

2008 Annual Report



**Environmental
Research and Education Foundation**

Developing environmental solutions for the future

2008 Highlights

Overview

Dear friends, this is EREF's 16th year and we remain the only foundation in the USA whose sole purpose is developing and evaluating new approaches to manage municipal solid waste.

The year 2008 was a financially difficult one for EREF; our total revenue for the year was \$(279,867) against expenses of \$1,667,063 for a decrease in net assets of \$(1,946,930). Virtually all the decrease was due to investment losses of \$(1,518,945) and at December 31, 2008 the foundation's net assets were \$6,246,555; a significant pullback from net assets of \$8,193,485 at December 31, 2006.

Since the foundation began operations \$9 million has been disbursed in research grants and scholarships and even though we had financial setbacks in 2008, we are pleased to report the following benchmarks achieved by the foundation for the year:

- > **EREF disbursed \$846,241 to research projects** on topics such as: modeling hydrogen sulfide generation from C&D wastes, developing microbial fuel cells that treat landfill leachate, evaluating evapotranspirative landfill caps, supporting a re-usable food container program, and sponsoring the 5th Intercontinental Landfill Research Symposium (the premier international meeting for the exchange of ideas among landfill researchers worldwide) that was held in conjunction with the 1st Global Waste Management Symposium on September 7-10, 2008 at Copper Mountain, Colorado. EREF is a strategic partner of the Symposium.
- > **The EREF board approved \$568,500 in new projects** measuring fugitive emissions from landfills and evaluating the reactivity and safe disposal of secondary aluminum processing wastes.
- > **EREF supported the studies of 9 graduate students** (6 Ph.D., 2 Master's of Science and 1 MBA) with \$77,350 in scholarship funds. They are studying at Yale University, Arizona State University, Johns Hopkins University, University of Texas Austin, Carnegie Mellon University, Baylor University, and the University of California-Davis. Since the foundation began its scholarship program in 1999, we have supported over 20 students with grants up to \$12,000 a year over multi-year terms.
- > **In the fall of 2005, the EREF board of directors created the EREF Research Council** to guide and prioritize the foundation's research. The Council continues to evolve and is increasingly shaping the EREF's research priorities and capabilities. Research Council members include representatives from the following organizations: Republic Services, Veolia Environmental Services, Waste Management, Waste

Connections, SCS Engineers, Joyce Engineering, University of Central Florida, and North Carolina State University.

- > **In May the foundation held its 14th equipment auction** at WasteExpo in Las Vegas – the event grossed \$1.5 million with a net return of \$625,396. Since 1995, with equipment donations from members of the Waste Equipment Technology Association, the auction has raised \$10,667,129 for the EREF!
- > **On October 17th golfers gathered at the Arizona Biltmore Golf Club** in Phoenix for the EREF Fall Classic Tournament. The winning team was: Ray Burke, Chad Lindholm, Brian Bales, and Vince Taormina. Since we began the tournament in 2003, \$1,005,075 has been raised in support of the EREF!
- > Due to the reduction in net assets EREF's Shaping the Future Capital Campaign has experienced a drop in the total raised through 2007 of \$4,662,832; we have our work cut out for us to achieve our objective of building the foundation's endowment to \$10 million by the end of 2010.

In a year like 2008 when accolades don't come our way due to financial results that are less than stellar; nonetheless we are pleased with the scientific results of 2008 and look forward to continued accomplishments in 2009 and beyond.

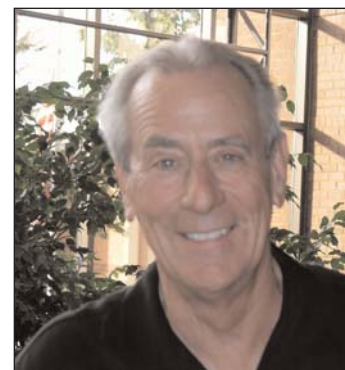
We are proud of and feel privileged to be a part of the community of people who are the EREF 'family' – our donors, colleagues, scholars, scientists, members of the Research Council and the EREF Board of Directors.



Kevin Walbridge
Chairman of the Board



Michael J. Cagney
President and Chief
Executive Officer



GRANTS approved or in progress in 2008

\$100,000 to Geosyntec Consultants to determine the critical data requirements for the implementation of the EREF methodology for evaluating post-closure care needs at municipal solid waste landfills and performing case studies at existing landfills.

\$102,363 to North Carolina State University and University of Central Florida to develop a roadmap for understanding and quantifying the aspects of landfill gas generation, collection, attenuation, and emissions.

\$121,515 to the University of New Hampshire to examine landfill leachate as a substrate for microbial fuel cells (MFC) and expand the applications of MFC to other areas of landfills.



\$32,000 to Eckerd College to develop and evaluate the use of a reusable food container for the college's food served thereby replacing disposal containers.

\$145,000 to Michigan State University to perform a field-scale assessment of evapo-transpirative methane oxidation caps for sustainable management of municipal solid waste landfills in sub-humid climates.

\$147,558 to the University of New Hampshire and SCS Engineers to model hydrogen sulfide generation from processed construction and demolition materials in landfills.

\$40,000 to North Carolina State University in support of the 5th Intercontinental Landfill Research Symposium.

\$135,000 to Safety and Ecology Corporation and Pennsylvania Department of Environmental Protection to collect and test leachate for the presence of tritium, determine the possible sources of tritium when found, and perform a dose/risk assessment of tritium found.

\$45,000 to the U.S. Environmental Protection Agency to update the existing landfill gas emission factors used by the Agency for regulatory purposes.

\$40,000 to the U.S. Environmental Protection Agency to examine the performance of bioreactor landfills and develop a state-of-art report for bioreactor landfills.

\$92,500 to Joyce Engineering, Inc. to determine the composition, size fraction, and concentration of airborne particulates generated from construction and demolition waste processing facilities.

\$65,000 to Virginia Polytechnic Institute and State University (Virginia Tech) for the examination of liquid additions on cellulose and lignin degradation in bioreactor landfills.

\$25,400 to the University of Central Florida for a study on controlling hydrogen sulfide emissions at landfills using autotrophic denitrification landfill biocovers.

\$40,000 to the University of Wisconsin – Madison for a study on the performance of alternative final covers through the exhumation of test sections at various landfills in the United States.

\$26,875 to the University of Illinois at Chicago for performing geophysical monitoring of leachate recirculation and its effects on waste degradation at the Orchard Hills Landfill.

\$100,000 to the University of Manitoba to investigate the clogging of landfill leachate collection pipes and cleaning strategies at field- and full-scale.

\$81,200 to the University of Central Florida for characterizing spontaneous fires at municipal solid waste landfills.

\$53,863 to Michigan State University to develop an estimation of field-scale properties of bioreactor landfills for optimum performance.

\$40,000 to EPA to investigate the performance of full-scale bioreactor municipal solid waste landfills.

\$183,000 to the National Solid Wastes Management Association to perform refuse driver safety training for work-related motor vehicle accidents and fatalities.

\$65,000 to the U.S. Environmental Protection Agency for the development of an internet-based municipal solid waste decision support tool for North America.

\$297,970 to R.D. Gibbons, LTD, Terra-Dynamics, Inc., and Severn Trent Laboratories, Inc. for a landfill leachate sampling and characterization study.

\$300,000 to EPA to collect and test municipal solid waste landfill gas as generated and after combustion.

Summary of Income and Expenses for 2008

Income:

Pledges	\$143,173
Auction (net)	625,396
Golf (net)	193,601
Contributions	266,098
Investment income	(1,518,945)
Other	<u>10,810</u>
Total income	\$ (279,867)

Expenses:

Projects:	\$1,380,915
Administration	145,245
Fundraising	<u>140,903</u>
Total expense	\$ 1,667,063

Change in net assets **\$ (1,946,930)**

SCHOLARSHIPS approved or in progress in 2008

\$36,000 to Mohan Dangi at Johns Hopkins University to assess the problems associated with municipal solid waste management in Nepal.

\$10,000 to Roberta Niemietz at Virginia Polytechnic Institute and State University to study the degradation of lignocellulose compounds in bioreactor landfills.

\$10,000 to Anne-Marie Armstrong at Yale University to develop a "zero-waste" building model.

\$36,000 to Susan De Long at the University Texas — Austin for studies on using gene sequencing for enhancing landfill biodegradation.

\$24,000 EREF to Monica N. Danon-Schaffer at the University of British Columbia for a mass balance evaluation of polybrominated biphenyl ethers used as flame retardants.

\$24,000 to Shahzeen Zahid Attari at Carnegie Mellon University to study excess packaging in the United States with implications of waste minimization, environmental justice, and social equity.

\$48,000 to Bryan Staley at North Carolina State University for research on mechanisms for controlling the production of non-methane organic compounds and microbial community structure during refuse decomposition.

\$36,000 to Nicole Berge at University of Central Florida studying the optimal environmental conditions and kinetics for in-situ nitrification and denitrification, and the development of an implementation strategy at field-scale.



Environmental Research and Education Foundation Cumulative Pledges

Chairman's Circle Club (donations of \$250,000.00 or more)

Dean L. and Rosemarie Buntrock Foundation
Environmental Industry Associations
E-Z Pack
Heil Environmental Inc.
Labrie Environmental Grp. (Leach Company)
Mack Trucks, Inc.
Marathon Equipment Company
McNeilus Truck and Manufacturing Company
Donald F. Moorehead, Jr.
Penton Business Media
Republic Services, Inc.
Ritchie Brothers Auctioneers
SITA
U. S. Department of Energy
Volvo Construction Equipment
Waste Management, Inc.
Wastequip

Platinum Club (donations of \$100,000.00 to \$249,999.00)

Autocar, LLC
Lawrence Beck
Tom Bowen
Andy Crawford
Robert C. Duncan
George W. Fennell
Harris W. Hudson
Ronald and Susan McCracken
Lonnie and Carol Poole Family Foundation
PTR Baler and Compactor, Inc.

Dwight Schaubach
Veolia ES
Waste Connections, Inc.

Gold Club (donations of \$50,000.00 to \$99,999.00)

Norm Aardema
Joseph Anstett
Ave Maria Carite
Big Truck Rental
Charles Cattaneo
Centres de Recherches et d'Essais
DaimlerChrysler Corporation
EDCO Disposal Corporation
Groot Industries, Inc.
H. Wayne Huizenga
William Hulligan
David Hyman
International Baler, Inc.
J. V Manufacturing Company
Joyce Engineering, Inc.
George Moorehead
Perkins Manufacturing Company
Bruce Ranck
Refuse Parts
Resource Management Companies
Harold Rubenstein
W. Tom Sawyer, Jr.
SCS Engineers
SP Industries, Inc.
Robert P. Stearns, PE
Stellar K-PAC Division

Silver Club (donations of \$25,000.00 to \$49,999.00)

Walbridge Family
Patrick Banfield

Bayne Thinline Premium Lifts Systems
Michael Cagney
General Purpose Steel
Homewood/Nu Way Disposal Service, Inc.
O'Brian Manufacturing Company
Palo Alto Sanitation Company
Eugene Wingerter
Zarn, Inc.

Sterling Club (donations of \$5,000.00 to \$24,999.00)

Izzie Abrams
ALCOA
Ameri-Kan
Cascade Engineering
Tom Conrad
General Waste
Goodyear Tire
Harris Waste Management Group, Inc.
Hydrolec, Inc.
IESI
Link Axle
Nu-Life Environmental, Inc.
Oakleaf Waste Management
Marshall Rabins
RDK Trucks
Rehrig Pacific Company
Robert Riethmiller, Jr.
Schaefer Systems International, Inc.
Telma, Inc.
Texas Commerce Bank
Vermeer
Kevin Walbridge
James Walsh, PE
Weaver Boos & Gordon, Inc.