mitigation banking, and regional ecosystem restoration.

Dr. Dunn was CH2M HILL's lead ecologist on two past projects for SFWMD. On the first project—supporting development of the surface water improvement and management (SWIM) Plan for the Everglades basin—Dr. Dunn directed the data review and summary efforts for natural resources inventories and assessment of ecological conditions in Everglades National Park (ENP) and adjacent Everglades' watershed areas. This effort included a summary of historic and existing resource conditions for upland, wetland, and estuarine communities in the Everglades basin. The second project was for SFWMD's regional water supply plan for its Lower East Coast (LEC) planning area. The objective of the LEC Water Supply Plan is to identify strategies that will help meet future water supply demands in the Everglades planning area. SFWMD has embraced a concept of a multipurpose East Coast Buffer between the Everglades and the increasingly urban areas to the east. In the LEC investigations, Dr. Dunn evaluated integration of the wetland restoration, mitigation banking, and natural ecosystems management into plans for water storage and supply and regional water quality enhancement.

Conference and Technical Presentations

“Adaptive Management of Water Resources in the St. Johns River Water Management District.” September 2003. Presentation for Florida Water Resources Conference. Tampa, Florida.

“Role of Adaptive Management In a Monitoring Framework.” April 13-15, 2003. Presentation for the Restore America's Estuaries Conference. Baltimore, Maryland.

“Implementing Adaptive Management of Water Resources in the St. Johns River Water Management District.” July 1-3, 2002. Presentation at American Water Resources Association (AWRA) Conference on Ground Water and Surface Water Interactions. Keystone, Colorado.

“Setting Wetland Rehydration Levels Using Biological Indicators in Bennett Swamp, Volusia County, Florida.” July 1-3 2002. Presentation at American Water Resources Association (AWRA) Conference on Ground Water and Surface Water Interactions. Keystone, Colorado.

“Testing a Managed Wetland Treatment System for Phosphorus Removal in the Florida Everglades.” July 13-15, 1999. Presented at Sixth Wetland Biogeochemistry Symposium, Fort Lauderdale, Florida.

“Construction, Monitoring and Maintenance Issues for Wetland Mitigation Banks.” June 1999. Presented at Second National Mitigation Banking Conference, Atlanta, Georgia, sponsored by Terrene Institute.

“West Palm Beach Regional Mitigation Bank: Mitigation Banking as a Tool for Watershed Restoration.” July 1998. Presented at Watershed Management: Moving from Theory to Implementation. Water Environment Federation.

“Alternative Models for Mitigation Banks.” May 1998. Presented at First National Mitigation Banking Conference, Washington D.C., sponsored by Terrene Institute.



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“Roles of Ecosystem Management and Watershed Management in Restoration Planning and Design.” June 1997. Presented at National Conference on Transportation and Wetlands, sponsored by State of Washington Department of Transportation and the National Highway Transportation Research Board. Tacoma, Washington.

“Wetlands Mitigation Banking”. April 3-7 1995. Presentation at National Interagency Workshop on Wetlands: Technology Advances for Wetland Science. New Orleans, Louisiana. Sponsored by U.S. Army Corps of Engineers Waterways Experiment Station.

“Water Supply Potential and Environmental Benefits of an Everglades Buffer.” April 3-7, 1995. Presentation at National Interagency Workshop on Wetlands: Technology Advances for Wetland Science. New Orleans, Louisiana. Sponsored by U.S. Army Corps of Engineers Waterways Experiment Station.

“Wetlands Succession—What is the Appropriate Paradigm?” September 1989. Presentation to American Water Resources Association (AWRA) Wetlands Symposium. Tampa, Florida.

Publications

Dunn, W., M. Minno, P. Burger, and S. Brown 2008. Development of a modified Kinser-Minno method for assessing the likelihood for harm to native vegetation and lakes in areas with an unconfined Florida aquifer SJRWMD SJ2008-SP 24. St. Johns River Water Management District, Palatka, Florida.

Dunn, B., R. Wycoff, R. Epting, and S. Hall 2006. Minimum Flows and Levels Candidate Site Selection and Prioritization Processes in East Central Florida. Publication SJ2006 SP16. St. Johns River Water Management District, Palatka, Florida.

CH2M HILL (W.J. Dunn). 2005. Preliminary Evaluation Criteria in Support of Minimum Flows and Levels for Sandhill Lakes. Publication SJ2005 SP7. St. Johns River Water Management District, Palatka, Florida.

CH2M HILL (W.J. Dunn). 2005. Water 2020 Wetland Constraints Handbook. Publication SJ2005 SP8. St. Johns River Water Management District, Palatka, Florida.

Dunn, W.J. 2005. Comparative Review of Use of Wetland Constraints in the Water Supply Planning Process. Publication SJ2005 SP20. St. Johns River Water Management District, Palatka, Florida.

CH2M HILL (W.J. Dunn). 2005. Evaluation of Wetland and Lake Constraint Sites in Lake, Orange, Osceola, Seminole and Volusia Counties. Publication SJ2005 SP21. St. Johns River Water Management District, Palatka, Florida.

Dunn, W.J., H. Wilkening, and R. Epting. July 1-3, 2002. Implementing Adaptive Management of Water Resources in the St. Johns River Water Management District. In Proceedings: American Water Resources Association (AWRA) Specialty Conference on Ground Water and Surface Water Interactions. Keystone, Colorado.

R. Epting, Dunn, W.J., and D.S. Stites. July 1-3, 2002. Setting Wetland Rehydration Levels Using Biological Indicators in Bennett Swamp, Volusia County, Florida. In Proceedings: American Water

Resources Association (AWRA) Conference on Ground Water and Surface Water Interactions. Keystone, Colorado.

Dunn, W., and B. Vergara. 2000. Optimization and Decision Modeling for Water Supply Planning in East Central Florida. In Proceedings: American Water Resources Association Annual Conference.

Dunn, W., and E. Olson. 1998. West Palm Beach Regional Mitigation Bank: Mitigation Banking as a Tool for Watershed Restoration. In Proceedings: Watershed Management: Moving from Theory to Implementation. Water Environment Federation, Alexandria, Virginia.

CH2M HILL (W.J. Dunn).1998. Alternative Water Supply Strategies: Estimated Mitigation Costs for Projected Year 2010 Groundwater Withdrawals. Publication SJ 98 SP11. St. Johns River Water Management District, Palatka, Florida.

Wycoff, R., and W.J. Dunn.1999. Review of Established Minimum Flows and Levels for the Wekiva River. Publication SJ99 SP1. St. Johns River Water Management District, Palatka, Florida.

CH2M HILL (W.J. Dunn) 1997. Alternative Water Supply Strategies: Conceptual Design of Wetland Augmentation Systems and Recommendations for Pilot Augmentation Systems. Publication SJ 97-SP37. St. Johns River Water Management District, Palatka, Florida.

CH2M HILL (W.J. Dunn) 1997. Alternative Water Supply Strategies: A Methodology for Evaluating Wetland Augmentation Systems. Publication SJ 97-SP. St. Johns River Water Management District, Palatka, Florida.

CH2M HILL (W.J. Dunn) 1996. Alternative Water Supply Strategies: Wetland Impact, Mitigation, and Planning-Level Cost Estimating Procedure. Publication SJ 96-SP22. St. Johns River Water Management District, Palatka, Florida.

Dunn, W.J., J. Bays, and R. Mishaga. 1995. Wetlands Mitigation Banking. In: Landin, M.C., Editor 1995. Proceedings of the National Interagency Workshop on Wetlands: Technology Advances for Wetland Science. Technical Report, Wetlands Research and Technology Center, U.S. Army Engineers Waterways Experiment Station, Vicksburg, Mississippi. 39180-6199.

Dunn W.J., S. Gong, and T. Strowd. 1995. Water Supply Potential and Environmental Benefits of an Everglades Buffer. In: Landin, M.C., Editor. Proceedings of the National Interagency Workshop on Wetlands: Technology Advances for Wetland Science. Technical Report, Wetlands Research and Technology Center, U.S. Army Engineers Waterways Experiment Station, Vicksburg, Mississippi. 39180-6199.

Mishaga, R., W.J. Dunn, J. Bays, D. King, and P. Scodari. 1994. Expediting Water Projects: Evaluation and Mitigation Banking. Published by American Waterworks Association (AWWA) 6666 West Quincy Ave., Denver, Colorado.

Fox, A., W. Haller, J. Joyce, W. Dunn, and R. Yorton. 1993. Assessment of the Potential for *Hydrilla Verticillata* to Affect the Use of Lake Washington as Potable Water Supply Source. Publication SJ 93-SP9. St. Johns River Water Management District, Palatka, Florida.

Dunn, W.J. 1989. Wetlands Succession—What Is the Appropriate Paradigm? In: Fisk, D.W., Editor. Symposium Proceedings: Wetland Concerns and Successes. American Water Resources Association.



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Baughman, D., R.L Knight, W.J. Dunn, and L. Schwartz. 1989. Use of Forested Wetland in South Carolina for Tertiary Treatment of Municipal Wastewater. In: Davis, F.E., Editor. Proceedings of Conference on Water Laws and Management. American Water Resources Association.

Erwin, K., G.R. Best, W.J. Dunn, and P.M. Wallace. 1985. Marsh and Forested Wetland Reclamation of a Central Florida Phosphate Mine. *Wetlands* 4:87-104.

Dunn, W. J., and G.R. Best. 1983. Enhancing Ecological Succession: Seed Bank Survey of Some Florida Wetlands and Role of Seed Banks in Marsh Reclamation. In: 1983 Symposium on Surface Mining, Hydrology, Sedimentation, and Reclamation. University of Kentucky, Lexington, Kentucky.

Brown, M.T., E.M. Starnes, C. Diamond, W. Dunn, J. Sendzimir, and R. Tighe. 1983. A Wetlands Study of Seminole County: Identification, Evaluation, and Preparation of Development Standards and Guidelines. Technical Report No. 41. Center for Wetlands, University of Florida, Gainesville, Florida.

G.R. Best, W.J Dunn, and P.M. Wallace. 1983. Enhancing Ecological Succession: Growth, Density, and Species Richness of Forest Communities Established from Seed on Amended Overburden Soils. In: 1983 Symposium on Surface Mining, Hydrology, Sedimentation, and Reclamation. University of Kentucky, Lexington, Kentucky.