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GLOUCESTER CITY COUNCIL
Ordinances & Administration Committee
Monday, June 15, 2015 – 6:00 p.m.
1st Fl. Council Committee Room – City Hall
AGENDA

(Items May be taken out of order at the discretion of the Committee)

1. *New Appointments:*

Shellfish Advisory Commission TTE 02/14/18 D. Nathaniel Mulcahy

2. *CC2015-018 (Cox) Amend GCO c. 21 "Streets, Sidewalks and Other Public Places" be amended by ADDING a new section entitled, "Sec. 21-13. Obstructions" (Cont'd from 06/01)*

COMMITTEE
Councilor Robert Whynott, Chair
Councilor Robert Stewart, Vice Chair
Councilor Joseph Ciolino

Back-up and Supporting Documentation all on file at the City Clerk's Office, City Hall

CC: Mayor Theken
Jim Destino
Linda T. Lowe
Chip Payson

The listing of matters is those reasonably anticipated by the Chair which may be discussed at the meeting. Not all items listed may in fact be discussed and other items not listed may also be brought up for discussion to the extent permitted by law.

City Hall
Nine Dale Avenue
Gloucester, MA 01930



CITY OF GLOUCESTER
OFFICE OF THE MAYOR

TEL 978-281-9700
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stheken@gloucester-ma.gov

June 2, 2015

Mr. D. Nathaniel Mulcahy
33 Middle Street
Gloucester, MA 01930

Dear Nathaniel:

I am pleased to appoint you to a three year term on the City of Gloucester's **Shellfish Advisory Commission**. Your appointment will be sent to the City Council for their meeting of June 9, 2015. Confirmation of your appointment will be referred out to the next Ordinance and Administration subcommittee, and you will be notified by the Clerk of Committees as to the date on which the O&A Committee will review your appointment.

In order for you to attend and vote at meetings until your appointment confirmation is finalized, I have issued you a 90 day temporary appointment. Please report to the City Clerk's office at your earliest convenience to pick up your appointment card (*copy enclosed*) and be sworn in.

On behalf of the City of Gloucester, I greatly appreciate your dedication to public service and look forward to working with you in the coming years to help make Gloucester a better place for all of us to live.

If you have any questions or if you require additional information, please feel free to contact my office.

Thank you again.

Sincerely,

Sefania Romeo Theken
Mayor

cc: Mayor's Report to the City Council
David Sargent, Shellfish Constable
Enclosure

Sec. 20-2. - Shellfish advisory commission.

- (a) *Created; membership; appointment; compensation.* There is hereby created and established in the city a commission to be known as the shellfish advisory commission. The commission shall consist of five members of all whom shall be citizens of the city and shall be appointed by the mayor, subject to confirmation by the city council, and shall be unpaid.
- (b) *Terms of members; chairperson.* All members of the shellfish advisory commission shall be appointed for three -year terms. The commission shall choose one of their members to be chairperson.
- (c) *Compensation.* The shellfish advisory commission shall consist of three persons from the shellfish industry, the chairperson of the conservation commission or his designee and a marine biologist, if available.
- (d) *Duties.* The shellfish advisory commission shall advise the mayor and city council on all matters pertaining to shellfish, seaworms and eels. The commission may establish, subject to approval by the city council, a management plan with rules and regulations relating to the issuance of permits and taking of shellfish, seaworms and eels.

(Ord. No. 49-95, § 1, 12-29-1995)

Cross reference— Boards, commissions, councils, and committees, § 2-400 et seq.

Nathaniel Mulcahy received his Bachelor of Science in mechanical and industrial engineering at the University of Massachusetts. He then went on to Washington University for his Masters of Science where he specialized in fluid dynamics and neuro-structures. He received his Dottorato di Ingegneria at l'Università Genova specializing in design for manufacture. In addition to other degrees, Mulcahy is currently working on a PhD in Marine Sciences at the University of New Hampshire. He is an inventor, and has been internationally recognized inventor for over three decades. His primary focuses have been humanitarian engineering and Ecology. He has worked for many companies including: Gillette, Lego, Textron, and Emerson. While at Emerson he held the position of *Director of Research*. Mulcahy has also consulted for organizations including CNR, Gates Foundation, UNCCD and the Politecnico di Milano. Mulcahy is currently the Founder and Director of WorldStove. In 2010, WorldStove became the world's first company to be certified as carbon negative, and the business model Mulcahy developed was awarded as one of the top ten for social good in 2011 by Trend Setter. Through WorldStove, Mulcahy has worked to help create local self-sustaining jobs in 13 countries through knowledge transfer and ecology programs in the areas of manufacturing, local energy, sustainable sanitation, reforestation, and soil and coastal restoration. For the past three years, as part of his coastal ecology programs, his research has focused on the possible ecological and economic impacts of existing invasive or non native flora and fauna. He has been a Lecturer at the Politecnico di Milano and taught at the University of Massachusetts, and is currently an affiliate researcher at the University of New Hampshire and an associate researcher and the Scottish Association for Marine Sciences

D.Nathaniel Mulcahy, Dott Ing, MSME, BSME
Owner/Director WorldStove

E-mail: nmulcahy@worldstove.com
Cell: 001 (413) 275 8737

REASEACH/AREAS OF INTEREST

Engineering:

Humanitarian engineering; design of mechanical assemblies for manufacturing; sustainable sanitation, marine industries; all with a focus on social entrepreneurship and local job creation.

Marine Science:

Determining the cause *Mya arenaria* die off in the greater Boston area, *Ostrea edulis* populations, establishing sustainable fisheries for *Ensis directus*, and hatchery and depuration devices and techniques for multiple shellfish species.

EDUCATION

- 2014 Algalculture for shellfish and Multi – Species Hatcheries. Scottish Association of Marine Sciences, Oban, Scotland (UK)
- 2013 Oyster Cultivation and invitro fertilization of shellfish Willam and Mary, Virginia Institute of Marine Sciences (VIMS), Gloucester VA
- 2007 Dott Ing (Laurea in Ingegneria Industriale) Industrial Engineering: Specializing in Design for Industrialized Production and Life Cycle
Università Degli Studi di Genova, Genova Italy
- 2002 MSME Bio Mechanical Engineering: Concentration on Fluid Dynamics
Washington University, St. Louis MO
- 2000 BSMIE honors Design of Mechanical Assemblies
University of Massachusetts, Amherst

WORK EXPERICENCE

2002- Present

Engineering Consultant

In addition to my regular work I have been an engineering consulting and designer for major corporations since 2002. Clients have included Gillette, Textron, UNCCD, UNH, DMF, CNR, and major automotive corporations. Projects have included design work for the Gillette Venus, gearing used on the shuttle bay doors, and the first eight cylinder manifold for formula 1, when the switch was made to go from twelve to eight cylinders.

2015-Present **Editor** **Virginia Institute of Marine Sciences**
Editor of the VIMS TOGA (Tidewater Oyster Grower's Association) Journal.

2015-Present **Lecturer** **Gordon College**
Co-teaching a class on Social Entrepreneurship and Invention. My part of the class is a compressed version of the two year course on invention and innovation I developed for the Politecnico di Milano's Engineering Department.

2014-Present **Research Associate** **Laurence Mee Center**
The Laurence Mee Center for Society and Sea was launched by the Scottish Association for Marine Sciences. As a research associate I work as part of a team of interdisciplinary researchers, collaborating on key issues related to aquaculture and sustainable fisheries.

2013-Present **Affiliate Faculty Member** **University of New Hampshire**
My work with UNH has been primarily focused on shellfish and the development of sustainable aquaculture programs and devices. Other projects have included computational fluid dynamic mapping of the Greater Boston Harbor in an attempt to determine the cause of rapid decline of Mya arenaria populations.

2006-Present **Director/Founder** **WorldStove**
WorldStove began in 2001 as a weekend only humanitarian engineering effort and became a proper company in 2006. Since then we have developed 25 new products, run programs in 13 countries, trained over 4000 collaborators and been recognized for both our products and our business model. In 2009 WorldStove became the world's first company to be certified as carbon negative. Recognized for our work in woman's health, sustainable sanitation, restoration of ecosystems, and the creation of permanent local self-sustaining jobs with a focus on ecologically fragile areas, disadvantaged populations. Our latest achievement is the partnering with organizations which provide safe houses for the victims of human trafficking in Massachusetts. (client list includes World Food Program, Bellona Foundation, Gates Foundation, Rwandan Red Cross)

2008-Present **Director** **WorldStove Ecosystem Restoration**
WorldStove began in 2008 to design coastal and ecosystem restoration programs in collaboration with the Coral Reef Alliance. Using fluid dynamic predictive modeling to evaluate silt deposits and coastal erosion I have developed both predictive erosion studies and remediation procedures which compensate for climate change, sea level rise, and negative agricultural practices. We have been successfully applying these practices in Haiti, Africa, and Massachusetts

2009-Present

Director/Founder

Measurable Offsets

In 2009 WorldStove became the world's first company to become certified as carbon negative. This combined with our unique business model of donating 100% of all offsets earned to the locally owned and operated StoveHubs brought enough attention to this division to require the creation of a separate organization for the brokering of these offsets. Most clients are corporate and based in the EU but we have had a growing number of clients from California and Australia due to recent legislation.

5/2002 – 10/2006

Director of Research and Development

Emerson Appliance

While at Emerson I was promoted from designer to director of R&D. In this capacity I was required to lead teams on three continents in the development of new products. I oversaw the merger of Plaset and Ceset into Emerson and helped establish a research group in Pune India. By the time I left, Emerson held 52% of the world's market for appliance motors. My daily tasks involved new product development, development of life testing procedures, market analysis, design of production lines, adaptation of existing products to customer needs. Coordinating projects with input from teams on three continents and a work force of 1200. Critical to my role as Director of R&D was the design and overseeing of life testing experiments to determine safety, durability and strength of critical structural and electromechanical components.

2/2001-5/2002

Instructor

Washington University Saint Louis

Taught Fluid Dynamics and Ran Laboratory for students leaning about pump efficiencies and capillary flow of emissive fluids in harmonic resonance.

4/1999-12/2000

Product Designer

Lemelson Assistive Technology Development Center

Worked as team leader on a project to develop a wheel chair for a child with cerebral palsy. The system incorporated a neuro feedback system which, using specific algorithms, would anticipate epileptic seizures and reduce the number of instances by up to 80%. My work on this project continued and lead to the neuro structures work I conducted at Washington University's Barns Jewish Hospital.

4/1998-3/1999

Product Designer

Cone Drive/TEXTRON (Traverse City, MI)

My work at Cone Drive began as an intern in the summer of 1998, during which time I was the team leader for a project which led to the development of an impeller and shroud for cooling gearboxes. Using both FEA of the blades, CFD of cooling channels, and Dynamometer tests I was able to achieve a 338% improvement in cooling over former design. The success of this project prompted Cone Drive to promote me and keep me on as an engineering consultant.

5/1997-9/1997

Engineering Intern

Gillett Corporation (Boston)

While at Gillett, I was part of the 226/Venus team and developed laboratory tests that measured and quantified shaving parameters.

PARTIAL LIST OF PATENTS AND INDUSTRY PROPRIETARY DEVICES

LuciaClearwater. Carbon negative cookstove capable of water depuration (2014)
Oyster cage and flipping device specifically designed to meet the needs of *O. edulis* (2014)
Depuration and degritting device for *Ensis directus* (2013)
Variable, Multi Parameter Control for Industrial Biochar Production (2012)
Biochar dosing and application device for restoring coastal ecologies and sand dunes (2012)
Process for using nutrients in invasive algae species to inoculate biochar for use as a soil amendment (2012)
Process for harvesting invasive algae species (2011)
Biochar community toilets (2010)
Emergency Relief Flat Pack Origami Stove (2010)
Aliquot dosing process for restoration of desertified soils (2009)
Continual process pyrolytic home heating unit and power generator (2009)
LuciaPQ developed for the One Laptop for Every Child Program (2009).
LuciaStove Process (Oct 2008)
Starting device for synchronous wet rotor pumps (July 2005)
Device for improved CNC milling (May 2005)
Anti cavitation integrated heating element for pumps (January 2005)
Anti sheering force rotor for wet rotor pumps (October 2004)
Tangential Blower AlCap.Plaset S.P.A. TO2003A000495 (June 2003)
Acoustic Resonator, a device used to measure four quantifiable elements of post-shaving hair and skin quality. Gillette Corp. (2000)
Neural-feedback algorithm and device for the reduction of epileptic seizures (1999-2001)
Living Spring, an injection moldable spring. Colgate Palmolive (1999)
Bat Fan (turbulence based impeller) Textron Corporation (1998)
Cybernetic Ear (1982)

PARTIAL LIST OF AWARDS AND HONORS

Voted one to the Top Ten social good business models of 2011 by Trend Hunter
Featured in the Clinton Foundation 2010 Earthday Celebration
Humanitarian of the Year Award— Val Curone Lions Club (April 2008)
Premio Industria Innovativa Biomeccanica Camera Commercio AL (August 2006)
Dirigente EAME (March 2005)
Outstanding Teacher Award (October 2002)
Highest Score On Design Doctoral Qualifier (February 2002)
Policemen's Award for Biodynamic Research (June 2001)
Tree and Plaque placed in honor of my leadership and creativity by the University of Massachusetts
School of Engineering (May 2001)
College of Engineering Dean's Fellowship, Washington University (February 2001)
First place ASME Design Award (November 2001)
College of Engineering Student Service Award (May 2000)
ASME Outstanding Student Leader Award (April 2000)
First Place ASME Old Guard National Engineering Research Paper Competition (November 1999)
5th place SAE International Super Mileage Vehicle Competition (June 1999)
College of Engineering Student Service Award (May 1999)
First Place Region 1 ASME Research Competition (May 1999)
First Place Western Mass ASME Student Paper Competition (March 1999)
Second Place Tau Beta Pi Engineering Design Competition (March 1998)
3rd place SAE National Super Mileage Vehicle Competition (March 1998)
Single largest grant ever from the Alumnae Association for undergraduate research for the
Development of a ultra efficient internal-combustion-engine vehicle (November 1997)
Massachusetts Patent Attorney Association Award for Invention of Aid for Deaf Parent (1982)

PUBLICATIONS

“In situ Observation and Computational Fluid Dynamic Analysis of *Ensis directus* Orientation with Regard to Dominant Currents.” . N.Mulcahy Journal of Shellfish Research Volume 33, Number 2 2014

“Cultivated Shellfish Based Carbon Offsets: Mitigating Climate Change, Improving the Environment and Providing Economic Incentives for Growers”. N.Mulcahy Journal of Shellfish Research Volume 33, Number 1 2014

“Improved techniques for depuration and degritting of *Ensis directus*”. N.Mulcahy Journal of Shellfish Research Volume 33, Number 1 2014

Coauthor of Textbook "Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, and Reversing CO₂ Increase". Coastal restoration utilizing biochar aliquots and shellfish restoration. CRC Press 2013

“Biochar soil amendment increases tomato seedling resistance to drought in sandy soils”. D.Nathaniel Mulcahy, D.L. Mulcahy, D. Dietz. Journal of Arid Environments Volume 88, January 2013, Pages 222–225

‘Measurement of Strain by MRI Tagging in Physical Models of Brain Injury’. P.V. Bayly, N. Mulcahy, G. Meyer, G.M. Genin, ASME Summer Bioengineering Conference 2003.

Invited Submissions and Reports

“What’s In A Name? Reflections on Cultural Sensitivity and Messaging in Cookstove Programs”. D.N. Mulcahy, K. Ragsdale. Journal of Society for Medical Anthropology. March 2014

“The Green Menace :Risks posed by *Carcinus maenas* to shellfish industries and possible solutions” N. Mulcahy, VIMS TOGA. Spring 2014

“Taking census of intertidal *Ostrea edulis* populations in New England waters and what their existence implies for oyster growers”. N. Mulcahy, VIMS TOGA. Winter 2013

PARTIAL LIST OF PRESENTATIONS, LECTURES, SIMPOSIA

Depuration, Innovation, and Diversification as keys for sustainable Shellfishing Industries 8TGM 2015
Structural and functional advantages of *Ciona intestinalis* for use as fish feed. NACE 2015
Sustainable Aquaculture Devices Scottish Association of Marine Sciences Oct 2014
Environmentally and Economically sustainable Carbon Offset Options UN Climate Summit NYC
September 14 2014
Social Entrepreneurship: How to Do Well AND Do Good. Enterprise Center Salem State 2014
Earth Day Lecturer for ASF /Advocates for a Sustainable Future) Gordon College 2014
Lectured on Green and Carbon Negative Coastal Restoration Projects for the Ocean Classroom
Foundation Fall 2013
Occasional Lecturer at the Politecnico di Milano Engineering Department (Lecco)2006-2009
USBI Sonoma 2012
ETHOS 2009, 2010, 2011, 2012
Global Alliance For Clean Cookstoves 2010,2011,2012,2013,2014
Concordia Summit 2012
Presentaiona at Istituto Nazionale de Enfermedades Respiratorias (Mexico City) 2011
Command performance for the Globe Forum, the Founder of Ikea, and inventor of Skype 2010
Gates Foundation Convening as one of the top ten, world experts, on Biochar 2010
Torre Superiorie Eco Simposium 2009
COP15
COP 9 Quantifying Carbon Offsets
Terra Futura
Terra Madre
Florence
University of Njala
Cape Coast University (Ghana)
Freetown University
Ran or am running programs in Uganda, Ghana, Togo, Sierra Leone, Rwanda, Senegal, Mexico, Haiti,
Nigeria, Tanzania, Mongolia, Afghanistan, United States, Italy, Sweden,

PROFESSIONAL AFFILIATIONS

Founding member of UN Foundation Clean Cookstove Program
East Coast Shellfish Grower's Association
National Shellfisheries Association
Advisor to the Afghan Women's Program
SuSanA (Sustainable Sanitaion Allaiance)
PCIA (Partnership for Clean Air Alliance)
Founding Member of ICHAR
ASME (American Society for Mechanical Engineers)
SAE (Society of Automotive Engineers)
Pi Tau Sigma (Mechanical Engineering Honors)
UNCCD



CITY OF GLOUCESTER 2015 CITY COUNCIL ORDER

ORDER: CC#2015-018
COUNCILLORS: Melissa Cox

DATE RECEIVED BY COUNCIL: 05/26/15
REFERRED TO: O&A & B&F
FOR COUNCIL VOTE:

ORDERED that the Gloucester Code of Ordinances Chapter 21 “Streets, Sidewalks and Other Public Places*” be amended by **ADDING** a new section entitled “Sec. 21-13. Obstructions” as follows:

Sec. 21-13. Obstructions.

- (a) *Generally.* No person, other than one employed directly or indirectly by the city and while in the performance of necessary duties, shall at any time erect or affix or cause to be erected or affixed in any public sidewalk or city street any fixture or structure or place or leave or cause to be placed or left in any public sidewalk or city street any article or material or merchandise or park a vehicle or a cart in any public sidewalk or city street for the purpose of displaying any article or material or merchandise until a license therefor has first been obtained from the licensing commission.
- (b) *Removal; Fines.* Any such fixture, structure, article, material or merchandise in any city street or public sidewalk found to violate this section may be removed by or under the direction of a city police officer and at the owner’s expense and such a violation may result in a fine of the cost of removal plus \$50.00.
- (c) *License Application.* The application for a license under this section shall be in writing, shall fully and specifically describe the reasons for the same and shall be delivered to the inspector of buildings. Within 45 days next following the submission of such application, the license shall be granted or denied with reasons set forth therein by the licensing commission. Notice of denial of an application under this section shall be delivered to the applicant in writing. No applicant having been denied a license as

provided in this section shall submit the same or a similar application within one year of denial without including in the new application facts showing that the circumstances upon which the original denial was based have substantially changed. Pedestrian access along all existing sidewalks shall never be less than 48 inches wide, 24 hours per day, seven days per week and merchandise shall be securely and adequately placed so that it will not endanger passersby or fall or extrude into any street or alley.

(d) *License Issuance.* All licenses granted under this section shall be issued and signed by the city clerk, as clerk of the licensing commission. The clerk shall keep a record of all licenses issued.

(e) *License Fees.* The following fees shall be charged for licenses under this section:

- (1) For an annual license: \$ _____.
- (2) For a monthly license: \$ _____.
- (3) For a weekly license: \$ _____.
- (4) For a daily license, not to exceed seven days, for each day: \$ _____.

FURTHER ORDERED that this matter be referred to the Ordinances & Administration Standing Committee and Budget & Finance Standing Committee for review and recommendation.

Melissa Cox
Ward 2 Councillor