



**MINUTES  
MIDDLESEX COUNTY  
WATER RESOURCES ASSOCIATION/WATERSHED MANAGEMENT GROUP MEETING  
HELD AT THE  
MIDDLESEX COUNTY BOARD OF CHOSEN FREEHOLDER MEETING ROOM  
March 14, 2016  
1:30 P.M.**

The meeting was called to order by Mr. Williams at 1:30 p.m. Notice of this meeting, pursuant to the Open Public Meetings Act, N.J.S.A. 10:4-10 and the NJ Water Quality Management Planning Rules, N.J.A.C. 7:15-9.3(b)7, have been complied with and are entered into the minutes of this meeting. A salute to the flag was observed prior to the start of today's meeting.

**I. Roll Call**

Attendance was as follows:

William Robins	Borough of Dunellen	Not present
Theodore Chase, Jr.	Township of Franklin	Present
Freeholder Charles Tomaro	Middlesex County Board of Chosen Freeholders	Not present
Alan Godber	Lawrence Brook Watershed Partnership, Inc.	Not present
Will Sigle		Not present
Sewell Peckham	Borough of Helmetta	Not present
David Hall	Township of Old Bridge	Not present
Dawn Mc Donald	Borough of Spotswood	Not present
Jean P. Mayer		Not present
Michael Hill	Freehold Soil Conservation District	Present
Brian Carr	Middlesex Water Company City of Perth Amboy	Present
Stephen Pospiech		Not present
Leigh Anne Hindenlang		Not present
Andrew Toth		Not present
William Kurzenberger		Present
Donald Newton	Borough of Sayreville	Present
Tim Eppinger		Not present
Dawn Corcoran-Gardella	Township of Piscataway	Not present
Vincent Martino	Middlesex County Planning Board	Not present
Siegfred Hubak	Township of Woodbridge	Not present
Alice Tempel	Borough of South Plainfield	Present
Brian Racin	Borough of South River	Present
Bryan Bidlack	Township of South Brunswick	Present
Leigh Jones	Township of East Brunswick Water and Sewage	Not present
Anne Zeman	League of Women Voters	Not present
Ron Yake	Township of Plainsboro	Not present
Les Varga		Not present
John Riggs	Township of Monroe	Not present
Doriann Kerber	Borough of Milltown	Present

**I. Roll Call (continued)**

George Ververides Mirah Becker Laurie Sobel Nicholas Tufaro Alexander Zakrewsky Lori Kahel	Middlesex County Office of Planning	Present Present Present Present Not present Present
Sharon Martens Gary Rojek	Middlesex Cty. Dept. of Public Health – Environmental Division	Not present Not present
Ken Klipstein Kathy Hale Bob O’Neil	NJ Water Supply Authority	Not present Not present Not present
Richard Fitamant Kevin Aiello	Middlesex County Utilities Authority	Not present Not present
Daria Ludas	Borough of Jamesburg	Not present
Doug Robertson Glenn Sandor	Township of North Brunswick	Present Not present
Allan Williams	Highland Park Environmental Commission	Present
Rick Lear	Middlesex County Parks and Recreation Department	Not present
Michele Bakacs	Rutgers Cooperative Extension	Not present
Sara Malone	Rutgers Sustainable Raritan Initiative	Not present
Denise Nickel	Middlesex County Improvement Authority	Present
Suzan Colon	Old Bridge Twp. Environmental and Open Space Committee	Present
Heather Fenyk	Lower Raritan Watershed Partnership	Not present
Bill Schultz	Raritan Riverkeeper	Present
Keith Jones	City of New Brunswick	Present

**II. Approval of the Minutes of the Previous Meetings – January 11, 2016 and February 8, 2016**

The minutes of the meeting of January 11, 2016 were distributed prior to today’s meeting. A motion was made, seconded, and approved to accept the minutes as presented. The minutes of February 8, 2016 were distributed prior to today’s meeting. A minor correction was recommended to Page 2, Section IV., where Brian Carr’s organization was changed to read Middlesex Water Company, not the City of Perth Amboy. A motion was made, seconded and approved to approve the minutes as amended.

**III. Presentation by Edward Clerico of Natural Systems Utilities Regarding New Approaches in the Fields of Water Reclamation and Organic Waste Repurposing**

Mr. Edward Clerico of Natural Systems Utilities (NSU) made a presentation on new approaches in the fields of water reclamation and organic waste repurposing. NSU currently operates 210 systems across 10 states, including the largest base of reuse and natural treatment systems in the United States. They offer clients fully integrated and cost effective solutions that incorporate award-winning innovations in system design. See attached PowerPoint presentation for details.

#### **IV. Middlesex County Wastewater Management Plan – Mirah Becker**

Ms. Becker presented an update on the Wastewater Management Plan (WMP). The Disbrow Hills amendment public hearing has been scheduled for Wednesday, March 23, 2016 at 5:30 p.m. in the Freeholder Meeting Room. She thanked the WRA members who participated in the conference call on this amendment which took place on February 8, 2016.

Any amendments that have recently been submitted will not be processed until after the new WMP rules are adopted. NJDEP anticipates publishing the rules in the Spring of 2016. There is a version of the proposed rules on the NJDEP website. There are some fine details on the analysis part of the rules that are not yet available. Middlesex County's draft WMP will have to be revised to be consistent with the new rules. Staff has been interacting with the other counties through a subcommittee which was formed by the NJ County Planners Association. Staff will provide the members with an analysis of the new rules at a future meeting. Mr. Williams asked when new amendments would start being reviewed. Ms. Becker thought amendments would be reviewed immediately after adoption of the new rules.

#### **V. Manalapan Brook Watershed Protection and Restoration Plan (Freehold Soil Conservation District (FSCD)/Middlesex County)**

Mr. Hill presented a brief update. Delays at NJDEP have caused the project cost to rise which are being addressed. This project is on schedule and includes:

1. Stabilize a section of shoreline along Manalapan Lake, Thompson Park (Middlesex County, NJ) (Station #37)
2. Re-design and retrofit an existing "dry" detention basin into a wetland water quality basin, located in Monroe Township, Middlesex County, NJ (Station #32)
3. Re-design and retrofit an existing "dry" detention basin into a water quality basin, located in Manalapan Township, Monmouth County, NJ (Station #80)
4. Re-design and retrofit an existing "dry" detention basin into a water quality basin, located in Manalapan Township, Monmouth County, NJ (Station #84)
5. Floating Wetlands Islands – replanting

The next list of 319(h) projects is being formulated by the Freehold Soil Conservation District and Princeton Hydro. Deadline for submittal to NJDEP is March 15.

#### **VI. Lawrence Brook Watershed Partnership (LBWP)**

No report.

#### **VII. Lower Raritan Watershed Partnership (LRWP)**

Members can visit the website at <http://lowerraritanwatershed.org/> to find out about upcoming events.

The LRWP is working on a Natural Assets Mapping project. Using layers, environmental, cultural, historic and human assets throughout the watershed will be mapped. With GIS, LRWP communities will be able to see where particular features are found, what geographical patterns exist, and what changes have occurred over a given time period. The project will also identify the

**VII. Lower Raritan Watershed Partnership (LRWP) (continued)**

natural assets in the watershed and how they relate to other community assets so that valuable natural features can be conserved or restored. This further reduces the need to build engineered structures to deal with issues like stormwater runoff in favor of more cost effective, natural solutions.

**VIII. Sustainable Raritan River Initiative**

The Sustainable Raritan River Conference has been scheduled for June 10, 2016. More details can be found at: <http://raritan.rutgers.edu/save-the-date-8th-annual-sustainable-raritan-river-conference/>

**IX. NJ Water Supply Activities/Projects (NJWSA)**

- **Raritan Basin Watershed Plan/Raritan Basin Watershed Alliance**
- **D & R Canal Tributary (Franklin) Project**
- **Cedar Grove Brook (Franklin) Project**

No report.

**X. Middlesex County Flood Control Commissions**

- **South Central Middlesex County Flood Control Commission**

No report.

- **Green Brook Flood Control Commission (Middlesex County)**

Mr. Ververides stated that in reference to maintenance, the County Engineering Office is working out an agreement with Somerset County whereby Somerset County would be responsible for maintaining and upkeep of the levees and pumping stations and levee flood gates.

**XI. Rutgers University's Green Infrastructure Initiative**

Mr. Tufaro stated that there was a workshop entitled "Fixing Flooding: One Community at a Time" held on February 26, 2016 at the Middlesex County Fire Academy. The conference was well attended by municipal representatives in the Raritan River Basin.

The Climate Resilient Green Infrastructure Project will lay the foundation to reduce future flooding from impervious surfaces in the Raritan River Basin, improve water quality, enhance wildlife habitat, and increase resiliency. Links to the impervious cover assessments (ICA), impervious reduction action plans (RAP), and RAP web maps that have been completed to date for each municipality within the Raritan River Basin can be found at <http://www.water.rutgers.edu/Projects/NFWF/NFWF.html>.

## **XII. Sustainable Jersey Resiliency Planning**

Mr. Tufaro announced that plans are underway to hold a Resiliency Workshop sponsored by Sustainable Jersey on May 17 from 9:30 a.m. to 11:30 a.m. at the Middlesex County Fire Academy. Information on new and pending resiliency actions and tools for local officials will be presented. A proposed agenda is attached to the minutes of today's meeting.

Ms. Nickel shared information on Sustainable Jersey's free technical assistance for resiliency planning. The program is available in a three step series to assist municipalities to better prepare for future river tidal and coastal flooding hazards. See information attached to the minutes of today's meeting for more details.

## **XIII. Correspondence**

There was no Correspondence presented at today's meeting.

## **XIV. Old Business**

There was no Old Business discussed at today's meeting.

## **XV. New Business**

- **Bylaws Subcommittee**

At the January 2016 WRA Meeting, the staff made a recommendation to form a subcommittee to review the bylaws. Mr. Williams asked for volunteers for the subcommittee. Mr. Williams, Ms. Becker, Ms. Colon, and Ms. Kerber will serve on the bylaws subcommittee. Ms. Becker will be contacting the subcommittee members to arrange for their first meeting.

## **XVI. Public Comment**

There was no Public Comment at today's meeting.

## **XVII. Next meeting, date, time and place**

The next WRA meeting will be held on Monday, May 9, 2016 at 1:30 p.m. at the Middlesex County Administration Building, Freeholder Meeting Room. This will be the Annual Meeting.

## **XVIII. Adjournment**

A motion was made, seconded, and approved to adjourn the meeting at 3:00 p.m.

lak

# Integrated Infrastructure: Ed Clerico

Mar 14, 2016



NATURAL  
SYSTEMS  
UTILITIES

A BETTER WAY

# 28 Years – 61 Systems

61 = 8 direct reuse sewer mining only + 17 combined direct and indirect reuse (handling 100% of wastewater flow) + 36 indirect reuse only (20 are within regulated utility). Capacities range from 15,000 gpd – 500,000 gpd.



**Bristol-Meyers Squibb, NJ**  
1<sup>st</sup> Pharmaceutical WWT/Reuse system in the US



**Copper Hill Elementary School, East Amwell, NJ**  
1<sup>st</sup> public school water reuse system



**Gillette Stadium, Foxboro, MA**  
Spurred economic development along Route 1 corridor including shops, restaurants and offices



**The Solaire, Battery Park, NYC**  
1<sup>st</sup> residential water reuse project in the U.S.; LEED-Platinum



**MacDonald Island, AB, Canada**  
Integrated Water Reuse and Heat Recovery system utilizing treated wastewater effluent for irrigation and flush water while also recovering the effluent heat for pool heating within the rec center.

1980s

1990s

2000s

2010s

**Durst Halletts Point 1, Queens NYC**  
District scale redevelopment with in-building water reuse and thermal energy recovery systems



**Emory University, Atlanta GA**  
400,000 GPD existing infrastructure sewer mining retrofit with water reuse for cooling and flushwater

# Engineering to Overcome The Forces of Nature



**The Roman Aqueduct – more than 2000 years old - supplied abundant water to bath houses and latrines and powerfully established the relationship between wealth and water.**

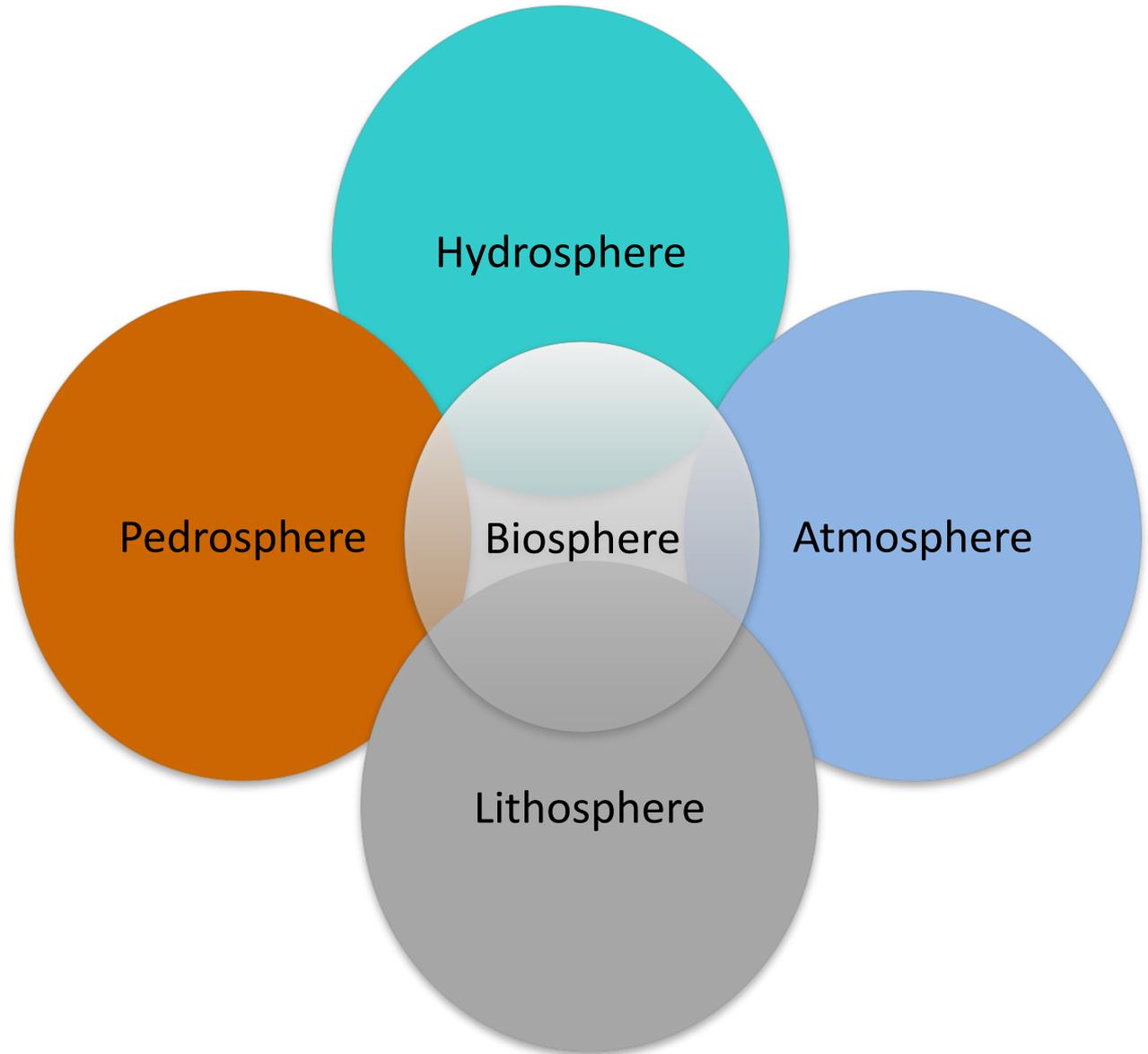
**The Roman Toilet – 500BC  
*Cloacina, Goddess of the Sewers*, carried wastes to the river - so began our modern perspective on waste management. “Dilution is the Solution”**



# Natural Systems - Creating Balance That Mimics Nature

The ultimate engineering objective is to design integrated infrastructure systems that consider all aspects of how the earth functions in support of life.

It is a complex endeavor that incorporates all aspects of earth science



# Infrastructure That Mimics Nature – The Tree Model

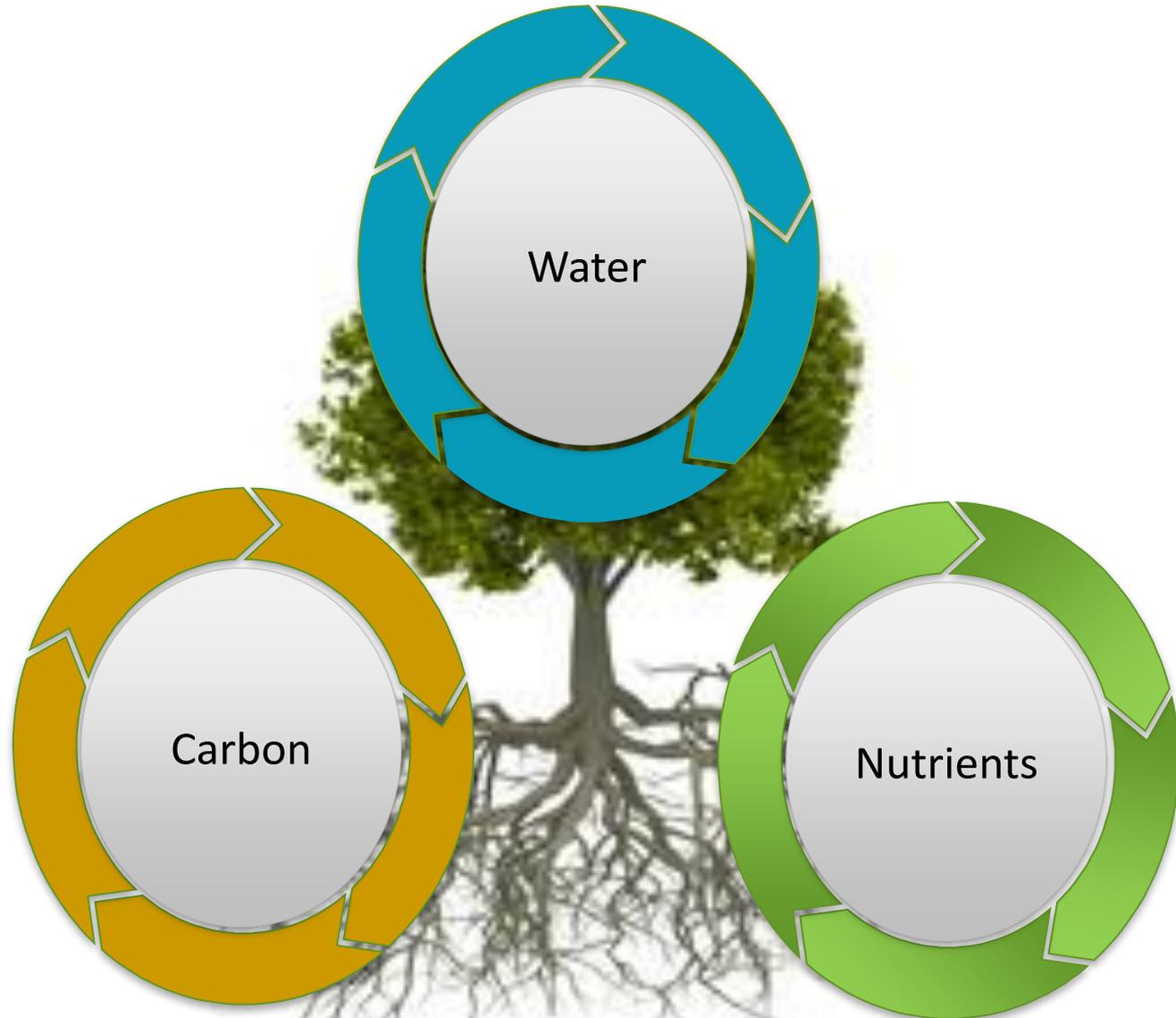
- Natural metabolic systems don't exist as single purpose linear systems, they function as highly integrated regenerative and efficient reuse systems
- They adapt to their environment
- They are resilient
- They are beautiful and don't need to be hidden
- They are distributed
- They provide triple bottom line value



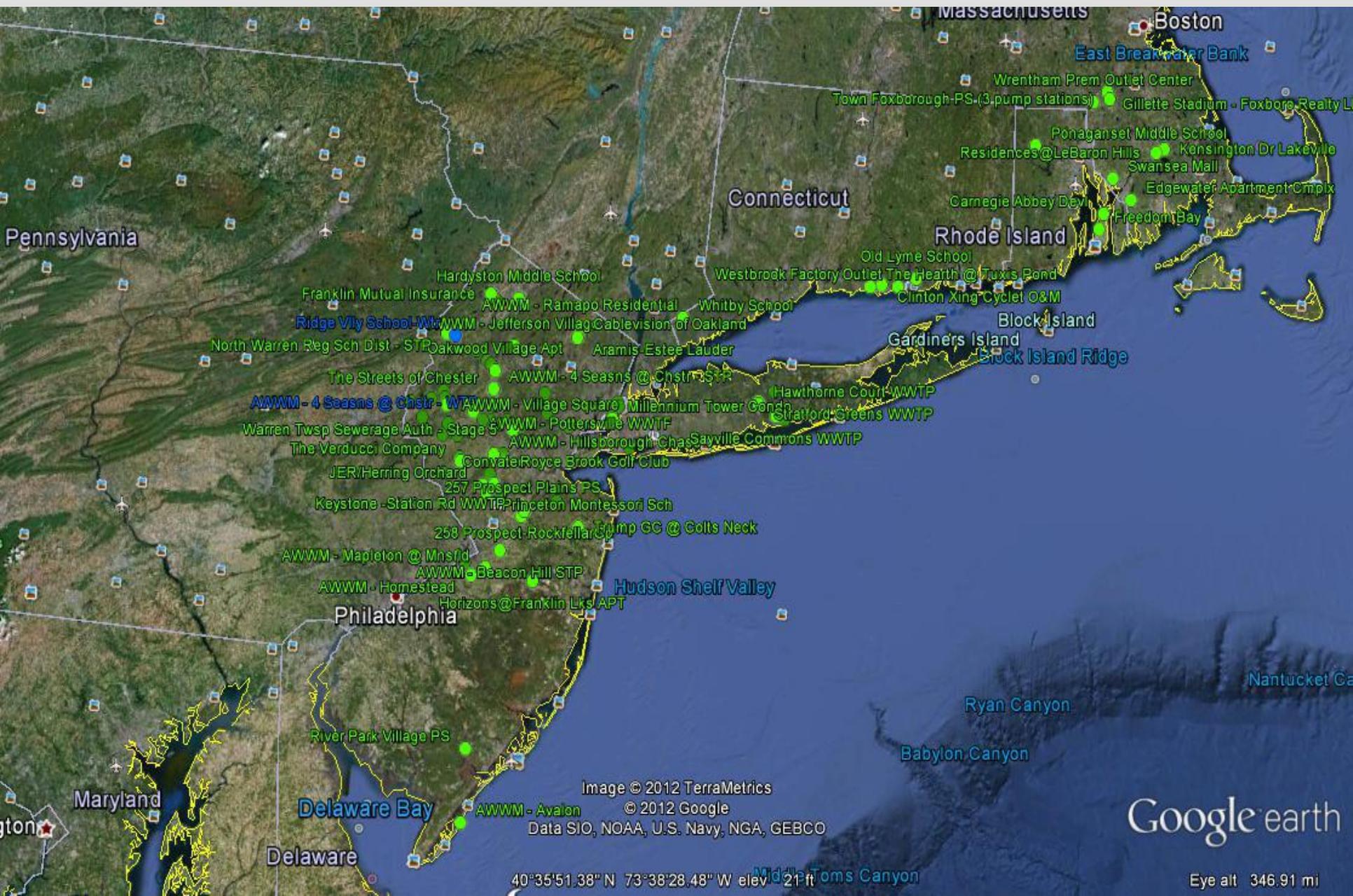
# Natural Systems - Creating Balance That Mimics Nature

The “Infrastructure Tree” is a very simplified analogy illustrating integrated functions and the key factors that influence our current design process.

Future integrated infrastructure will be far more complete and complex



# NSU Northeast – An Integrated Infrastructure Forest

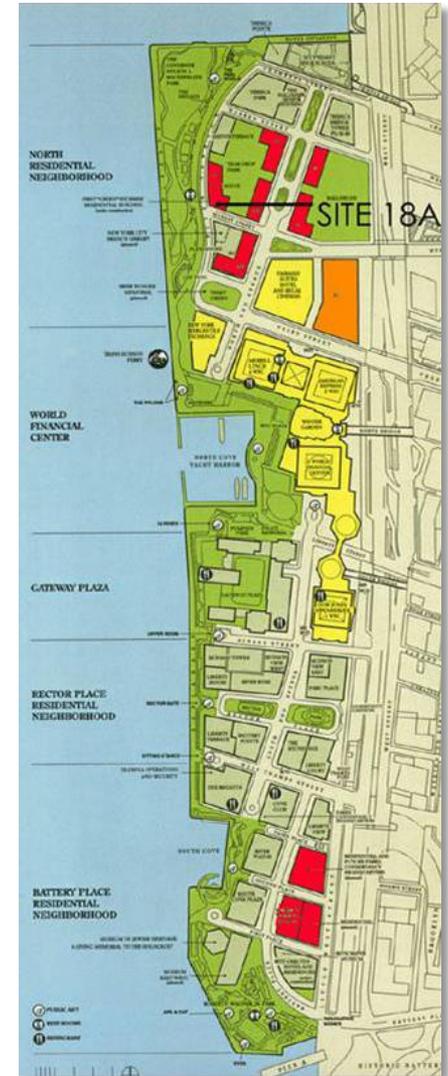


# Key Lessons Learned

- Customer Drivers Vary Widely – Triple Bottom Line
  - Pollution prevention – protecting the pristine, restoring the polluted
  - Water conservation – scarcity of supply
  - Economic benefit – property value, affordability, community economic vitality, resiliency
- Delivery Mechanism Greatly Affects Innovation Potential – DBO and DBOO allow for flexibility and accountability
- Innovation drives value
- Performance Is Not Just O&M – System Stewardship - the responsible overseeing and protection of something considered worth caring for and preserving. Adequate performance requires Responsible Management Entity (RME) as system steward.
- Regulatory framework greatly affects innovation potential – prescriptive regulations stymie innovation and create scapegoat dynamics – performance regulations must prevail and be backed with strong enforcement.
- Integrated Systems Approach Provides Best Value To All Stakeholders

# Existing Case Studies – Battery Park City

- **Over 10 years** of operating data. **ZERO permit exceedances** and **ZERO user complaints/public health concerns**
- System automatically controlled/monitored with alarms. Licensed Operator **On-Site 2 days/wk**, less than 4 hours per day (8 hours / wk)
- Achieving **>55% Water Use Reduction**
- Achieving **>65% Sewer Discharge Reduction**
- **100% Reclaimed Water** For Cooling Tower Make-up
- Reduced strain on municipal/centralized infrastructure
- Existing systems being retrofitted & new systems being developed with thermal energy recovery for **NET ZERO/NET POSITIVE ENERGY** water reuse



# Battery Park City – Neighborhood Water Reuse



Multiple small scale systems serving densely populated areas. High efficiency MBRs – high quality water, small foot print

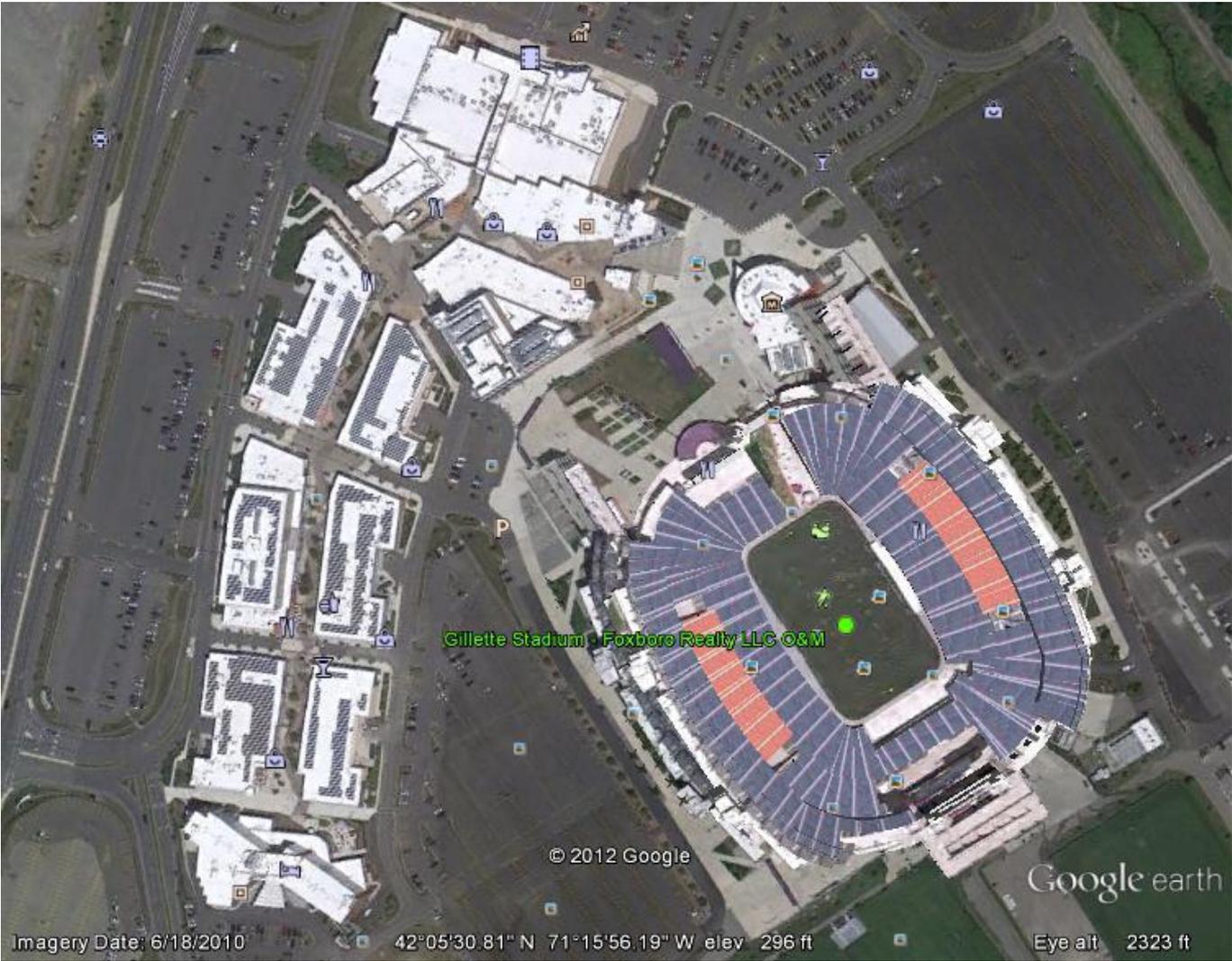


# Gillette Stadium - New England Patriots - Foxboro

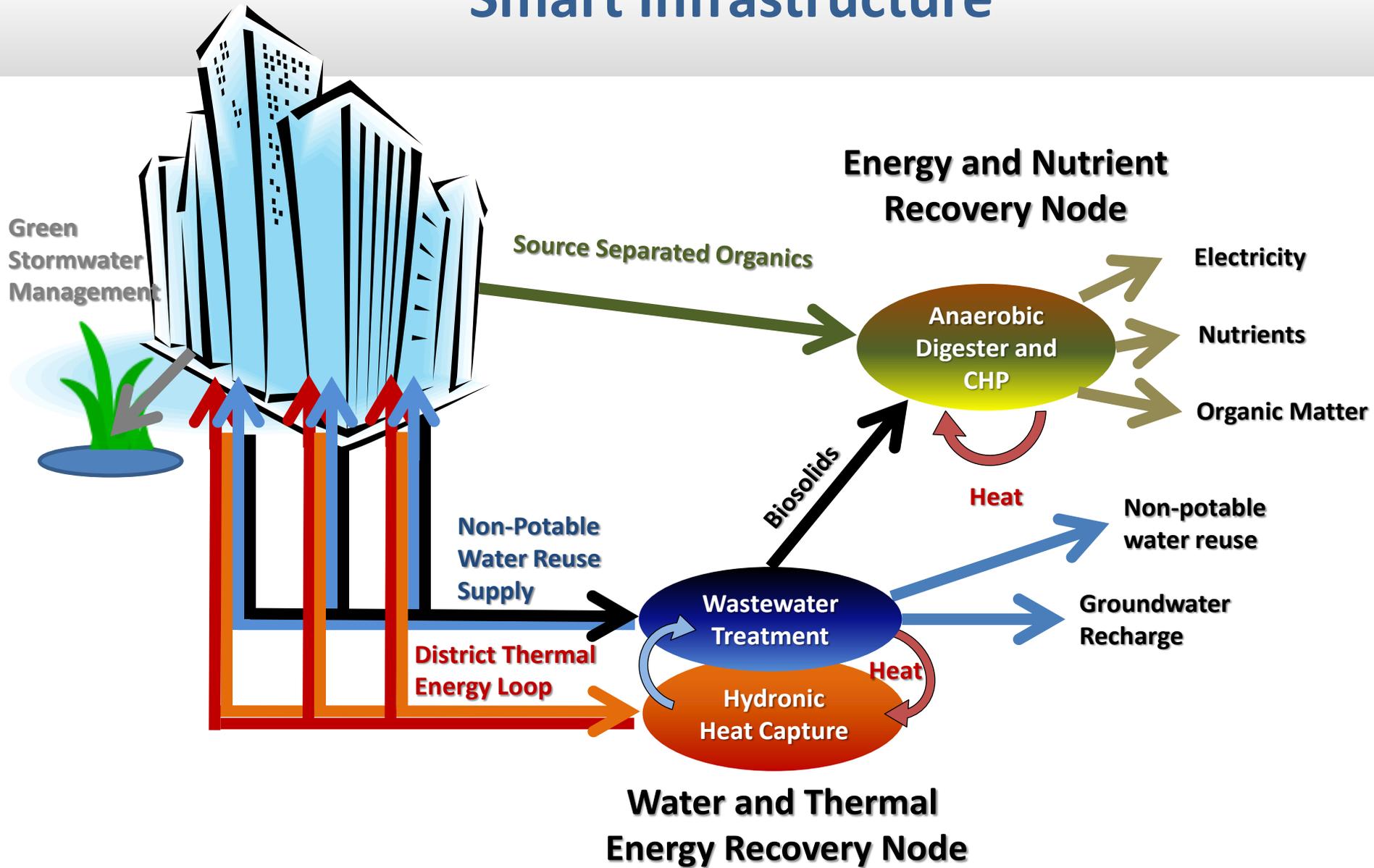
- Intensive applications of wastewater treatment and water reuse that set new standards of performance.
- Gillette Stadium provides a case study of developer and community economic benefits coupled with environmental gains.



# Gillette Stadium – Economic Growth Engine



# Smart Infrastructure



Thank You!

