



# ENVIRONMENTAL RESEARCH & DESIGN, INC.

ENGINEERING # SCIENCE # CHEMISTRY # RESEARCH  
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## RESUME OF

**DR. HARVEY H. HARPER, III, P.E.**  
**President**  
(Revised January 2011)

### **EDUCATION:**

- B.S. Biological Sciences (Limnology), Florida Technological University, 1977
- M.S. Environmental Sciences, University of Central Florida, 1979  
Thesis Title: "Ecological Responses of Lake Eola to Urban Runoff"
- Ph.D. Environmental Engineering, University of Central Florida, 1985  
Dissertation Title: "Fate of Heavy Metals from Highway Runoff in Stormwater Management Systems"

### **PROFESSIONAL REGISTRATION:**

Registered Professional Engineer in State of Florida, Reg. #32595  
Registered Professional Engineer in State of Washington, Reg. #31061  
Florida Engineering Society Certificate of Continued Professional Development, Certificate #1421

### **PROFESSIONAL EXPERIENCE:**

1986-Present:            President            Environmental Research and Design, Inc.  
3419 Trentwood Blvd., Suite 102  
Orlando, Florida 32812

Activities: Water quality engineering exclusively in the areas of environmental chemistry, stormwater management systems, lake management and restoration, hydrology, use of alum for pollutant removal, groundwater pollutant studies, wetlands and sediment chemistry.

1989-1990:            Asst. Professor            Department of Civil and Environmental Engineering  
(Part-Time)            University of Central Florida.

1987-1989:            Instructor            Department of Civil and Environmental Engineering  
(Part-Time)            University of Central Florida.

1978-1987:            Instructor            Department of Civil and Environmental Engineering  
(Full-Time)            University of Central Florida.

## **PROFESSIONAL EXPERIENCE (Continued):**

### **General Teaching Areas**

Environmental Chemistry  
Environmental Biology  
Fluid Mechanics  
Water and Wastewater Treatment  
Air Pollution  
Solid and Hazardous Wastes  
Statistics

### **Specific Courses Taught**

EGN 1380 - Engineering Chemistry I  
EGN 1381 - Engineering Chemistry II  
STA 3032 - Probability and Statistics  
EES 3104 - Environmental Engineering Biology  
EVS 3240 - Water Supply Systems  
ETM 3314 - Hydraulics and Hydrology  
EGN 3353 - Fluid Mechanics  
GEO 3370 - Resource Geography  
EGN 3704 - Engineering and the Environment  
EVS 4220 - Wastewater Treatment Plant Analysis  
ENV 4355 - Solid and Hazardous Wastes  
EVS 4362 - Air Pollution Control  
ENV 4404 - Hydrology and Hydraulics  
ENV 4433 - Water Resources Design  
ENV 4561 - Environmental Engineering Process Design  
EVS 4682 - Solid Waste Management  
EGN 4825 - Environment and Society  
ENV 5615 - Environmental Impact Assessment  
ENV 6519 - Aquatic Chemistry  
ENV 6616 - Receiving Water Impacts

## **PRIMARY RESEARCH ACTIVITIES:**

- Impacts of Groundwater Seepage on Surface Water Systems
- Efficiency and Performance of Stormwater Management Practices
- Response of Freshwater Lakes to Stormwater Runoff
- Inactivation of Phosphorus Release from Lake Bottom Sediments
- Limnological Studies of Lakes in Central Florida
- Development of Algal Bioassay Techniques
- Stormwater Retention/Detention Designs
- Chemical (Alum) Coagulation for Pollutant Removal
- Assimilation and Fate of Stormwater Pollutants in Soil
- Movement & Fate of Heavy Metals in Stormwater Management Systems
- Modeling of Heavy Metal Movement in Groundwater
- Dynamics of Nutrients and Heavy Metals in Freshwater Wetlands
- Use of Alum for Lake Management

## **HONORS / AWARDS:**

1. Richard Coleman Aquatic Resources Award, Florida Lake Management Society, June 2004.
2. 2002 Stormwater Committee Service Award, Florida Water Environment Association, May 6, 2003.
3. Engineer of the Year - Central Florida Region, National Engineers Week, February 18-24, 2001.
4. 1993 Award for Outstanding Technical Achievement (Alum Treatment of Stormwater), Florida Engineering Society.
5. 1993 Award for Outstanding Technical Achievement (Alum Treatment of Stormwater), Central Florida Chapter of the Florida Engineering Society.
6. Elected to Tau Beta Pi, Engineering Honor Society, Florida Delta Chapter, March 14, 1984.
7. Award for outstanding presentation from Environmental Chemistry Section, Florida Academy of Sciences for paper presented on March 24, 1979 titled "Algal Productivity Responses of Lake Eola to Urban Runoff."

## **SPONSORED RESEARCH PROJECTS:**

1. "Characterization of Runoff Quality from Natural Undeveloped Land Uses in Florida," Principal Investigator and Project Director, Florida Department of Environmental Protection, \$150,000, 4/07-12/08.
2. "Evaluation of the Performance Efficiency of a Modified Wet Detention Pond for Enhanced Nitrogen Removal," Principal Investigator and Project Director, Florida Department of Environmental Protection, \$172,500, 8/03-12/08.
3. "Use of Liquified Activated Carbon (LAC) for Sediment Reduction in Lakes," Principal Investigator and Project Director, Lakeland Animal Nutrition, \$35,000, 4/04-4/05.
4. "Evaluation of Current Stormwater Design Criteria within the State of Florida," Principal Investigator and Project Director, Florida Department of Environmental Protection, \$117,460, 8/03-12/04
5. "Lake Okeechobee Tributary Sediment Removal Demonstration Project," Principal Investigator and Project Director, South Florida Water Management District, \$420,000, 9/00-6/04.
6. "Nonpoint Source Model Development and Basin Management Strategies for Lemon Bay," Principal Investigator and Project Director, Southwest Florida Water Management District, \$99,945, 12/01-5/04.
7. "Evaluation of Alternative Stormwater Regulations for Southwest Florida," Principal Investigator and Project Director, Water Enhancement and Restoration Coalition, Inc., \$40,000, 10/02-9/03.
8. "Effectiveness of Stormwater Treatment Systems in the Florida Keys," Principal Investigator and Project Director, Florida Department of Environmental Protection, \$167,995, 5/01-12/02.
9. "Lake Morton Water Quality Diagnostic Evaluation," Principal Investigator and Project Director, City of Lakeland, Florida, \$50,000, 3/01-12/02.
10. "Bradfordville Stormwater Study," Principal Investigator and Project Director, Leon County Florida, \$227,922, 10/98-5/00.

## **SPONSORED RESEARCH PROJECTS (Continued):**

11. "Lake Hancock Water Quality Improvement Project," Principal Investigator and Project Director, Southwest Florida Water Management District, \$100,000, 8/98-10/99.
12. "Performance Evaluation of Dry Detention Stormwater Basins," Principal Investigator and Project Director, Florida Department of Environmental Protection, \$100,000, 2/97-8/98.
13. "East Lake Stormwater Restoration Project," Principal Investigator and Project Director, Hillsborough County, Florida, \$75,000, 6/96-11/97.
14. "Lake Maggiore - Evaluation of Bottom Sediments," Principal Investigator and Project Director, City of St. Petersburg, Florida, \$65,300, 5/94-10/94.
15. "Lake Maggiore Restoration - Stormwater Pre-Treatment Ponds," Principal Investigator and Project Director, City of St. Petersburg, Florida, \$140,000, 7/93-4/94.
16. "Clear Lake Restoration," Principal Investigator and Project Director, Orange County Stormwater Department, \$150,000, 6/93-12/94.
17. "Lake Holden Water Quality and Restoration Study," Principal Investigator and Project Director, Orange County Environmental Protection Department, \$18,000, 10/90-6/92.
18. "Evaluation of Agricultural Impacts on the Indian River Lagoon," Principal Investigator and Project Director, St. Johns River Water Management District, \$80,000, 3/92-3/93.
19. "Performance Evaluation of Detention with Filtration Systems," Principal Investigator and Project Director, St. Johns River Water Management District, \$134,000, 10/90-6/93.
20. "Feasibility of Alum Treatment for Improvement of Water Quality in Megginnis Arm During Sediment Dredging Activities," Principal Investigator and Project Director, Northwest Florida Water Management District, \$15,000, 6/90-1/92.
21. "Long-Term Evaluation of the Lake Ella Alum Injection System," Principal Investigator and Project Director, Florida Department of Environmental Regulation, \$40,000, 1/21/90-11/30/90.
22. "Effectiveness of a Pilot Project to Reduce Nutrient Concentrations in Agricultural Runoff by Chemical Precipitation Using Alum," Principal Investigator and Project Director, Lake County Board of County Commissioners, \$8,430, 4/1/87-1/31/88.
23. "Feasibility of Alum Treatment for Nutrient Reductions in Surface Water Discharges," Principal Investigator and Project Director, Lake County Board of County Commissioners, \$5,000, 9/15/86-2/15/87.
24. "Effects of Wet Detention Basins on Groundwater Quality," Principal Investigator and Project Director, Florida Department of Environmental Regulation, \$105,210, 10/1/86-6/30/88.
25. "Stormwater Treatment by Natural Systems," Principal Investigator and Project Director, Department of Environmental Regulation, \$70,000, 7/1/84-11/30/86.
26. "Best Management Practices," Co-Investigator, Florida Department of Transportation, \$150,000, 1/1/82-6/30/84.
27. "Bottom Sediments - Lake Jackson," Principal Investigator, Florida Department of Environmental Regulation, \$41,175, 6/1/83-8/15/84.

### **SPONSORED RESEARCH PROJECTS (Continued):**

28. "Consequential Species of Heavy Metals in Highway Stormwater Runoff," Co-Investigator, Florida Department of Transportation and Federal Highway Administration, \$50,000, 1/82-6/84.
29. "Phase II - Lake Eola Impacts/Designs," Co-Investigator, U.S. Environmental Protection Agency, \$66,000, 9/81-9/82.
30. "Effects of Bridges on Biological Productivity and Diversity in the Flood Plain," Co-Investigator, State of Florida STAR Grant, \$31,000, 9/30/81-9/30/82.
31. "Lake Toho Study," Co-Investigator, South Florida Water Management District, \$42,000, 6/81-12/81.
32. "Restoration of Lake Eola," Co-Investigator, U.S. Environmental Protection Agency, \$800,000, 1/1/78-9/30/81.
33. "Inactivation of Bottom Sediment Release of Phosphorus," Co-Investigator, Environmental and Industrial Experiment Station, \$30,000, 6/30/79-9/30/80.
34. "Stormwater Management," Co-Investigator, Florida Department of Environmental Regulation, \$35,000, 6/79-6/80.

### **PRESENTATIONS:**

1. "Rainfall, Runoff, and Loadings," Presented at the Florida Engineering Society Stormwater Conference, Lake Mary, FL, December 7, 2010.
2. "Restoration of Lake Holden: A True Success Story Using A Multifaceted Approach to Nutrient Load Reductions," Presented at the 30<sup>th</sup> International Symposium of the North American Lake Management Society, Oklahoma City, OK, November 3-5, 2010.
3. "Reflections on 30 Years of Sediment Inactivation Projects in Florida Lakes – What Have We Learned and Where Do We Go From Here?," Presented at the 30<sup>th</sup> International Symposium of the North American Lake Management Society, Oklahoma City, OK, November 3-5, 2010.
4. "Evolving Science of Nutrient Loading Analyses," Presented at the Conference on Indian River Lagoon. Hosted by Brevard County and held at the Florida Solar Energy Center, Cocoa, FL, October 20, 2010.
5. "Rainfall, Runoff, and Loadings," Presented at the Florida Engineering Society Stormwater Conference, Lake Mary, FL, September 23, 2010.
6. "Restoration of Lake Holden: A True Success Story Using a Multi-Faceted Approach to Nutrient Load Reductions," Presented at the 21st Annual Florida Lake Management Society Conference, Crystal River, FL, June 16, 2010.
7. "Feasibility of Using Alum to Reduce Nutrient Loads to Lake Jesup," Presented at the 21st Annual Florida Lake Management Society Conference, Crystal River, FL, June 15, 2010.
8. "Common Pitfalls in BMP Selection and Implementation," Presented at the 2010 Annual Florida Stormwater Association Conference, Sanibel Harbour, FL, June 9-11, 2010.

## **PRESENTATIONS (Continued):**

9. "Common Pitfalls in BMP Selection and Implementation," Presented at the 19th Annual North American Lake Management Society Southeastern Lakes Management Conference, Winston-Salem, NC, May 6, 2010.
10. "Impacts of Nutrient Limitations on Algal Species in Lakes," Presented at the 33rd Annual Meeting of the Florida Aquatic Plant Management Society, Daytona Beach, FL, October 12, 2009.
11. "Role of Nutrient Limitation in Lake Restoration," Presented at the 20th Annual Conference of the Florida Lake Management Society and the North American Lake Management Society Southeast Regional Conference, Key Largo, FL, June 10, 2009.
12. "Water Quality Responses to Land Use Changes in the Lake Sawyer Drainage Basin – Did Development Improve Water Quality?" Presented at the 20th Annual Conference of the Florida Lake Management Society and the North American Lake Management Society Southeast Regional Conference, Key Largo, FL, June 9, 2009.
13. "Statewide Stormwater Rule Revisions," Presented at the 2009 Green Engineering Seminar: Engineering Florida's Future, sponsored by the Florida Engineering Society, January 15, 2009.
14. "Irrigation with Recycled Wastewater – Good Intentions Gone Awry – Part II," Presented at the Florida Stormwater Association Winter Conference, Tampa, FL, December 5, 2008.
15. "Limitations of the TSI Statistic – When the Data Lie," Presented at the North American Lake Management Society International Symposium, Lake Louise, Canada, November 13, 2008.
16. "Limitations of the TSI Statistic – When the Data Lie," Presented at the 19<sup>th</sup> Annual Conference of the Florida Lake Management Society, Sandestin, FL, June 3, 2008.
17. "Irrigation with Recycled Wastewater – Good Intentions Gone Awry?" Presented at the Florida Stormwater Association Winter Conference, Orlando, FL, December 7, 2007.
18. "Irrigation with Recycled Wastewater – Good Intentions Gone Awry?" presented at the North American Lake Management Society International Symposium, Orlando, FL, November 1, 2007
19. "Current Research and Trends in Alum Treatment of Stormwater Runoff," Presented at the North American Lake Management Society International Symposium, Orlando, FL, November 1, 2007
20. "Stormwater Quality Treatment and Regulation: Where Do We Go From Here?" Presented at the Florida Water Law Conference, Tampa, FL, May 22, 2007.
21. "Current Research and Trends in Alum Treatment of Stormwater Runoff," Presented at the Stormwater Academy 9<sup>th</sup> Biennial Research Conference on Stormwater Research and Watershed Management, Orlando, FL, May 2-3, 2007.
22. "Banana Lake Alum Treatment Project," Presented at the LE/AD Lakes Management Conference on Managing Lakes in Polk County, Lakeland, FL, October 16, 2007.
23. "Sediment Removal Feasibility Study for Lakes May, Shipp, and Lulu," Presented at the LE/AD Lakes Management Conference on Managing Lakes in Polk County, Lakeland, FL, October 16, 2007.
24. "Removal of Nutrients in Stormwater Runoff," Presented at the 2006 FICE/FDOT Design Conference, Orlando, FL, August 2, 2006.

## **PRESENTATIONS (Continued):**

25. "Impacts of Boating Activities and Shoreline Vegetation on Water Quality in the Butler Chain-of-Lakes," Presented at the 17<sup>th</sup> Annual Conference of the Florida Lake Management Society, St. Augustine, FL, June 8, 2006.
26. "Effects of Meteorological Variability on the Performance Efficiency of Dry Retention Systems in Florida," Presented at the 2<sup>nd</sup> Biennial Stormwater Management Research Symposium, Orlando, FL, May 4-5, 2006.
27. "Seasonal and Diurnal Variability in Lake Hancock, an Ultra-Hypereutrophic Lake," Presented at the 25th International NALMS Symposium on Lake Affects/Effects: Exploring the Relationship Between People and Water, Madison, WI, November 9-11, 2005.
28. "Evaluation of Dose Requirements for Alum Sediment Inactivation," Presented at the 16th Annual Conference of the Florida Lake Management Society, Hawk's Kay Resort/Duck Key-Florida Keys, June 6-9, 2005.
29. "Seasonal and Diurnal Variability in Lake Hancock, an Ultra-Hypereutrophic Lake," Presented at the 16th Annual Conference of the Florida Lake Management Society, Hawk's Kay Resort/Duck Key-Florida Keys, June 6-9, 2005.
30. "Effects of Residence Time and Depth on Wet Detention System Performance," Presented at the 8th Biennial Conference on Stormwater Research & Watershed Management, Tampa, FL, April 27-28, 2005.
31. "Comparative Removal Efficiencies of CDS and Baffle Box Units for Removal of Phosphorus in Lake Okeechobee Tributaries," Presented at the 2004 NALMS Conference on Lakes: Habitat for Fish, Habitat for People, Victoria, British Columbia, Canada, November 3-5, 2004.
32. "Use of Gross Pollutant Separators for Removal of Tributary Phosphorus – Lake Okeechobee," Presented at the FSA 2004 Winter Conference on Total Maximum Daily Loads, Orlando, FL, December 1-3, 2004.
33. "Comparative Removal Efficiencies of CDS and TST Units for Removal of Phosphorus in Lake Okeechobee Tributaries," Presented at the 15th Annual Florida Lake Management Society Conference, Tampa, FL, June 7-10, 2004.
34. "Lake Hollingsworth Alum Treatment," Presented at the 15th Annual Florida Lake Management Society Conference, Tampa, FL, June 7-10, 2004.
35. "Effectiveness of Stormwater Treatment Systems in Coastal Areas and the Florida Keys," Presented at the Florida Stormwater Association December Conference on Total Maximum Daily Loads – Technical, Regulatory, and Policy Considerations, Clearwater Beach, FL, December 3-5, 2003.
36. "Chemical and Ecological Impacts of Alum Coagulation," Presented at the 12th Annual Southeast Lakes Management/NALMS/FLMS Conference, Orlando, FL, June 2-5, 2003.
37. "Status of Alum Stormwater Treatment in Florida," Presented at the West Coast Branch ASCE Environmental Management/Water Resources Annual Conference, Tampa, FL, May 6, 2003.
38. "Do Stormwater Management Systems Truly Mitigate the Impacts from new Development?" Presented at the 2002 Southeastern Conference on Stormwater Management, Orlando, FL, June 19-21, 2002.

## **PRESENTATIONS (Continued):**

39. "Significance of Littoral Zone Vegetation and Pond Depth on Wet Detention Pond Performance," Presented at the 7th Biennial Conference on Stormwater Research & Watershed Management, Tampa, FL, May 22-23, 2002.
40. "Pollutant Removal Efficiencies of Common Stormwater Management Systems in Florida," Presented at the Watershed 2002 Specialty Conference, Ft. Lauderdale, FL, February 24-27, 2002.
41. "Management Implications of Revised Hydrologic and Nutrient Budgets for the Winter Park Chain-of-Lakes," Presented at the 21st International Symposium, North American Lake Management Society Conference, Madison, WI, November 7-9, 2001.
42. "Management Implications of Revised Hydrologic and Nutrient Budgets for the Winter Park Chain-of-Lakes," Presented at the Florida Lake Management Society 12th Annual Conference, Tallahassee, FL, May 21-24, 2001.
43. "Chemical Coagulation of Stormwater Runoff," Presented at the Delaware Urban Erosion, Sediment & Stormwater Conference, Newark, DE, October 24-26, 2000.
44. "Impacts of Alum Sediment Inactivation on Internal Recycling and Groundwater Seepage in the Winter Park Chain-of-Lakes," Presented at the Florida Lake Management Society 2000 Annual Conference, Duck Key, Florida, May 22-25, 2000.
45. "Impacts of Alum Sediment Inactivation on Internal Recycling and Groundwater Seepage in the Winter Park Chain-of-Lakes," Presented at the 19th International Symposium of the North American Lake Management Society, Reno, Nevada, December 1-4, 1999.
46. "Performance Evaluation of Dry Detention Stormwater Management Systems," Presented at the 6th Biennial Stormwater Research and Watershed Management Conference, Southwest Florida Water Management District, Tampa, Florida, September 14-17, 1999.
47. "Stormwater Chemistry and Water Quality: Estimating Pollutant Loadings and Evaluation of Best Management Practices for Water Quality Improvements," Presented at the 1999 Stormwater Management: A Designer's Course, Florida Engineering Society, Orlando, Florida, August 26-27, 1999.
48. "Why Lake Restoration Projects Fail," Presented at the 10th Annual Florida Lake Management Society Annual Conference, Safety Harbor, Florida, May 26-28, 1999.
49. "Alum Treatment of Stormwater: The First Ten Years," Presented at the Stormwater and Urban Water Systems Modeling Conference, Toronto, Canada, February 18-19, 1999.
50. "Stormwater Chemistry and Water Quality," Presented at the FWEA Seminar on Stormwater Issues and Approaches for the Next Millennium, Orlando, Florida, December 3, 1998.
51. "Treatment Efficiencies of Stormwater Management Techniques," Presented at the FWEA Seminar on Stormwater Issues and Approaches for the Next Millennium, Orlando, Florida, December 3, 1998.
52. "Stormwater Chemistry and Water Quality", "Estimating Loading Rates," and "Evaluation of Best Management Practices for Water Quality Improvements." Presented at the 1998 Stormwater Management: A Designer's Course, Florida Engineering Society, Tampa, Florida, April 2-3, 1998.

## **PRESENTATIONS (Continued):**

53. "Alum Treatment of Stormwater: The First Ten Years". Presented at the Stormwater and Urban Water Systems Modeling Conference, Toronto, Canada, February 19-20, 1998.
54. "Alum Treatment of Stormwater: An Innovative BMP for Urban Runoff Problems," Presented at the National Conference on Retrofit Opportunities for Water Resource Protection in Urban Environments, Chicago, Illinois, February 11, 1998.
55. "Impacts of Nutrient Inputs from Bird Waste on Selection of Restoration Options for East Lake, Florida", 17th International Symposium of the North American Lake Management Society, Houston, Texas, December 4, 1997.
56. "Stormwater Management as a Solution to Contaminated Runoff", 3rd Annual Florida Remediation Conference, Orlando, Florida, November 13, 1997.
57. "Alum Treatment of Stormwater - The First Ten Years: What Have We Learned and Where Do We Go From Here?", Fifth Biennial Stormwater Research Conference, Tampa, Florida, November 5, 1997.
58. "East Lake Restoration", Environmental Management 97 - Status and Trends, Sponsored by the ASCE West Coast Branch, Tampa, Florida, March 27, 1997.
59. "Alum Treatment of Stormwater - The First Ten Years: What Have We Learned and Where Do We Go From Here?", 16th Annual International Symposium on Lake, Reservoir and Watershed Management (NALMS), Minneapolis/St. Paul, Minnesota, November 14, 1996.
60. "Effects of Groundwater Seepage on Nutrient and Microbiological Inputs to Clear Lake," Seventh Annual Meeting of the Florida Lake Management Society, Ocala, Florida, May 24, 1996.
61. "Effects of Groundwater Seepage from Septic Tanks on Nutrient Loadings and Bacteriological Inputs to Clear Lake," 15th International Symposium on Lake, Reservoir and Watershed Management, North American Lake Management Society, Toronto, Canada, November 10, 1995.
62. "Pollutant Removal Efficiencies for Typical Stormwater Management Systems in Florida," Fourth Biennial Stormwater Research Conference, Southwest Florida Water Management District, October 18, 1995.
63. "Alum Treatment of Stormwater Runoff," 1995 Annual Meeting of the Florida Association of Environmental Professionals, Tampa, Florida, October 13, 1995.
64. "Stormwater Chemistry and Water Quality: Estimating Loading Rates and the Evaluation of Best Management Practices for Water Quality Improvements," 1995 Stormwater Management: A Designer's Course, Florida Engineering Society, Orlando, Florida, September 21, 1995.
65. "Alum Treatment of Stormwater Runoff: Orlando's Lake Dot and Lake Lucerne Systems," 14th International Symposium of the North American Lake Management Society, Orlando, Florida, November 3, 1994.
66. "Evaluation of Sediment Loadings from Highway Land Use," 1994 FDOT Design Conference, Orlando, Florida, August 11, 1994.
67. "Evaluation of a Direct Methodology for Estimating Phosphorus Inactivation Requirements in Lake Sediments," 5th Annual Florida Lake Management Society Symposium, Orlando, Florida, April 28, 1994.

## **PRESENTATIONS (Continued):**

68. "Sediment Inactivation of Lake Davis: Success or Failure?" 13th International Symposium of the North American Lake Management Society, Seattle, Washington, December 2, 1993.
69. "Treatment Efficiencies of Detention with Filtration Systems," Third Biennial Stormwater Research Conference, Sponsored by the Southwest Florida Water Management District; Tampa, Florida, October 7-8, 1993.
70. "Alum Treatment of Stormwater Runoff," 1993 FDOT Design Conference, Orlando, Florida, August 10, 1993.
71. "Applications and Limitations of Alum for Lake Management," Fourth Annual Symposium of the Florida Lake Management Society, Deland, Florida, April 14, 1993.
72. "Stability of Phosphorus and Metal-Sediment Associations in Alum Treated Lakes," 12th Annual International Symposium of the North American Lake Management Society, Cincinnati, Ohio, November 5, 1992.
73. "Evaluation of the Use of Alum for Treatment of Stormwater Runoff," First Annual Southeast Regional Lake Management Conference, Marietta, Georgia, March 19, 1992.
74. "Long-Term Evaluation of the Lake Ella Alum Stormwater Treatment System," 11th Annual International Symposium on Lake and Reservoir Management, Denver, Colorado, November 15, 1991.
75. "Groundwater Effects of Stormwater Management Systems," Florida Stormwater Research Workshop, Sponsored by the Southwest Florida Water Management District, Tampa, Florida, October 2, 1991.
76. "Evaluation of Alum Treatment Systems," 3rd Annual Meeting of the Florida Lake Management Society, Orlando, Florida, September 13, 1991.
77. "Alum Injections," Water Resources Forum of the East Central Florida Branch - Florida Section ASCE, Orlando, Florida, May 17, 1991.
78. "Chemistry of Stormwater Pollutants," SpecCon Technical Skills Workshop, Tampa, Florida, April 16, 1991.
79. "Case Study of the Lake Dot Alum Stormwater Treatment System," Florida Engineering Society Stormwater Quality Short Course, Orlando, Florida, October 12, 1990.
80. "Innovative Best Management Practices for Stormwater Runoff," Florida Engineering Society Stormwater Quality Short Course, Orlando, Florida, October 11, 1990.
81. "Stormwater Pollutants and Their Removal," Florida Engineering Society Stormwater Quality Short Course, Orlando, Florida, October 11, 1990.
82. "Removal Processes for Stormwater Treatment in Hardwood Wetlands," ASCE Technical Seminar: Wetlands - How They Impact Development, Tampa, Florida, March 21, 1990.
83. "Long-Term Evaluation of the Lake Ella Alum Injection Stormwater Treatment System," 9th Annual International Symposium on Lake and Reservoir Management, Austin, Texas, November 10, 1989.

## **PRESENTATIONS (Continued):**

84. "Use of Alum as a Management Tool for Florida Lakes," 1st Annual Meeting of the Florida Lake Management Society, Winter Park, Florida, October 14, 1989.
85. "Dynamics of Phosphorus and Heavy Metal Uptake in a Hardwood Wetland Receiving Stormwater Runoff," American Water Resources Association Symposium on Wetlands: Concerns and Successes, Tampa, Florida, September 20, 1989.
86. "Review of Alum System Performance on Lake Ella and Lake Dot," 4th Annual Florida Lake Management Conference: Stormwater Management and Lake Quality Indicators, Winter Haven, Florida, June 15, 1989.
87. "Best Management Practices for Management of Stormwater Quality," Florida ASCE - West Coast Branch, Stormwater Technical Seminar: Water Quality - What Is Its Future?, Tampa, Florida, May 10, 1989.
88. "Restoration of an Urban Lake: The Cleanup and Management of Stormwater Inputs to Lake Ella in Tallahassee," Florida Environmental Health Association, Wakulla Springs, Florida, July 20, 1988.
89. "Lake Restoration of Lake Ella by Alum Treatment of Urban Stormwater Inputs," 7th International Symposium of the North American Lake Management Society, Orlando, Florida, November 6, 1987.
90. "Restoration of Lake Ella by Alum Treatment of Urban Stormwater Inputs," 7th International Symposium of the North American Lake Management Society, Orlando, Florida, November 6, 1987.
91. "Groundwater Effects of Stormwater Management Systems," ASCE National Conference on Environmental Engineering, Orlando, Florida, July 9, 1987.
92. "Stormwater Treatment in Wetlands," Florida Department of Environmental Regulation Stormwater Workshop, Orlando, Florida, June 18, 1987.
93. "Impacts of Stormwater Management Systems on Shallow Groundwater," Florida Department of Environmental Regulation Stormwater Workshop, Orlando, Florida, June 18, 1987.
94. "Impacts of Stormwater Management Systems Receiving Highway Runoff on Shallow Groundwaters," 14th Annual Conference of the ASCE Division of Water Resources Planning and Management, Kansas City, Missouri, March 16, 1987.
95. "Inactivation and Precipitation of Urban Runoff by Alum Injection in Stormsewers," 6th Annual International Symposium on Lake and Reservoir Management: Influences of Nonpoint Source Pollutants and Acid Precipitation, Portland, Oregon, November 7, 1986.
96. "Effects of Inputs of Stormwater Runoff on the Stability of Metal-Sediment Associations in a Hardwood Wetland," Conference on Research and Applications of Aquatic Plants for Water Treatment and Resource Recovery, Orlando, Florida, July 23, 1986.
97. "An Alum Injection System for Retrofitting Urban Stormsewers to Enhance Water Quality," 9th Annual Meeting of the Florida Association for Water Quality Control, Tampa, Florida, May 19, 1986.

## **PRESENTATIONS (Continued):**

98. "Stability of Metal-Sediment Associations in a Southern Hardwood Wetland Receiving Urban Runoff," 9th Annual Symposium on Freshwater Wetlands and Wildlife - Perspectives on Natural, Managed, and Degraded Ecosystems, Charleston, South Carolina, March 25, 1986.
99. "Effectiveness of Detention/Retention Basins for Removal of Heavy Metals in Highway Runoff," EPA Stormwater and Water Quality Model Users Group Meeting, Orlando, Florida, March 24, 1986.
100. "Treatment Efficiencies for Residential Stormwater Runoff in a Hardwood Wetland," 5th Annual International Symposium on Applied Lake and Watershed Management, Lake Geneva, Wisconsin, November 15, 1985.
101. "Sediment Nutrient Exchange and Algal Productivity in Megginnis Arm of Lake Jackson," International Symposium on Lake and Reservoir Management, McAfee, New Jersey, October 18, 1984.
102. "Efficiency of Roadside Swales in Removing Heavy Metals from Highway Associated Nonpoint Source Runoff," 20th Annual American Water Resources Association Conference and Symposium on Options for Reaching Water Quality Goals, Washington, D.C., August 15, 1984.
103. "Lake Eola Restoration Project for Management of Stormwater Pollution in an Urban Lake," Florida American Public Works Association 1984 Convention and Equipment Show, Orlando, Florida, May 3, 1984.
104. "An Investigation into the Importance of Sediment Nutrient Exchange on Algal Productivity in Megginnis Arm of Lake Jackson," 48th Annual Meeting of the Florida Academy of Science, Boca Raton, Florida, March 30, 1984.
105. "Fate of Heavy Metals in Stormwater Management Systems," International Symposium on Lake and Reservoir Management, Knoxville, Tennessee, October 19, 1984.
106. "Detention for Quality Control," 19th Annual American Water Resources Association Conference on Analysis and Management of Land Drainage and Flood Waters, San Antonio, Texas, October 12, 1983.
107. "Reuse of Water Treatment Sludges for Improvement of Reservoir Quality," 1983 American Water Works Association Annual Conference, Las Vegas, Nevada, June 7, 1983.
108. "Stormwater Treatment Around Lake Eola," Florida Department of Environmental Regulation, Stormwater Training Workshop, Leesburg, Florida, May 26, 1983.
109. "Removal of Heavy Metals and Nutrients in Detention Ponds and Roadside Swales," Florida Department of Environmental Regulation, Stormwater Training Workshop, Leesburg, Florida, May 25, 1983.
110. "Fate of Pollutants from Highway Runoff in Roadside Swales," 7th Annual Conference on Environmental Sciences and Engineering, Gainesville, Florida, May 21, 1983.
111. "Restoration of Lake Eola," 2nd Annual Meeting of the North American Lake Management Society, Vancouver, British Columbia, October 28, 1982.
112. "Stormwater Control Around Lake Eola," Stormwater Quality Control Seminar, Orlando, Florida, November 4, 1981.

## **PRESENTATIONS (Continued):**

113. "Stormwater Treatment by Diversion to Underground Systems," 1981 National Conference on Environmental Engineering, Atlanta, Georgia, July 10, 1981.
114. "Changes in Water Quality Due to Stormwater Runoff in Lake Eola," 45th Annual Meeting of the Florida Academy of Sciences, Orlando, Florida, May 1, 1981.
115. "Impact of Water Treatment Sludges on Benthic Organisms in Shallow Lakes," 45th Annual Meeting of the Florida Academy of Sciences, Orlando, Florida, May 1, 1981.
116. "Retention/Detention Stormwater Designs," 1980 Annual Civil Engineering Conference, Hollywood, Florida, October 31, 1980.
117. "Ecological Responses of Lake Eola to Urban Runoff," 44th Annual Meeting of the Florida Academy of Sciences, Tampa, Florida, March 27, 1980.
118. "Productivity Responses of Lake Eola Water to Urban Runoff," Urban Stormwater and Combined Sewer Overflow - Impact on Receiving Waterbodies National Conference, Orlando, Florida, November 26, 1979.
119. "Responses of *Chlorella* and *Selenastrum* to Urban Runoff in Lake Eola," 43rd Annual Meeting of the Florida Academy of Sciences, Miami Beach, Florida, March 31, 1979.

## **PUBLICATIONS:**

1. Harper, H.H. and Baker, D.M. (2007). "Evaluation of Current Stormwater Design Criteria within the State of Florida." Final Report submitted to the Florida Department of Environmental Protection for Agreement SO108.
2. Harper, H.H. (2007). "Current Research and Trends in Alum Treatment of Stormwater Runoff." In Proceedings of the 3<sup>rd</sup> Biennial Stormwater Management Research Symposium, Orlando, Florida, May 2-3, 2007.
3. Harper, H.H. and Baker, D.M. (2006). "Effects of Meteorological Variability on the Performance Efficiency of Dry Retention Systems in Florida," In Proceedings of the 2<sup>nd</sup> Biennial Stormwater Management Research Symposium, Orlando, Florida, May 4-5, 2006.
4. Harper, H.H. (2005). "Use of Alum in Lake Management: Managing the Associated Risks," Lakeline, Vol. 25, No. 3, pp. 13-16, Fall 2005.
5. Harper, H.H. (2005). "Evaluation of Dose Requirements for Alum Sediment Inactivation," Proceedings of the 16th Annual Conference of the Florida Lake Management Society, Duck Key, Florida, June 6-9, 2005.
6. Harper, H.H. (2005). "Seasonal and Diurnal Variability in Lake Hancock, an Ultra-Hypereutrophic Lake," Proceedings of the 16th Annual Conference of the Florida Lake Management Society, Duck Key, Florida, June 6-9, 2005.
7. Harper, H.H. (2005). "Effects of Residence Time and Depth on Wet Detention System Performance." Proceedings of the 8th Biennial Conference on Stormwater Research & Watershed Management, Tampa, Florida, April 27-28, 2005.
8. Harper, H.H.; Villapando, R.; Zhao, Y.; and Aziz, T. (2004). "Comparative Removal Efficiencies of CDS and TST Units for Removal of Phosphorus in Lake Okeechobee Tributaries." Proceedings of the 15th Annual Florida Lake Management Society Conference, Tampa, Florida, June 7-10, 2004.

## **PUBLICATIONS (Continued):**

9. Harper, H.H. and Medley, G. (2004). "Lake Hollingsworth Alum Treatment." Proceedings of the 15th Annual Florida Lake Management Society Conference, Tampa, Florida, June 7-10, 2004.
10. Harper, H.H. (2004). "Lake Okeechobee Tributary Sediment Removal Demonstration Project." (2004). Final Report prepared for the South Florida Water Management District for Contract No. C-11205.
11. Harper, H.H. and Baker, D.M. (2004). "Nonpoint Source Model Development and Basin Management Strategies for Lemon Bay." Final Report prepared for the Southwest Florida Water Management District.
12. Harper, H.H. (2003). "Chemical and Ecological Impacts of Alum Coagulation." Proceedings of the 12th Annual Southeast Lakes Management/NALMS/FLMS Conference, Orlando, Florida, June 2-5, 2003.
13. Harper, H.H.; Baker, D.M.; and Harper, C. (2003). "Performance Evaluation of the Palm Bay Basin 7 Wet Detention Pond." Final Report prepared for the City of Palm Bay, Florida.
14. Harper, H.H.; Herr, J.L.; and Baker, D.M. (2002). "Lake Morton Water Quality Diagnostic Evaluation." Final Report prepared for the City of Lakeland, Lakes and Stormwater Division, Lakeland, Florida.
15. Harper, H.H. (2002). "Significance of Littoral Zone Vegetation and Pond Depth on Wet Detention Pond Performance," Proceedings of the 7th Biennial Conference on Stormwater Research & Watershed Management, Tampa, Florida, May 22-23, 2002.
16. Harper, H.H. (2002). "Pollutant Removal Efficiencies of Common Stormwater Management Systems in Florida," Proceedings of the Watershed 2002 Specialty Conference, Ft. Lauderdale, Florida, February 24-27, 2002.
17. Harper, H.H.; Baker, D.M.; and Harper, C. (2002). "Effectiveness of Stormwater Treatment Systems in the Florida Keys." Final Report prepared for the Florida Department of Environmental Protection for Contract No. WM797.
18. Harper, H.H. (2001). "Management Implications of Revised Hydrologic and Nutrient Budgets for the Winter Park Chain-of-Lakes," Proceedings of the 21st International Symposium, North American Lake Management Society Conference, Madison, Wisconsin, November 7-9, 2001.
19. Harper, H.H. and J.L. Herr. (2000). "Chemical Coagulation of Stormwater Runoff: An Economic Alternative for Reducing NPS Impacts." Proceedings of the Delaware Urban Erosion, Sediment & Stormwater Conference, Newark, Delaware, October 24-26, 2000.
20. Harper, H.H. and Herr, J.L. (2000). "Reducing Nonpoint Source Pollutant Loadings to Tampa Bay Using Chemical Treatment." Proceedings of the Water Environment Federation 73rd Annual Conference & Exposition on Water Quality and Wastewater Treatment, Anaheim, California, October 14-18, 2000.
21. Harper, H.H. and Herr, J.L. (2000). "End-of-Pipe Stormwater Treatment Systems for the Removal of Gross Pollutants." Proceedings of the Southeast Stormwater Conference 2000, Orlando, Florida, June 28-30, 2000.
22. Harper, H.H. (2000). "Impacts of Alum Sediment Inactivation on Internal Recycling and Groundwater Seepage in the Winter Park Chain-of-Lakes." Proceedings of the Florida Lake Management Society 2000 Annual Conference, Duck Key, Florida, May 22-25, 2000.

## **PUBLICATIONS (Continued):**

23. Harper, H.H. (1999). "Impacts of Alum Sediment Inactivation on Internal Recycling and Groundwater Seepage in the Winter Park Chain-of-Lakes." Proceedings of the 19th International Symposium, North American Lake Management Society, Reno, Nevada, December 1-4, 1999.
24. Harper, H.H.; Herr, J.L.; and Baker, D.M. (1999). "Performance Evaluation of Dry Detention Stormwater Management Systems." Proceedings of the 6th Biennial Stormwater Research and Watershed Management Conference, Southwest Florida Water Management District, Tampa, Florida, September 14-17, 1999.
25. Harper, H.H. (1999). "Pollutant Removal Efficiencies for Typical Stormwater Management Systems in Florida." Florida Water Resources Journal, pp. 22-26, September 1999.
26. Harper, H.H. (1999). "Stormwater Chemistry and Water Quality: Estimating Pollutant Loadings and Evaluation of Best Management Practices for Water Quality Improvements." Proceedings of the 1999 Stormwater Management: A Designer's Course, Florida Engineering Society, Orlando, Florida, August 26-27, 1999.
27. Harper, H.H. (1999). "Why Lake Restoration Projects Fail." Proceedings of the 10th Annual Florida Lake Management Society Annual Conference, Safety Harbor, Florida, May 26-28, 1999.
28. Harper, H.H. (1998). "Stormwater Chemistry and Water Quality." Proceedings of the FWEA Stormwater Issues and Approaches for the Next Millennium Seminar, Orlando, Florida, December 3, 1998.
29. Harper, H.H. (1998). "Treatment Efficiencies of Stormwater Management Techniques." Proceedings of the FWEA Stormwater Issues and Approaches for the Next Millennium Seminar, Orlando, Florida, December 3, 1998.
30. Herr, J.L., and Harper, H.H. (1998). "Evaluation of Treatment Alternatives for a Regional Stormwater Retrofit Facility in Largo, Florida." Proceedings of the Seventh Annual Southeast Lakes Management Conference, Orlando, Florida, April 15-18, 1998.
31. Harper, H.H. (1998). "Stormwater Chemistry and Water Quality: Estimating Pollutant Loadings and Evaluation of Best Management Practices for Water Quality Improvements." Proceedings of the 1998 Stormwater Management: A Designer's Course, Florida Engineering Society, Tampa, Florida, April 2-3, 1998.
32. Harper, H.H.; Herr, J.L.; and Livingston, E.H. (1998). "Alum Treatment of Stormwater: The First Ten Years." New Applications in Modeling Urban Water Systems - Monograph 7 - Proceedings of the Conference on Stormwater and Related Modeling: Management and Impacts, Toronto, Canada, February 19-20, 1998.
33. Harper, H.H.; Herr, J.L.; and Livingston, E.H. (1998). "Alum Treatment of Stormwater: An Innovative BMP for Urban Runoff Problems." Proceedings of the National Conference on Retrofit Opportunities for Water Resource Protection in Urban Environments, Chicago, Illinois, February 11, 1998. EPA/625-R-99/002 (July 1999).
34. Harper, H.H.; Herr, J.L.; and Livingston, E.H. (1997). "Alum Treatment of Stormwater - The First Ten Years: What Have We Learned and Where Do We Go From Here?" Proceedings of the 5th Biennial Stormwater Research Conference, Southwest Florida Water Management District, Tampa, Florida, November 5-7, 1997.

## **PUBLICATIONS (Continued):**

35. Herr, J.L., and Harper, H.H. (1997). "The Evaluation and Design of an Alum Stormwater Treatment System to Improve Water Quality in Lake Maggiore, St. Petersburg, Florida." Proceedings of the ASCE Florida/South Florida Section Annual Meeting, Clearwater, Florida, September 18-20, 1997.
36. Herr, J.L., and Harper, H.H. (1997). "Improving Surface Water Quality with Chemical Treatment of Stormwater Runoff." Proceedings of the 18th Annual Conference, Illinois Water Environment Federation, Rockford, Illinois, March 18-20, 1997.
37. Harper, H.H. (1995). "Pollutant Removal Efficiencies for Typical Stormwater Management Systems in Florida." Proceedings of the 4th Biennial Stormwater Research Conference, Southwest Florida Water Management District, Clearwater, Florida, October 18-20, 1995.
38. Harper, H.H. (1995). "Stormwater Chemistry and Water Quality: Estimating Loading Rates and the Evaluation of Best Management Practices for Water Quality Improvements." Proceedings of the 1995 Stormwater Management Course, Florida Engineering Society, Orlando, Florida, September 21, 1995.
39. Harper, H.H. (1994). "Stormwater Loading Rate Parameters for Central and South Florida." In-House Report. Revised October 1994.
40. Herr, J.L. and Harper, H.H. (1994). "Chemical Treatment of Stormwater Runoff." Proceedings of WEFTEC '94, the 67th Annual Water Environment Federation Conference and Exposition, Chicago, Illinois, October 11, 1994.
41. Livingston, E.H.; Harper, H.H.; and Herr, J.L. (1994). "The Use of Alum Injection to Treat Stormwater." Proceedings of the 2nd Annual Conference on Soil and Water Management for Urban Development, Sydney, Australia, September 1994.
42. Harper, H.H. and Miracle, D. (1993). "Treatment Efficiencies of Detention with Filtration Systems." Proceedings of the 3rd Biennial Stormwater Research Conference, Tampa, Florida, October 7-8, 1993.
43. Harper, H.H. (1993). "Stormwater Chemistry and Water Quality: Estimating Loading and Assimilation Rates." Proceedings of the 1993 Stormwater Management: A Designer's Course," Florida Engineering Society, Orlando, Florida, September 29-30, 1993.
44. Harper, H.H. and Herr, J.L. (1993). "Evaluation and Analysis of Nonpoint Source Loadings from Agricultural Activities in the Indian River Lagoon Basin." Final Report to the St. Johns River Water Management District for Project No. 92W130, September 1993.
45. Harper, H.H. and Herr, J.L. (1993). "Treatment Efficiencies of Detention with Filtration Systems." Final Report to the St. Johns River Water Management District for Project No. 90B103, August 1993.
46. Harper, H.H., and Herr, J.L. (1992). "Stormwater Treatment Using Alum." Public Works Magazine, Vol. 123, pp. 47-49, 89, September 1992.
47. Harper, H.H. (1992). "Estimation of Stormwater Loading Rate Parameters for Central and South Florida." In-House Report. Revised June 25, 1992.
48. Harper, H.H. (1992). "Long-Term Evaluation of the Use of Alum for Treatment of Stormwater Runoff." Proceedings of the First Annual Southeastern Lakes Management Conference, Marietta, Georgia, March 19-21, 1992.

## **PUBLICATIONS (Continued):**

49. Harper, H.H. (1991). "Long-Term Performance Evaluation of the Alum Stormwater Treatment System at Lake Ella." Final Report to the Florida Department of Environmental Regulation for Project No. WM339, 200 pages.
50. Harper, H.H. (1990). "Effects of Stormwater Management Systems on Groundwater Quality." Final Report to the Florida Department of Environmental Regulation for Project #WM190, 529 pages.
51. Harper, H.H. (1990). "Stormwater Pollutants and Their Removal." Proceedings of the Stormwater Quality Short Course, Orlando, Florida.
52. Harper, H.H. (1990). "Restoration of Lake Dot Using an Improved Alum Stormwater Treatment Process." Proceedings of the Stormwater Quality Short Course, Orlando, Florida.
53. Harper, H.H. (1990) "Feasibility of Alum Treatment for Improvement of Water Quality in Megginnis Arm During Sediment Dredging Activities." Final Report to the Northwest Florida Water Management District, Lake Jackson SWIM Project.
54. Harper, H.H. (1990). "Estimates of Nonpoint Source Loading Rate Parameters for Various Land Uses in the Tampa Bay Watershed." Final Report to the Southwest Florida Water Management District, Tampa Bay SWIM Project.
55. Murphy, M.P.; Harper, H.H.; and Livingston, E.H. (1987). "Operational Results from the Restoration of Lake Eola." Proceedings of the 1987 ASCE Specialty Conference on Environmental Engineering, Orlando, Florida, pp. 702-707, July 1987.
56. Harper, H.H.; Yousef, Y.A.; and Wanielista, M.P. (1987). "Groundwater Effects of Stormwater Management Systems." Proceedings of the 1987 ASCE Specialty Conference on Environmental Engineering, Orlando, Florida, July 1987.
57. Harper, H.H. (1987). "Stormwater Treatment by Natural Systems." Final Report to the Florida Department of Environmental Regulation for STAR Project #84-026, Tallahassee, Florida, 697 pages.
58. Harper, H.H. (1987). "Feasibility of Alum Treatment for Nutrient Reductions in Surface Water Discharges." Final Report to the Lake County Pollution Control Board, 27 pages, February 1987.
59. Harper, H.H.; Wanielista, M.P.; Fries, B.M.; and Livingston, E.H. (1986). "Effects of Inputs of Stormwater Runoff on the Stability of Metal-Sediment Associations in a Hardwood Wetland." Proceedings of the Conference on Research and Applications of Aquatic Plants for Water Treatment and Resource Recovery, Orlando, Florida, July 20-24, 1986.
60. Yousef, Y.A.; Wanielista, M.P.; Harper, H.H.; and Hvitved-Jacobsen, T. (1986). "Effectiveness of Retention/Detention Ponds for Control of Contaminants in Highway Runoff." Bureau of Environment, Florida Department of Transportation, FL-ER-34-86, 138 pages.
61. Harper, H.H. (1985). "Fate of Heavy Metals from Highway Runoff in Stormwater Management Systems." Ph.D. Dissertation – University of Central Florida, Orlando, Florida, December 1985.
62. Yousef, Y.A.; Wanielista, M.P.; and Harper, H.H. (1985). "Swale Hydraulics," Proceedings of the Conference on Stormwater Management - An Update, University of Central Florida Environmental Systems Engineering Institute, Orlando, Florida, July 1985.

## **PUBLICATIONS (Continued):**

63. Yousef, Y.A.; Wanielista, M.P.; and Harper, H.H. (1985). "Fate of Pollutants in Retention/Detention Ponds." Proceedings of the Conference on Stormwater Management - An Update, University of Central Florida Environmental Systems Engineering Institute, Orlando, Florida, July 1985.
64. Harper, H.H.; Yousef, Y.A.; and Wanielista, M.P. (1985). "Effectiveness of Detention/Retention Basins for Removal of Heavy Metals in Highway Runoff." Proceedings of the EPA Stormwater and Water Quality Model Users Group Meeting, Orlando, Florida, March 1985.
65. Harper, H.H.; Wanielista, M.P.; Baker, D.M.; Fries, B.M.; and Livingston, E.H. (1985). "Treatment Efficiencies for Residential Stormwater Runoff in a Hardwood Wetland." Lake and Reservoir Management Proceedings of the 5th Annual Conference and International Symposium on Applied Lake and Watershed Management, Lake Geneva, Wisconsin, pp. 351-356, November 13-16, 1985.
66. Yousef, Y.A.; Wanielista, M.P.; and Harper, H.H. (1985). "Removal of Highway Contaminants by Roadside Swales." Surface Drainage and Highway Runoff Pollutants, Transportation Research Record 1017, Transportation Research Board, Washington, D.C., pp. 62-72.
67. Yousef, Y.A.; Harper, H.H.; Wiseman, L.P.; and Bateman, J.M. (1985). "Consequential Species of Heavy Metals in Highway Runoff." Surface Drainage and Highway Runoff Pollutants, Transportation Research Record 1017, Transportation Research Board, Washington, D.C., pp. 56-61.
68. Yousef, Y.A.; Wanielista, M.P.; Harper, H.H.; Pearce, D.B.; and Tolbert, R.D. (1985). "Best Management Practices - Removal of Highway Contaminants by Roadside Swales." Report FL-ER-30-85, Bureau of the Environment, State of Florida Department of Transportation, 172 pages.
69. Harper, H.H. (1984). "Sediment Nutrient Exchange and Algal Productivity in Megginnis Arm of Lake Jackson." Proceedings of the 4th Annual Conference and International Symposium of the North American Lake Management Society, McAfee, New Jersey, pp. 275-281.
70. Harper, H.H.; Yousef, Y.A.; and Wanielista, M.P. (1984). "Efficiency of Roadside Swales in Removing Heavy Metals from Highway Associated Nonpoint Source Runoff." Proceedings of the 20th Annual American Water Resources Association Conference and Symposium on Options for Reaching Water Quality Goals, Washington, D.C.
71. Yousef, Y.A.; Wanielista, M.P.; Hvitved-Jacobsen, T.; and Harper, H.H. (1984). "Fate of Heavy Metals in Stormwater Runoff from Highway Bridges." The Science of the Total Environment, **33**, pp. 233-244.
72. Harper, H.H. and Wanielista, M.P. (1984). "An Investigation into Alum Applications for Sediment Nutrient Inactivation in Megginnis Arm, Lake Jackson." Final Report to the Florida Department of Environmental Regulation, Tallahassee, Florida, 194 pages.
73. Harper, H.H.; Yousef, Y.A.; and Wanielista, M.P. (1984). "Fate of Heavy Metals in Stormwater Management Systems." Lake and Reservoir Management, EPA 440/5/84-001, U.S. Environmental Protection Agency, Office of Water Regulations and Standards, Washington, D.C., pp. 329-334.
74. Wanielista, M.P.; Yousef, Y.A.; and Harper, H.H. (1983). "Hydrology/ Hydraulics of Swales." Proceedings of the Workshop on Open Channel and Culvert Hydraulics, Orlando, Florida, September 1983.

## **PUBLICATIONS (Continued):**

75. Harper, H.H.; Yousef, Y.A.; and Wanielista, M.P. (1983). "Reuse of Water Treatment Sludges for Improvement of Reservoir Water Quality." Proceedings of the 1983 American Water Works Association Annual Conference, Las Vegas, Nevada, pp. 503-516, June 5-9, 1983.
76. Yousef, Y.A.; Wanielista, M.P.; and Harper, H.H. (1983). "Impact of Watersheds on Lake Quality." Lake Restoration, Protection and Management, EPA 440/5-83-001, U.S. Environmental Protection Agency, Washington, D.C., pp. 271-275.
77. Harper, H.H.; Wanielista, M.P.; and Yousef, Y.A. (1983). "Restoration of Lake Eola." Lake Restoration, Protection and Management, EPA 440/5-83-001, U.S. Environmental Protection Agency, Washington, D.C., pp. 13-22.
78. Yousef, Y.A.; Wanielista, M.P.; Harper, H.H.; and Skene, E.T. (1983). "Impact of Bridging on Floodplains." Wetlands, Floodplains, Erosion and Stormwater Pumping, Transportation Research Report 948, Transportation Research Board, Washington, D.C., pp. 26-30.
79. Harper, H.H.; Wanielista, M.P.; Yousef, Y.A.; and DiDomenico, D. (1982). "Lake Eola Restoration: Water Quality Background and Stormwater Management Practices." Final Report submitted to the Florida Department of Environmental Regulation, September 1982, 74 pages.
80. Yousef, Y.A.; Wanielista, M.P.; Harper, H.H.; Skene, E.T.; and Bateman, N. (1982). "Effects of Bridging on Biological Productivity and Diversity in the Floodplain." FL-ER-22-82, Bureau of the Environment, State of Florida Department of Transportation, 122 pages.
81. Yousef, Y.A.; Wanielista, M.P.; Harper, H.H.; and Christopher, J.E. (1982). "Management of Drainage Systems from Highway Bridges for Pollution Control." Hydrology and Hydraulics: Water, Noise and Air Quality, Transportation Research Record 896, National Academy of Sciences, Washington, D.C., pp. 51-54.
82. Wanielista, M.P. and Harper, H.H. (1982). "Stormwater Management for Lake Tohopekaliga Watersheds." Final Report to the Florida Department of Environmental Regulation, 174 pages, June 1982.
83. Wanielista, M.P. and Harper, H.H. (1981). "Stormwater Control Around Lake Eola." Proceedings of the Stormwater Quality Control Seminar, Orlando, Florida.
84. Harper, H.H.; Wanielista, M.P.; and Yousef, Y.A. (1981). "Stormwater Treatment by Diversion to Underground Systems." Proceedings of the 1981 National Conference on Environmental Engineering, Atlanta, Georgia, pp. 596-603, July 8-10, 1981.
85. Wanielista, M.P.; Yousef, Y.A.; and Harper, H.H. (1981). "Detention with Effluent Filtration for Stormwater Management." Proceedings of the 2nd International Conference on Urban Stormwater Drainage, University of Illinois, Urbana, Illinois, June 1981.
86. Yousef, Y.A.; Wanielista, M.P.; and Harper, H.H. (1981). "Impact of Stormwater Runoff on Lake Eola Water Quality." Proceedings of the 2nd International Conference on Urban Stormwater Drainage, University of Illinois, Urbana, Illinois, June 1981.
87. Harper, H.H. and Yousef, Y.A. (1981). "Inactivation of Anaerobic Release of Phosphorus by Water Treatment Sludges." Proceedings of the 13th Annual Mid-Atlantic Industrial Waste Conference, Newark, Delaware, June 13, 1981.

## **PUBLICATIONS (Continued):**

88. Yousef, Y.A.; Harper, H.H.; and Wanielista, M.P. (1981). "Inactivation of Lake Sediment Release of Phosphorus." EIES Project #11-1699-034, University of Central Florida, Orlando, FL, January 1981.
89. Harper, H.H.; Yousef, Y.A.; and Wanielista, M.P. (1980). "Productivity Responses of Lake Eola Water to Urban Runoff." Urban Stormwater and Combined Sewer Overflow - Impacts on Receiving Waterbodies, EPA 600/9-80-056, U.S. Environmental Protection Agency, Office of Research and Development, Cincinnati, OH, pp. 341-370.
90. Harper, H.H. and Wanielista, M.P. (1980). "Retention/Detention Stormwater Design." Proceedings of the 1980 Annual Civil Engineering Conventions, Hollywood, Florida, October 31, 1980.

## **SEMINARS / SHORT COURSES CONDUCTED:**

1. "Windermere Stormceptor BMP Evaluation." Florida Stormwater Association 2010 Winter Conference, Tampa, FL, December 1-3, 2010.
2. "Florida Unified Statewide Stormwater Rule – What, Why, How, and When?" American Society of Landscape Architects-Florida Chapter (FLASLA) Workshop, Gainesville, FL, June 23, 2010.
3. "Water Quality Monitoring, Data Analysis, and Interpretation." 21<sup>st</sup> Annual Conference of the Florida Lake Management Society, Crystal River, FL, June 14, 2010.
4. "Compilation, Analysis, and Interpretation of Environmental Data." 20<sup>th</sup> Annual Conference of the Florida Lake Management Society and the North American Lake Management Society Southeast Regional Conference, Key Largo, FL, June 8, 2009.
5. "Stormwater Chemistry and Water Quality." FES 2007 Stormwater Management: A Designer's Course, Orlando, FL, September 3, 2007, 1 hour.
6. "BMPs – Effectiveness and Selection." FES 2007 Stormwater Management: A Designer's Course, Orlando, FL, September 3, 2007, 1 hour.
7. "Nutrient Management." 26th International Symposium of the North American Lake Management Society, Indianapolis, IN, November 7, 2006, 8 hours.
8. "Open Channel Hydraulics." FES 2006 Stormwater Management: A Designer's Course, Orlando, FL, October 25, 2006, 0.5 hours.
9. "Stormwater Chemistry and Water Quality." FES 2006 Stormwater Management: A Designer's Course, Orlando, FL, October 26, 2006, 1.5 hours.
10. "Open Channel Hydraulics." FES 2006 Stormwater Management: A Designer's Course, Orlando, FL, September 7, 2006, 0.5 hours.
11. "Stormwater Chemistry and Water Quality." FES 2006 Stormwater Management: A Designer's Course, Orlando, FL, September 8, 2006, 1.5 hours.
12. "Nutrient Management Methods." 17th Annual Conference of the Florida Lake Management Society, St. Augustine, FL, June 5, 2006, 4 hours.

## **SEMINARS / SHORT COURSES CONDUCTED (Continued):**

13. "Nutrient Management Methods." 16th Annual Conference of the Florida Lake Management Society, Duck Key, FL, June 6, 2005, 4 hours.
14. "Open Channel Hydraulics". FES 2005 Stormwater Management Workshop – A Designer's Course, 2nd Edition. January 24-25, 2005, 1 hour.
15. "Stormwater Chemistry and Water Quality". FES 2005 Stormwater Management Workshop – A Designer's Course, 2nd Edition. January 24-25, 2005, 2 hours.
16. "Open Channel Hydraulics". FES 2004 Stormwater Management Workshop – A Designer's Course. December 2-3, 2004, 1 hour.
17. "Stormwater Chemistry and Water Quality". FES 2004 Stormwater Management Workshop – A Designer's Course. December 2-3, 2004, 2 hours.
18. "Nutrient Management Methods." 15th Annual Florida Lake Management Society Conference, Tampa, FL, June 7, 2004, 4 hours.
19. "Water Quality Training Workshop." Sponsored by the U.S. Environmental Protection Agency, Fort Myers, FL, August 22, 2003, 4 hours.
20. "Sanitary Engineering - Wastewater." ASCE YMF PE Review Course, Orlando, FL, September 8, 2003, 3 hours.
21. "Sanitary Engineering - Water Supplies." ASCE YMF PE Review Course, Orlando, FL, September 2, 2003, 3 hours.
22. "Advanced Hydraulics." ASCE YMF PE Review Course, Orlando, FL, August 25, 2003, 3 hours.
23. "Introduction to Hydraulics." ASCE YMF PE Review Course, Orlando, FL, August 18, 2003, 3 hours.
24. "Developing a Lake and Pond Watershed Management Plan," 12th Annual Southeast Lakes Management Society/NALMS/FLMS Conference, Orlando, FL, June 2, 2003, 3 hours.
25. "Development and Implementation of Best Management Practices," 12th Annual Southeast Lakes Management Society/NALMS/FLMS Conference, Orlando, FL, June 2, 2003, 3 hours.
26. "Status of Alum Stormwater Treatment in Florida," ASCE Environmental Management/ Water Resources Annual Conference, Tampa, FL, May 6, 2003, 1 hour.
27. "Sanitary Engineering - Wastewater." ASCE YMF PE Review Course, Orlando, FL, September 9, 2002, 3 hours.
28. "Sanitary Engineering - Water Supplies." ASCE YMF PE Review Course, Orlando, FL, September 3, 2002, 3 hours.
29. "Advanced Hydraulics." ASCE YMF PE Review Course, Orlando, FL, August 26, 2002, 3 hours.
30. "Introduction to Hydraulics." ASCE YMF PE Review Course, Orlando, FL, August 20, 2002, 3 hours.
31. "Stormwater Chemistry and Water Quality," 2001 Florida Engineering Society, Stormwater Management: A Designer's Course, September 22, 2001, 1 hour.

## **SEMINARS / SHORT COURSES CONDUCTED (Continued):**

32. "Best Management Practice Effectiveness," 2001 Florida Engineering Society, Stormwater Management: A Designer's Course, September 22, 2001, 1 hour.
33. "Erosion and Sediment Control," 2001 Florida Engineering Society, Stormwater Management: A Designer's Course, September 22, 2001, 1 hour.
34. "Sanitary Engineering - Water Supplies." Florida Engineering Society PE Review Course, University of Central Florida, March 18, 2002, 3 hours.
35. "Advanced Hydraulics." Florida Engineering Society PE Review Course, University of Central Florida, March 11, 2002, 3 hours.
36. "Introduction to Hydraulics." Florida Engineering Society PE Review Course, University of Central Florida, March 4, 2002, 3 hours.
37. "Stormwater Chemistry and Water Quality." Conducted at the 2001 Stormwater Management: A Designer's Course; Sponsored by FES, Orlando, FL, September 22, 2001, 1 hour.
38. "Best Management Practice Effectiveness." Conducted at the 2001 Stormwater Management: A Designer's Course; Sponsored by FES, Orlando, FL, September 22, 2001, 1 hour.
39. "Erosion and Sediment Control." Conducted at the 2001 Stormwater Management: A Designer's Course; Sponsored by FES, Orlando, FL, September 22, 2001, 1 hour.
40. "Stormwater Best Management Practices (BMPs)." Conducted at the Florida Lake Management Society 12th Annual Conference, Tallahassee, FL, May 21, 2001, 1.5 hours.
41. "Environmental Statistics." Conducted at the Florida Lake Management Society 12th Annual Conference, Tallahassee, FL, May 21, 2001, 1.5 hours.
42. "End-of-Pipe Stormwater Treatment." Conducted at the APWA Florida Chapter 2001 Annual Meeting and Trade Show, Orlando, FL, April 10, 2001, 1 hour.
43. "Pollution Removal Efficiencies." Conducted at the APWA Florida Chapter 2001 Annual Meeting and Trade Show, Orlando, FL, April 10, 2001, 1 hour.
44. "Sanitary Engineering - Wastewater," Florida Engineering Society PE Review Course, University of Central Florida, March 26, 2001, 3 hours.
45. "Sanitary Engineering - Water Supplies," Florida Engineering Society PE Review Course, University of Central Florida, March 19, 2001, 3 hours.
46. "Advanced Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, March 5, 2001, 3 hours.
47. "Introduction to Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 26, 2001, 3 hours.
48. "Selection and Optimization of Stormwater BMPs." Conducted at the North American Lake Management Society 20<sup>th</sup> Internal Symposium, Miami, FL, November 11, 2000, 3 hours.
49. "Sanitary Engineering - Wastewater," ASCE-YMF Review Course for the Professional Engineer Examination; Orlando, FL, September 5, 2000, 3 hours.

## **SEMINARS / SHORT COURSES CONDUCTED (Continued):**

50. "Sanitary Engineering - Water Supplies," ASCE-YMF Review Course for the Professional Engineer Examination; Orlando, FL, August 28, 2000, 3 hours.
51. "Advanced Hydraulics," ASCE-YMF Review Course for the Professional Engineer Examination; Orlando, FL, August 21, 2000, 3 hours.
52. "Introduction to Hydraulics," ASCE-YMF Review Course for the Professional Engineer Examination; Orlando, FL, August 7, 2000, 3 hours.
53. "Environmental Statistics." Conducted at the Florida Lake Management Society 2000 Annual Meeting; May 22, 2000, 3 hours.
54. "Selection of Stormwater BMPs." Conducted at the Florida Lake Management Society 2000 Annual Meeting; May 22, 2000, 3 hours.
55. "Sanitary Engineering - Wastewater," Florida Engineering Society PE Review Course, University of Central Florida, February 27, 2000, 3 hours.
56. "Sanitary Engineering - Water Supplies," Florida Engineering Society PE Review Course, University of Central Florida, February 20, 2000, 3 hours.
57. "Advanced Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 13, 2000, 3 hours.
58. "Introduction to Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 6, 2000, 3 hours.
59. "Stormwater Chemistry and Water Quality," 1999 Stormwater Management: A Designer's Course; Sponsored by FES; Orlando, FL, August 26, 1999, 3 hours.
60. "Erosion and Sediment Control," 1999 Stormwater Management: A Designer's Course; Sponsored by FES; Orlando, FL, August 26, 1999, 3 hours.
61. "Sanitary Engineering - Wastewater," ASCE-YMF Review Course for the Professional Engineer Examination; Orlando, FL, August 30, 1999, 3 hours.
62. "Sanitary Engineering - Water Supplies," ASCE-YMF Review Course for the Professional Engineer Examination; Orlando, FL, August 23, 1999, 3 hours.
63. "Advanced Hydraulics," ASCE-YMF Review Course for the Professional Engineer Examination; Orlando, FL, August 16, 1999, 3 hours.
64. "Introduction to Hydraulics," ASCE-YMF Review Course for the Professional Engineer Examination; Orlando, FL, August 9, 1999, 3 hours.
65. "Sanitary Engineering - Wastewater," Florida Engineering Society PE Review Course, University of Central Florida, February 22, 1999, 3 hours.
66. "Sanitary Engineering - Water Supplies," Florida Engineering Society PE Review Course, University of Central Florida, February 15, 1999, 3 hours.
67. "Advanced Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 8, 1999, 3 hours.

## **SEMINARS / SHORT COURSES CONDUCTED (Continued):**

68. "Introduction to Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 1, 1999, 3 hours.
69. "Sanitary Engineering - Wastewater," ASCE-YMF Review Course for the Professional Engineer Examination; Orlando, FL, August 24, 1998, 3 hours.
70. "Sanitary Engineering - Water Supplies," ASCE-YMF Review Course for the Professional Engineer Examination; Orlando, FL, August 17, 1998, 3 hours.
71. "Advanced Hydraulics," ASCE-YMF Review Course for the Professional Engineer Examination; Orlando, FL, August 10, 1998, 3 hours.
72. "Introduction to Hydraulics," ASCE-YMF Review Course for the Professional Engineer Examination; Orlando, FL, August 3, 1998, 3 hours.
73. "Phosphorus Inactivation and Removal," 7th Annual Southeastern Lakes Management Conference, Orlando, FL, April 18, 1998, 3 hours.
74. "Stormwater Chemistry and Water Quality: Estimating Pollutant Loadings and Evaluation of Best Management Practices for Water Quality Improvements," 1998 Stormwater Management: A Designer's Course; Sponsored by FES; Tampa, FL, April 2-3, 1998, 3 hours.
75. "Sanitary Engineering - Wastewater," Florida Engineering Society PE Review Course, University of Central Florida, February 16, 1998, 3 hours.
76. "Sanitary Engineering - Water Supplies," Florida Engineering Society PE Review Course, University of Central Florida, February 9, 1998, 3 hours.
77. "Advanced Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 2, 1998, 3 hours.
78. "Introduction to Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, January 26, 1998, 3 hours.
79. "Sanitary Engineering - Wastewater," Florida Engineering Society PE Review Course, University of Central Florida, February 24, 1997, 3 hours.
80. "Sanitary Engineering - Water Supplies," Florida Engineering Society PE Review Course, University of Central Florida, February 17, 1997, 3 hours.
81. "Advanced Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, January 27, 1997, 3 hours.
82. "Introduction to Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, January 20, 1997, 3 hours.
83. "Sanitary Engineering - Wastewater," Florida Engineering Society PE Review Course, University of Central Florida, February 26, 1996, 3 hours.
84. "Sanitary Engineering - Water Supplies," Florida Engineering Society PE Review Course, University of Central Florida, February 19, 1996, 3 hours.
85. "Advanced Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, January 29, 1996, 3 hours.

## **SEMINARS / SHORT COURSES CONDUCTED (Continued):**

86. "Introduction to Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, January 22, 1996, 3 hours.
87. "Sanitary Engineering - Wastewater," Florida Engineering Society PE Review Course, University of Central Florida, February 27, 1995, 3 hours.
88. "Sanitary Engineering - Water Supplies," Florida Engineering Society PE Review Course, University of Central Florida, February 20, 1995, 3 hours.
89. "Advanced Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, January 30, 1995, 3 hours.
90. "Introduction to Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, January 23, 1995, 3 hours.
91. "Sanitary Engineering - Wastewater," Florida Engineering Society PE Review Course, University of Central Florida, February 28, 1994, 3 hours.
92. "Sanitary Engineering - Water Supplies," Florida Engineering Society PE Review Course, University of Central Florida, February 21, 1994, 3 hours.
93. "Advanced Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 14, 1994, 3 hours.
94. "Introduction to Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 7, 1994, 3 hours.
95. "Stormwater Chemistry and Water Quality: Estimating Loading and Assimilation Rates," 1993 FES Stormwater Management Short Course, Presented by the Florida Engineering Society, Orlando, Florida, September 30, 1993, 2 hours.
96. "Sanitary Engineering - Wastewater," Florida Engineering Society PE Review Course, University of Central Florida, March 1, 1993, 3 hours.
97. "Sanitary Engineering - Water Supplies," Florida Engineering Society PE Review Course, University of Central Florida, February 22, 1993, 3 hours.
98. "Advanced Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 15, 1993, 3 hours.
99. "Introduction to Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 8, 1993, 3 hours.
100. "Innovative Stormwater Treatment," Central Florida Chapter of the Florida Engineering Society Environmental Concerns Meeting, Orlando, Florida, November 8, 1992, 1 hour.
101. "Sanitary Engineering - Wastewater," Florida Engineering Society PE Review Course, University of Central Florida, March 2, 1992, 3 hours.
102. "Sanitary Engineering - Water Supplies," Florida Engineering Society PE Review Course, University of Central Florida, February 24, 1992, 3 hours.
103. "Advanced Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 17, 1992, 3 hours.

## **SEMINARS / SHORT COURSES CONDUCTED (Continued):**

104. "Introduction to Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 10, 1992, 3 hours.
105. "Stormwater Chemistry and Water Quality: Estimating Loading and Assimilation Rates," 1991 Stormwater Management: A Designer's Course, Presented by the Florida Engineering Society, Orlando, Florida, September 25, 1991, 1 hour.
106. "Alum Treatment of Stormwater," 1991 Stormwater Management: A Designer's Course, Presented by the Florida Engineering Society, Orlando, Florida, September 24, 1991, 1 hour.
107. "Sanitary Engineering - Wastewater," Florida Engineering Society PE Review Course, University of Central Florida, March 16, 1991, 3 hours.
108. "Sanitary Engineering - Water Supplies," Florida Engineering Society PE Review Course, University of Central Florida, March 9, 1991, 3 hours.
109. "Advanced Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, March 2, 1991, 3 hours.
110. "Introduction to Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 25, 1991, 3 hours.
111. "Sanitary Engineering - Wastewater," Florida Engineering Society PE Review Course, University of Central Florida, February 26, 1990, 3 hours.
112. "Sanitary Engineering - Water Supplies," Florida Engineering Society PE Review Course, University of Central Florida, February 19, 1990, 3 hours.
113. "Advanced Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 12, 1990, 3 hours.
114. "Introduction to Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 5, 1990, 3 hours.
115. "Sanitary Engineering - Wastewater," Florida Engineering Society PE Review Course, University of Central Florida, March 20, 1989, 3 hours.
116. "Sanitary Engineering - Water Supplies," Florida Engineering Society PE Review Course, University of Central Florida, March 13, 1989, 3 hours.
117. "Advanced Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, March 6, 1989, 3 hours.
118. "Introduction to Hydraulics," Florida Engineering Society PE Review Course, University of Central Florida, February 27, 1989, 3 hours.
119. "Florida Lake Ecology," Presented at the 7th International Symposium of the North American Lake Management Society, November 7, 1987, Orlando, Florida, 4 hours.
120. "Introduction to Lake Ecology and Management," Presented at the 7th International Symposium of the North American Lake Management Society, November 3, 1987, Orlando, Florida, 4 hours.
121. "Hydraulics II," given at the FDOT Engineering Review Course, Deland, Florida, October 4, 1988, 4 hours.
122. "Hydraulics I," given at the FDOT Engineering Review Course, Deland, Florida, September 27, 1988, 4 hours.

## **CONTINUING EDUCATION:**

1. Short Course: "Principles of Geotechnical Engineering." Engineer Educators, February 24, 2009, 4 hours.
2. Workshop: "Laws, Rules and Ethics for Professional Engineers." FSA 2006 Winter Conference, Orlando, Florida, November 29, 2006, 4 hours.
3. Short Course: "Laws, Rules, and Ethics for Professional Engineers." FSA 2004 Winter Conference, Orlando, Florida, December 1, 2004, 4 hours.
4. Workshop: "Internal Phosphorus Loading: Its Effect on Lake Water Quality, its Determination, Quantification and Prediction, and Remediation Options." Sponsored by the North American Lake Management Society, Victoria, British Columbia, Canada, November 2, 2004, 8 hours.
5. "Internal Phosphorus Loading." Sponsored by the North American Lake Management Society, Mashantucket, Connecticut, November 4, 2003, 8 hours.
6. Workshop: "Basins." Sponsored by the American Society of Civil Engineers; New Orleans, Louisiana, January 20-21, 2000, 16 hours.
7. Workshop: "CE-QUAL-W-2 Model for Lakes and Reservoirs." Reno, Nevada, November 30, 1999, 8 hours.
8. Short Course: "1998 Stormwater Management: A Designer's Course." Tampa, Florida, April 2-3, 1998, 16 hours.
9. Workshop: "Phosphorus Inactivation and Interception." Minneapolis, Minnesota, November 13, 1996, 8 hours.
10. Workshop: "Stormwater Management Modeling with the U.S. EPA SWMM4 Model, PCSWMM4 and Shells." Toronto, Canada, February 19-21, 1996, 24 hours.
11. Workshop: "Water Analysis Simulation Program (WASP)." Athens, Georgia, June 26-30, 1995, 32 hours.
12. Short Course: "1991 Stormwater Management: A Designer's Course." Orlando, Florida, September 24-25, 1991, 16 hours.
13. Short Course: "Lake Water Quality Assessment and Modeling II." Springfield, Massachusetts, November 10, 1990, 8 hours.
14. Short Course: "Stormwater Quality." Orlando, Florida, October 11-12, 1990, 12 hours.
15. Short Course: "Lake Water Quality Assessment and Modeling I." Austin, Texas, November 11, 1989, 8 hours.
16. Short Course: "Subsurface Monitoring Technology." University of Wisconsin - Extension, September 20-21, 1982, 20 hours.
17. Short Course: "Lake Restoration Technology." University of Wisconsin -Extension, October 12-13, 1981, 20 hours.

## **PROFESSIONAL MEMBERSHIP:**

Member, North American Lake Management Society (NALMS)  
Member, American Water Resources Association (AWRA)  
Member, American Water Resources Association, Florida Chapter  
Member, Florida Lake Management Society (FLMS)  
Member, Florida Engineering Society  
Member, National Society of Professional Engineers  
Member, Florida Stormwater Association