



FLORIDA ASSOCIATION for WATER QUALITY CONTROL

May 17, 1987

Welcome to the 10th Annual Conference of the Florida Association for Water Quality Control. This year's Conference promises to live up to our reputation in presenting top quality technical presentations in a relaxed, friendly atmosphere.

For your convenience, this Program is divided into the following sections:

SECTION I is the Technical Program and Meeting Agenda. The Technical Presentations are grouped into the following sessions:

1. Ground Water
2. Surface Water
3. Quality Assurance

SECTION II is Abstracts and Resumes of our Technical Speakers. This is interesting and impressive information.

SECTION III lists our Special Keynote Speaker and Moderators. We thank these people for taking time from their busy schedules to take part in our Conference.

SECTION IV is information on this year's Short Course on Underground Storage Tanks.

SECTION V lists the Companies participating in this year's EXPO. Please stop by to see their exhibits - we really appreciate their participation.

SECTION VI lists all the FAMQC Science Fair Award Winners. There were 66 Awards given this year!

SECTION VII is a special 10 Year History of FAMQC. This lists all the people involved with FAMQC since 1977.

SECTION VIII is a list of all Officers, Chairpersons and Resource People. These are the people who worked all year to make this Conference possible. Many thanks to them and their employers for their support.

ENJOY THE CONFERENCE!

Sincerely,

Deborah A. Rothenberger

Deborah A. Rothenberger
1986/87 Chairperson

***I. TECHNICAL PROGRAM
AND MEETING AGENDA***

**FLORIDA ASSOCIATION FOR
WATER QUALITY CONTROL
MAY 17, 18, 19, 1987 TECHNICAL PROGRAM AND MEETING AGENDA**

Sunday, May 17

12:30- 5:30 p.m.	Golf Tournament
1:00- 5:00 p.m.	Tennis Tournament
4:30- 6:30 p.m.	Registration
7:00- 9:00 p.m.	Opening Cocktail Social, Courtesy of Pembroke Laboratory, S&ME, Inc.

Monday, May 18

7:30- 8:00 p.m.	Registration
8:00- 8:15 p.m.	Welcome by FAWQC Chairperson Deborah A. Rothenberger, IMC New Wales Operations

SESSION I-GROUNDWATER-Moderator: Scott Benyon, District Manager, Florida Department of Environmental Regulation

8:15- 8:45 a.m.	Reverse Osmosis	William J. Conlon, P.E., Senior Project Manager Post, Buckley, Schuh, & Jernigan, Inc.
8:45- 9:15 a.m.	Volatile Organics Contamination and Well Field Protection-The Deerfield Beach Perspective	Gary E. Eichler, CPG, Senior Hydrogeologist, CH2M Hill
9:15- 9:45 a.m.	G-1 Aquifer Protection Status	Howard L. Rhodes, P.E., Division Director, Florida Department of Environmental Regulation
9:45-10:15 a.m.	Break	
10:15-10:45 a.m.	Liner Comparisons	John Garlanger, Ph.D., P.E., Vice President, Ardaman & Associates, Inc.
10:45-11:15 a.m.	Secondary Standards	William D. Preston, Esquire, Hopping Boyd Green & Sams
12:00- 1:30 p.m.	Luncheon & Annual Business Meeting	Keynote Speaker: Dale H. Twachtmann, Secretary Florida Department of Environmental Regulation

SESSION II-SURFACE WATER-Moderator: John Wodraska, Executive Director, South Florida Water Management District

2:00- 2:30 p.m.	Toxicity Testing Requirements in NPDES Permits in Florida	Marshall Hyatt, Environmental Scientist, Environmental Protection Agency
2:30- 3:15 p.m.	Wetlands Mitigation Rules	Gary Stevens, Esquire, Dean & Gonsky, P.A. Randall L. Armstrong, Division Director, Florida Department of Environmental Regulation
3:15- 3:45 p.m.	Break	
3:45- 4:15 p.m.	An Introduction to Water Quality Based Effluent Limitation Analysis	Steven L. Palmer, Division Director, Florida Department of Environmental Regulation
4:15- 5:00 p.m.	Conserv II Water Reuse Project	Salvatore D'Angelo, P.E., Assistant Managing Engineer, Boyle Engineering Corporation
		Mygnon Evans, Esquire, Vice President, Florida Citrus Mutual
1:30- 4:30 p.m.	Short Course: Underground Storage Tanks	(Registrants only-runs concurrent with Session II)
5:45- 6:45 p.m.	Cocktail Hour, Courtesy Ardaman & Associates, Inc. and Holland & Knight	
6:45- p.m.	Luau, Poolside	

SESSION III-QUALITY ASSURANCE-Moderator: George Barsom, Sc.D., President, Environmental Science and Engineering, Inc.

9:00- 9:30 a.m.	Quality Assurance Plans	Carolyn Lewis, Environmental Administrator Florida Department of Environmental Regulation
9:30-10:00 a.m.	Legal Implications of QA Plans	Thomas J. Patka, Esquire, Holland & Knight
10:00-10:30 a.m.	Break	
10:30-11:00 a.m.	Commercial Lab View of QA Plans	Tyrone R. Smith, Ph.D., Vice President, Orlando Laboratories, Inc.
11:00-11:30 a.m.	Consultant View of QAPP & QACC	J. Geoffrey Leech, P.E., S&ME, Inc.
11:30-12:00 a.m.	Panel Discussion	
12:00-12:15 p.m.	Concluding Statements	G. Greg Williams, ERM-South, Inc.
1:00- 4:00 p.m.	Short Course: Underground Storage Tanks	(Registrants Only)

II. TECHNICAL SPEAKERS

FLORIDA ASSOCIATION FOR WATER QUALITY CONTROL

GUEST SPEAKERS

MR. RANDALL L. ARMSTRONG

Division Director
Division of Environmental Permitting
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

MR. WILLIAM J. CONLON, P.E.

Senior Project Manager
Post, Buckley, Schuh, & Jernigan
6326 Presidential Court
Ft. Myers, Florida 33907

MR. SALVATORE D'ANGELO, P.E.

Assistant Managing Engineer
Boyle Engineering
320 East South Street
Orlando, Florida 32801

MR. GARY E. EICHLER, CPG

Senior Hydrogeologist
CH2M Hill
550 Fairway Drive, Suite 205
Deerfield Beach, Florida 33441

MS. MYGNON EVANS, ESQUIRE

Florida Citrus Mutual
Post Office Box 89
Lakeland, Florida 33802

MR. JOHN GARLANGER, PH.D., P.E.

Ardaman & Associates, Inc.
8008 South Orange Avenue
Orlando, Florida 32809

MR. MARSHALL HYATT

Environmental Scientist
Environmental Protection Agency
Facilities Performance Branch
Water Management Division
345 Courtland Street, N.E.
Atlanta, Georgia 30365

MR. J. GEOFFREY LEECH, P.E.

Senior Environmental Engineer
S&ME, Inc.
370 South North Lake Boulevard
Suite 1028
Altamonte Spring, Florida 32701

MS. CAROLYN S. LEWIS

Environmental Administrator
Bureau of Water Quality Management
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32301

MR. STEVEN L. PALMER

Environmental Supervisor
Bureau of Water Quality Management
Department of Environmental Regulation
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32301

MR. THOMAS J. PATKA, J.D., PH.D.

Holland & Knight
Post Office Drawer BW
Lakeland, Florida 33802

MR. WILLIAM PRESTON, ESQUIRE

Hopping Boyd Green & Sams
Suite 420, First Florida Bank Building
Post Office Box 6526
Tallahassee, Florida 32314

MR. HOWARD L. RHODES, P.E.

Director, Division of Environmental Programs
Florida Department of Environmental Regulation
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32301

MR. TYRON R. SMITH, PH.D.

Vice President
Orlando Laboratories, Inc.
Post Office Box 19127
Orlando, Florida 32814

MR. CHARLES G. STEVENS, Esquire

Law Offices of Blain & Cone, P.A.
202 Madison Street
Tampa, Florida 33602

ABSTRACTS AND BIOGRAPHICAL SKETCHES (In Order of Presentation)

REVERSE OSMOSIS

By: Mr. William J. Conlon, P.E., Post, Buckley, Schuh, & Jernigan

This presentation explains osmosis and reverse osmosis and covers the early history and development of membranes. An overview of desalination in Florida and the effectiveness of the desalination process will be discussed. Emerging new technologies - nanofiltration and ultra low pressure, operating costs, energy consumption, and cost reduction methods will be covered. The presentation includes slides of actual reverse osmosis plants, plant buildings, and reverse osmosis applications.

William J. Conlon is a Senior Project Manager for Post, Buckley, Schuh & Jernigan, Inc., consulting engineers. He graduated from Florida International University with a B.S. in Environmental Systems Technology. He is a registered engineer in the State of Florida. Mr. Conlon is responsible for the design and management of engineering projects for municipal, industrial and private sector clients. His experience spans 30 years covering the gamut of water and wastewater treatment. His principal work area or forte is in reverse osmosis and other membrane processes. He is a member of the American Water Works Association, the International Desalination Association, and the National Water Supply and Improvement Association.

VOLATILE ORGANICS COMPOUND CONTAMINATION AND WELLFIELD PROTECTION THE DEERFIELD PERSPECTIVE

By: Mr. Gary E. Eichler, C.P.G., Senior Hydrogeologist, ^{changed} CH2M Hill and Mr. Monte Essen, Water Plant Supervisor, City of Deerfield Beach, FL

While conducting annual, routine sampling and analyses on treated water from the City of Deerfield Beach, Florida, the volatile organic compound ethylene dibromide (EDB) was discovered in the distribution system. Concentrations exceeded the maximum contaminant levels. Further sampling in the wellfield confirmed that City Well No. 17 was contaminated with EDB at concentrations as high as 10.0 ug/l. During the Contamination Assessment Plan efforts, the source of EDB was found to be a nearby maintenance facility that had underground fuel tanks (leaded gasoline contains EDB as an additive). These tanks had been used in the past to store and mix pesticides for application to a nearby golf course (EDB was used on golf courses for nematode control until banned in the early 1980s). The City has taken the lead in assessing the situation and will soon undertake remediation/aquifer restoration in the West Wellfield.

Gary E. Eichler has 13 years of experience in Florida groundwater resources. He is currently the Water Resources and Industrial Processes Division Manager for the CH2M Hill Deerfield Beach office. He has managed more than 80 projects related to groundwater contamination in Florida and throughout the continental U.S. and Alaska. He is presently project manager for the Deerfield Beach, West Wellfield, contamination efforts. He received a Bachelor of Science in Construction and Geology from the Syracuse University and a Master of Science in Geology, minoring in Civil Engineering from the University of Florida.

AQUIFER PROTECTION STATUS

By: Mr. Howard L. Rhodes, P.E., Florida Department of Environmental Regulation

The topic of ground water protection around wellheads has been surrounded by significant controversy for the past year. This presentation describes the background of G-1, what G-1 means and how it is proposed to be applied. The rule has been challenged and is subject to Administrative Hearing Officer review. Assuming the rule is sustained, the presentation will tell the general direction of G-1 implementation over the next several years.

Howard L. Rhodes received both his BCE and MSCE from Auburn University. He is a Registered Professional Engineer in the State of Florida. He served as a Captain in the U.S. Army (2 years as Environmental Health Engineer in U.S. Army Medical Service Corps) and participated in the Harvard University Program for Senior Managers in Government. Mr. Rhodes joined the Florida Department of Pollution Control, subsequently the Florida Department of Environmental Regulation, in 1969. He has held the following positions with the Department; Chief, Bureau of Permitting; Chief, Construction Grants Program; Chief, Bureau of Wastewater Management and Grants; Deputy Director, Water and Special Programs, Division of Environmental Programs; and Director, Division of Environmental Programs since 1983.

LINER COMPARISONS

By: John E. Garlanger, Ph.D., P.E., Ardaman & Associates, Inc.

The following types of liner systems have been designed and tested by the author's firm: compacted natural clay; compacted sand-bentonite clay mix, *in situ* clay with slurry wall side liner, synthetic membrane side liner, and compacted clay side liner, waste phosphatic clay with synthetic membrane side liner; and synthetic membrane (HDPE and PVC). Laboratory and field data on the hydraulic characteristics of each system will be discussed. Recommendations based on the author's experience will be made for installing these types of liner systems.

John E. Garlanger is a principal in the Orlando office of Ardaman & Associates, Inc. Dr. Garlanger received his B.S., M.S., and Ph.D. in Civil Engineering from the University of Illinois. After graduation he spent one year as a Fellow at the Norwegian Geotechnical Institute in Oslo, Norway. Subsequently, Dr. Garlanger joined the Civil Engineering Faculty of the Massachusetts Institute of Technology.

Since joining Ardaman & Associates, Inc. in 1973, Dr. Garlanger has been actively involved as a consultant on the geotechnical and hydrological aspects of many large residential, commercial, and industrial land development projects. A large part of his practice involves the siting design, construction, and monitoring of liquid and solid waste disposal facilities. Many of these projects have involved the use of liner and leachate collection facilities.

SECONDARY STANDARDS

By: Mr. William D. Preston, Esquire, Hopping Boyd Green & Sams

This presentation will cover the purpose and scope of Secondary Drinking Water Standards including the history of consideration as "maximum contamination levels" and a comparison of primary vs. secondary drinking water standards. Also discussed will be the DER rationale for extending the Secondary Standard compliance deadline. The monitoring and data collection efforts made to determine the applicability of the Secondary Standards, including the Florida Electric Power Coordinating Group study (FCG) will be reviewed. An update will be given on current developments concerning the Secondary Standards including the DER report to the ERC. Finally, the potential relief mechanisms including legislation and regulatory "lifeboats" will be explained.

William D. Preston graduated from Rochester Institute of Technology, Rochester, New York, B.S. Biological Sciences, 1969, and Florida State University, Tallahassee, Florida, J.D., 1975. Partner, Hopping Boyd Green & Sams, Tallahassee, Florida. Staff Director, Senate Natural Resources and Conservation Committee, Florida Legislature, 1976-79. Active participant in all Florida Department of Environmental Regulation solid/hazardous waste/groundwater rulemaking matters and activities and Florida environmental legislation since 1975. **Author:** "Lust in the Heart of Florida; Regulation of Pollutant Storage Tanks," Florida State University, Journal of Land Use & Environmental Law, Volume 1:321 (1985). **Co-Author:** "Florida's New Groundwater Regulations," The Florida Bar Journal, May 1983; "The Water Quality Assurance Act of 1983 — Florida's "Great Leap Forward" into Groundwater Protection and Hazardous Waste Management," Florida State University Law Review, 1983.

TOXICITY TESTING REQUIREMENTS IN NPDES PERMITS IN FLORIDA

By: Mr. Marshall Hyatt, Environmental Scientist, Environmental Protection Agency

This presentation includes a review of the need for toxicity testing, and the rational policies and State Water Quality Standards upon which such testing is based. The actual testing requirements, how they are derived, and the type facilities they are applied to will be explained. New fractionation procedures EPA has developed to help permittees isolate the class of compound which may be causing effluent toxicity will be discussed.

Marshall Hyatt is an Environmental Scientist with the Environmental Protection Agency. Mr. Marshall has a B.S. Degree in Environmental Engineering Science from the University of Florida and an M.S. Degree in Environmental Chemistry and Biology from the University of North Carolina. He joined EPA in 1980 and has worked in the areas of water quality modeling, water quality standards, and writing municipal and industrial NPDES permits.

WETLANDS MITIGATION RULES

By: Charles G. Stephens, Esquire, Blain & Cone, P.A.

How would you like to be mitigated?

- The value system underlying mitigation ideology

How would you like to be mitigated several different ways at once?

- The struggle for consistency between agencies
- From setting standards to cutting deals; the new look in environmental permitting

Charles G. (Gary) Stephens is a native of Tallahassee, attended Florida State University College of Law and was admitted to the Florida Bar in 1977. Prior to law school, Mr. Stephens received his B.A. from Duke University and completed coursework for a Ph.D. in Spanish language and literature at Brown University. He then served as Dean of Students at an American college (Schiller College) in West Germany before returning to North Florida.

From 1980 to 1985 Mr. Stephens was employed in the Office of General Counsel of the DER where he served as legal advisor to the Orlando, Fort Myers, and Tampa district offices in succession. He is presently an associate with the Tampa firm of Blain and Cone and participates actively in the Environmental and Administrative Law Sections on the Florida Bar.

WETLANDS MITIGATION RULES

By: Randall L. Armstrong, Division Director, Department of Environmental Regulation

The Warren S. Henderson Wetlands Protection Act of 1984 specifically authorized the incorporation of mitigation measures into department permits to offset adverse impacts of dredge and fill projects. Rule development is underway to formalize procedures and policies governing such proposals. A rule is scheduled to go before the Environmental Regulation Commission on June 10 for adoption. A brief synopsis of the rule draft will be presented.

Randall L. Armstrong, Director, Division of Environmental Permitting. BS, 1971, Florida State University (Biology), aquatic weed research for Florida Technological University 1972; joined Department of Pollution Control (later Department of Environmental Regulation) 1972 as field biologist in Orlando District Office; 1973 promoted to Environmental Specialist in Water Quality Analysis Section in Tallahassee, 1979-1984 Administrator of that Section; 1984-1985 Chief of the Bureau of Laboratories and Special Programs; 1986-1987 Chief of the Bureau of Permitting, responsible for primarily the dredge and fill program; 1987 appointed Director, Division of Environmental Permitting.

AN INTRODUCTION TO WATER QUALITY BASED EFFLUENT LIMITATION ANALYSIS

By: Steven L. Palmer, Environmental Supervisor, Department of Environmental Regulation

Water Quality Based Effluent Limitation (WQBEL) studies provide information to assist in making effective decisions on levels of treatment required for a source or sources of pollutant load. WQBELS are water quality oriented and are directed at establishing a quantitative relationship between a particular waste load and its impact on water quality. With this capability, one is able to identify the maximum waste load that can be discharged without violating a water quality standard in the receiving water.

Two approaches to WQBEL analysis are considered: the chemical specific approach and the whole effluent approach. Guidelines for meeting, modeling and sampling requirements are discussed.

Steven L. Palmer is an Environmental Supervisor for the Bureau of Water Quality Management with the Florida Department of Environmental Regulation. Mr. Palmer received his B.A. Degree in Mathematics and M.S. Degree in Marine Science, both from the University of South Florida. Prior to joining the DER in 1980, Mr. Palmer worked as a Research Associate for the University of South Florida and as an Environmental Specialist for the Hillsborough County Department of Water Resources.

CONSERV II WATER REUSE PROJECT

By: Mr. Salvatore D'Angelo, P.E., Assistant Managing Engineer, Boyle Engineering Corporation

Faced with the need to expand wastewater treatment services and a state requirement to eliminate discharge of treated effluent to surface waters, the City of Orlando and Orange County jointly developed an innovative water reclamation program.

The Water Conserv II water reclamation project involves the use of highly treated wastewater, called reclaimed water, for citrus irrigation and groundwater recharge through rapid infiltration basins. It is one of the largest water reuse projects in the country and the first reuse program permitted in Florida that involves irrigation of crops intended for human consumption. Initially, the project will provide approximately 25 million gallons per day of reclaimed water and will ultimately deliver 50 million gallons per day.

Salvatore D'Angelo is Assistant Managing Engineer for Boyle Engineering Corporation. He received his BSE in Civil Engineering and Environmental Sciences from the University of Central Florida and is a Registered Professional Engineer in the State of Florida. He is experienced in all facets of wastewater facility planning and design with specialized expertise in advanced wastewater treatment. Mr. D'Angelo is Project Manager for Water Conserv II, an innovative 50-mgd. \$150 million wastewater treatment/citrus irrigation project to serve Orlando and Orange County. Since joining Boyle Engineering in 1980 he has served as project engineer or project manager on numerous wastewater treatment facility projects.

CONSERV II WATER REUSE PROJECT

By: Ms. Mygnon Evans, Esquire, Vice President, Staff Legal Counsel, Florida Citrus Mutual

Citrus growers accepting treated wastewater for irrigation purposes must be concerned with a number of potential problems. These include viability of viruses and related future government regulations; extreme weather variables; changes in the composition of the wastewater; build-up of salts and heavy metals in the soil; and potential future alternative land uses.

Mygnon Evans is Vice President, Staff Legal Counsel for Florida Citrus Mutual. She received her Juris Doctorate from the University of Florida College of Law. Her Master's Degree is in Government from Florida State University. She received a Fulbright Fellowship to India for research on her thesis and teaching English in the Commerce Department, Punjab University. Prior to joining Florida Citrus Mutual she was Special Projects Assistant Director for the Southwest Florida Water Management District. Her responsibilities included public relations, contacts with legislators, local officials and researching for the executive director for special projects.

QUALITY ASSURANCE PLANS

By: Ms. Carolyn S. Lewis, Environmental Administrator, Florida Department of Environmental Regulation

DER policy requires their district offices, program offices, laboratories, and outside entities (such as local programs of cities and counties and private organizations submitting data to the Department) be subject to a centrally-managed quality assurance program. As part of its EPA approved quality assurance program, the Department requires preparation of Quality Assurance Plans for all work involving sampling and analysis conducted by, for or under the purview of the Department. A Quality Assurance Plan is a written document, which presents in specific terms, the policies, organizational objectives, functional activities, and specific quality assurance and quality control (QC) activities designed to achieve the data quality goals of specific projects or continuing operations. Plans must be prepared in accordance with DER Guidelines for Preparing Quality Assurance Plans, DER-QA-001/85. Preparation and DER approval of QA plans is required to obtain environmental laboratory certification.

Carolyn S. Lewis has a B.S. Degree in Biology and a M.S. Degree in Marine Science. She is currently working on a Doctorate Degree in Marine Science with a concentration in biogeochemistry. Over the past three years Ms. Lewis has been employed by the DER as Environmental Administrator and is the Department's Quality Assurance Officer for water related programs. Her past work experience includes employment as an environmental consultant where she participated in and managed numerous multidisciplinary projects and was responsible for supervising the technical staff in field and laboratory operations for aquatic ecology.

LEGAL STATUS OF QUALITY ASSURANCE PROJECT PLANS (QAPP)

By: Thomas J. Patka, Esquire, Holland & Knight

This presentation includes the legal status of QAPPs within a consent order; the duty to comply, and the effect of non-compliance on a client. In addition, the discussion will cover negligence and breach of contract issues for consultants and laboratories posed by QAPPs. We will then discuss whether and how consultants and laboratories can protect themselves against these claims through disclaimers or other means. Finally, a few words will be said about the "language" of QAPPs and its potentially negative effect on working relationships between clients, attorneys and consultants.

Thomas J. Patka received his B.A. in microbiology and chemistry in 1967 from the University of Minnesota, his MPA and Ph.D. in 1973 from the Maxwell School, Syracuse University and his J.D. in 1985 from the Catholic University in Miami before moving to the EPA (Washington, D. C.) on a post doctoral fellowship in 1979. He has authored a number of articles and papers on government and public policy, including a co-authored paper entitled "Managing POTW Performance" presented to the 1981 Annual Conference of the Water Pollution Control Federation. Mr. Patka is a member of the Environmental and Land Use Law of the Florida Bar and serves on the Solid and Hazardous Waste Committee of the Natural Resources Law Section of the American Bar Association. Tom was admitted to the Florida Bar in 1985.

COMMERCIAL LAB VIEW OF QUALITY ASSURANCE PLANS

By: Tyrone R. Smith, Ph.D., Orlando Laboratories, Inc.

The major product of a laboratory is information. The validity and accuracy of that information is directly related to the quality of the chemical tests performed. Consequently, the quality of the reported information is dependent on many factors. Among these factors are: utilization of the best available technology (BAT), the expertise of the analyst, the appropriateness of the analytical methodology and the translation of data into information.

From a manager's point of view, quality assurance/quality control provide a means of determining and controlling the performance of the organization, its goals and direction. The Quality Assurance Plan is but one facet of the ongoing programs designed to control and assure a quality product.

The presentation will cover the systems in place to assure accurate information and how the Quality Assurance Plan fits within these systems.

Tyrone R Smith is Vice President of Orlando Laboratories, Inc. His primary responsibilities include providing direction for the Science, Quality Assurance, and Marketing divisions within Orlando Laboratories. He received his B.S. Degree in Chemistry from Shaw University in Raleigh, North Carolina. He received his Ph.D. in Analytical Chemistry from the Massachusetts Institute of Technology. Dr. Smith's areas of expertise include; Technical Management, Contract Administration, Expert Witness, Complex Organic Structure Elucidation, Separation Sciences, and Computer Systems Software Design.

CONSULTANT VIEW OF QAPP & QACC

By: J. Geoffrey Leech, P.E., Senior Environmental Engineer, S & ME, Inc.

Quality Assurance Project Plans (QAPP's) are a requirement of the EPA and the DER in groundwater contamination cases. QAPP's provide a formal, written procedure for field sampling and laboratory analysis. If DER can be called the "second client," then the QAPP is the "second contract." QAPP's are generally viewed as a valuable and necessary tool by the environmental consulting community because they specify agreed methods and procedures prior to work performance. Similarities between a contract and the QAPP are identified. There is also a strong link between the QAPP and the professional's responsibility to protect public health and safety.

Results of a questionnaire on the effectiveness of DER's implementation of QAPP's will be discussed. Recommendations for improving the current procedures for QAPP's are made.

J. Geoffrey Leech is a Senior Environmental Engineer with S & ME, Inc. and the Environmental Services Branch Manager for the State of Florida. His areas of expertise include Project Management, Project Engineering, Environmental Engineering, Hazardous Waste Site Remedial Investigations, Spill Prevention Control and Countermeasures, Field Investigation, Regulatory Agency Liaison, Contract Development and Administration, and Quality Assurance/Quality Control. He received his B.S. Degree in Chemical Engineering from the Purdue University. As Branch Manager of S & ME's Florida Environmental Services, Mr. Leech is the Principal-In-Charge of all site assessments, hydrogeological studies, groundwater monitoring programs, and environmental surveys performed in Florida.

***III. KEYNOTE SPEAKER
AND MODERATORS***

FLORIDA ASSOCIATION FOR WATER QUALITY CONTROL

KEYNOTE SPEAKER

MR. DALE H. TWACHTMANN, SECRETARY
FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION
2600 BLAIR STONE ROAD
TWIN TOWER OFFICE BUILDING
TALLAHASSEE, FLORIDA 32399-2400

MODERATORS

MR. SCOTT BENYON
DISTRICT MANAGER
FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION
POST OFFICE BOX 3858
WEST PALM BEACH, FLORIDA 33402

MR. JOHN WODRASKA
EXECUTIVE DIRECTOR
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
POST OFFICE BOX V
WEST PALM BEACH, FLORIDA 33402

MR. GEORGE BARSON, Sc.D.,
PRESIDENT
ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
POST OFFICE BOX ESE
GAINESVILLE, FLORIDA 32602

IV. SHORTCOURSE

UNDERGROUND STORAGE TANKS SHORT COURSE

This year's Short Course is on Underground Storage Tanks. The Short Course begins with Florida Department of Environmental Regulation personnel providing a regulatory overview on underground storage tanks in the State of Florida. Representatives of the American Petroleum Institute will discuss the engineering aspects of tank systems and provide those in attendance with a working knowledge of equipment and its function. Proper inventory and maintenance procedures will also be presented. Experts in tank testing will explain the process of determining how underground tanks are tested for leakage. Remedial action, including but not limited to, groundwater monitoring, air stripping, product recovery, tank retrofit, tank replacement, and contamination assessment plans will be explained by consultants who have extensive experience in these areas. The workshop will conclude with a panel discussion.

The short course will be held two times; the first session is on Monday, May 19 from 1:30 p.m. to 4:30 p.m. and repeated again on Tuesday, May 19 from 1:30 p.m. to 4:30 p.m. The course will be held in the Marlin Room. The course is for registrants only. Please see Pam Beauchamp at the Registration Desk if you would like to attend the course and have not pre-registered.

1987 FAWQC SHORT COURSE

UNDERGROUND STORAGE TANKS

**SHORT COURSE
CO-CHAIRMEN**

MR. EDWARD J. KENT, PH.D., P.E.
Camp Dresser & McKee, Inc.
1 Tampa City Center
Suite 1750
Tampa, Florida 33602

MR. G. GREG WILLIAMS
ERM-South, Inc.
P.O. Box 290918
Tampa, Florida 33617

SPEAKERS

MR. GEORGE S. LOMAX
Technical Services Manager
Heath Consultants
Petrotite Tank Test
R.D. #1, Box 417 N
Williamsport, Pennsylvania 17701

MR. SAMUEL L. WELLS, P.E.
President
Isacor, Inc.
3300 Marjan Drive
Atlanta, Georgia 30340

MR. MARC J. METEYER
Marketing Department
American Petroleum Institute
1220 L Street, Northwest
Washington, D.C. 20005

MR. JACK D. RIGGENBACH, P.E.
President
ERM-South, Inc.
Post Office Box 290918
Tampa, Florida 33617

MS. PATRICIA A. DUGAN
Department of Environmental Regulation
2600 Blair Stone Road
Twin Tower Office Building
Tallahassee, Florida 32399-2400

MR. MARSHALL T. MOTT-SMITH
Department of Environmental Regulation
2600 Blair Stone Road
Twin Tower Office Building
Tallahassee, Florida 32399-2400

MR. PAUL GRUBER, P.G.
Principal
EMR-South, Inc.
Post Office Box 290918
Tampa, Florida 33617

V. EXPO

EXPO 1987

The response to the Expo for the Tenth Annual Conference of the Florida Association for Water Quality Control was overwhelming. This year's Expo features twenty water quality specialists from a variety of fields. Consultants, laboratories and instrumentation are all well represented. The Expo allows attendees the opportunity to mix and mingle with the vendors and discuss the latest innovations in each exhibitor's field of expertise. Our thanks to all vendors for making the Expo a huge success!

VENDOR LIST - 1987

ES & E

GEORGE BARTSON

JACK DOOLITTLE

Post Office Box ESE
Gainesville, Florida 33602
(904) 332-3318

ENVIROLAB

SANDRA MORRIS

Post Office Box 607
Ormond Beach, Florida 32074
(904) 672-5668

FLORIDA ENVIRONMENTS

DAVE NEWPORT

Post Office Box 1617
215 N. Main Street
High Springs, Florida 32643-1617

GERAGHTY & MILLER, INC.

JACKIE LARSON

2700 PGA Boulevard
Suite 104
Palm Beach Gardens, Florida 33410

GEITECH, INC.

DON GEIGER

Post Office Box 1141
Gainesville, Florida 32602-1141
(904) 371-2857

HEATH CONSULTANTS

CHRIS LEAUBER

Post Office Box 110075
Nashville, Tennessee 37222
(615) 833-1579

JAYALDON ENTERPRISES, INC.

SYLVIA S. BAIZE

RUTH E. VIERGEVER

2 N. Tuttle Avenue
Sarasota, Florida 33577
(813) 955-5680

LATCHAT INSTRUMENTS

KEN BRIGHT

10500 North Port Washington Road
Mequon, Wisconsin 53092
(414) 241-3872

G. WARREN LEVE, INC.

WARREN LEVE

ALEX LEVY

6501 Arlington Expressway, #114
Jacksonville, Florida 32211
(904) 725-4140

MID-FLORIDA MINING INDUSTRIES

ALLEN EDGAR

MIKE WILKINSON

3300 S. W. 34th Avenue
Suite 152
Ocala, Florida 32674
(904) 854-0070

MCGINNES LABORATORIES

GAIL BIGGS

PAUL MCGINNES

4168 Westshore Drive
West Palm Beach, Florida 33407
(305) 842-2849

NEPCCO, INC.

DAVID BOVE

JAMES BOOMGARDEN

1239 E. Newport Center Drive
Suite 119
Deerfield Beach, Florida 33442
(305) 429-9905

ORLANDO LABORATORIES, INC.

PAT FLEMING

JEFF RICHARDS

3438 Lawton Road
Suite 231
Orlando, Florida 32803
(305) 896-6724

PSI

JIM SAVIDGE

DAN ANDERSON

6056 Ulmerton Road
Clearwater, Florida 33520
(813) 531-1446

REG FILES, INC.

KEN PREST

2003 Apalachee Parkway
Suite 102
Tallahassee, Florida 32314
(904) 878-1285

RESOURCE RECOVERY OF AMERICA

ROBERT O. KINCART

GLORI ANN THIELEN

Post Office Box 75283
Tampa, Florida 33675
(813) 248-9000

SEABURN & ROBERTSON

MICHELE CUTERI

5510 Gray Street
Suite 118
Tampa, Florida 33609
(813) 877-9182

R. E. WRIGHT ASSOCIATES, INC.

HAMMOND REED

3240 Schoolhouse Road
Middletown, Pennsylvania
(717) 944-5501

VI. SCIENCE FAIR AWARDS

SCIENCE FAIR AWARDS

For 1987, the Board of Directors of the FAWQC decided to expand the Science Fair award program to include Regional Science Fairs as well as the State Science Fair. We contacted the Florida Foundation of Future Scientists, which supervises the science fair program in Florida, and obtained a list of the Regional Science Fairs and Directors. There are 32 Regional Science Fairs in Florida.

The Board of Directors voted to award a \$50 savings bond and a certificate to both Junior and Senior winners at the regional level. Award letters were sent to be presented to each of the regional winners.

The program at the State level remains the same as last year; a \$100 savings bond and a plaque for both Junior and Senior winners. We also invite the Senior winner to attend the FAWQC Annual Conference.

The FAWQC Board of Directors feels this is an excellent way to encourage students to become involved in Florida's water quality problems. We are very impressed with the quality of projects these students have developed.

**STATE SCIENCE FAIR
SENIOR AWARD**

Blanka Taborsky
9808 28th Avenue E.
Palmetto, FL 33561
594-22-9504

**REGIONAL SCIENCE FAIR
SENIOR AWARDS**

Peter M. Adams
1250 Gasparilla Drive
Fort Myers, FL 33901
265-93-9953

Heather Andresen
1220 NW 28th Street
Gainesville, FL 32605
591-32-8227

Hilary Anne Davis
404 Hillcrest Drive
Bradenton, FL 33529
594-38-1557

Maureen Gomes
POB 1317
Bushnell, FL 33513
591-10-0219

Heather Hamilton
POB 248
Grand Is., FL 32735
264-75-4474

Kelli Jones
100 Cheeseborough Avenue
Quincy, FL 32351
265-77-8456

Frances Duhig
8454 SW 75th Street
Miami, FL 33143
261-39-6826

Andy Kleiman
107 Thistlewood Circle
Longwood, FL 32779
373-66-9186

Hilary Latcheran
119 Knollwood Circle
Ormond Beach, FL 32074
263-89-6364

Rachel Deborah Mathason
131 Easterly Road
N. Palm Beach, FL 33408
200-48-1167

Everett N. Maxey
POB 64
Gotha, FL 32734
267-53-0880

Robin Jane Rowe
827 Egret Road
Cocoa, FL 32926
590-22-5484

Chad P. Schulze
Rt. 2, Box 542
Interlachen, FL 32048
410-29-0440

Sandra L. Steele
614 Manvel Drive
Port Richey, FL 33568
589-36-0977

REGIONAL SCIENCE FAIR
JUNIOR AWARDS

Kristi Ann Barrett
2335 NE 54th Trail
Okeechobee, FL 33472
261-49-8212

Lauri Bernard
6701 23rd Avenue W.
Bradenton, FL 33529
474-80-8435

Heather L. Bowers
POB 1546
Panama City, FL 32402
592-46-6987

Andrea Burton
7750 River Avenue
Green Cove, FL 32043
590-36-7571

Andrew C. Faulkner
6343 Cotton Street
Pensacola, FL 32506
593-44-2569

Amber Feldman
2151 Friday Road
Cocoa, FL 32926
No SS No.

Sadie Fraleigh
POB 266
Madison, FL 32340
266-39-3488

Laura Hersey
12876 154th Rd. N.
Jupiter, FL 33478
No SS No.

Matthew Kanady
14592 Westport Drive, SW
Fort Myers, FL 33908
313-82-7344

Jennifer Nevard
8705 NW 35th Street
Coral Springs, FRL 33065
No SS No.

Bryan Kemper
2210 E. Norvell Bryant Hwy
Hernando, FL 32642
No. SS No.

Ashley Adell King
4994 Pitch Pine Court
Jacksonville, FL 32210
No SS No.

Debbie Kirk
703 Harland Court
Kissimmee, FL 32758
298-78-7535

Kysha Long
Rt. 5, Box 333-A
Quincy, FL 32351
592-46-4148

Robbie Milstead
4044 Tenita Drive
Winter Park, FL 32792
591-42-1693

Beverly Newsome
POB 154
White Springs, FL 32096
No. SS No.

Alpesh Patel
2871 North Avenue
Leesburg, FL 32748
594-24-0167

Jayson Pierce
27084 Roper Road
Brooksville, FL 33512
236-19-4564

Christopher Stringer
4988 Courtland Loop
Winter Springs, FL
264-75-3832

Joseph David Braddock
POB 146
Crescent City, FL 32012
592-46-5975

**REGIONAL SCIENCE FAIR
WINNERS**

NOTE: We do not know if these winners are Junior or Senior classifications.

Tracie Arrigo
7861 NW 54th Street
Fort Lauderdale, FL 33321
589-46-8180

Julie D. Bitton
3427 NW 27th Terrace
Gainesville, FL 32605
266-85-0499

Shannon Purcell
POB 1936
Crystal River, FL 32629
591-16-2921

Veronica Taylor
POB 188
Raiford, FL 32083
594-26-3741

***VII. 10 YEAR HISTORY
OF FAWQC***

**FLORIDA ASSOCIATION FOR WATER QUALITY CONTROL
ANNIVERSARY MEETING**

This year's Annual Meeting of the Florida Association for Water Quality Control marks the 10th Annual Meeting. In recognition of this achievement, presented herein is a brief history of the inception of the Association and a review of Past Officers and Directors who have contributed to the success of this organization. It should be noted that many of these individuals have served as officers and directors. Conspicuously absent from this list are those individuals who have labored tirelessly as committee chairpersons and committee members to bring you the professional quality that you expect from the Florida Association for Water Quality Control.

Although the Association had its beginning at the 1976 Cape Coral Air Pollution Control Association Conference, it was not incorporated until March of 1978. Officially, the 1978 Conference held in St. Petersburg, Florida at the Tierra Verde Hotel was the Inaugural or First Annual Conference.

During the formative years of 1976 through 1979, there was a self-described dictatorship composed of a Chairman (Bill Hamilton) and those appointed by him. For purposes of incorporation, Bob Hearon was listed as Vice Chairman and Bill Arlington was listed as Secretary-Treasurer. Article VII of the Incorporation papers lists Bill Hamilton, Bob Hearon, Bill Arlington, Hoyt Charles, and Cliff Beasley as "directors who are to serve until the first election". Although not officially listed anywhere, personal communication with the "old timers" reveal that Eustis Parnell, Mike Altenburger, and Harold Long were also active participants during this time.

The Second Annual Conference was held in 1979 at the Gold Key Inn in Orlando, Florida.

The "Officers" (still appointed) at the Third Annual Conference (1980), held at the Mission Inn and Country Club, were Bob Hearon, Chairman; Hoyt Charles, Vice Chairman; and Bill Arlington, Secretary-Treasurer. The first ballot for officers and directors was cast at this Conference.

The 1981 Officers and Directors for the Fourth Annual Meeting (notice it is "meeting" now instead of "conference") who were elected as a result of the Mission Inn ballot were:

- Hoyt Charles - Chairman
- Bob Hearon - Vice Chairman
- Joe Tessitore - Secretary-Treasurer
- Cliff Beasley - Director (elected for two years)
- Ben Breedlove - Director (elected for two years)
- Bill Arlington - Director (elected for one year)
- Jim Sullivan - Director (elected for one year)

The 1982 Fifth Annual Meeting was held at the Holiday Inn in Daytona Beach as was the previous Annual Meeting. The Officers and Directors for this meeting were:

Jim Sullivan - Chairman
Gene McNeill - Vice Chairman
Jay Allen - Secretary-Treasurer
Cliff Beasley - Director
Ben Breedlove - Director
Bob Hearon - Director (elected for two years)
Harold Long - Director (elected for two years)

The Sixth Annual (AKA the Second Annual Fifth Annual) Meeting was also held at the Holiday Inn in Daytona Beach. The Officers and Directors for the 1983 Meeting were:

Gene McNeill - Chairman
Jay Allen - Vice Chairman
Jerry Steinberg - Secretary-Treasurer
Bob Hearon - Director
Harold Long - Director
Herb Stangland - Director (elected for two years)
John Miller - Director (elected for two years)

The 1984 Daytona Beach gathering was the Seventh Annual Meeting with the following Officers and Directors:

Jay Allen - Chairman
Jerry Steinberg - Vice Chairman
Herb Stangland - Secretary-Treasurer
John Miller - Director
Gene McNeill - Director (elected for two years)
Clayton Robertson - Director (elected for two years)
Ollie Boody - Director (elected for two years)

The 1985 Eighth Annual Meeting, held at the Sheraton Palm Coast Resort, marked the introduction of the first female directors. The Officers and Directors for that year's Meeting were:

Jerry Steinberg - Chairman
Herb Stangland - Vice Chairman
Ken Ford - Secretary-Treasurer
Gene McNeil - Director
Clayton Robertson - Director
Patty Lodge - Director (elected for two years)
Debbie Purcell - Director (elected for two years)

Last year's Annual Meeting, held at the luxurious Harbour Island Hotel in Tampa, Florida, was officiated by the following Officers and Directors:

Herb Stangland - Chairman
Ken Ford - Vice Chairman
Debbie Rothenberger - Secretary/Treasurer
Patricia Lodge - Director
Dan Rothenberger - Director (elected for two years)
Jackie Larson - Director (elected to complete
Debbie's term)
Bill Theiss - Director (elected for two years)

The 1984 Annual Meeting also marked the first year of the Association's recognition of junior high and high school students which participated in the Florida State Science & Engineering Fair. Miss Blanka Taborsky of Palmetto, Florida, and Miss Jessica Pemberton of Panama City, were the recipients of last year's special awards for science projects which demonstrated an outstanding contribution in the area of water quality.

The Tenth Annual "Anniversary" Meeting is being held at Jupiter Beach Hilton Hotel. This year's Officers and Directors include:

Debbie Rothenberger - Chairman
Ken Ford - Vice Chairman
Dan Rothenberger - Secretary/Treasurer
Jack Doolittle - Director
Jeff Spence - Director (elected for two years)
Ed Kent - Director
Greg Williams - Director

This year, the Association has expanded its Special Awards program to include the recognition of students which participated in the Regional Science & Engineering Fairs held throughout the State. The Association presented over thirty-eight awards to Regional Science Fair competitors. Two State Science Fair students were also recognized. Miss Taborsky was ironically selected again as this year's winner in the Senior Division while Dan Barile of Palm Bay, Florida, was presented the award in the Junior Division.

We sincerely desire that you benefit from your participation with the Florida Association for Water Quality Control and request that you take a minute to thank those that have contributed to the success of this organization.

**VIII. OFFICERS, COMMITTEE
CHAIRPERSONS,
RESOURCE PEOPLE**

FLORIDA ASSOCIATION FOR WATER QUALITY CONTROL

1986/87 OFFICERS

CHAIRPERSON

DEBBIE ROTHENBERGER
IMC - New Wales Operations
Post Office Box 1035
Mulberry, Florida 33860
Telephone: (813) 428-2531

VICE CHAIRMAN

KEN FORD
W. R. Grace & Company
Post Office Box 471
Bartow, Florida 33830
Telephone: (813) 533-2171

SECRETARY/TREASURER

DAN ROTHENBERGER
Geraghty & Miller, Inc.
Post Office Box 271173
Tampa, Florida 33618
Telephone: (813) 961-1921

DIRECTOR

JACK DOOLITTLE
Environment Science & Engineering, Inc.
Post Office Box ESE
Gainesville, Florida 32602-3053
Telephone: (904) 332-3318

DIRECTOR

ED KENT
CDM
1 Tampa City Center
Suite 1750
Tampa, Florida 33602
Telephone: (813) 221-2833

DIRECTOR

JEFF SPENCE
Polk County Water Resources Department
Post Office Box 60
Bartow, Florida 33830
Telephone: (813) 533-2151

DIRECTOR

GREG WILLIAMS
EMR-South
Post Office Box 290918
Tampa, Florida 33687
Telephone: (813) 985-0335

FLORIDA ASSOCIATION FOR WATER QUALITY CONTROL

1986/87 RESOURCE PEOPLE

DAWN THOMAS

Polk County Water Resources Department
Post Office Box 60
Bartow, Florida 33830
Telephone: (904) 397-8270

GENE MCNEILL

Occidental Chemical Company
Post Office Box 300
White Springs, Florida 32096
Telephone: (904) 397-8270

JOHN MILLER

CH₂M HILL
3030 North Rocky Point Drive
Suite 350
Tampa, Florida 33607
Telephone: (813) 888-6777

CLAYTON ROBERTSON

Conservation Consultants, Inc.
5010 U. S. Hwy. 19, North
Post Office Box 35
Palmetto, Florida 33561
Telephone: (813) 722-6667

HERB STANGLAND

Ardaman & Associates
8008 South Orange Avenue
Orlando, Florida 32809
Telephone: (305) 855-3860

JERRY STEINBERG

Water & Air Research
Post Office Box 1121
Gainesville, Florida 32602
Telephone: (904) 372-1500

FLORIDA ASSOCIATION FOR WATER QUALITY CONTROL

MEMBERS AND ATTENDEES FOR 1987

Mr. Jack Abney
Anchor Engineering
790 Harbor Drive
Maples, FL 33940
813/649-1551

Mr. Weir Alexander
Bordo Cirtus Products Cooperative
P. O. Box 1152
Winter Haven, FL 33882
813/294-5951

Mr. Jay Allen
International Minerals & Chemical Corp.
P. O. Box 867
Bartow, FL
813/533-1121

Mr. Dan R. Anderson
Professional Service Industries
6056 Ulmerton Road
Clearwater, FL 33520
813/531-1446

Mr. Randy Armstrong
Dept. of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400
904/488-0130

Ms. Sylvia S. Baize
Jayaldon Enterprises, Inc.
2 N. Tuttle Avenue
Sarasota, FL 33577
813/955-5680

Mr. C. Edward Barber
Florida Sugar Cane League
P. O. Box 1148
Clewiston, FL 33440
813/983-9151

Mr. George Barsom, Sc.D.
Environ. Science & Engineering, Inc.
P. O. Box ESE
Gainesville,, FL 32602
904/332-3318

Mr. Woodrow Batchelor
Environmental Protection Commission
1900 9th Avenue
Tampa, FL 33605
\$75

Mr. John Beasley
Agrico Chemical Company
P. O. Box 1110
Mulberry, FL 33860
813/428-1431

Mr. Clifford C. Beasley, Jr.
Florida Citrus Processors Association
P. O. Box 780
Winter Haven, FL 33882
813/293-4171

Ms. Pamela S. Beauchamp
Occidental Chemical Company
P. O. Box 300
White Springs, FL 32096
904/3978266

Mr. Thomas V. Belanger
Dept. of Environ. Science & Engineering
Melbourne, FL 32801
305/768-8068

Mr. Alan D. Benedict
Florida Power & Light Co.
P. O. Box 14000
Juno, Beach FL
305/694-3625

Mr. Scott Benyon
Dept. of Environmental Regulation
P. O. Box 3858
West Palm Beach, FL 33402

Mr. Bart Bibler
Camp, Dresser & McKee, Inc.
555 Winderley Place
Maitland, FL 32751
305/660-2552

Ms. Gail Biggs
McGinnes Laboratories
4168 Westroads Drive
W. Palm Beach, FL 33407
305/842-2849

Mr. Don Bilder
Pratt & Whitney
P. O. Box 109600
West Palm Beach, FL 33410-9600
305/840-3781

Mr. James Boomgarden
NEPCCO, Inc.
1239 E. Newport Center Dr. Suite 119
Deerfield Beach, FL 33442
305/429-9905

Mr. Gary W. Bors
Hazen and Sawyer, P.C.
5950 Washington St., Suite 301
Hollywood, FL 33023
305/987-0066

Ms. Elaine Bouch
S & ME, Inc.
370 N. Lake Blvd., #1028
Altamonte Springs, FL 32701
305/5967

Mr. David Bove
NPECCO, Inc.
1239 E. Newport Center Drive, Suite 119
Deerfield Beach, FL 33442
305/429-9905

Mr. Charles E. Bowman
City of Leesburg
608 North Canal Street
Leesburg, FL 32748
904/787-4585

Mr. Karl W. Boyer, P.E.
Brown & Caldwell
Suite 321, 5130 Eisenhower Blvd.
Tampa, FL 33634
813/885-8912

Mr. Ken Bright
Latchat Instruments
10500 N. Port Washington Rd.
Meguon, Wisconsin 53092
414/241-3872

Mr. Marc Bruner
Solid Waste Authority
5114 Okeechobee Blvd.
West Palm Beach, FL 33417
305/471-5770

Mr. Harvey Bush
Waste Managment, Inc.
500 N.W. 62nd Street, Suite 300
Ft. Lauderdale, FL 33309
305/771-9850

Mr. Rudy J. Cabina
Gardinier, Inc.
P. O. Box 3269
Tampa, FL 33601
813/677-9111

Mr. John E. Cameron
IMC New Wales Operation
P. O. Box 1065
Mulberry, FL 33860
\$75

Mr. Mark Castellano
WCRWSA
2535 Landmark Drive, Suite 211
Clearwater, FL 33519
813/796-2355

Mr. Yining Chen
City of Fort Lauderdale
P. O. Box 14250
Fort Lauderdale, FL
305/492-7888

Mr. R. J. Red Clanton
Heidt & Associates, Inc./Senior Engineer
2212 Swann Avenue
Tampa, FL 33609
813/253-5311

Mr. Edward Clark
Clark Engineers & Scientist
11960 SW 144th Street
Miami, FL 33186

Mr. William J. Conlon, P. E.
Post, Buckley, Schuh, & Jernigan
6326 Presidential Court
Ft. Myers, FL 33907

Mr. Edward C. Cowder
Acme Improvement District
P. O. Box 248
Loxahatchee, FL 33470
305/793-0866

Mr. Fred Crafa
City of St. Petersburg
1635 3rd Avenue. North
St. Petersburg, FL 33713
813/893-7261

Ms. Melanie Curan
Environmental Protection Commission
1900 9th Ave.
Tampa, FL 33617
813/272-5960

Mr. Fred W. Curtis
North Miami Beach Public Utilities
2080 N.E. 160th St.
N. Miami Beach, FL 33162
305/948-2924

Mr. Jimmy Dail
Pratt & Whitney
P. O. Box 109600
West Palm Beach, FL 33410-9600
305/840-2448

Mr. Salvatore D'Angelo, P.E.
~~Boyle Engineering~~
320 East South Street
Orlando, FL 32801

Mr. Phillip A. Davidson
2379 Broad Street
Brooksville, FL 33512-9712

Dr. John Davis
Environmental Services & Permitting, Inc.
P. O. Box 5489
Gainesville, FL 32602
904/462-4358

Mr. Patrick A. Davis
Hazen and Sawyer, P.C.
5950 Washington St., Suite 301
Hollywood, FL 33023
305/987-0066

Mr. Edward P. de la Parte
Gilbert & Gramovot, P.A.
705 E. Kennedy Blvd.
Tampa, FL 33602-5011
813/229-2775

Mr. Greg DeMuth
Orlando Utilities Commission
P. O. Box 3193
Orlando, FL 32809
305/658-6444

Mr. James A. Denier, Jr.
General Development Corp.
1111 So. Bayshore Drive
Miami, FL 33131
305/350-1531

Mr. Richard Dent
~~Loxahatchee River Environmental Control District~~
P. O. Box 396
Jupiter, FL 33468
305/747-5700

Mr. Forrest Dierberg
Dept. of Environmental Science & Engineering
Melbourne, FL 32901
305/768-8068

Mr. Arthur R. Dillione
Hazen and Sawyer, P.C.
1001 U. S. Hwy. 1
Jupiter, FL 33477
305/747-3434

Mr. Ron DiRamio
Coral Springs Improvement District
10300 N.W. 11th Manor
Coral Springs, FL 33071

Mr. Terrence S. Dolan
S. W. Florida Regional Planning Council
2121 W. 1st Street
Ft. Myers, FL 33901
813/334-7382

Mr. Jack Doolittle
Environmental Science & Engineering, Inc.
P. O. Box ESE
Gainesville, FL 32602
904/332-3318

Mr. Leroy C. Doughty
Piercefield, Amaden & Associates, Inc.
P. O. Box 187
Lutz, FL 33549
813/949-7455

Ms. Patricia J. Dugan
Dept. of Environmental Regulation
2600 Blairston Road
Tallahassee, FL
904/487-3299

Mr. Christopher A. Dunn
CF Industries, Inc.
P. O. Box 1549
Wauchula, FL 33873
813/375-4321

Mr. Allen Edgar
Mid-Florida Mining Industries
3300 S. W. 34th Avenue, Ste. 152
Ocala, FL 32674
904/854-0070

Mr. Gary Eichler
CH2M Hill
550 Fairway Drive, Suite 205
Boca Raton, FL 33433
305/426-4008

Ms. Rebecca Elliott
Paul R. McGinnes & Associates
4168 Westroads Drive
West Palm Beach, FL 33407-1241
305/842-2849

Ms. Mygnon Evans, Esquire
Florida Citrus Mutual
P. O. Box 89
Lakeland, FL 33802

Ms. Gwen Eyeington
Orlando Laboratories, Inc.
P. O. Box 250, 4356 Okeechobee Blvd.
W. Palm Beach, FL 33409

Mr. Andy Feinstein
AHWG, Inc.
295 Florida Street
Stewart, FL 33497
305/287-2022

Mr. Sebastian Fichera
Pinellas County Sewer System
310 Court Street
Clearwater, FL 33516

Ms. Pat Fleming
Orlando Laboratories
3438 Lawton Road, Suite 231
Orlando, FL 32803
305/816-6724

Mr. John E. Garlanger
Ardaman & Associates
8008 S. Orange Avenue
Orlando, FL 32809

Mr. Thomas E. Garnar
Titanium Consultants, Inc.
P. O. Drawer 1100
Keystone Heights, FL 32656
904/472-2224

Ms. Mary Gavila
Florida Power & Light
9250 West Flagler Street
Miami, FL 33174
305/552-3910

Mr. Don Geiger
Dohrmann
Geitech, Inc.
P. O. Box 1141, Gainesville FL
32602

Mr. Guy J. Germain
SF Water Management District
P. O. Box 24680
West Palm Beach, FL 33416
305/686-8800

Mr. Everett E. "Moe" Gerths
Meister & Associates, Inc.
8 North 12th Avenue
Pensacola, FL 32501
904/438-8038

Mr. Richard S. Ghent
CF Industries, Inc.
P. O. Drawer L
Plant City, FL 33566
\$75

Mr. Jerry Girardin
IMC-New Wales, Inc.
P. O. Box 1035
Mulberry, FL 33860

Mr. Gary Gornto
Reedy Creek Improvement District
P. O. Box 36
Lake Buena Vista, FL 32830
305/824-3460

Mr. Dwight R. Graydon
SF Conservancy District
P. O. Box 896
Bell Glade, FL 33430
305/996-2940

Renee M. Grenier
Paul R. McGinnes & Associates
4168 Westroads Drive
West Palm Beach, FL 33407-1241
305/842-2849

Mr. Archie L. Gresham
EMTEK, Inc.
871 West Oakland Park Blvd.
Ft. Lauderdale, FL 33311
305/761-1038

Ms. Judy Grim
Briley, Wild & Assoc.
1042 U. S. 1 North
Ormond Beach, FL 32074
904/6725660

Mr. Paul Gruber, P.G.
EMRSouth, Inc.
P. O. Box 290918
Tampa, FL 33617

Mr. Rick Hagberg
Water and Air Research
P. O. Box 1121
Gainesville, FL 32602
904/372-1500

Dr. Art Hayes
Consulting Geologist
P. O. Box 9201
Winter Haven, FL 33883
813/293-1972

Mr. Carlton Heckerman
City of West Palm Beach
P. O. Box 3366
West Palm Beach, FL 33402

Mr. Victor N. Howard
Broward Co. Env. Quality Control Board
500 SW 14th Court
Ft. Lauderdale, FL 33315

Mr. Marshall Hyatt
Environmental Protection Agency
345 Courtland Street
Atlanta, GA 30365

Mr. Richard Jacobs
City of Sunrise Utilities
4350 Springtree Drive
Sunrise, FL 33321
305/741-6570

Dr. Edward J. Kent
Camp, Dresser & McKee
One Tampa City Center
Tampa, FL 33602
813/221-2833

Mr. J. Harry Kerns
Dept. of Environmental Regulation
7601 Hwy. 301 N.
Tampa, FL 33610
813/985-7402

Mr. Ghastem Khavarin
Broward Co. Public Heath
2421 SW 6th Avenue
Fort Lauderdale, FL 33315
305/467-4847

Ms. Sheri Kime
Pinellas County Sewer System
310 Court Street
Clearwater, FL 33516
813/462-4721

Mr. Robert O. Kincart
Resource Recovery of America, Inc.
P. O. Box 75283
Tampa, FL 33675
813/248-9000

Mr. Robert T. Kirkland
U. S. Geological Survey,
207 NW 2nd Street, Room 222
Ocala, FL 32670
904/629-8931

Mr. Russell Klier, P.E.
Sarasota County Environmental Services Dept.
1301 Cattlemen Rd
Sarasota, FL 33582-9631
813/378-6128

Mr. John P. Kuhn
Juice Bowl Products, Inc.
P. O. Box 1048
Lakeland, FL 33802
813/665-5515

Mr. Jose La Puente
Tampa Electric Company
P. O. Box 111
Tampa, FL 33601
813/228-4835

Mr. John Frederick Lang
Tree Sweet Products Company, Inc.
2305 Florida Avenue
Ft. Pierce, FL 33450
305/464-7946

Ms. Jacquelyn M. Larson
Geraghty & Miller, Inc.
2700 PGA Blvd., Suite 104
Palm Beach Gardens, FL 33410
305/694-0300

Mr. Chris E. Leauber
Health Consultants, Inc.
P. O. Box 110075
Nashville, TN 37222
615/833-1579

Mr. J. Geoffrey Leech, P.E.
S & ME, Inc.
370 S. North Lake Blvd., Suite 1028
Alamonte Springs, FL 32701
305/331-5967

Mr. Carlos R. Lemos
Seaburn and Robertson
5510 Gray Street, Suite 118
Tampa, FL 33609
813/877-9182

Mr. Warren Leve
G. Warren Leve, Inc.
6501 Arlington Expy. #114
Jacksonville, FL 32211
904/725-4140

Laxsamee Levin
Dept. of Environmental Regulation
3319 Maguire Blvd., Suite 232
Orlando, FL
305/894-7555

Mr. Alex Levy
G. Warren Leve, Inc.
6501 Arlington Expy. #114
Jacksonville, FL 32211
904/725-4140

Ms. Carolyn S. Lewis
Bureau of Water Quality Management
2600 Blair Stone Road
Tallahassee, FL 32301

Mr. George S. Lomax
Petrotite Tank Test
Box 417 N
Williamsport , PA 17701

Mr. Martin
BJM Associates, Inc.
Winter Park, FL 32789
305/645-5566

Mr. Ed Mayer
Martin Marrietta Orlando Aerospace Corp.
P. O. Box 5837, MP-280
Orlando, FL 32855
305/356-2000

Mr. Paul R. McGinnes
Paul R. McGinnes & Associates
4168 Westroads Drive
West Palm Beach, FL 33407-1241
305/842-2849

Mr. Gene McNeill
Occidental Chemical Company
P. O. Box 300
White Springs, FL 32096
904/397-8270

Mr. Marc J. Meteyer
American Petroleum Institute
1220 L. Street, NW
Washington , D.C. 20005

Ms. Amanda Moore
Solid Waste Authority
5114 Okeechobee Blvd.
West Palm Beach, FL 33417
305/471-5770

Ms. Joyce Morales - Caramella
Env. & Industrial Hygiene Services, Inc.
P. O. 290286
Tampa, FL 33687
813/623-2780

Ms. Sandra Morris
Envirolab
P. O. Box 607
Ormond Beach, FL 32074
904/672-5668

Mr. Al Morrison
Thornton Laboratories
1145 E. Cass Street
Tampa, FL 33602
813/223-9702

Mr. Marshall T. Mott-Smith
Dept. of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Mr. Raymond A. Nemecek
City of Fort Lauderdale
P. O. Box 14250
Ft. Lauderdale, FL
305/492-7886

Mr. Dave Newport
Florida Environments
P. O. Box 1617
High Springs, FL 32643
904/454-2007

Mr. Michael F. Oaks
Gulf Power Company
P. O. Box 1151
Pensacola, FL 32520
904/444-6429

Mr. Jack Oberdorf
QED Environmental Systems
8302 Laurelfair Circle #130
Tampa, FL 33610
813/621-8771

Mr. R. Walter Ogburn, III
Breedlove, Dennis & Associates, Inc.
2412 Forsyth Road
Orlando, FL 32807
305/677-1882

Mr. Thomas P. Oxford
Jacobs Engineering Group, Inc.
P. O. Box 2008
Lakeland, FL 33806
813/665-1511

Mr. Steven L. Palmer
Dept. of Environmental Control
2600 Blair Stone Road
Tallahassee , FL 32301

Ms. Christine A. Panico
Volusia Co. Planning & Zoning Dept.
250 N. Beach Street
Daytona Beach, FL 32014
904/254-4620

Mr. W. Jeffrey Pardue
Florida Power Corporation
3201 34th Street South - H2G
St. Petersburg, FL 33711
813/866-4387

Mr. Ed Pate
Farmland Industries
P. O. Box 960
Bartow, FL
813/533-1141

Mr. Thomas J. Patka
Holland & Knight
P. O. Drawer BW
Lakeland, FL 33802

Ms. Mary Pauley
Occidental Chemical Company
P. O. Box 300
White Springs, FL 32096
904/397-8427

Mr. Bill Peltier
Environmental Protection Agency
345 Courtland Street, N. E.
Atlanta , GA 30308
SPEAKER

Mr. Winifred G. Perkins
Florida Power & Light
P. O. Box 14000
Juno Beach, FL 33408-0420

Mr. J. Ray Perrin
Estech, Inc.
P. O. Box 208
Bartow, FL 33830
813/533-7164

Mr. Norman L. Platte
Resource Engineering & Planning, Inc.
5800 Corporate Way,
West Palm Beach, FL 33407
305/471-0666

Mr. Richard Powers
Bromwell & Carrier, Inc.
P. O. Box 5467
Lakeland, FL 33807-5467
813/646-8591

Mr. Ken Prest
REGfiles, Inc.
2003 Apalachee Parkway
Tallahassee, FL 32314
904/878-1285

Mr. William D. Preston
~~Hopping Boyd Green & Sams~~
P. O. Box 6526
Tallahassee, FL 32314
904/222-7500

Mr. Kermit Prine
Boyle Engineering
,

Mr. Scott Quaas
Tarmac Florida, Inc.
7752 NW 74 Avenue,
Medley, FL 33166
305/883-0055

Mr. Kenneth E. Quattlebaum
ITT Rayonier, Inc.
P. O. Box 2002
Fernadina Beach, FL 32034
904/261-3611

Mr. Scott Rampenthal
Post, Buckley, Schuh & Jernigan, Inc.
889 N. Orange Avenue
Orlando, FL 32801
305/423-7275

Mr. Hammond (Ham) Reed
R. E. Wright Associates, Inc.
3240 Schoolhouse Road
Middletown, PA 17057
717/944-5501

Mr. Rick Reis
Pratt & Whitney
P. O. Box 109600
West Palm Beach, FL 33410-9600
305/840-3690

Mr. James H. Renfro
~~Belcher Oil Company~~
8700 West Flagler Street
Miami, FL 33174
305/551-5447

Mr. Roy A. Reynolds
Broward County Water Resources Mgmt. Division
115 S. Andrews Avenue
Ft. Lauderdale, FL 33302
305/357-6327

Mr. Howard L. Rhodes, P.E.
Dept. of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32301

Mr. Jeff Richards
Orlando Laboratories
3438 Lawton Road
Orlando, FL 32803
305/896-6645

Mr. Storm Richards
Environmental Planner
225 E. Robinson Street, Suite 255
Orlando, FL 32801-1913
305/422-0353

Mr. Jack Riggensbach, P. E.
Env. Protection Management - South, Inc.
5035 E. Bush Blvd.
Tampa, FL 33617
813/985-0335

Mr. Richard G. Roberts
Hazen and Sawyer, P.C.
1001 U. S. Hwy. 1
Jupiter, FL 33477
305/747-3434

Mr. H. Clayton Robertson
Conservation Consultants, Inc.
P. O. Box 35, 5010 U. S. Hwy. 19,
North Palmetto, FL 33561
813/722-6667

Mr. Peter E. Robinson
Vice President, Hazen and Sawyer, P.C.
5950 Washington St., Suite 301
Hollywood, FL 33023
305/987-0066

Mr. Daniel Rothenberger
Geraghty & Miller, Inc.
3820 Northdale Blvd. Suite 200
Tampa, FL 33688-3630

Mrs. Deborah A. Rothenberger
IMC - New Wales Operations
P. O. Box 1035
Mulberry, FL 33860
813/428-2531

Mr. Sam Sahebzamani
Dept. of Environmental Regulation
7601 Hwy. 301 N.
Tampa, FL 33637
813/985-7402

Ms. Elwyn C. Sanders
Englewood Water District
P. O. Box 1399 - 201 Selma Avenue
Englewood, FL 33533
813/474-3217

Mr. Arnel A. Santos
Environmental Protection Commission
1900 9th Avenue
Tampa, FL 33605
813/272-5960

Mr. James Savidge
Professional Service Industries, Inc.
6056 Ulmerton Road
Clearwater, FL 33520
813/531-1446

Mr. John Schrieffer
City of Lauderhill Utility Dept.
2000 City Hall Drive
Lauderhill, FL 33313

Mr. James L. Seelinger
Pratt & Whitney
P. O. Box 109600
West Palm Beach, FL 33410-9600
305/840-5661

Mr. Bob Sharkey
Florida Environments
P. O. Box 1617
High Springs, FL 32643
904/454-2007

Mr. Ralph E. Shepard
Florida Mining & Materials Corp.
P. O. Box 6
Brooksville, FL 34298-0006
904/796-7241

Mr. Tyrone Smith
Orlando Laboratories
3438 Latwon Road, Suite 231
Orlando, FL 32803
305/896-6645

Mr. James Spalding
Jacobs Engineering Goup, Inc.
P. O. Box 2008
Lakeland, FL 33806
813/665-1511

Mr. Jeffrey F. Spence
Polk County Water Resources Dept.
P. O. Box 798
Bartow, FL 33830
813/533-2151

Mr. James Spurlock, III
Pratt & Whitney
P. O. Box 109600
West Palm Beach, FL 33410-9600
305/840-3230

Mr. Herb Stangland
Ardaman & Associates, Inc.
8008 S. Orange Avenue
Orlando, FL 32809
305/855-3860

Mr. Jerry Steinberg
Water & Air Research
6821 Archer Road
Gainesville, FL 32608
904/372-1500

Mr. Charles G. Stevens, Esquire
Law Offices of Blain & Cone, P. A.
202 Madison Street
Tampa, FL 33602

Mr. Jeff Stewart
Agrico Chemical Company
P. O. Box 1969
Bartow, FL 33830
813/428-1423

Mr. Roger P. Stewart
Environmental Protection Commission
1900 9th Avenue
Tampa, FL 33605
813/272-5960

Mr. William Stockton
Pratt & Whitney
P. O. Box 109600
West Palm Beach, FL 33410-9600
305/840-2431

Ms. Lisa Sutton
Orlando Laboratories
3438 Lawton Road
Orlando, FL 32803
305/896-6724

Mr. J. R. (Bob) Svenelid
Hazen and Sawyer, P.C.
1001 U. S. Hwy 1
Jupiter, FL 33477
305/747-3434

Mr. Richard B. Tedder
Dept. of Environmental Regulation
3319 Maguire Blvd., Suite 232
Orlando, FL 32803

Mr. John R. Ten Eyck
City of Vero Beach
17-17th St. P. O. Box 1389
Vero Beach, FL 32961-1389
305/562-3637

Ms. Glori Ann Thielen
Resource Recovery of America
P. O. Box 75283
Tampa, FL 33675
813/248-9000

Dawn D. Thomas
Polk County Water Resources Dept.
P. O. Box 798
Bartow, FL 33830
813/533-2151

Mr. James C. Thurrott
City of Daytona Beach
Box 551
Daytona Beach, FL 32015
904/258-3143

Mr. Norman Tuckett, Jr., P.E.
Craig A. Smith & Associates
1000 West MCNAB Road
Pompano Beach, FL 33069
\$75

Mr. Dale Twachtmann
Dept. of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Mr. Robert K. Vanderslice
Dept. of Environmental Regulation
7601 Hwy 301 North
Tampa, FL 33637-9544
\$75

Ms. Ruth E. Viergever
Jayaldon Enterprises, Inc.
2 N. Tuttle Avenue
Sarasota, FL 33577
813/955-5680

Mr. Thomas D. Walker
Camp, Dresser & McKee, Inc.
2001 NW 6th Street,
Fort Lauderdale, FL 33310
305/776-1731

Mr. M. Lee Walton
International Minerals & Chemical Corp.
P. O. Box 1035
Mulberry, FL 33860
813/428-2531

Mr. David Watt
South Fla. Water Management District
P. O. Box 24680
West Palm Beach, FL 33416
305/686-8800

Mr. Samuel L. Wells, P. E.
Isacor, Inc.
3300 Marjan Drive
Atlanta, GA 30340

Ms. Charlene Wilcox
Keith & Schnars, P.A.
115 N. E. 4th Avenue
Ft. Lauderdale, FL 33304
305/763-3843

Mr. John G. Wiley
Monsanto Company
P. O. Box 12830
Pensacola, FL 32575
904/968-7582

Mr. Allen Wilkinson
MFM Industries
3300 SW 34th Avenue, Suite 152
Ocala, FL 32674
904/854-0070

Mr. Mike Wilkinson
Mid-Florida Mining Industries
3300 S. W. 34th Avenue, Ste 152
Ocala, FL 32674
904/854-0070

Mr. Dan A. Williams
Dept. of Environmental Regulation
7601 Hwy. 301
Tampa, FL 33637
813/985-7402

Mr. G. Greg Williams, E. I.
Env. Resources Management - South, Inc.
5035 E. Bush Blvd.
Tampa, FL 33617
813/985-0335

Mr. Bruce C. Wirth
SW Florida Water Management District
2379 Broad Street
Brooksville, FL 33512
904/796-7211

Mr. John Wodraska
SF Water Management District
P. O. Box V
West Palm Beach, FL 33402

Mr. Dennis R. Wylie
Bio-Environmental Services Division
515 W. 6th Street
Jacksonville, FL 32206
904/630-3210

Ms. Ruth Ziergever
Petroleum Product Services
11413 49th Street N.
Clearwater, FL 33520
813/577-7747