# TABLE OF CONTENTS

## SESSION I – FINANCING LFG PROJECTS AND NEW MARKET OPPORTUNITIES

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landfills and Climate Change: An Update on Greenhouse Gas Policy and its Impact on Landfills</td>
<td>1</td>
</tr>
<tr>
<td>Bruce K. Maillet, EMCON/OWT, Inc.</td>
<td></td>
</tr>
<tr>
<td>New Tax Credit Strategies For LFG Developments</td>
<td>25</td>
</tr>
<tr>
<td>M. Curtis Whittaker &amp; Stanley R. Arnold, Rath, Young and Pignatelli</td>
<td></td>
</tr>
</tbody>
</table>

## SESSION II – FOCUS ON LFG IN FLORIDA

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlling H2S Emissions from Landfill Gas for Power Production: A Case Study</td>
<td>35</td>
</tr>
<tr>
<td>Tony Barnette, Gas Technology Products LLC</td>
<td></td>
</tr>
<tr>
<td>Application of an Exposed Geomembrane Cover System to Provide Title V Air Emission Collection System Controls</td>
<td>37</td>
</tr>
<tr>
<td>Mark D. Hadlock, Jones, Edmunds &amp; Associates, Inc.</td>
<td></td>
</tr>
<tr>
<td>Impact of High H2S Levels on Landfill Gas System Expansion and Title V Permitting at the Naples Landfill</td>
<td>55</td>
</tr>
<tr>
<td>Bruno Ferraro, Grove Scientific &amp; Engineering Company</td>
<td></td>
</tr>
<tr>
<td>David Penoyer &amp; Raymond J. Dever, SCS Engineers</td>
<td></td>
</tr>
<tr>
<td>John W. Wong, Waste Management, Inc. of Florida</td>
<td></td>
</tr>
</tbody>
</table>

## SESSION III – EPA’S LANDFILL METHANE OUTREACH PROGRAM (LMOP): EMERGING LFG UTILIZATION TECHNOLOGIES AND PRACTICES

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simplified Biogaz System</td>
<td>59</td>
</tr>
<tr>
<td>Charles L. Anderson &amp; Ken Wascheck, Air Liquide – MEDAL</td>
<td></td>
</tr>
<tr>
<td>Landfill Gas Application of a 25 kW PowerUnit Stirling Cycle Engine</td>
<td>71</td>
</tr>
<tr>
<td>John J. McKenna, STM Power, Inc.</td>
<td></td>
</tr>
</tbody>
</table>

## SESSION IV – CURRENT LFG RESEARCH AND MODELING PROJECTS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production of NMOC's During the Decomposition of Refuse and Individual Waste Components Under Various Operating Conditions</td>
<td>73</td>
</tr>
<tr>
<td>Morton A. Barlaz &amp; Stephen J. Cowie, Department of Civil Engineering, NC State University</td>
<td></td>
</tr>
<tr>
<td>Gary R. Hater, Waste Management Inc.</td>
<td></td>
</tr>
</tbody>
</table>
Landfill Gas Module, Performance-Based System for Post-Closure Care at MSW Landfills
Patrick Sullivan, SCS Engineers
Jeremy Morris & Mike Houlihan, GeoSyntec Consultants
Steve Clarke & Dave Burt, Waste Management, Inc.
Ed Repa, Environmental Research & Education Foundation
Morton Barlaz, Department of Civil Engineering, North Carolina State University

LFG Generation Modeling: A Reality Check
Thomas A. Bilgri & Angela Krueger, EMCON/OWT, Inc.

SESSION V – DIVERSE AND INNOVATIVE LFG CASE STUDIES

Developing Innovative Combustion System Based Landfill Gas User Facilities at Landfill Sites
Joseph P. Curro, Camp Dresser & McKee, Inc.

Saving Money Through Application of a Modified Tier 3 Analysis
Douglas M. Gatrell & Paul J. Stout, EMCON/OWT, Inc.

SESSION VI – FOCUS ON MICROTURBINES

Microturbine Operating Experience at Landfills
Andrew Wang, Capstone Turbine Corporation
Benny Benson, SCS Energy
Ed Wheless, Sanitation Districts of Los Angeles County

Oil Landfill Microturbine Power Plant: Case Study
Jeffrey L. Pierce, SCS Energy
Les LaFountain, New Cure, Inc.

Microturbine Pilot-Scale Testing at Shepard Landfill, Calgary, Alberta
Chuck Smith, CH2M HILL Canada Limited
Kevin Colbran, City of Calgary Waste & Recycling Services

Innovative LFGTE Microturbine CHP System Integrated with Desalination and Aquaponics
David Specca, New Jersey EcoComplex / Rutgers University

SESSION VII – MONITORING LFG AREA AND POINT SOURCE EMISSIONS

Analysis of Landfill Gas Emissions through IR Thermography in a Sanitary Landfill
Umberto Desideri, Stefania Proietti, Virginia Masciotti, University Of Perugia, Italy
SESSION VIII – THE LOS ANGELES COUNTY SANITATION DISTRICTS (LACSD) – LFG RETROSPECTIVE AND CURRENT SYSTEMS

County Sanitation Districts of Los Angeles County: Landfill Gas Retrospective and Current Systems .................................................................................................................. 161
Ray Huitric, Ed Wheless, James F. Stahl, Stephen R. Maguin, Los Angeles County Sanitation Districts

SESSION IX – LFG FINANCIER AND DEVELOPERS PANEL – MEET THE EXPERTS

Banking on the Green Power Premium: An Investor’s Perspective ......................... 183
Jerome P. Peters Jr., United Capital

SESSION X – COMBINED GAS AND LEACHATE MANAGEMENT

Liquids, Collection, Management and Landfill Gas Impacts at the Oil Landfill .......... 195
Benny Benson, SCS Engineers
Les LaFountain, New Cure, Inc.

Permitting & Construction of a Post-Closure Leachate Recirculation System at the Deercroft RDF .............................................................................................................. 201
Tony Maxson, Bryan E. de Varona, Tom Bilgr, EMCON/OWT, Inc.

SESSION XI – OUTLOOK FOR LANDFILL GAS-TO-ENERGY IN TODAY’S ENERGY MARKET: OLD AND NEW PROSPECTS

No papers submitted for this session

SESSION XII – SILOXANES: ANALYSIS AND TREATMENT

A Summary of Available Analytical Methods for the Determination of Siloxanes in Biogas .......................................................................................................................... 217
Guy J. Graening, Heidi C. Hayes, Sandia Kao, Sepideh Saeed, Air Toxics, Ltd.

Removal of Siloxanes from Landfill Gas by SAG Polymorphous Porous Graphite Treatment Systems .............................................................................................. 225
Paul Tower, Applied Filter Technology
SESSION XIII – LFG COLLECTION SYSTEMS: STATE OF THE ART AND RETROFITS

When Everything is Changing: An Interim Approach to Design and Installation of a GCCS to Achieve NSPS Compliance ................................................................. 235
Juene Franklin & Amanda Olson, EMCON/OWT

Horizontal Collectors: Design Parameters, Mathematical Model and Case Study ....... 241
Gregory P. McCarron & Darrin D. Dillah, SCS Engineers
Owen R. Esterly, Chester County Solid Waste Authority

LFG Collection Systems Designed and Built for a System Operator................................ 257
Paul Barnett, Environmental Manager, Brewton, AL
Carlo Lebron, Kevin De Lange, Brad Stone, HDR Engineering, Inc.

2002 SWANA LANDFILL GAS EXCELLENCE AWARD WINNERS – LFG CONTROL CATEGORY

Collier County Recycling & Disposal Facility – Naples, Florida (Gold) ....................... 265
Metro Bay Center, LP – Colma, California (Silver).................................................... 273

LFG 26 SPEAKER CONTACT LIST

26th Annual Landfill Gas Symposium Speakers.................................................................. 279