

**Promoting Stewardship and Volunteer Monitoring in the Elizabeth River / Arthur Kill  
Watershed through Hands-on Experiences  
NY-NJ Harbor Estuary Program Grant  
NEIWPC Job Code: 0355-002 Project Code: 2004-020**

*Final Report July 2005*

Summary

RECEIVED

FEB 06 2006

This vision of this project, to promote and enhance stewardship in the Elizabeth River / Arthur Kill Watershed, reached approximately 300 people of diverse backgrounds, including college students and faculty, middle and high school students and teachers, community members and elected officials. The volunteer information collected gives us a sturdy base of over 50 individuals, including teachers and students in K-12 and higher education to begin a long term monitoring campaign along the Elizabeth River.

The total cost of the project is projected at \$5692.75 ( \$4942.75 grant / \$750 match from Future City Inc.). This grant strengthened the relationship between Future City Inc and Kean University and also fostered partnerships with the City of Elizabeth and the Elizabeth Marina, the Elizabeth, Linden, and Union School Districts, the United States Army Corps of Engineers, and Garden State Labs in Hillside, a local EPA-certified lab. In addition, a HEP meeting was hosted by Future City, Inc. and a brief presentation was made about the project (see attachments).

There are several notable publications produced; an approved Quality Assurance Project Plan, multilingual brochures, and numerous posters to promote the activities of the grant and watershed education. The purchase and use of Lamotte GREEN water monitoring kits also provides an excellent resource for promoting better understanding of watersheds and water quality.

Goals and Objectives Reached

The goal of this project was to continue to promote and enhance stewardship of the Elizabeth River / Arthur Kill Watershed through a multilingual educational campaign that incorporates volunteerism with hands-on learning experiences in the watershed. As written in the proposal: "The success of these initiatives will be evaluated by the development and EPA-approval of the QAPP, a successful watershed education day attended by over 100 people, and an initial cohort of 30 diverse volunteers."

The following objectives were implemented in this project to achieve this goal.

1. Produce graphical representations of the Elizabeth River / Arthur Kill Watershed Region for a linguistically diverse audience based on the previously identified formal and functional region using a geographic information system (GIS).  
*Deliverable: Multilingual Brochures created (see attachments)*

2. Develop a Quality Assurance Project Plan (QAPP) to begin meaningful data collection in the watershed. Parameters to be assessed will include but not necessarily be limited to general indicators of environmental health such as vegetation, benthic macro-invertebrates, temperature, pH, dissolved oxygen, total suspended sediments and dissolved solids, and pollution indicators such as phosphates and fecal coli form.  
*Deliverable: QAPP approved by the EPA (see attachments)*
3. Sustain a cohort of volunteers to begin watershed assessment (following EPA Volunteer Stream Assessment guidelines), through walking and virtual field trips to identify visible watershed qualities.  
*Deliverable: Approximately 75 names and contact information have been collected.*
4. Identify sites and assign volunteers for initial watershed and water quality monitoring.  
*Deliverable: QAPP approved, assignment of volunteers to commence in Fall 2005*
5. Train volunteers using the QAPP.  
*Deliverable: Four Demonstrations Given: Estuary Day October 2005 (at Peterstown Community Center in Elizabeth, NJ); Watershed Awareness day November 2005 (at Kean University Student Center); Science Celebration Day April 2005 (sponsored by Epsilon Corps-Kean University) and Earth Day April 2005 (at Elizabeth Marina).  
Deliverable: Hosted a field trip with discussion and dissemination of the QAPP and preliminary training for local teachers June 2005 (for the NJDEP Watershed "Make the Connection" Conference).*
6. Establish long term monitoring of the watershed and water quality in the region.  
*Deliverable: QAPP approved, teachers and volunteers identified, pending final training for teachers and volunteers and assignment to sampling areas (Fall 2005)*

### Highlights

1. The production of multilingual brochures
2. The approval of the QAPP
3. Estuary Day Activities
4. Watershed Awareness Day Activities
5. Science Celebration Day and Earth Day Activities
6. NJDEP "Making the Connection" Watershed Conference

### Problems

The length of time needed for review and revisions to the QAPP adversely affected the initial timeline for the project. Final approval for the QAPP was achieved in June 2005, therefore training and monitoring was not possible in Spring 2005. This monitoring will begin in Fall 2005, coincident with the long term plan for monitoring in the watershed. The overall success of the estuary, watershed awareness, science celebration, and earth day activities has provided a clear message about the importance of watershed education and dedicated workforce to carry out the monitoring campaign. The watershed conference was useful in preparing teachers for the fall by providing a preview of the QAPP to each and some preliminary training.

### Results of Evaluation

No Data

### HEP Staff Participation

The New York – New Jersey Harbor Estuary Program provided support whenever requested. Scheduling often conflicted with the ability of HEP staff to attend some of the sponsored activities. Critical review of the QAPP was a major contribution of the HEP and NEIWPC staff to this project.

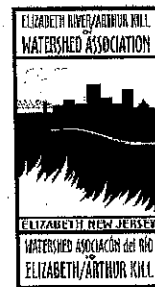
### List of Attachments

1. Brochure (English)
2. Brochure (Spanish)
3. Powerpoint Presentation for HEP Meeting
4. QAPP
5. Watershed Awareness Day 2004 Flyer
6. Copy of Science Celebration Day-Watershed Awareness Poster
7. Copy of Poster for Earth Day 2005
8. Watershed Conference Flyer
9. Pictures from Watershed Conference

**G & M** Department of Geology  
and Meteorology  
Kean University



CENTER FOR EARTH SYSTEM EDUCATION  
KEAN UNIVERSITY



## Watershed Asociación del Elizabeth River / Arthur Kill

### MISION

La meta del Río Elizabeth / Asociación Watershed de el Arthur Kill es realizar la calidad de la vida en y alrededor de el watershed para todos sus residentes naturales y humanos promoviendo la investigación cuidadosa, la evaluación imparcial y el retro eficaz. La intención de la asociación es de lograr estas metas a través investigación independiente, información y educación pública, los proyectos y cooperación sostenible con autoridades de el estado, federales, y municipales.

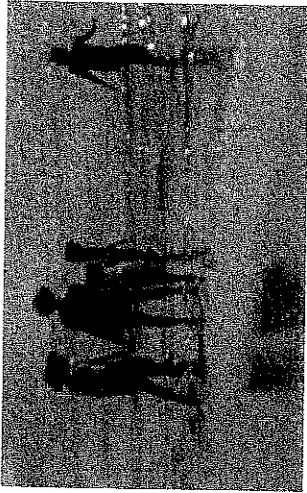
### VISION

Nuestra visión para el Río Elizabeth / Asociación Watershed de el Arthur Kill es la de un grupo voluntario de los residentes que representan, nuestros componentes diversos que, trabaja juntos para:

- Realizar la comprensión pública de los temas referentes al agua
- Promover activismo en la comunidad y la administración sostenible
- Empezar la colección de datos necesaria en calidad de el watershed
- Documentar y divulgar cualquier violación al agua limpia
- Incitar la revisión legislativa.

## PROYECTOS & ACTIVIDADES

### Agua Limpia



Nuestros residentes utilizan el watershed a pesar de cualquier peligro. Esperamos el día en que todo el watershed y el estuario estén limpios y seguros para nuestras familias. Solo depende de nosotros el asegurar que esto ocurra. Proveemos consultas bilingües sobre cojer y soltar los pescados y cangrejos y educación pública para nuestro watershed.

### Educación y Administración

Proveemos educación sobre los temas referentes al agua limpia que resultan en que residentes entiendan el valor y el acoplamiento del agua limpia a su calidad de la vida a largo plazo. Nuestros resultados a largo plazo de una comunidad de administradores que practican comportamientos positivos con el agua limpia.

### Supervisión del Agua

A través de pruebas en el laboratorio y en el watershed podemos supervisar la calidad del agua de las corrientes en nuestro watershed, río y Arthur Kill.

### Divulgación y Defensa

Los datos de la supervisión del agua proporcionan una medida de nuestro watershed que permite que divulguemos nuestros resultados a la entidad apropiada y abogar por los temas referentes al agua limpia que afectan nuestro estuario y watershed.

### Restauración

Tomamos un acercamiento hidrológico a la utilización del las tierras y la restauración de nuestro watershed, tierras de el río/corriente y Arthur Kill. Esto incluye la cultivación de las especies nativas y de apropiada repoblación forestal.

### Habitación

Nuestra agua tiene el potencial de ser un loto dinámico para realzar la biodiversidad existente de nuestro watershed. Hemos comenzado a identificar sitios de nidos para localizar investigaciones permanentes, nidos, y alimentadores del pájaro para los pájaros no invasores. Una vez que hayamos terminado este piloto de dos años ampliaremos esta iniciativa.

### Día del Estuario



Nuestros acontecimientos anuales del día del estuario proveen a nuestras escuelas y residentes una oportunidad de tener experiencias educacionales interactivas con respecto a nuestro estuario y nuestro watershed.

### Escuelas

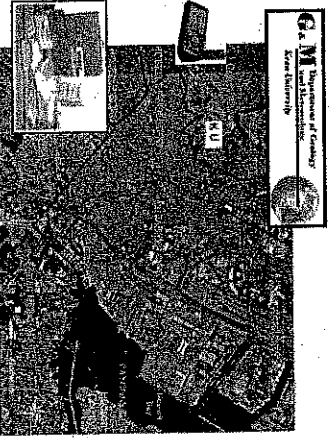
Los estudiantes son nuestros futuros administradores ambientales. Nuestro watershed trabaja de cerca con un grupo grande de escuelas públicas y no públicas del watershed para proporcionar la fundación ambiental educativa que es necesaria.

## SOCIOS DE UNIVERSIDAD

La universidad de Kean cubre aproximadamente 150 hectáreas en el watershed y es una universidad pública, comprensiva que proporciona muchas oportunidades educativas.



El geoprograma de Geografía ha estado implicado activamente en desarrollar actividades específicas que se enfocan en las preocupaciones referentes al watershed incluyendo pruebas de la calidad del agua y evaluación de la vegetación, y mapas de uso de las tierras y análisis usando los sistemas de información geográficas, sistemas de colección globales y detección remota.



La universidad de Kean está comprometida a convertirse en un líder en ciencia y educación de tecnología. La sociedad con FCI proporciona una oportunidad única de construir esta visión y de desarrollar el conocimiento y las habilidades para hacer a nuestras comunidades sostenibles.

## Socios

Green Map

ER/AK School Consortia

ER/AK Residents

Kean University

Member of the New York/New Jersey Harbor Estuary Management, Habitation and CAC Committees

Waquahic Park Association

Miembros

ANJEC

City Parks Alliances

Leadership Newark Go

National Olmsted Park Association

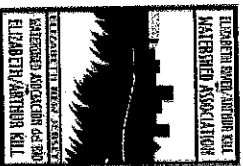
New Jersey Audubon Society

New Jersey Future

New Jersey Tree Foundation

New York City Audubon Society

Preservation New Jersey



### Future City Inc.

ELIZABETH RIVER / ARTHUR KILL

WATERSHED ASSOCIATION

1045 EAST JERSEY STREET SUITE 204

ELIZABETH, NEW JERSEY 07201

Phone: (908) 659-0689 Fax: (908) 659-0688

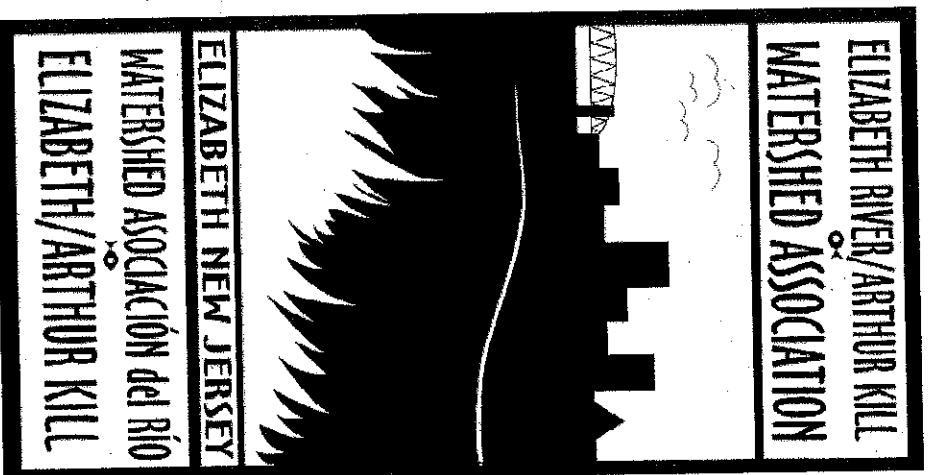
erakwatershed@optonline.net

www.futurecitynj.org

*Creado por: Alvaro Franco*

*con ayuda de Inárriza Hernández 12-02-05*

Watershed Asociación del  
Elizabeth River / Arthur Kill



## Elizabeth River / Arthur Kill Watershed Association

### MISSION

The goal of the Elizabeth River / Arthur Kill Watershed Association is to enhance the quality of life in and around the watershed for all of its natural and human residents by promoting the thorough investigation, impartial evaluation and effective removal of threats to the watershed. It is the intention of the Association to accomplish these goals through independent research, public information and education, sustainable projects and cooperation with state, federal, and municipal authorities.

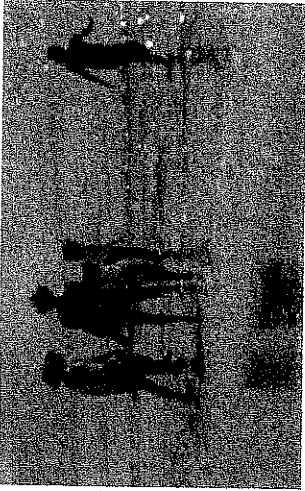
### VISION

Our vision for the Elizabeth River / Arthur Kill Watershed Association is that of a voluntary group of residents representing our diverse constituents who, who work together to:

- Enhance public understanding of water issues
- Promote community activism and sustainable stewardship
- Undertake necessary data collection on watershed quality
- Document and report any clean water violations.
- Prompt legislative review

## PROJECTS & ACTIVITIES

### Clean Water



Our residents utilize our watershed regardless any dangers. We look forward to the day when the entire watershed and estuary are clean and safe for our families. It is up to all of us to insure this occurs. We provide an aggressive bilingual Catch and release fish and crab advisory and public education for our watershed.

### Education and Stewardship

We provide education on clean water issues that will result in the residents understanding the value and linkage of clean water to their long term quality of life. Our long term results of a community of stewards who practice positive clean water behaviors.

### Water Monitoring

Through laboratory and watershed testing we are able to monitor the water quality of our watershed streams, river and Kill.

### Reporting and Advocacy

The water monitoring data provides a measurement of our watershed that allows us to report our findings to the appropriate entity and advocate for clean water issues that impact our estuary and watershed.

### Restoration

We take a hydrological approach to land use and restoration of our watershed river/stream lands and Arthur Kill. This includes cultivation of native species and appropriate reforestation.

### Habitation

Our water has the potential of being a dynamic lotus for enhancing the existing biodiversity of our watershed. We have begun identifying nesting sites for locating permanent researching and bird nests and feeders for noninvasive birds. Once we have completed this two year pilot we will expand this initiative.

### Estuary Day



Our annual Estuary Day events provide our schools and residents an opportunity to have interactive educational experiences regarding our estuary and our watershed.

### Schools

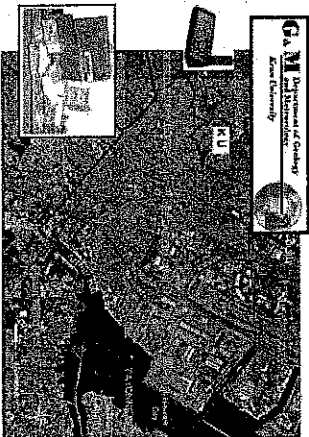
The students are our future environmental stewards. Our watershed works closely with an expanding group of public and nonpublic watershed schools to provide the educational environmental foundation that is necessary.

## UNIVERSITY PARTNER

Kean University covers approximately 150 acres in the watershed and is a public, comprehensive university that provides many educational opportunities.



The Department of Geology & Meteorology has been actively involved in developing specific activities that address concerns in the watershed including water quality testing and watershed evaluation, and land use mapping and analysis using geographic information systems, global positioning systems and remote sensing.



Kean University is committed to becoming a leader in science and technology education. The partnership with FCI provides a unique opportunity to build this vision and develop the knowledge and skills to make our communities sustainable.

### Partners

- Green Map
- ER/AK School Consortia
- ER/AK Residents
- Kean University
- Member of the New York/New Jersey Harbor Estuary Management, Habitation and CAC Committees
- Weequahic Park Association
- Memberships
- ANJEC
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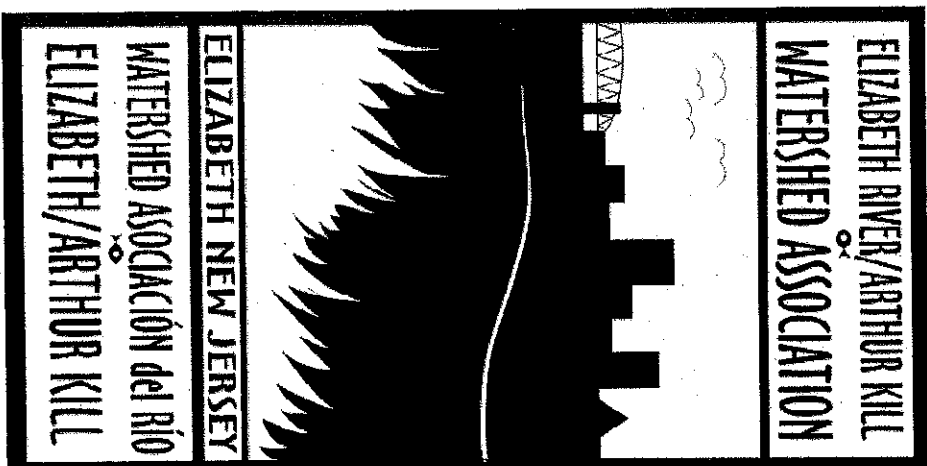


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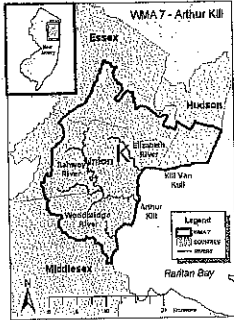
*Created by: Alvaro Franco  
with assistance from Indira Hernandez 29-01-05*

## Elizabeth River / Arthur Kill Watershed Association

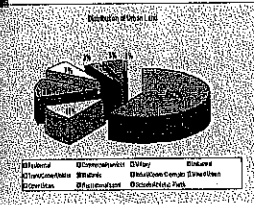
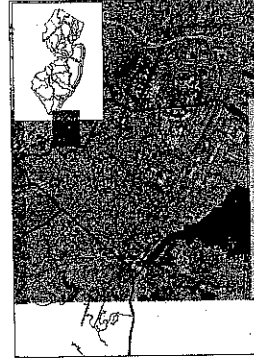


# NJ HEP MEETING – OCTOBER 2004

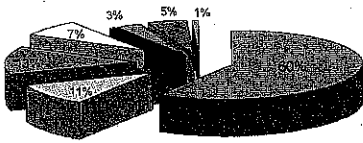
Watershed Management Area (WMA) 7  
The Arthur Kill



## Impact of Land Use

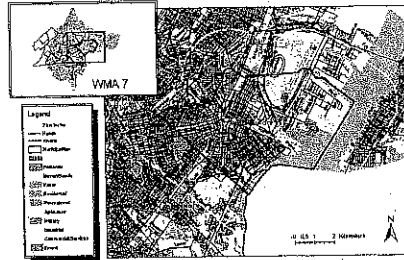


## Distribution of Urban Land

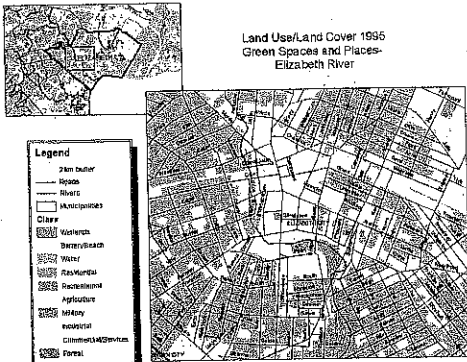


- Residential
- Commercial/Services
- Military
- Industrial
- Trans/Comm/Utilities
- Wetlands
- Industry/Custom Complex
- Mixed Urban
- Other Urban
- Recreational Land
- Schools/Athletic Fields

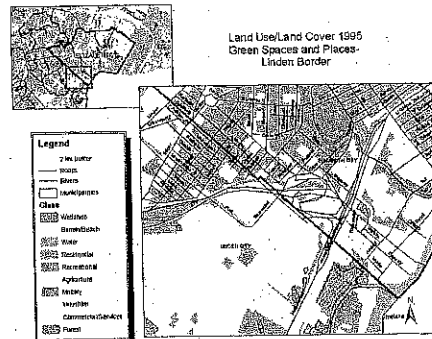
## Land Use/Land Cover 1995 - Green Spaces and Places

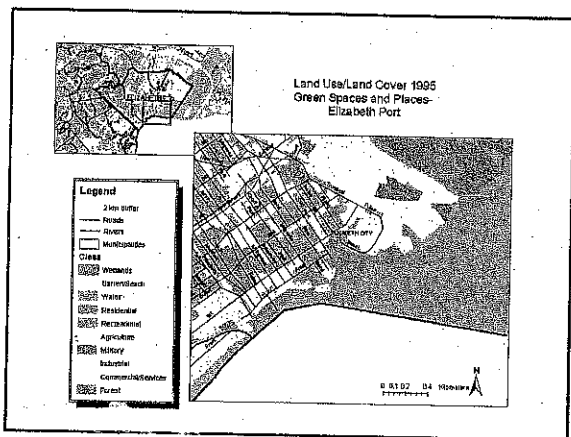


## Land Use/Land Cover 1995 Green Spaces and Places - Elizabeth River



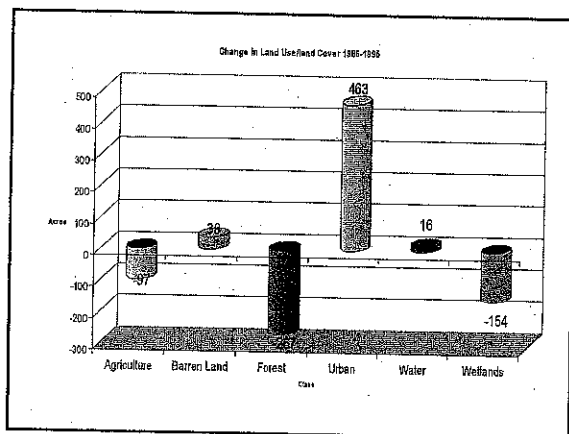
## Land Use/Land Cover 1995 Green Spaces and Places - Linden Border





**UNION COUNTY (In Acres)**

Land Use Type	1986	1995	Net Change
Agriculture	231	134	-97
Barren Land	265	303	38
Forest	7,345	7,078	-267
Urban Land	54,456	54,919	462
Water	1,757	1,773	16
Wetlands	3,352	3,198	-154



**The BIG Map**  
Blueprint  
for smart  
growth

- Green means....  
- Go!
- Yellow means  
- Caution or  
- Speed up before it  
turns RED
- Red means...  
- Stop - maybe

03/03/03

GREEN (Smart Growth)  
YELLOW (Caution)  
RED (Stop)  
WATER

# Watershed Awareness Day 2004

## Celebrate the Elizabeth River/Arthur Kill Watershed!

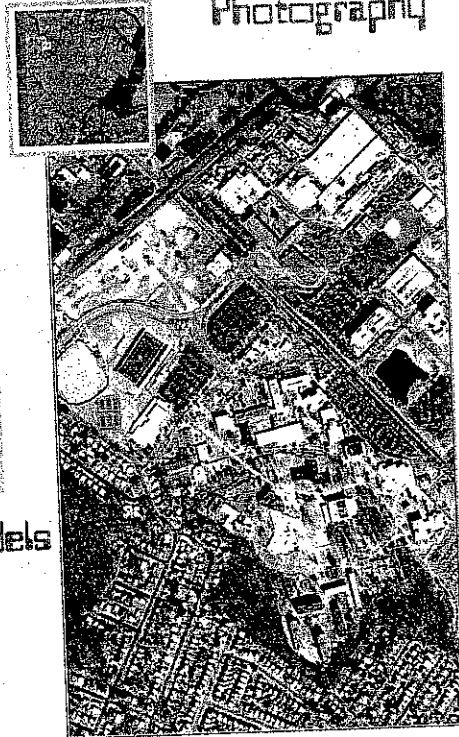
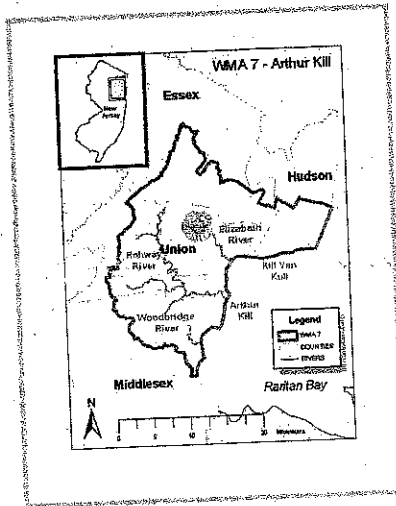
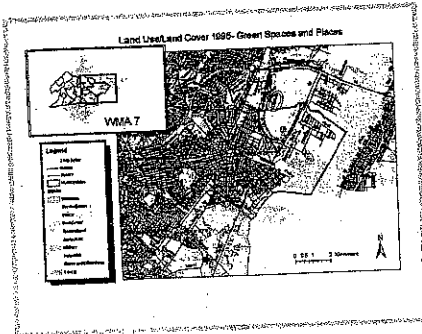
Watershed Evaluation using mapping & GIS

Geographic Information Systems

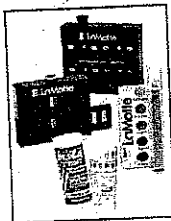
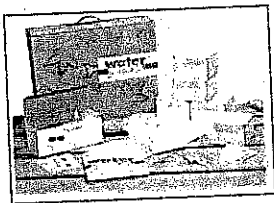
Aerial

Photography

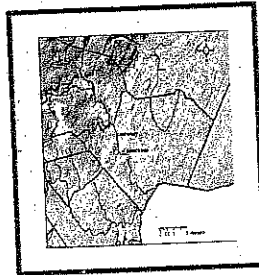
Land Use Impacts



Water Quality  
Testing & Evaluation



Digital Elevation Models



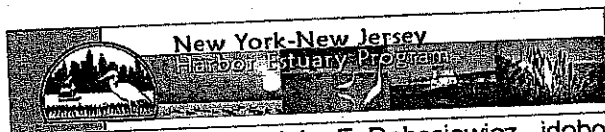
**When** : November 3, 2004 from 2-5 PM

**Where**: Kean University-Outside University Center

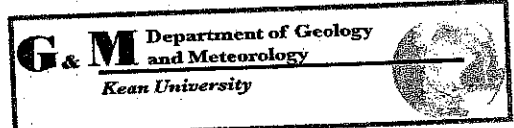
**Who**: Kean Faculty, Students, Staff & anyone interested in learning about OUR watershed!

Become a member of our Volunteer Monitoring Program!

Sponsored by ORSP-Kean University & the NY-NJ Harbor Estuary Program



rain location  
T-117 NJCSTE



Contact Dr. John F. Dobosiewicz - [jdobosie@kean.edu](mailto:jdobosie@kean.edu) (908) 737-3696 for additional information



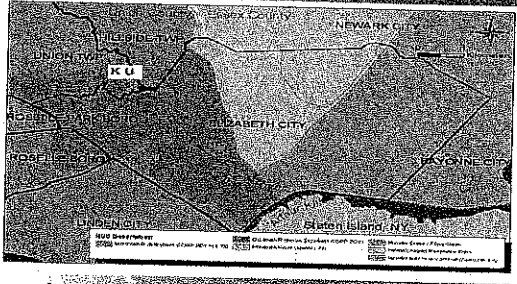
# Watershed Awareness Celebrate the Elizabeth River / Arthur Kill Watershed!

When: April 6, 2005

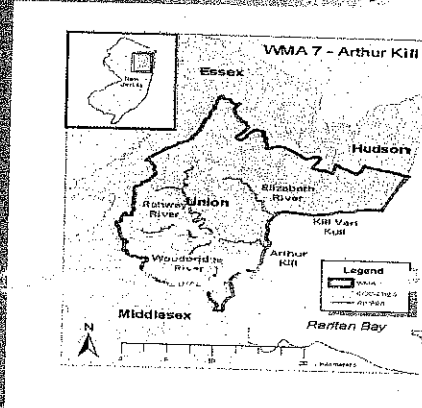
Where: Kean University University Center

Who: Kean Faculty, Students, Staff & anyone interested in learning about OUR watershed!

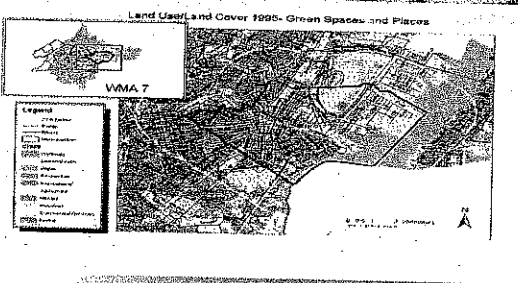
## Boundaries



## Mapping & GIS (Geographic Information Systems)

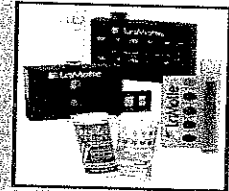
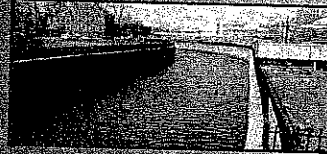
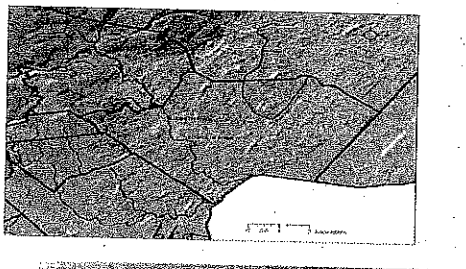


## Impacts of Land Use

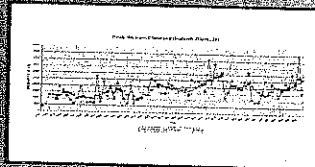
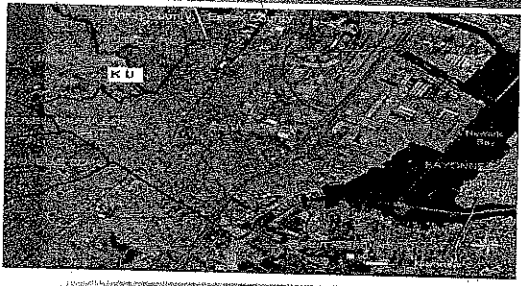


## Data Collection Watershed & Water Quality Monitoring

## Digital Elevation Models



## Aerial Photography



Sign up Today to become a Volunteer Monitor for the Watershed!

Supported by Epsilon Corps, C in Sit, Kean University, the N.Y. N.J. Harbor Estuary Program, & the Elizabeth River / Arthur Kill Watershed Association





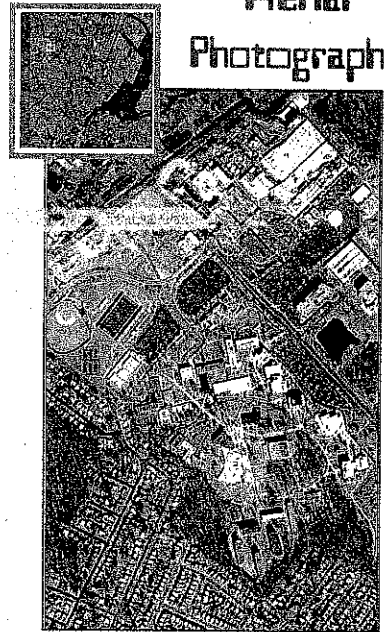
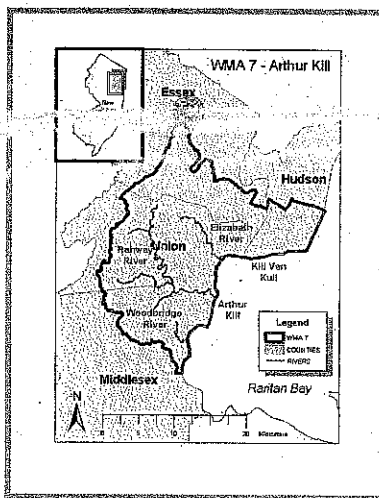
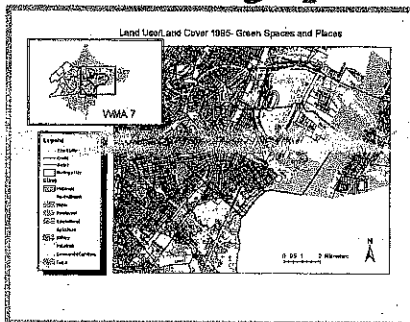
# Watershed Conference 2005

## Exploring an Urban Watershed

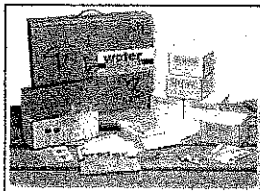
The Elizabeth River/Arthur Kill Watershed

Watershed Evaluation using mapping & GIS  
Geographic Information Systems

Aerial  
Photography



Land Use Impacts  
Water Quality  
Testing & Evaluation



US Army Corps  
of Engineers



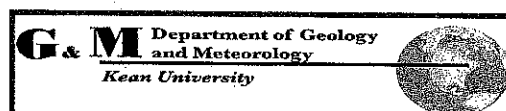
**When : June 29, 2005 from 9-3 PM**

**Where: Kean University- Science Building C-338**

**Become a member of our Volunteer Monitoring Program!**

**Schedule**      9-10AM The "Plan"    10-11:30AM Boat Ride    11:30AM-12:30PM Site Visits  
12:30-1PM Lunch    1-1:30PM NJ Watershed Data    1:30-3PM Water & Watershed Evaluation

Sponsored by ORSP-Kean University, the Elizabeth River / Arthur Kill Watershed Association, the US Army Corps of Engineers, the NY-NJ Harbor Estuary Program, & the NJDEP



Contact Dr. John F. Dobosiewicz - [jdobosie@kean.edu](mailto:jdobosie@kean.edu) (908) 737-3696 for additional information

