



MANHATTAN COLLEGE

Judith Swift
Coastal Institute - Narragansett Bay Campus
University of Rhode Island
Narragansett, RI 02882

April 20, 2013

RE: NAC CESU Non-Federal Partner Application for Manhattan College

Dear Ms. Judith Swift

The Manhattan College Civil and Environmental Engineering Department and Biology Departments are respectfully requesting to become a partner in the North Atlantic Coast Cooperative Ecosystem Studies Unit (NAC CESU). We have enclosed an overview of our institution and a description of how we can contribute to the mission and vision of the NAC CESU. Also included are brief professional summaries of the people from our institution that would be interested in contributing to the NAC CESU mission, active and completed research grants, from both federal and non-federal agencies, and additional information requested in the revised CESU application packet.

Kerryanne Donohue will serve as the contact person and technical representative for Manhattan College, with Kirk Barrett as an alternate. We can be reached best by email: kerryanne.donohue@manhattan.edu and kirk.barrett@manhattan.edu. Ms. Donohue and Dr. Barrett agree to relay agency-specific research, technical assistance and educational needs and associated funding opportunities to other institutions/organizational members. Our full contact information is below. We, along with the administration of Manhattan College, have read the CESU agreement and agree to support the CESU mission and goals and fulfill the roles and responsibilities of a non-federal partner, as described in the CESU agreement.

Thank you for outlining the sequence of steps necessary to join the NAC CESU, as per your email correspondence in January, 2012, and March 2013. We look forward to hearing from you soon, and are enthusiastic to serve the consortium in the near future.

Sincerely,

Kerryanne Donohue, MS, P.E.
Visiting Instructor
(718) 862-7171

Kirk Barrett, PhD,
Associate Professor
(718) 862-7517

Civil and Environmental Engineering Department
Manhattan College Leo Engineering Building Room 309
4513 Manhattan College Parkway
Riverdale, NY 10471 Fax: (718) 862-8035



Non-Federal Partner Application for Manhattan College in NAC CESU

Who We Are:

Manhattan College is an independent Catholic institution of higher learning that embraces qualified men and women of all faiths, cultures, and traditions. It was founded in 1853 by the De La Salle Christian Brothers. The campus is in the Riverdale section of the Bronx, New York City, NY. It serves a diverse population, with 28% of the student from underrepresented minority ethnicities in the school of engineering.

The Civil and Environmental Engineering (CEEN) Department is one of four engineering departments in the School of Engineering, offering bachelor and master level degrees in ABET (Accreditation Board for Engineering and Technology) accredited programs. The CEEN department currently has 400 undergraduate students, the largest department in the School of Engineering and at Manhattan College, which has 3000 undergraduate students overall. There are 165 students in the graduate engineering program. Manhattan College has the second largest Civil Engineering Department in New York State.

The Master's program in environmental engineering is one of the oldest and most renowned programs in the nation. The program has an international reputation for being at the forefront of the field. Extensive faculty research in water quality modeling and water/wastewater treatment has been a trademark of the program from its beginning. The faculty has received numerous national and international awards for their research, and the program proudly boasts that six of its alumni have been inducted into the National Academy of Engineering.

CEEN works very closely with the Biology Department in the School of Science at Manhattan College. Environmental Engineering students are required to take at least one core class and an elective class from the biology department, and collaborative research between the departments is ongoing. The Biology and CEEN offices are adjacent to each other, in the same building and floor on campus.

The Mission:

The mission of Manhattan College is to provide a contemporary, person-centered educational experience that prepares graduates for lives of personal development, professional success, civic engagement, and service to their fellow human beings. The College pursues this mission through programs that integrate a broad liberal education with concentration in specific disciplines in the arts and sciences or with professional preparation in business, education and engineering

The goal of both the CEEN and Biology departments is to prepare students, through instruction and research, to function professionally as responsible members of the global community dedicated to life-long learning collaborative practice, discovery and sharing a breadth of knowledge.

Primary Programs, Departments, and Institutes to be Engaged in CESU activities at Manhattan College

The primary departments that will be engaged in CESU activities will be the Civil and Environmental Engineering Department and the Biology Department. Bachelor of Science Degrees, and Master of Science and Engineering Degrees are awarded by CEEN. More information about the undergraduate degree program can be found at:

<http://www.manhattan.edu/academics/engineering/civil-environmental-engineering/civil-engineering>

The Environmental Engineering Program is recognized nationally for its ability to produce well-prepared environmental engineers. The Environmental Engineering program at Manhattan College dates back to 1939. The Master of Engineering program in Environmental Engineering, as well as the bachelor degrees, are ABET accredited. This program prepares students for careers at environmental consulting firms, academia, government agencies or in private industry, where they will work to solve the many challenges of life in this evolving world: providing safe drinking water, clean air and waterways, proper disposal of solid and hazardous waste, effective environmental site restoration, and responsible management of our natural resources.

Certificate programs, which consist of prescribed courses in a specific concentration area, are available through the environmental engineering graduate program. Courses in these programs may be applied to a Master's of Engineering or a Master's of Science Degree in Environmental Engineering.

3-Course Certificate Programs:

Environmental Engineering
Water Quality Modeling
Environmental Construction Management

Treatment Process Engineering
Geoenvironmental Engineering
Water Resources

A Combined, 5-Course Certificate Program in Environmental Engineering and Project Management is also available. Information about these degrees and certificates can be found at:

<http://www.manhattan.edu/environmental>.

Every year for the last 57 years, Manhattan College has conducted a summer institute in water pollution control (see www.mciwpc.org) which provides an opportunity for professional development of federal scientists and managers involved in the CESU. It is the longest, continuously-running Environmental Engineering short course in the United States. Found in the **supplemental information** section of this application is a list of the agencies and employers who have had their employees take courses at the institute for the last two years.

The Biology Department offers a bachelor of science degree in biology. They also offer the biology majors a pre-professional program in Environmental Biology. More information can be found at Biology Department's website, <http://www.manhattan.edu/academics/science/biology>.

Expertise that Manhattan College can contribute to the NAC CESU

Manhattan College has much to contribute to the work of the NAC CESU. Our faculty has a long and distinguished record of contributing to improving understanding of environmental issues in the New York-New Jersey Harbor Estuary and beyond. We have expertise in a variety of disciplines that are directly relevant to the mission of the CESU, among them:

- geochemistry
- coastal ecology
- ecological restoration
- environmental engineering
- coastal engineering
- environmental assessment
- water quality modeling
- ecotoxicology
- hydrologic, geologic and water quality monitoring

Manhattan College's faculty and students in this program have in the past and continue to make important contributions, with a focus on water:

- modeling fate and transport of toxic pollutants
- improving processes to improve removal of pollutants from wastewaters discharged to coastal areas
- monitoring presence of toxics and nutrients in coastal waters and their tributaries
- hydrological restoration of saline, tidal and fluvial wetlands and habitats to control exotic species expansion and promote native species populations.
- coastal habitat impact assessment and recovery after coastal storm events.

Short professional biographies of the environmental engineering and biology faculty that expect to work with the CESU are attached as **supplemental information**.

The faculty at Manhattan College has expertise and decades of experience in water quality modeling, groundwater modeling and hydraulic capacity assessment of natural and engineered systems. Currently, the Environmental Engineering is expanding with two new hires to include water and environmental sustainability, extreme weather infrastructure and planning and urban resiliency. Faculty have received funding from NSF, EPA, NIEHS, NYS DEC, NYC DEP, the Hudson River Foundation, USGS, USDA and multiple private companies, consulting firms and non-for-profit organizations. Every year for the last 57 years, Manhattan College has conducted a summer institute in water pollution control (see www.mciwpc.org) which provides an opportunity for professional development of federal scientists and managers involved in the CESU.

Relationships that Manhattan College has had with federal and non-federal agencies

Relationships that Manhattan College has had with federal and non-federal agencies that are related to federal land management, environmental and research can be best described in the list of current and completed grants that the college and the faculty of the college have received. This list is attached as **supplemental information**.

Ways Manhattan College can Contribute to the Mission and Vision of the NAC CESU

The Manhattan College Environmental Engineering and Biology Department faculty have been involved in the assessment and modeling of natural and engineered system related to surface water quality, groundwater quality, wastewater treatment, and storm water treatment and control. Our research and consulting experience has included assessing impacts of extreme weather on treatment processes, water quality, and impacts of different water quality parameters on the environmental health, sustainability and usability. The faculty has worked on many facets of large, federally funded environmental restoration projects in the region, such as the Hudson-Raritan Estuary Project of New York and New Jersey, NY and NJ Harbor Deepening Project and the Jamaica Bay Marsh Islands Project. They are intimately familiar with the region's geography, climate, environmental and cultural influences. They can offer assistance to the region as they learn from and recover from Hurricane Sandy devastation in October, 2012. Federal partners have expressed an interest in Manhattan College assisting in bringing the environmental restoration community together for workshops that would aid in the collaboration of an environmental restoration plan that could best meet scientific, public and agency specific objectives. As environmental restoration projects are implemented, Manhattan College can also assist in monitoring them in years following construction.

Facilities and Equipment

Many laboratories at Manhattan College are available to perform work for CESU tasks. They include the Environmental Engineering, Biology, Fluid Mechanics and Soil Mechanics Laboratories.

The environmental engineering laboratory on campus has the ability to carry out routine and more sophisticated water and sediment sampling and analysis. This includes analysis of all major water quality parameters including: alkalinity, nitrogen speciation, phosphorous, metals, organic carbon, solids, particle size, microbial contaminants (fecal and total coliforms, *ecoli*, *enterococcus*, fecal strep, etc.). The lab has been involved with large scale water quality sampling programs including total residual chlorine, indicator organisms, general water quality, nitrogen and phosphorous speciation, etc. It consists of several rooms with the total space approximately 6800 square feet. The analytical capabilities of the environmental lab are listed in the below table.

ANALYTICAL CAPABILITIES: Environmental Laboratory

<i>Instruments</i>	<i>Make/Model</i>	<i>Analysis</i>
Inductively Coupled Plasma -Atomic Emission Spectrometer (ICP-AES)	LEEMAN LABS. INC/ Prodigy High Dispersion ICP	Metals (Na,K,Ca,Mg,Cu,Ni,Cr,As,Ag,Pb,Cd,Co, etc.)
Atomic Absorption Spectrophotometry (AAS)	BUCK SCIENTIFIC/220-GF (Graphite Furnace)	Metals (Na,K,Ca,Mg,Cu,Ni,Cr,As,Ag,Pb,Cd,Co, etc.)
Ion Chromatograph	DIONEX/DX-120	Anions (NO_3^- , CO_3^{2-} , Cl^- , Br^- , SO_4^{2-} , ClO_2^- , ClO_3^- , CrO_4^{2-})
Gas Chromatograph with FID detector	HEWLETT PACKARD/5890 Series II	Volatile and semi-volatile organics
High Performance Liquid Chromatograph with diode array detector	BECKMAN SYSTEM/ Gold HPLC	Polar organic chemicals
Capillary Electrophoresis with diode array detector	Beckman P/ACE MDQ	Anions (NO_3^- , CO_3^{2-} , Cl^- , Br^- , SO_4^{2-} , ClO_2^- , ClO_3^- , CrO_4^{2-})
Spectrophotometers	HACH DR/2400 and DR/2800; BECKMAN COULTER/DU 800; HITACHI U2000	Ferrous iron, free chlorine, total chlorine, dissolved sulfide, hexavalent chromium, nitrate, ammonia, total nitrogen, total phosphorous, orthophosphate, chl a, COD
TOC Analyzer	SHIMADZU TOC-V CPH/CPV	TOC, DOC, POC, TN
pH Meters and electrodes	ORION	pH, ORP, NH_3 , alkalinity, acidity, total hardness
Conductivity Monitors	OAKTON CON 110 Series and 200 series	EC
Turbidimeter	Hach Turbidity Spectrophotometer 210 DP	Turbidity
Dissolved Oxygen Meters	YSI 52 (Laboratory) and 57 (Field)	O_2 , BOD

The Biology Laboratory is approximately 2000 square feet. The following table contains a list of equipment that can potentially assist with CESU's activities.

<i><u>ANALYTICAL CAPABILITIES: Biology Laboratory</u></i>	
Sorval refrigerated high-speed centrifuges (2)	molecular imager
desktop PCR machines (4)	microplate reader
Revco -80C ultralow freezer (2)	water baths
various incubators (including Percival chambers), some with shakers included	molecular biology grade ultrapure water supply
Autoclaves	CO2 incubator
laminar flow hood for cell culture	cryostat
fluorescent inverted microscope, with data-collection software	UV crosslinker

The Soil Mechanics and Fluid Mechanics laboratories can also be made available for CESU activities. They house a 30-ft long water flume, 5 total station survey equipment sets, two Load Track Triaxial soil test systems, multiple constant head permeability devices, sieve stacks, and hydrometers.

Demographics

The demographics of the entire student body (4094) that currently attend Manhattan College are listed below. Manhattan College is not categorized as a minority serving institution.

Racial/Ethnic Breakdown

Category	Number	Percent
White, non-Hispanic	2545	62%
Hispanic	764	19%
Race and/or ethnicity unknown	408	10%
Black or African American, non-Hispanic	158	4%
Asian, non-Hispanic	144	4%
Two or more races non-Hispanic	70	2%
American Indian or Alaskan Native, non Hispanic	5	0%
Native Hawaiian or Other Pacific Islander non- Hispanic	0	0%

Supplemental Information I: Professional Biographies of Faculty to work on CESU activities

Supplemental Information II: Grants received by Manhattan College faculty

Supplemental Information III: Attendance of governmental employees (federal and non-federal) and others who attended Institute of Water Pollution Control Short Courses from 2010 - 2011

Supplemental Information IV: Letter of Support from a NAC CESU Participating Agency

Supplemental Information V: Letter from Manhattan College Administration agreeing to 17.5% overhead and CESU commitments.

Supplemental Information I: Professional Biographies of Faculty to work on CESU activities

Dr. Kevin Farley is a Professor of Civil and Environmental Engineering and the Director of the Institute in Water Pollution Control at Manhattan College in Riverdale, New York. His research focuses on water quality modeling, sediment contamination, bioaccumulation of toxic chemicals, and metals. Current research projects include studies on the mobilization of metals from contaminated sediments, on the development of a chemical speciation-transport model for metals in lakes, on the oxidation of chromium during drinking water disinfection, and on contaminant fate and bioaccumulation modeling of PCBs, dioxin/furans, PAHs, pesticides and mercury in the Hudson River and New York Harbor.

In addition, Dr. Farley has served as a technical advisor and consultant on issues related to water quality, water quality modeling, sediment contamination and bioaccumulation of toxic contaminants. This has included scientific review panels for the EPA Chesapeake Bay Program, the National Research Council Committee on Remediation of PCB-Contaminated Sediments, the EPA Science Advisory Board panel reviewing the agency's risk assessment framework for metals, and the UNEP International Panel for Sustainable Resource Management Metals Workgroup. Dr. Farley is currently serving as a technical consultant for sediment contamination studies in New York-New Jersey Harbor, and has recently been appointed to the Ecotoxicity Technical Advisory Panel (ETAP), which serves as the cooperative research arm for the international nonferrous metal industries. He is also a member of the American Chemical Society, the Society of Environmental Toxicology and Chemistry, and the American Society of Limnology and Oceanography.

Dr. Farley has served as a technical consultant on issues related to water quality, water quality modeling, sediment contamination and bioaccumulation of contaminants in aquatic food webs. Previous clients have included the U.S. Department of Justice, the American Geological Institute, the Confederated Salish and Kootenai Tribes, and the California State Water Resources Control Board (SWRCB). He has also worked as a part-time associate at HydroQual, Inc., an environmental engineering consulting firm in Mahwah NJ (2002-2010), on projects for the U.S. Environmental Protection Agency and the Hudson River Foundation.

Dr. Michael Judge is Professor and Chair of Biology at Manhattan College. He has been at Manhattan College since 1993 and has over 25 years of research experience in coastal communities. In particular, Dr. Judge has studied (1) the invasion biology of the non-native Asian shore crab *Hemigrapsus sanguineus*, and (2) near-shore habitat quality necessary for salt marsh crabs and bivalve aquaculture. The relatively recent invasion by the Asian shore crab affords an opportunity to examine the changes in North Atlantic coastal rocky shoreline communities. With colleagues, Dr. Judge been developing a mathematical model capturing the invasion population dynamics and have published on cues used by the larval stages to identify suitable adult habitat. Salt marshes and estuarine mudflats are critical habitat for a wide variety of invertebrate species. Dr. Judge has co-authored 3 publications on the specificity expressed by fiddler crabs for salt marshes and published on growth rates of bivalves cultured in mudflats between oyster reefs. He has also assisted with numerical model efforts to predict larval survival under varying levels of dissolved oxygen within Long Island Sound.

Kerryanne Donohue-Couch is a visiting instructor in the Department of Civil and Environmental Engineering at Manhattan College, NY. She came to Manhattan College 3 years ago, after 12 years with the US Army Corps of Engineers – New York District (USACE- NYD), and 18 years as a practicing engineer. She was the team leader and lead hydraulic engineer for USACE-NYD Ecosystem Restoration Team in its Engineering Division. She was responsible for the research and technical preparation of designs, plans and specifications, and reviews of all ecosystem restoration projects in the district. She had to determine the applicable hydraulic design criteria for all features of ecosystem restoration project designs. She implemented hydraulic, hydrodynamic and coastal engineering models and data collection efforts. Her major projects included Beneficial Use of Dredged-Material – NY-NJ Harbor Deepening Project (Elders East, Elders West, Yellowbar) and its salt marsh mitigation sites, Jamaica Bay Ecosystem Restoration Project and the Hudson-Raritan Estuary Study. She facilitated “Lessons Learned” workshops locally and 2 nationally, which created a forum for scientists, engineers and managers who have designed and constructed wetland restoration projects to share information. She authored and implemented sections of the 10-year monitoring plan for the Jamaica Bay Salt Marsh Restoration Project, which measured erosion and settlement rates, habitat loss, and wave impacts on wetland shorelines. She presented her findings in refereed journals and conference proceedings. She holds a Professional Engineering Registration from NY State, a Master’s degree in Coastal and Oceanographic Engineering and is a returned US Peace Corps Volunteer.

Dr. Kirk Barrett is Assistant Professor in the Department of Civil and Environmental Engineering at Manhattan College, NY. He has over 25 years of experience in field of water resources, specializing in surface/wetland hydrology, hydraulics and water quality processes. He holds a doctoral degree in environmental engineering from Northwestern University and is a licensed Professional Engineer and a certified Professional Wetland Scientist. For the last 13 years, Dr. Barrett has been a leader in academic research related to environmental coastal areas in New York and New Jersey. From 1999-2004, he served as the Research Director of the Meadowlands Environmental Research Institute, a collaboration between Rutgers University and the NJ Meadowlands Commission, a NJ-state agency responsible for the Hackensack Meadowlands, which contains over 8000-acres of tidal wetlands, many contaminated and/or ecologically or hydrologically disturbed. Then, from 2004-2011, he served as the first Director of the Passaic River Institute of Montclair State University, focusing on the environmental challenges of this highly contaminated, tidal river in northeastern New Jersey. Since joining the faculty to Manhattan College in fall 2011, Dr. Barrett has been collaborating with Dr. Rainer Lohman of the University of Rhode Island Graduate School of Oceanography on a project funded by the Hudson River Foundation that is monitoring organic persistent bioaccumulative toxic compounds in the sediment, water, biota and overlying air of the tidal Passaic River. He is also conducting the monitoring program for three stormwater bioretention systems that are designed to reduce stormwater inflow into the combined sewers of New York City and remove pollutants.

Dr. Robert R. Sharp is the Donald J. O’Connor Professor of Environmental Engineering at Manhattan College. He earned his BS and MS at the University of New Mexico, and his PhD from the NSF-Center for Biofilm Engineering at Montana State University. At Manhattan College, Dr. Sharp teaches undergraduate and graduate courses in water and wastewater treatment, water reuse and environmental sustainability and hazardous waste management. He also runs an active research program that focuses advanced water and wastewater treatment, water and wastewater disinfection

and nutrient removal and recovery. His research lab has carried out multiple field and laboratory studies that have included water quality sampling and monitoring, process optimization, and water and wastewater disinfection studies. Robert is the co-author of over 20 journal articles and book chapters, and over 50 conference proceedings. He is an active member of WEF, WERF and NYWEA. In addition to teaching and research, Dr. Sharp has consulted for major environmental engineering consulting firms and private companies in the areas of process control and optimization, and water and wastewater disinfection. He is currently an Exclusive Process Consultant for Hazen and Sawyer Engineers.

Dr. Scott Lowe is a Professor in the Department of Civil and Environmental Engineering at Manhattan College, NY. Dr. Lowe has been in the Department since 1994. Dr. Lowe specializes in the area of marine and coastal engineering and has worked as a consulting engineer for local engineering firms since joining the college. Some projects in the local area that Dr. Lowe has worked on recently include: Hydrodynamic and sediment transport analysis under storm surge conditions in the lower Hudson River/New York Harbor; Hydrodynamic and sediment transport analysis of construction impacts of a marine power cable from Canada to New York City via Lake Champlain and the Hudson River; Hydrodynamic and sediment analysis of Jamaica Bay; Hydrodynamic and sediment analysis of Newark Bay; Hydrodynamic and sediment analysis of Kill Van Kull; Sediment balance for Newark Bay; Thermal discharge analysis of Poletti Power Plant in Queens; NY-NJ Harbor Navigation Study; World Trade Center thermal discharge analysis; Astoria power plant intake analysis; Flushing Bay hydrodynamic analysis; Lower East River shoreline analysis.

Dr. Richard F. Carbonaro is a Research Associate Professor in the Department of Civil and Environmental Engineering at Manhattan College, NY and full time partner in the consulting firm, Mutch Associates, LLC. He has over 15 years of experience in the field of aquatic chemistry, water quality, and fate and transport modeling of organic and inorganic chemicals in the environment. He holds a doctoral degree in environmental engineering from Johns Hopkins University where he studied the sources, sinks, and speciation of chromium in heterogeneous media. At Manhattan College, Dr. Carbonaro has managed several federally-funded research projects related to water quality monitoring of urban pollutants, transport modeling of metals in sediments, modeling of metals in lakes for toxicity assessments, and partitioning of metals onto organic carbon. Dr. Carbonaro has also developed numerical models for modeling metal fate and transport in rivers and streams and contaminant fate and transport in groundwater. He has published several peer-reviewed papers on transformations of chromium and other trace metals in aquatic systems and has been a presenter or co-author on over 60 presentations at technical conferences. Dr. Carbonaro's recent work in chromium speciation in drinking water was featured on the cover of *Journal of Environmental Monitoring*. Dr. Carbonaro is a licensed professional engineer in New York and has served as a consultant on a wide range of environmental engineering topics, including water quality assessments, contaminant fate and transport modeling, groundwater geochemistry, hazardous waste remediation, and environmental forensics.

Supplemental Information II: Grants received by Manhattan College faculty

Active Grants – Federally Funded

- *Carcinogenic Metals and Their Interactions with Other Toxicants: Research Translation Core* National Institute of Environmental Health Sciences, Superfund Research Program 2009-2012, \$140,000. Farley, K.J. and Carbonaro, R.F.
 - *Effect of Natural Organic Matter on Bioavailability and Mobilization of Metals*. National Institute of Environmental and Health Sciences, Superfund Research Program. 2009-2012, \$148,000. Farley, K.J., and Carbonaro, R.F
 - *Enhancing Diversity in the Geosciences* National Science Foundation. 2008 – 2013. Barrett, K.
 - *Water Filter Program*. Environment Protection Agency. 2012 –2013. Abulencia, J.P. and Nossoni, G.
 - *RUI: Understanding the Role of Flexible and Rigid Barriers in Mitigating Surface Blast Effects on Underground Structures*. National Science Foundation. 2009 – 2013, \$158,789.00. De, A.
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Active Grants – Non-Federally Funded

- *Predicting the Fate and Effects of Resuspended Metal Contaminated Sediments*. Strategic Environmental Research and Development Program (SERDP), 2010-2013, \$281,000. Farley, K.J., and Carbonaro, R.F.
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Completed Grants – Federally Funded

- *Does urbanization decrease baseflow? A historical, empirical analysis in the coastal states of Eastern United States*. US Geological Survey National Institute for Water Resources. 2009-2011, \$82,489. Barrett, K.
- *Effects of Urbanization on Stream baseflow on Rural, Urbanizing Watershed: A historical empirical analysis in New Jersey*. US Dept. of Agriculture. 2005-2008, \$47,000. Barrett, K.
- *Passaic River Educational Environmental Monitoring Organization*. USEPA. 2007-2009.. \$39,888. Barrett, K.
- *Invasive Plant Species in wetlands along the Passaic River*. USEPA. 2006-2009, \$46,800. Barrett, K.
- *Contamination Warning System Demonstration Pilot Project*. USEPA University Partnership. 2010 – 2011, \$120,000. R Sharp
- *Toxicity and Mobilization of Metals and Metal Mixtures in Sediments*. National Institute of Environmental and Health Sciences, RO1 Program. 2006-2009, \$387,644. Farley, K.J., and Carbonaro, R.F.
- *A Decision Support Tool to Facilitate Nitrogen Load Reductions in the Long Island Sound (LIS) Watershed.*, USEPA. 2004 - 2006. \$80,800. Farley, K.J.

- *Developing a Model to Predict the Persistence of Metals in Aquatic Environments.* USEPA, Center for Metals in the Environment. 2003-2005 \$63,500. Farley, K.J
- *REU: Transdisciplinary Research on Forest Lakes.* National Science Foundation. 2010-2011, \$120,000 . Barrett, K.
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Completed Grants – Non-Federally Funded

- *Summer Program in Environmental Science and Computer technology for 7th and 8th graders from Newark.* Victoria Foundation, Landsberger Foundation, BMW America, Port Authority of NY/NJ. 2006-2011, \$120,000. Barrett, K.
 - *CARP Sediment Transport and Organic Carbon Model Refinements for the Mainstem Hudson.* Hudson River Foundation (HRF). 2009-2011, \$152,000. Farley, K.J.
 - *Novel Corrosion Inhibitor Study.* New York City Department of Environmental Protection (DEP). 2010 - 2011. Sharp, R.
 - *Aqueduct Manganese Deposit Characterization and Treatment Study.* New York City DEP. 2008 – 2010. Sharp, R.
 - *Measuring and Characterizing Dissolved Organic Nitrogen at Advanced Wastewater Treatment Facilities.* Hazen and Sawyer/Stamford WPCF/Norwalk WPCF. 2007 – 2009. Sharp, R. and Pagilla, K. from Illinois Institute of Technology.
 - *Impact of Chloramine Disinfection on Biological Regrowth and Corrosion in New York City's Drinking Water Distribution System.* New York City DEP. 2006 – 2009. Sharp, R.
 - *Phosphorus and Sediment Investigations of Speedwell Lake, Morris County, NJ. Whippany River Watershed Action Committee.* NJ Department of Environmental Protection. 2006-2007. \$14,400. Barrett, K..
 - *Continued Development of the Tier 1 Unit World Model for Metals in Lakes.* International Commission of Mining and Metals (ICMM). 2006-2007, \$50,000. Farley, K.J. and Carbonaro, R.F.
 - *Developing a Unit World Model for Critical Loadings of Metals in Aquatic Environments.* ICMM. 2004-2005, \$40,000. Farley, K.J. and Carbonaro, R.F.
 - *Identifying the source of excess fine-grained sediments in New Jersey rivers using radionuclides.* New Jersey Water Resources Research Institute. 2008-2012. \$30,000. Barrett, K.
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Supplemental Information III: Attendance of governmental employees (federal and non-federal) and others who attended Institute of Water Pollution Control Short Courses from 2010 - 2011

Agency/Institution/Employer	Employees
U.S. EPA Region 2	5
NJ Department of Environmental Protection (NJDEP)	9
NY State Department of Environmental Conservation (NYSDEC)	6
New York City Department of Environmental Protection (NYC DEP)	8
Other Agencies (NY State Attorney General's Office, U.S. Army Corps of Engineers-ERDC, New England Water Pollution Control Commission, Delaware Department of Natural Resources)	5
Environmental Consulting Firms (Anchor-QEA, LimnoTech, AECOM, The Louis Berger Group, LaBella Associates)	9
Academia (Rutgers University)	1
Total	43



DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

April 25, 2013

REPLY TO
ATTENTION OF
Planning Division

Application Review Board
North Atlantic Coast, Cooperative Ecosystem Studies Unit
c/o Judith Swift, Director
1 Greenhouse Rd.
University of Rhode Island
Kingston, RI 2881

Dear Review Board:

The US Army Corps of Engineers, New York District has a long-standing history with Manhattan College, particularly the Civil and Environmental Engineering Department, and supports their application in joining the North Atlantic Coast Cooperative Ecosystem Studies Unit (NAC CESU).

Over the years, Manhattan College faculty have provided the District with expertise in coastal & estuarine processes, wetland ecology and water & sediment quality modeling. With their campus in New York City, they have been very involved in geophysical and ecological studies of the coastal areas within the jurisdiction of the New York District.

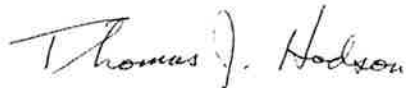
Manhattan College faculty participated in developing the restoration goals and targets (Target Ecosystem Characteristics [TECs]) for the Hudson Raritan Estuary's Comprehensive Restoration Plan that addressed poor water quality and pervasive sediment contamination. The plan, which was developed in collaboration with Federal, State, municipal, non-governmental organizations and other regional stakeholders, sets forth a consensus vision and strategy for ecosystem restoration in the New York & New Jersey Harbor. Manhattan College has also played a key role in assisting in communicating within the Hudson-Raritan Estuary on all aspects of environmental restoration and promoting technology transfer.

Manhattan College faculty is also currently working with USACE investigators at the Engineering Research and Design Center (ERDC) on the ecological impacts of sediment resuspension (e.g., due to episodic storms, propeller-induced disturbances and dredging activities). The project, which is funded through the DoD's Strategic Environmental Research and Development Program (SERDP), will provide a modeling tool to assess metal bioavailability and toxic responses to both pelagic and benthic organisms.

Manhattan College also provides professional training through the Manhattan College Institute in Water Pollution Control (IWPC), which has been a benefit to a number of Government employees. The Institute is the longest, continuously-running program offering professional courses in the environmental field, and has educated over 2,500 professionals since it began in 1956. The IWPC currently offers week-long courses on "Water Quality Modeling" and "Biological Treatment and Remediation."

The Corps would benefit by having the option to partner with Manhattan College through the NAC CESU, based upon our understanding of the institution and their credentials. The Corps supports the application of Manhattan College as a non-federal partner in the North Atlantic Coast CESU.

Sincerely,

Handwritten signature of Thomas J. Hodson in cursive.

for Frank Santomauro,
Chief Planning Division

CESU Network Council
1849 C Street NW, Room 2737
Washington, D.C. 20240

To Whom It May Concern:

In support of the proposal being submitted to CESU by Manhattan College with Professor Kerryanne Donahue as PI, the College agrees to accept a limited overhead rate of 17.5% of Modified Total Direct Costs.

Additionally, my signature below indicates that Manhattan College is willing to commit to a binding multi-year federal cooperative joint venture agreement should the College apply for and receive funding. Furthermore, the PI will perform the tasks outlined in agreements made with funding federal partners and provide the appropriate interim and post-award reports. She will attend annual meetings and respond to requests for review of partner applications.

Sincerely,



Dominic Esposito
Director of Grants Administration