

THE NEWEA

JOURNAL

Volume 42 No. 1

Spring 2008



Biosolids Perspectives: Treatment to Disposal

Biosolids: More a Resource than Ever
Integrated Energy and Solids Management Cost Reduction Strategies
Integrated Waste Management Breeds Success



ISSN 1077-3002

PUMP STATIONS

FROM CONCEPT TO COMPLETION

United's pre-fabricated capabilities include **custom designed products** to meet your needs such as water booster above/below ground pump stations, wet/dry pit pump stations, metering vaults, utility buildings/vaults, generator buildings, restrooms and storage facilities.

Please contact our experienced innovative team to discuss your specific requirements



Water Booster System



Boiler System



Fire Pump System



Setting Buildings

United's experienced team provides a variety of factory fabricated mechanical buildings, supplying complete systems, with single source responsibility.



United Concrete Products, Inc.
173 Church St.
Yalesville, CT 06492
ph: 800-234-3119
f: 203-265-4941
www.unitedconcrete.com

The NEWEA Journal

Volume 42 No. 1 Spring 2008



Editorial

President's Message	7
Letter from the Editor	9

Industry News

EPA Reports on Clean Water Infrastructure Needs	13
WEF Launches New, Improved Website for Infrastructure	13
Protecting the Nation's Water Sector from Security Threats	14
Water For People Increases Impact and Revenues in 2007	15
Guidebook to Help Water Utilities Improve Energy Management	15

Feature Articles

Biosolids: More a Resource than Ever (N. Beecher)	18
Integrated Energy and Solids Management Cost Reduction Strategies (T. Tyler, J. Bowers, M. Zabilansky)	22
Integrated Waste Management Breeds Success (J. Heath)	26

Departments

Membership Information	1
NEWEA Officers and Committee Chairs	6
2008 Membership Application	35
Specialty Seminar Proceedings (2007 Annual North East Residuals & Biosolids)	42
State Director Reports	44
New Members Listing	56
Schedule of Meetings	62
Advertiser Listing	63

This is Volume 42 Number 1

NEWEA Journal ISSN # 1077-3002, is published quarterly by The New England Water Environment Association, Inc., 100 Tower Office Park, Suite K, Woburn, MA 01801 Application to Mail at Periodicals Postage Rates is under USPS #024559 at Woburn, MA 01801, and additional mailing offices. Postmaster: Send address changes to: The NEWEA Journal, 100 Tower Office Park, Suite K, Woburn, MA 01801.

Cover: The Hartford WPCP's solids receiving facility with the incinerator building in the background. Photo courtesy of the Hartford Metropolitan District.

The concepts, ideas, procedures and opinions contained in the articles in this publication are those expressed by the various authors who submit the material for publication. The New England Water Environment Association, its executive committee, the editors, the executive director, and administrative staff hereby assume no responsibility for any errors or omissions in the articles as presented in this publication, or are the concepts, ideas, procedures and opinions in these articles necessarily recommended or endorsed as valid by NEWEA, its executive committee, the editors, the executive director, or staff.

The NEWEA Journal is published by: NEWEA
100 Tower Office Park, Suite K, Woburn, Massachusetts 01801
Telephone: (781) 939-0908 Fax: (781)-939-0907
email: mail@newea.org http://www.newea.org
Executive Director, Elizabeth A. Cutone

The NEWEA Journal
Publications Director/Editor: Susan Landon
Assistant Editor/Production Manager: Thomas Heinlein
Journal Committee: Daniel Coughlin, Andrew Fish, Stephen Gates, Paul Hunt, Donald St. Marie, Alan Slater
Mike Sullivan, Meredith Zona
Design/production: Robert Hurst/www.proposalgraphics.com; rob@proposalgraphics.com

ASSOCIATION EXECUTIVE COMMITTEE 2008

PRESIDENT

Robert Cutone, CDM, Cambridge, MA

PRESIDENT-ELECT

Erin Mosley, CH2M HILL, Boston, MA

VICE PRESIDENT

Howard Carter, City of Saco, ME

TREASURER

Katherine M. Mello, CDM, Providence, RI

PUBLICATIONS DIRECTOR

Susan K. Landon, Malcolm Pirnie, Inc., Wakefield, MA

PAST PRESIDENT

Arnold T. Bevins, Town of Vernon, CT

WEF DELEGATES

Steven Freedman, Brown & Caldwell, Portland, ME
Charles W. Tyler, MWRA, Winthrop, MA
Robert O. Button, CDM, Cambridge, MA
Sean Osborne, Haley & Ward, Waltham, MA
Jeanette Brown, City of Stamford, CT
John F. Hart, City of Saco, ME

PWO REPRESENTATIVE

Paul A. Dombrowski, Woodard & Curran, Cheshire, CT

MEETING MANAGEMENT DIRECTOR

Daniel P. Bisson, CDM, Manchester, NH

STATE DIRECTORS

Peter H. Grose, Fuss & O'Neill, Manchester, CT
Joseph Witts, Hayes Pump, Inc., West Concord, MA
Edward J. Savage, City of Rutland, VT
Paul A. Desrosiers, Narragansett Bay Commission, West Warwick, RI
Bradley L. Moore, City of Bangor, ME
George C. Neill, New Hampshire DES, Concord, NH

SECRETARY

Deborah P. Mahoney, Earth Tech, Concord, MA

EXECUTIVE DIRECTOR

Elizabeth A. Cutone



GET AHEAD
in Environmental Engineering
WITHOUT MISSING A STEP.

**Online world-class
graduate degrees**

Advance your career while still working. Enroll in one of the country's only online water-focused environmental programs. Worcester Polytechnic Institute is ranked among the "Best Online Graduate Engineering Programs" by U.S. World & News Report. Get ahead by making the first step; call WPI today.

508-831-6789

www.online.wpi.edu



IS ALGAE COSTING YOU TIME & MONEY?

Reservoirs, Surface Water, Holding Tanks, Clarifiers, UV Chambers

NEW *soundwaves* THAT KILL ALGAE

ULTRASONIC ALGAE CONTROL

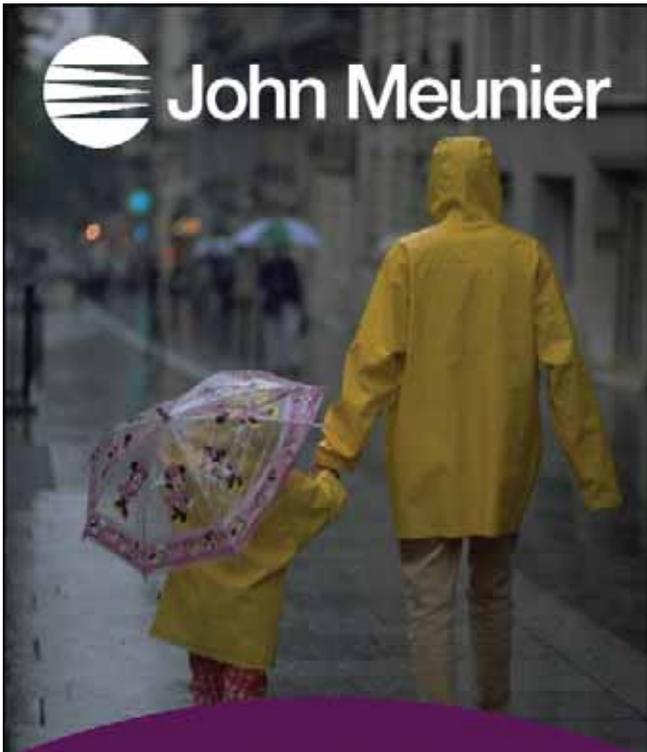
100% ENVIRONMENTALLY FRIENDLY

reduce CHLORINE USE AND LOWER THM COUNTS *lower* TOTAL SUSPENDED SOLIDS
prevent BIOFILM GROWTH WHERE ALGAE ATTACH AND THRIVE *lengthen* THE TIME BETWEEN CLEANING CYCLES
eliminate TASTE AND ODOR ISSUES GENERATED BY ALGAE

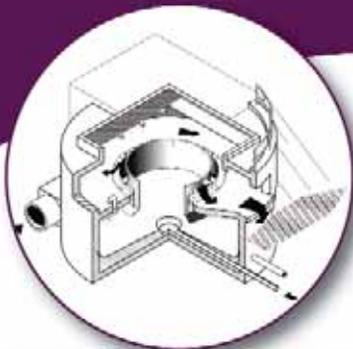
CALL MARYLAND BIOCHEMICAL TODAY FOR AN ON SITE ALGAE EVALUATION
BIOAUGMENTATION . ALGAE CONTROL . BIOREMEDIATION

800-771-7252

BIOLOGICAL ADDITIVES FOR THE WATER & WASTEWATER INDUSTRIES
VISIT US AT www.marylandbiochemical.com FOR MORE INFO



Work with the
Wet Weather specialist!



The Hydrovex® FluidSep Vortex Solid Separator:

- Performs in accordance with CSO guidance.
- Reduces overflow structure size and costs.
- Provides self cleaning structures.

For details on how you can benefit from the Hydrovex® FluidSep, contact our local representative in New England Bau / Hopkins at 1-800-733-1860

John Meunier Inc.
(412) 417-6614
cso@johnmeunier.com
www.johnmeunier.com



Solutions & Technologies

Savin Engineers, P.C.

EXPERIENCE QUALITY RELIABILITY MOBILITY



- TV Inspection**
- Flow Monitoring**
- Smoke Testing**
- Building Inspection**
- Telemetry**
- Manhole Inspection**
- Flow Isolation**
- Dyed Water Studies**

3 Campus Drive
Pleasantville, NY 10570
914.769.3200
www.savinengineers.com



FOR ALL YOUR COLLECTION SYSTEM NEEDS

Our Diversity is
Our Strength

COLER & COLANTONIO INC.
ENGINEERS AND SCIENTISTS

Energy Infrastructure	101 Accord Park Drive
Geospatial Technology	
Government	Norwell, MA 02061
Land Development	
Engineering Surveys	tel: 781.982.5400
Environmental Services	fax: 781.982.5490
Water & Wastewater	
Wastewater Operations	www.col-col.com

Massachusetts Texas Maine Ohio

Environmental Consulting
 Treatment Plant Optimization
 Environmental Assessment
 Piloting
 Design
 Design Build

METCALF & EDDY | AECOM

701 Edgewater Drive • Wakefield, MA 01880
 Ph: 781-246-5200 • Fax: 781-245-6293
www.m-e.aecom.com



Dedicated to your success



With over 250 professionals based in New England, CH2M HILL gives our clients the support and commitment they need to treat, conserve, and sustain water for our communities and businesses.

From water, wastewater, and water resources expertise to full-service engineering, construction, procurement, and operations you can count on our dedication to your success.

ch2mhill.com

25 New Chardon Street, Suite 300 • Boston, MA 02114-4770 • 617.523.2260

WWW.CH2MHILL.COM



New England Water Environment Association proudly announce their 2008 Annual Conference and Meeting!

NEWEA 2009



January 25-28, 2009

for more information: call
 NEWEA at 781-939-0908

**Boston Marriot Hotel
 Copley Place**

Come join the excitement, sign up today!

New England Water Environment Association
 100 Tower Office Park, Suite K
 Woburn, MA 01801
 781.939.0908
[mail @newea.org](mailto:mail@newea.org)/www.newea.org



Feature article

Biosolids: More a Resource than Ever

Ned Beecher

North East Biosolids and Residuals Association

Six years ago, the North East Biosolids and Residuals Association (NEBRA) conducted a national survey of public perceptions of biosolids that concluded that about 14 percent of the public had some sense of what “biosolids” means. That percentage has likely increased. Those reading this Journal certainly know what biosolids are: treated and tested municipal wastewater solids that may be used as soil amendments and fertilizers. (See <http://www.nebiosolids.org/pdf/Biosolids-theWord-Aug05.pdf> for a thorough discussion of official usage of the word.)

But even our professional understanding of biosolids is changing. For example, the term is used widely by Ontario professionals to designate any form of biological residual that can be land applied, such as “paper mill biosolids.” I have even heard “manure biosolids.” And while we know the origin of the material we call “municipal” biosolids and know its general make up, it is impossible to state precisely what is in it. We may call this the “Uncertainty Principle of Biosolids,” and it weighs heavily in the public mind and is the focus of much research.

NEBRA-led research on public perceptions of biosolids showed that this uncertainty, along with other factors such as the human waste component, make people uncomfortable when they are first learning about biosolids recycling to soils. Decades of social science research identified a variety of factors that influence how people perceive a particular risk. Being in control is one of the factors that social scientists have identified as critical to reducing a person’s fear of a potential risk. Peter Sandman called these “outrage factors,” because these factors influence a person’s level of fear – or outrage – when they face a risk. Our research found that some biosolids management programs include many outrage factors, some of which can be controlled and some of which cannot be. Uncertainty about every ingredient in biosolids is one of the most important factors that cannot be completely controlled. Thus, we assume that this

“Uncertainty Principle of Biosolids” will always be with us, causing some heightened public concern, just like biosolids’ unalterable association with human waste. These and other outrage factors present a constant challenge for public acceptance as each wastewater treatment program strives to find the most beneficial and sustainable option for biosolids management.

Carefully providing accurate information about biosolids – including information that reduces such outrage factors – is essential to gaining better public understanding of biosolids. To the extent those involved in biosolids management can reduce outrage factors, they will find greater public support of their biosolids management projects. For example, even the uncertainty of what is in biosolids can be bounded and limited. We know, for instance, that any particular biosolids contains:

- Water: anywhere from ~5 percent (heat dried pellets) to ~ 96 percent (liquid)
- Organic matter – perhaps 40- to 80-percent dry weight in biological and other organic molecules from the wastewater treatment process (process micro-organisms), foods, human waste, household and business processes, runoff, etc., including lipids, proteins, sugars, starches, polymers, etc.
- Nutrients – approximately 12 percent by dry weight, including the macro-nutrients N, P, K; lesser nutrients Ca, Fe, etc.; and micro-nutrients (Cu, Zn, etc.)
- Energy – a ton of dry biosolids contains from 5,000 - 10,000 BTUs, held in molecular bonds
- Binding sites, which adsorb and reduce the bioavailability of potentially toxic constituents, such as lead and mercury
- Inert sand, silt, grit, and synthetic particles



Feature Article

Integrated Energy and Solids Management Cost Reduction Strategies

Thomas Tyler
Jeffery Bowers
Michael Zabilansky

The Metropolitan District
Hartford, Connecticut

Presented at the 2007 Annual North East Residuals and Biosolids Conference

The Metropolitan District was chartered by the Connecticut General Assembly in 1929, and since has grown in its environmental mission to perform water supply and treatment, distribution and collection, water pollution control, and mapping/GIS services for the member towns of Bloomfield, East Hartford, Hartford, Newington, Rocky Hill,

West Hartford, Wethersfield and Windsor. The District, like all similar utilities, has faced tremendous increases in energy prices in the past several years. This article highlights several proactive strategies taken to reduce energy use and costs, primarily at the Hartford water pollution control facility (WPCF), since that facility (see Figure 1) dominates energy use at the District's four WPCFs, as seen in Figure 2.



Figure 1. Hartford water pollution control facility

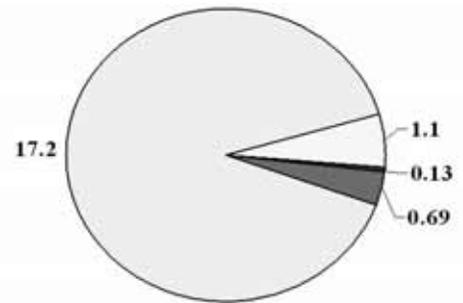


Figure 2. Comparison of Energy Use, BTUs 10¹¹

District Overview

The District serves a population of about 440,000. It also provides water to other towns in the region, maintains Riverfront Park in Hartford, and operates and maintains the Connecticut Resources Recovery Authority's municipal solid waste processing facility. The District has approximately 600 employees and an annual budget of \$100 million. It is the second largest landowner in Connecticut with more than 10,000 acres of watershed protection land. There are six reservoirs, totaling more than 40 billion gallons of water reserve, and more than 18 million kilowatts of hydroelectric power are generated each year from two facilities. The District's three water treatment plants have a combined production

capacity exceeding 70 million gallons per day (mgd). The District owns and maintains more than 2,700 miles of distribution and collection system piping in addition to more than 80 water and wastewater pump stations. There are four water pollution control facilities with a combined permitted capacity of 115 mgd. This includes the Hartford plant – the largest wastewater treatment facility in Connecticut – see Figure 1. The Hartford facility also operates a 60 mgd wet weather treatment facility. The District is in the first phase of the \$2 billion Clean Water Project to address sanitary sewer overflows, combined sewer overflows, nitrogen removal and other associated projects. See www.themdc.com and www.thecleanwaterproject.com for more details.

FST-Your Choice for Wastewater Projects



Upper Neponset Valley Replacement Sewer

ENGINEERS

FST

Since 1914

FAY, SPOFFORD &
THORNDIKE

5 Burlington Woods
Burlington, MA 01803

1-800-835-8666

www.fstinc.com

Massachusetts - New Hampshire
Connecticut - New Jersey
New York - Florida