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Westchester County Citizens' Volunteer Monitoring Program

Water Quality Report 2004


WESTCHESTER COUNTY DEPARTMENT OF PLANNING
Gerard E. Mulligan, AICP, Commissioner

WESTCHESTER COUNTY EXECUTIVE

Andrew J. Spano

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Citizens' Volunteer Monitoring Program
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For more information, visit the WCCVMP at http://cvmp.westchestergov.com/cvmp/.

I. Introduction

This summer 106 volunteers were trained and certified as streamwater monitoring volunteers with the Westchester County Citizens' Volunteer Monitoring Program (WCCVMP). These volunteers join 56 volunteers from the 2003 monitoring season in monitoring Westchester County's stream water quality. At the conclusion of the 2004 WCCVMP Training workshops a total of nine teams were formed. Together these teams monitored 11 sites during the 2004 monitoring season. Of the nine teams, seven monitored one site each and the other two teams monitored two sites each. The monitoring season extended from April 15, 2004 to October 2, 2004 and yielded excellent water quality data that can be viewed at http://cvmp.westchestergov.com/cvmp. Seven of the sites monitored during the 2004 monitoring season were also monitored during the 2003 monitoring season. Data collected during the 2004 monitoring season can be compared to data collected in the 2003 monitoring season.

Monitoring Locations

In 2003, water quality was monitored at the following sites:

Municipality	Watershed	River	Location
Lewisboro	Croton	Cross River	Kimberly Bridge (Boutonville Road)
Bedford	Croton	Beaver Dam Creek	225 Cantitoe Road
Bedford	Croton	Stone Hill River	Stone Hill Road
Cortlandt	Upper Hudson River	Annsville Creek	Hudson Hills Highlands (Route 9)
Cortlandt	Upper Hudson River	Sprout Brook	Sprout Brook Park (Sprout Brook Road)
Cortlandt	Upper Hudson River	Hollow Brook	Gallows Hill Road
Peekskill	Upper Hudson River	McGregory Brook	Tompkins Park (Route 6)
Scarsdale	Bronx River	Bronx River	Depot Road
Mamaroneck	Lower Long Island Sound	Sheldrake River	Columbus Park
New Rochelle	Lower Long Island Sound	Stephenson Brook	New Rochelle High School
New Rochelle	Lower Long Island Sound	Hutchinson River	Nature Study Woods

Currently, there are monitoring sites in all of the six major watersheds in Westchester County. The eleven monitoring site locations are:

Municipality	Watershed	River	Location
Cortlandt	Upper Hudson River	Annsville Creek	Hudson Hills Highlands (Route 9)
Cortlandt	Upper Hudson River	Hollow Brook	Gallows Hill Road
Cortlandt	Upper Hudson River	Sprout Brook	Sprout Brook Park (Sprout Brook Road)
Sleepy Hollow	Lower Hudson River	Pocantico River	Gate P7 at Rockefeller State Park
Bedford	Croton	Beaver Dam Creek	225 Cantitoe Road
Bedford	Croton	Stone Hill River	Stone Hill Road
Lewisboro	Croton	Brady's Brook	North Todd Road
Scarsdale	Bronx River	Bronx River	Depot Road
Bedford	Upper Long Island Sound	Mianus River	Miller's Mill Road
North Castle	Upper Long Island Sound	Mianus River	Middle Patent Road
Mamaroneck	Lower Long Island Sound	Sheldrake River	Columbus Park

II. Monitoring Parameters

Volunteers monitored 10 characteristics or (parameters) at the eleven 2004 monitoring sites. These parameters consist of:

1. Water Temperature and Flow

Aquatic animals need a moderate stream temperature to live in. They become less abundant as stream temperature falls outside the normal range. Seasonal and daily fluctuations, riparian cover and human impacts affect water temperature.

Stream flow is the amount of water moving past a given point in a set amount of time (stream area * water velocity). Flow is instrumental in understanding chemical parameters.

2. Turbidity

Turbidity is a measure of the amount of clarity or cloudiness in a stream. Turbidity levels increase as suspended solids (tiny particles in the water) and plankton (microscopic plants and animals) accumulate in the water column.

3. Phosphorus

Phosphorus is a component of plant fertilizer and a limiting nutrient for aquatic plant growth in freshwater systems. As a result, small additions of phosphorus can have huge negative impacts on a waterbody.

A waterbody becomes unhealthy and overloaded with algae when too many nutrients (phosphates and nitrates) accumulate.

4. Nitrate

Nitrate is a necessary nutrient for plant growth, so like phosphorus, it can have a direct effect on the amount of algae and other aquatic plants present in a waterbody. Excessive nitrate levels, when in a drinking water supply, can also cause health problems.

5. Dissolved Oxygen

Low dissolved oxygen levels cause stress in an aquatic ecosystem and may kill aquatic animals. Most sensitive aquatic animals require dissolved oxygen levels of at least 6.0 mg/L.

Dissolved oxygen is required for aquatic organisms to survive in a stream.

6. pH

pH is the measure of acids and bases dissolved in streamwater. A waterbody with a pH outside of the 6.5 - 8.5 range is unable to support a diverse amount of aquatic animals.

7. Alkalinity

Alkalinity is a measure of the amount of dissolved weak bases that are readily available to neutralize acids that enter the stream, such as acid rain. Freshwater usually has alkalinity levels between 20-200 mg/L depending on the composition of the surrounding soils and bedrock.

8. *Salinity*

Salinity measures the salt content of water. Freshwater usually has low salinity levels. Road salt and other pollutants can increase the salinity of a waterbody.

9. Conductivity

Conductivity measures the ability of water to pass an electrical current, and is measured in order to establish a baseline conductivity range for the waterbody. Conductivity values should be relatively similar over time. The conductivity in fresh-waterbodies varies greatly from 150-500 microsiemans per centimeter (abbreviated µS/cm).

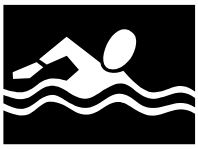
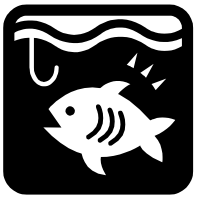
10. Macroinvertebrates

Macroinvertebrates make up the bottom of the food chain, providing food for fish and birds. The macroinvertebrate species diversity of a stream is an indicator used to determine water quality. If a stream supports a mixture of macroinvertebrates, such as the mayfly, caddisfly and stonefly, it has good water quality.

III. NY State Stream Classifications and Water Quality Standards

The State of New York has adopted regulations that identify stream use classifications and water quality regulations. These standards legally set the maximum amount of any pollutant that can be in a waterbody and still be clean. The allowed amount of pollution varies depending on the assigned stream use classification, and each stream is assigned the highest use classification that it ever could reach as determined by the State of New York.

The New York stream classifications include:

Class	Most sensitive Use	Also Supports These Uses
A/ AA-Special	 **Drinking**	• **Swimming** • **Fishing** • **Fish propagation**
B	 **Swimming**	• **Fishing** • **Fish propagation**
C	 **Fish propagation**	• **Fishing**
D	 **Fishing**	

Once the stream use classification is known, comparisons can be made between the WCCVMP monitoring data and New York State's water quality regulations. The table in Appendix A lists the New York State Water Quality Criteria for surface freshwater waterbodies.

IV. Upper Hudson River Watershed

A. Annsville Creek

General Information

- Source of the creek is in Putnam County.
- Tributaries in Westchester include Sprout Brook and Peekskill/Hollow Brook.
- New York Stream Class C: Fish Propagation.
- Monitoring site is located at the Hudson Hills Highlands on Route 9 in Cortlandt.
- Monitored during the 2003 WCCVMP season.

Fish Propagation

- Average stream width of 7 meters.
- Good vegetative cover, good bank stability and preservation.
- Little to no human impacts.

Team Participants

Monitored by Team Annsville in 2004: Noel Kropf, Sue McDonnell, Eddy Khuns

Overall Water Quality (Results from July – October 2004)

- Annsville Creek has good water quality.
- Abnormal chemical readings were not experienced, except phosphorous levels, which at times were above recommended values.

Flow and Temperature

- Flow varied between 0 – 0.09 m^3/sec. The overall average was 0.032 m^3/sec.
- Temperature ranged from 16.7 – 19.2°C.

pH: Meets NY Standards

- Measurements ranged from 7.745 – 7.845.

Conductivity: Meets Recommended Levels

- Generally fresh water conductivity varies between 150 - 500 µS/cm.
- Measurements ranged from 307 – 434 µS/cm.

Dissolved Oxygen: Meets NY Standards

- New York dissolved oxygen standard is never less than 4.0 mg/L with a daily average above 5.0 mg/L (for class C streams with non-trout waters).
- Dissolved oxygen varied between 7.115 – 9.305 mg/L. There was an average DO of 8.285 mg/L.
- Measurements ranged from 78% - 87% saturated.

Turbidity: Meets NY Standards

- New York surface water standard states that turbidity must be low enough to prevent a "substantial visible contrast to natural conditions".
- Levels were low and varied between 1.35 – 3.8 NTU.

Alkalinity: Meets Recommended Levels

- Recommended levels should be above 20 mg/L (NY is yet to adopt alkalinity standards).
- Levels were above 20 mg/L.

Nitrates: Meets NY Standards and Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 10 mg/L.
- Measurements ranged from 0.15 – 1.6 mg/L.

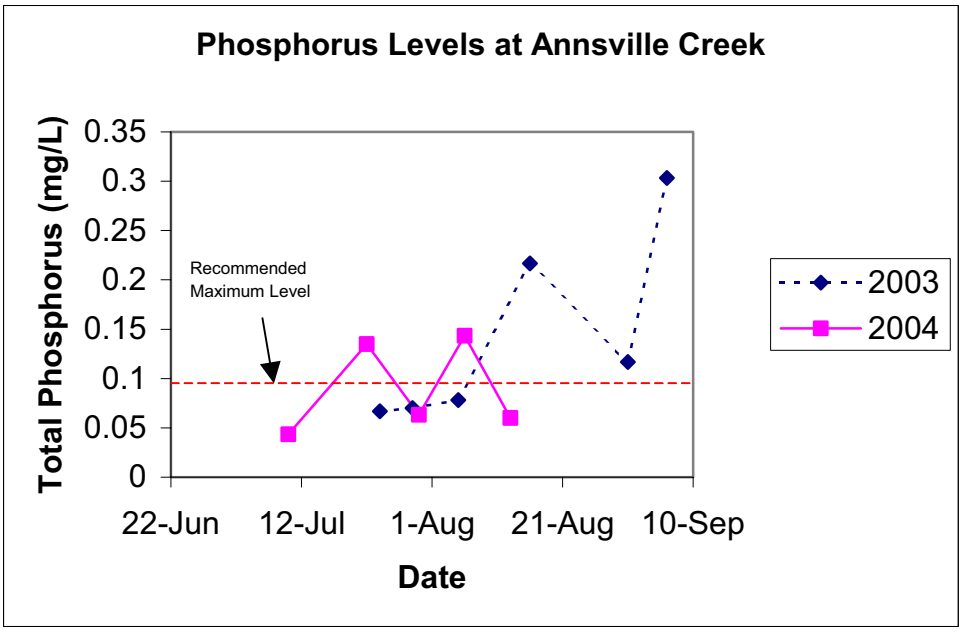
Phosphorus: Meets NY Standards / Does Not Always Meet Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 0.1 mg/L.
- Measurements ranged from 0.043 – 0.143 mg/L.
- Figure 1 below displays phosphorus measurements for the 2003 and 2004 monitoring season.

Macroinvertebrates

- No information available during the 2004 monitoring season.

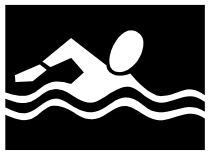
Figure 1. Phosphorus Levels at Annsville Creek During the 2003 and 2004 Monitoring Seasons



B. Sprout Brook

General Information

- The source of the brook is located in the Town of Cortlandt.
- Empties into Annsville Creek.
- New York Stream Class B: Swimming.
- Monitoring site is located at Sprout Brook Park, off Sprout Brook Road, in Cortlandt.
- Monitored during the 2003 WCCVMP season.



Swimming

- Located in a sparsely forested area.
- Average stream width of 3.5 meters.
- Approximately 4.8 km (3 miles) upstream from the monitoring site is a dam.

Sprout Brook is also known as Canopus Creek.

Team Participants

Monitored by Team Annsville in 2004: Noel Kropf, Sue McDonnell, Eddy Khuns

Overall Water Quality (Results from June – July 2004)

- Sprout Brook has good water quality.
- Abnormal chemical readings were not experienced.

Flow and Temperature

- Flow varied between 0.01 – 0.23 m^3/sec.
- Temperature ranged from 17 - 22.2°C.

pH: Meets NY Standards

- Measurements ranged from 7.72 – 7.88.

Conductivity: Meets Recommended Levels

- Generally freshwater conductivity varies between 150 - 500 μS/cm.
- Measurements ranged from 255 – 311.5 μS/cm.

Dissolved Oxygen: Meets NY Standards

- New York dissolved oxygen standard is never less than 4.0 mg/L with a daily average above 5 mg/L (for class B streams with non-trout waters).
- The dissolved oxygen varied between 6.915 – 8.21 mg/L with an average DO of 7.568 mg/L.
- Measurements ranged from 70% - 90% saturated.

Turbidity: Meets NY Standards

- New York surface water standard states that turbidity must be low enough to prevent a "substantial visible contrast to natural conditions".
- Levels were low and varied between 0.65 – 3.85 NTU.

Alkalinity: Meets Recommended Levels

- Recommended levels should be above 20 mg/L (NY has yet to adopt alkalinity standards).
- Levels were above 20 mg/L.

Nitrates: Meets NY Standards and Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 10 mg/L.
- Measurements ranged from 0.45 – 5.2 mg/L.
- Figure 2 displays nitrate levels for Sprout Brook during the 2003 and 2004 monitoring seasons.

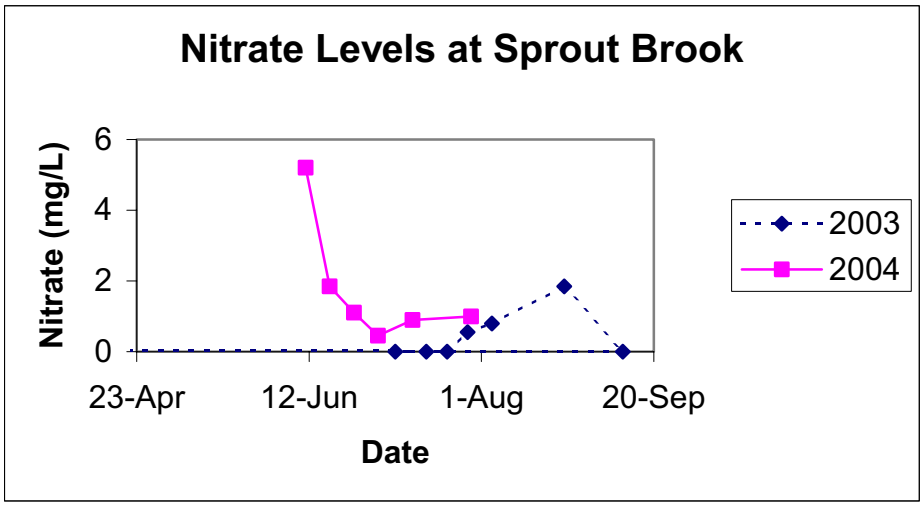
Phosphorus: Meets NY Standards and Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 0.1 mg/L.
- Measurements ranged from 0.035 – 0.078 mg/L.

Macroinvertebrates

- No information available during the 2004 monitoring season.

Figure 2. Nitrate levels at Sprout Brook During the 2003 and 2004 Monitoring Season.



V. Lower Hudson River Watershed

A. Pocantico River

General Information

- New York Stream Class C: Fish Propagation.
- Monitoring site is located at Gate P7 in Rockefeller State Park.
- River flows into the Hudson River.
- Located in a forested area.

Fish Propagation

Team Participants

Monitored by Team Rockefeller State Park in 2004: Tessa Johnson, Chris Parris, Ben Yardeni, Susan Porcino, Lynn DeMichele, Ryan DeMichele, Bob Eaton

Overall Water Quality (Results from June – July 2004)

- Pocantico River has good water quality.
- Abnormal chemical readings were not experienced, except for conductivity levels which were above recommended values at times.

Flow and Temperature

- Flow varied between 0.42 – 2.19 m^3/sec with an overall average of 1.053 m^3/sec.
- Temperature ranged from 20.1 - 25°C.

pH: Meets NY Standards

- Measurements ranged from 7.955 – 8.24.

Conductivity: Does Not Meet Recommended Levels

- Generally fresh water conductivity varies between 150 - 500 µS/cm.
- Measurements ranged from 416 - 1442 µS/cm.
- Conductivity levels were often higher than the recommended levels for freshwater.
- Figure 3 shows conductivity levels in 2004.

Dissolved Oxygen: Meets NY Standards

- New York dissolved oxygen standard is never less than 5.0 mg/L with a daily average above 6 mg/L (for class C streams with trout).
- Dissolved oxygen varied between 7.85 – 18.62 mg/L with an average of 9.853 mg/L.
- One measurement of 110% saturated dissolved oxygen was taken.

Turbidity: Meets NY Standards

- New York surface water standard states that turbidity must be low enough to prevent a "substantial visible contrast to natural conditions".
- Levels were low and varied between 0.85 – 3.55 NTU.

Alkalinity: Meets Recommended Levels

- Recommended levels should be above 20 mg/L (NY has yet to adopt alkalinity standards).
- Levels were above 20 mg/L.

Nitrates: Meets NY Standards and Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 10 mg/L.
- Measurements ranged from 0.35 – 1.5 mg/L.

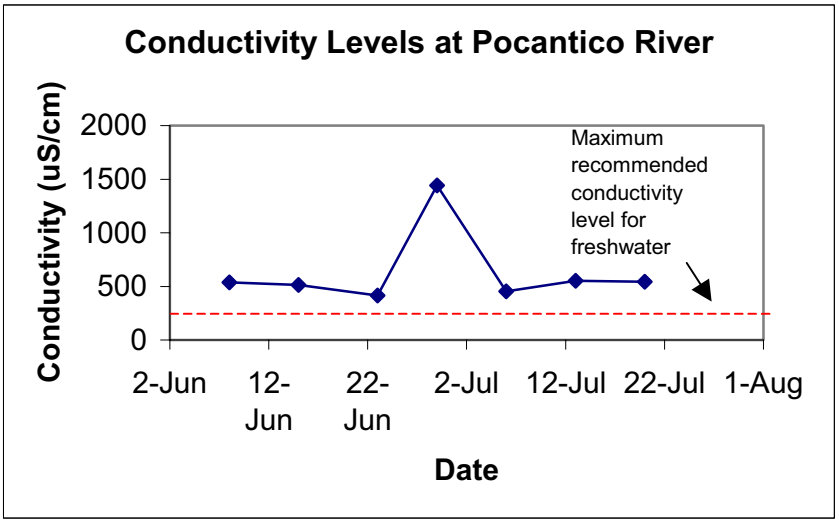
Phosphorus: Meets NY Standards and Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 0.1 mg/L.
- Measurements ranged from 0.033 – 0.077 mg/L.

Macroinvertebrates

- No information available during the 2004 monitoring season.

Figure 3. Conductivity Levels at Pocantico River During the 2004 Monitoring Season.



VI. Croton Watershed

A. Beaver Dam Creek

General Information

- Empties into the New Croton Reservoir.
- New York Stream Class C: Fish Propagation.
- Monitoring site is located on Cantitoe Road in Bedford.
- Located in a densely forested area.
- Excellent bank stability and vegetative coverage.
- Monitored during the 2003 WCCVMP season.

Fish Propagation

Team Participants

Monitored by Team Bedford in 2004: Scott Walter, Simon Skolnik, Charles McDuffe, Ann McDuffe, Frank Fox, Janeen Karlsson, Jane Pearl

Overall Water Quality (Results from May – August 2004)

- Beaver Dam Creek has good water quality.
- Abnormal chemical readings were not experienceed, except for phosphorus levels which were above recommended levels at times and alkalinity levels which were below recommended levels at times.

Flow and Temperature

- Flow varied between 0 – 1.5 m^3/sec.
- Temperature ranged from 14.8 – 22.2°C.

pH: Meets NY Standards

- Measurements ranged from 7.675 – 7.905.

Conductivity: Meets Recommended Levels

- Generally fresh water conductivity varies between 150 - 500 µS/cm.
- Measurements ranged from 214 - 342 µS/cm.

Dissolved Oxygen: Meets NY Standards

- New York dissolved oxygen standard is never less than 7.0 mg/L (for class C streams with trout spawning waters).
- The dissolved oxygen varied between 7.74 – 16.96 mg/L with an overall average of 9.143 mg/L.
- Measurements ranged from 85% - 104% saturated.

Turbidity: Does Not Meet Standards

- New York surface water standards state that turbidity must be low enough to prevent a "substantial visible contrast to natural conditions".
- Levels were variable and ranged between 2.85 – 18.25 NTU.
- Turbidity levels were higher in 2004 than in 2003.
- Figure 4 shows turbidity measurements for 2003 and 2004.

Alkalinity: Does Not Meet Recommended Levels

- Recommended levels should be above 20 mg/L (NY has yet to adopt alkalinity standards).
- Levels were not always above 20 mg/L.

Nitrates: Meets NY Standards and Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 10 mg/L.
- Measurements ranged from 0.05 – 1.85 mg/L.

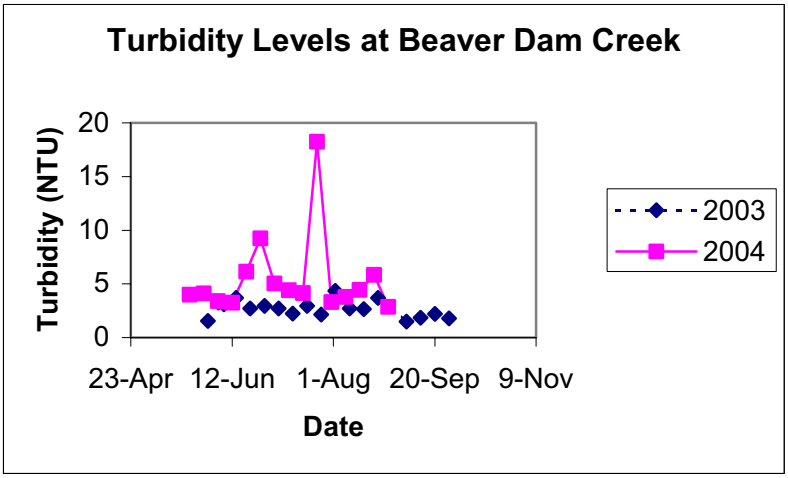
Phosphorus: Meets NY Standards / Does Not Always Meet Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 0.05 mg/L (because the stream discharges into a drinking water reservoir).
- Measurements ranged from 0.033 – 0.161 mg/L.

Macroinvertebrates

- No information available during the 2004 monitoring season.

Figure 4. Turbidity Levels at Beaver Dam Creek During the 2003 and 2004 Monitoring Seasons



B. Stone Hill River

General Information

- The source of the river is in the Town of Pound Ridge.
- Empties into Beaver Dam Creek.
- New York Stream Class C: Fish Propagation.
- Monitoring site is located on Stone Hill Road in Bedford.
- Located in a densely forested area.
- Excellent vegetative coverage and bank stability.
- Monitored during the 2003 WCCVMP season.

Fish Propagation

Team Participants

Monitored by Team Bedford in 2004: Scott Walter, Simon Skolnik, Charles McDuffe, Ann McDuffe, Frank Fox, Janeen Karlsson, Jane Pearl

Overall Water Quality (Results from May – August 2004)

- Stone Hill River has good water quality.
- Abnormal chemical readings were not experienced, except for the phosphorus values which were continuously above recommended values.

Flow and Temperature

- Flow varied between 0 – 0.66 m^3/sec.
- Temperature ranged from 14.6 – 21.7°C.

pH: Meets NY Standards

- Measurements ranged from 7.14 – 7.87 with an overall average of 7.496.

Conductivity: Meets Recommended Levels

- Generally fresh water conductivity varies between 150 - 500 µS/cm.
- Measurements ranged from 263 – 343.5 µS/cm.

Dissolved Oxygen: Meets NY Standards

- The New York dissolved oxygen standard is never less than 5 mg/L with a daily average above 6.0 mg/L (for class C streams with trout).
- Dissolved oxygen varied between 6.47 – 16.32 mg/L.
- Measurements ranged from 66% - 102% saturated.

The Stone Hill River was stocked with Brown Trout by the Department of Environmental Conservation in 2003.

Turbidity: Meets NY Standards

- New York surface water standard states that turbidity must be low enough to prevent a "substantial visible contrast to natural conditions".
- Levels were low and varied between 1.09 – 5.1 NTU.

Alkalinity: Meets Recommended Levels

- Recommended levels should be above 20 mg/L (NY has yet to adopt alkalinity standards).
- Levels were above 20 mg/L.

Nitrates: Meets NY Standards and Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 10 mg/L.
- Measurements ranged from 0 – 0.85 mg/L.

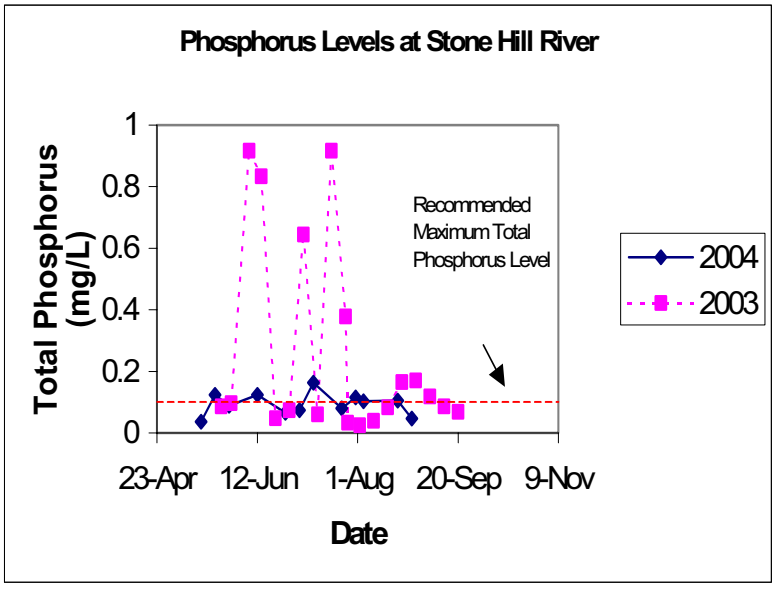
Phosphorus: Meets NY Standards But Does Not Always Meet Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 0.1 mg/L.
- Measurements ranged from 0.037 – 0.163 mg/L.
- Phosphorus levels were higher during the 2004 monitoring season than during the 2003 monitoring season.
- Figure 5 displays Phosphorus measurements over the 2003 and 2004 monitoring period.

Macroinvertebrates

- No information available during the 2004 monitoring season.

Figure 5. Phosphorus Levels at the Stone Hill River During the 2003 and 2004 Monitoring Seasons.



C. Brady's Brook

General Information

- New York Stream Class C: Fish Propagation.
- Monitoring site is located near North Todd Road in Lewisboro.
- Good bank stability and good vegetative coverage.

Fish Propagation

Team Participants

Monitored by Team Brady's Brook in 2004: Michael Dwyer, Eric Stand, Tait Johansson, George Levites, John Askildsen

Overall Water Quality (Results from June – September 2004)

- Brady's Brook has good water quality.
- Abnormal chemical readings were not experienced, except for the phosphorus levels which were continuously above recommended levels.

Flow and Temperature

- Flow varied between 0 – 0.73 m^3/sec.
- Temperature ranged from 15 – 22.6°C.

pH: Meets NY Standards

- Measurements ranged from 7.34 – 8.12 with an average of 7.736.

Conductivity: Does Not Meet Recommended Levels

- Generally fresh water conductivity varies between 150 - 500 µS/cm.
- Measurements ranged from 331.5 - 665 µS/cm.

Dissolved Oxygen: Meets NY Standards

- New York dissolved oxygen standard is never less than 4.0 mg/L with a daily average above 5.0 mg/L (for class C streams without trout).
- Dissolved oxygen varied between 5.915 – 10.44 mg/L.
- Measurements ranged from 71.5% - 120% saturated.

Turbidity: Does Not Meet NY Standards

- New York surface water standard states that turbidity must be low enough to prevent a "substantial visible contrast to natural conditions".
- Levels were variable and ranged between 1.45 – 18.1 NTU.
- Figure 6 shows turbidity levels during 2004.

Alkalinity: Meets Recommended Levels

- Recommended levels should be above 20 mg/L (NY has yet to adopt alkalinity standards).
- Levels were above 20 mg/L.

Nitrates: Meets NY Standards and Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 10 mg/L.
- Measurements ranged from 0.4 – 1.95 mg/L.

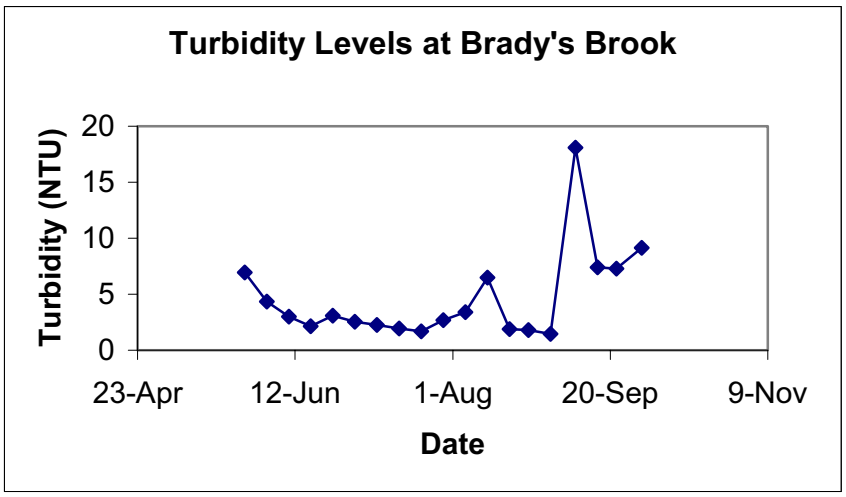
Phosphorus: Meets NY Standards But Does Not Always Meet Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 0.05 mg/L (because the stream discharges into a drinking water reservoir).
- Measurements ranged from 0.04 – 0.348 mg/L.

Macroinvertebrates

- Mayflies, stoneflies, caddisflies, beetles, and worms were present which indicate that the water quality is good.

Figure 6. Turbidity Levels at Brady's Brook During the 2004 Monitoring Season.



VII. Bronx River Watershed
A. Bronx River

General Information

- The Bronx River is 23 miles long and its watershed is 56.4 square miles.
- New York Stream Class C: Fish Propagation.
- Monitoring site is located at the Scarsdale Train Station.
- Located in an urban area.
- Good bank stability and fair vegetative coverage.
- Monitored during the 2003 WCCVMP season.

Fish Propagation

Team Participants

Monitored by Team Scarsdale in 2004: Todd Shaw, Margaret Futia-Veltri, Dan Veltri, Yoshie Matsumura, Philip Reynolds, Helen Wu, Kelly Duhigg, Joanna Furgiuele

Overall Water Quality (Results from May – September 2004)

- Conductivity, pH, turbidity and phosphorus levels were sometimes above recommended levels.
- Alkalinity levels were sometimes below recommended levels.

Flow and Temperature

- Flow varied between 0.4 – 0.89 m^3/sec.
- Temperature ranged from 15.7 – 21.6°C.

pH: Does Not Meet NY Standards

- Measurements ranged from 7.445 – 8.85.
- Figure 7 displays pH from the 2003 thru the 2004 monitoring period.

Conductivity: Does Not Meet Recommended Levels

- Generally fresh water conductivity varies between 150 - 500 µS/cm.
- Measurements ranged from 361 - 1020 µS/cm.

Dissolved Oxygen: Meets NY Standards

- New York dissolved oxygen standard is never less than 4 mg/L with a daily average above 5.0 mg/L (for class C streams with non-trout waters).
- Dissolved oxygen varied between 7.61 – 14.64 mg/L.
- Measurements ranged from 82% - 107.5% saturated.

Turbidity: Does Not Meet NY Standards

- New York surface water standard states that turbidity must be low enough to prevent a "substantial visible contrast to natural conditions".
- Levels were not low and varied between 1.6 – 23.65 NTU.

Alkalinity: Does Not Meet Recommended Levels

- Recommended levels should be above 20 mg/L (NY has yet to adopt alkalinity standards).
- Not all levels were above 20 mg/L.

Nitrates: Meet NY Standards and Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 10 mg/L.
- Measurements ranged from 0.15 – 1.7 mg/L.

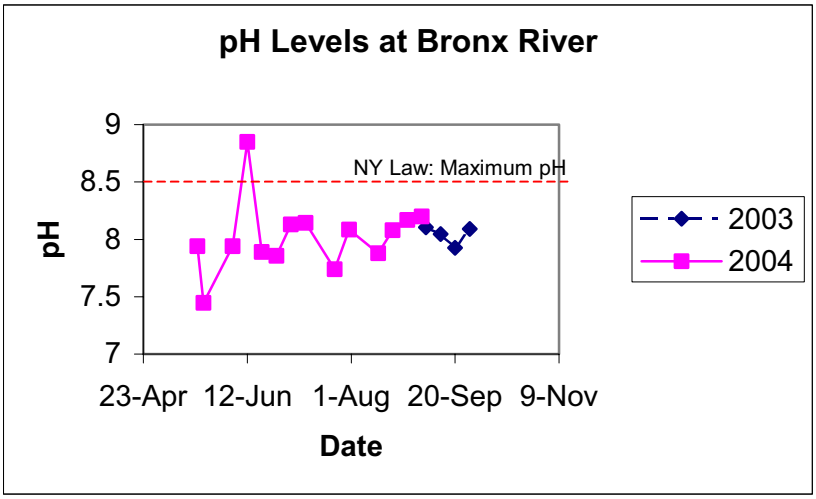
Phosphorus: Meets NY Standards But Does Not Meet Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 0.1 mg/L.
- Measurements ranged from 0.06 – 0.202 mg/L.

Macroinvertebrates

- No information available during the 2004 monitoring season.

Figure 7. pH Levels at the Bronx River During the 2003 and 2004 Monitoring Season.



VIII. Upper Long Island Sound Watershed
A. Mianus River at Miller's Mill Road

General Information
- New York Stream Class AA-Special: Drinking.
- Monitoring site is located at Miller's Mill Road in Bedford.
- Located in a suburban residential area.
- Good bank stability and excellent vegetative coverage.


Drinking

Team Participants
Monitored by Team Mianus River-Miller's Mill Road in 2004: Nancy Roth, Gus Van Loveren, Jean Vitarius, Emily Roth, Josh Roth.

Overall Water Quality (Results from August – September 2004)
- Mianus River at Miller's Mill Road has good water quality.
- High phosphorus levels occurred, which were at times above the recommended levels.

Flow and Temperature
- Flow varied between 0.09 – 2.73 m^3/sec.
- Temperature ranged from 15.6 – 21.4 °C.

pH: Meets NY Standards
- Measurements ranged from 7.25 – 7.55.

Conductivity: Meets Recommended Levels
- Generally fresh water conductivity varies between 150 - 500 µS/cm.
- Measurements ranged from 198.35 – 354 µS/cm with an average 286.463 µS/cm.

Dissolved Oxygen: Meets NY Standards
- New York State dissolved oxygen standard is never less than 4 mg/L with a daily average above 5 mg/L (for class AA-special streams with non-trout waters).
- Dissolved oxygen varied between 7.915 – 12.1 mg/L with an average of 9.529 mg/L.
- Measurements ranged from 81% - 135% saturated.

Turbidity:
- New York surface water standard states that turbidity must be low enough to prevent a "substantial visible contrast to natural conditions".
- Levels were variable and ranged between 0.05 – 12.95 NTU.
- Figure 8 below shows turbidity levels in 2004.

Alkalinity: Meets Recommended Levels

- Recommended levels should be above 20 mg/L (NY has yet to adopt alkalinity standards).
- Levels were above 20 mg/L.

Nitrates: Meets NY Standards

- NY Law states that levels should be below 10 mg/L.
- Measurements ranged from 0.2 – 1.4 mg/L.

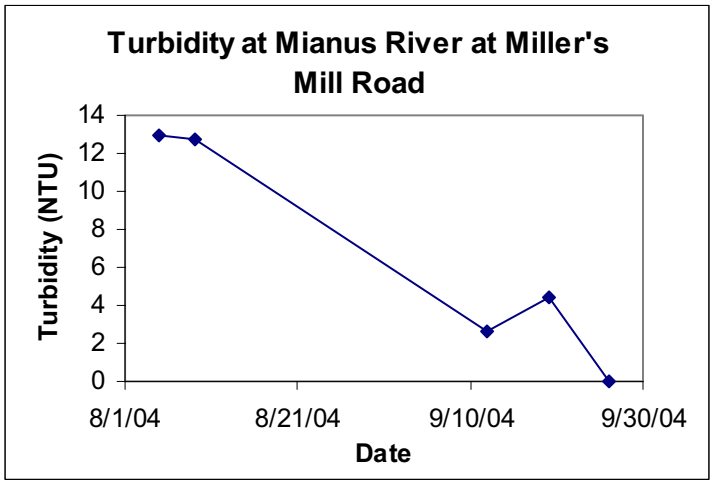
Phosphorus: Meets NY Standards But Does Not Always Meet Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 0.05 mg/L (because the stream discharges into a drinking water reservoir).
- Measurements ranged from 0.018 – 0.11 mg/L.

Macroinvertebrates

- Mayflies, stoneflies, caddisflies, and beetles were present which indicate that water quality is good.

Figure 8. Turbidity Levels at the Mianus River at Miller's Mill Road During the 2004 Monitoring Season.



B. Mianus River at Middle Patent Road

General Information

- New York Stream Class AA-Special: Drinking.
- Monitoring site is located at Middle Patent Road in North Castle.
- Located in a suburban residential area.
- Excellent bank stability.

Team Participants

Monitored by Team Mianus River-Middle Patent Road in 2004: Jean Vitarius, Ginny Powers, Nancy Roth, Gus Van Loveren, Jerry Gorman, Brett Gorman, Francis Corcoran

Overall Water Quality (Results from June – September 2004)

- Mianus River at Middle Patent Road has good water quality.
- High conductivity, turbidity, and phosphorus levels were detected which were at times above the recommended levels.
- Alkalinity levels were sometimes lower than the recommended levels.

Flow and Temperature

- Flow varied between 0 – 0.37 m^3/sec.
- Temperature ranged from 12.9 – 22.6°C.

pH: Meets NY Standards

- Measurements ranged from 7.605 – 8.07.

Conductivity: Does Not Always Meet Recommended Levels

- Generally fresh water conductivity varies between 150 - 500 µS/cm.
- Measurements ranged from 253 – 932.5 µS/cm with an average of 343.941 µS/cm.
- Figure 9 below shows conductivity levels in 2004.

Dissolved Oxygen: Meets NY Standards

- The New York dissolved oxygen standard is never less than 4 mg/L with a daily average above 5.0 mg/L (for class AA-special streams with non-trout waters).
- Dissolved oxygen varied between 7.11 – 12.27 mg/L with an average DO of 8.846 mg/L.
- Measurements ranged from 73.5% – 139% saturated.

Turbidity: Does Not Meet NY Standards

- New York surface water standard states that turbidity must be low enough to prevent a "substantial visible contrast to natural conditions".
- Levels were variable and ranged between 1.0 – 23.6 NTU.

Alkalinity: Does Not Meet Recommended Levels

- Recommended levels should be above 20 mg/L (NY has yet to adopt alkalinity standards).
- Levels were not always above 20 mg/L.

Nitrates: Meet NY Standards

- NY Law states that levels should be below 10 mg/L.
- Measurements ranged from 0.095 – 1.9 mg/L.

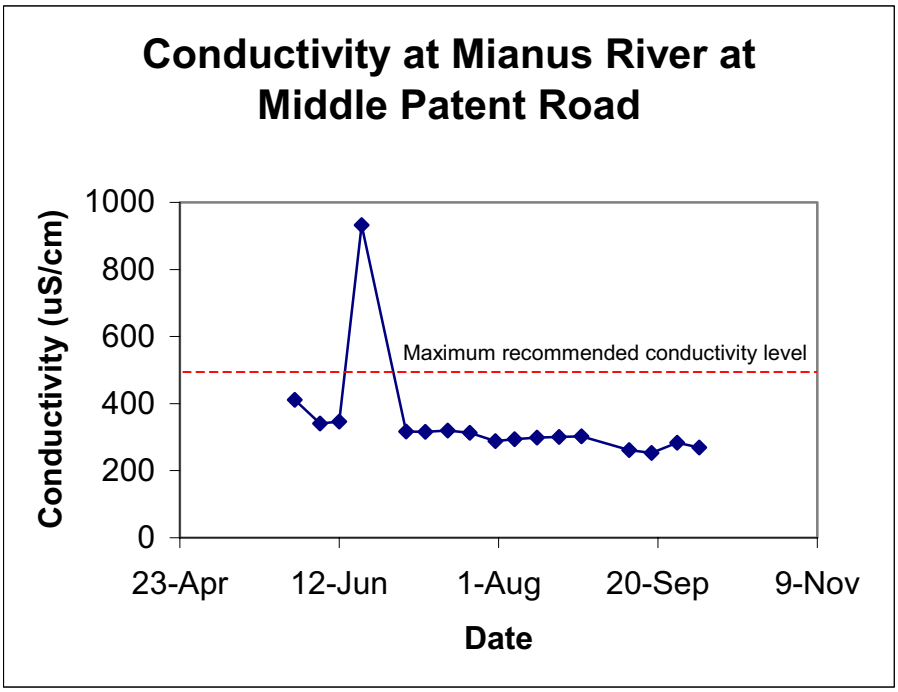
Phosphorus: Meets NY Standards But Does Not Always Meet Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 0.05 mg/L (because the stream discharges into a drinking water reservoir).
- Measurements ranged from 0.015 – 0.47 mg/L.

Macroinvertebrates

- Mayflies, stoneflies, caddisflies, beetles, and aquatic worms were present which indicates good water quality.

Figure 9. Conductivity Levels at the Mianus River at Middle Patent Road During the 2004 Monitoring Season.



IX. Lower Long Island Sound Watershed

A. Sheldrake River

General Information

- Sheldrake River drains approximately 6.1 square miles.
- The Sheldrake river empties into the Mamaroneck River.
- New York Stream Class C: Fish Propagation.
- Monitoring site is located in Columbus Park in Mamaroneck.
- Monitored during the 2003 WCCVMP season.

Fish Propagation

- Site is located in a suburban residential area.
- Average stream width of 9 meters.
- Fair vegetative coverage and good bank stability.
- Some human impacts.
- Approximately 2 miles upstream there is a dam.

The Sheldrake River comprises the upper Sheldrake (above and including the Larchmont Reservoir) and lower Sheldrake River (below the Larchmont Reservoir).

Team Participants

Monitored by Team Sheldrake in 2004: Bill Nagle, Tiffany Robinson, Sam Suharto, LeNelle Suharto, George Roniger, Ruben Berrios, Patrick Donnelly, Daniel Dieter, Chiemi Nagle, Paula Piekos, Asher Leviton.

Overall Water Quality (Results from April - September 2004)

- Sheldrake River has good water quality.
- High phosphorus and conductivity levels were detected, which were at times above the recommended values.

Flow and Temperature

- Flow varied between 0 – 1.12 m^3/sec.
- Temperature ranged from 17 – 23.3°C.

pH: Meets NY Standards

- Measurements ranged from 7.455 – 8.435.

Conductivity: Does Not Always Meet Recommended Levels

- Generally fresh water conductivity varies between 150 - 500 µS/cm.
- Measurements ranged from 292 – 659 µS/cm with an average 555.75 µS/cm.

Dissolved Oxygen: Meets NY Standards

- New York dissolved oxygen standard is never less than 5 mg/L with a daily average above 6.0 mg/L (for class C streams with non-trout waters).
- Dissolved oxygen varied between 6.085 – 12.3 mg/L with an average of 8.55 mg/L.
- Measurements ranged from 63% - 125% saturated.
- Figure 10 below shows dissolved oxygen levels for 2003 and 2004.

Turbidity:

- New York surface water standard states that turbidity must be low enough to prevent a "substantial visible contrast to natural conditions".
- Levels varied between 1.75 – 7.40 NTU.

Alkalinity: Meets Recommended Levels

- Recommended levels should be above 20 mg/L (NY is yet to adopt alkalinity standards).
- Levels were above 20 mg/L.

Nitrates: Meets NY Standards and Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 10 mg/L.
- Measurements ranged from 0.6 – 1.45 mg/L.

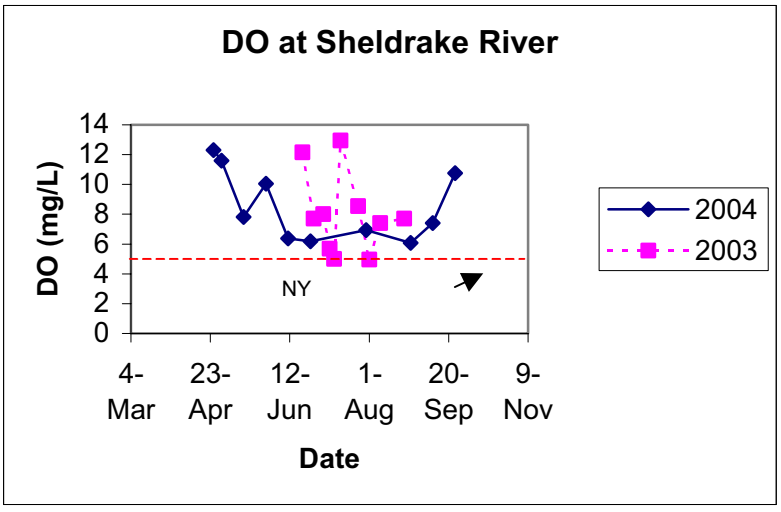
Phosphorus: Meets NY Standards / Does Not Always Meet Recommended Levels

- NY Law states that the amount of nutrients will not "result in the growth of algae, weeds, and slimes that will impair uses".
- Recommended levels should be below 0.1 mg/L.
- Measurements ranged from 0.062 – 0.27 mg/L.

Macroinvertebrates

- Caddisflies and worms were present which indicates fair water quality.

Figure 10. Dissolved oxygen Levels at the Sheldrake River During the 2003 and 2004 Monitoring Seasons.



Appendix A.
Water Quality Criteria
for Surface Freshwater

Appendix A. Water Quality Criteria for Surface Freshwater

Parameter	Classification	Standard	Guidelines for a Healthy Stream
pH	AA-Special, A, B, C	6.5-8.5	
	D	6.0-9.0	
DO	AA-Special, A, B, C	Trout spawning, 7.0 mg/L	
		Trout waters, never < 5.0 mg/L, daily avg. never < 6.0 Non-trout, never < 4.0 mg/L, daily avg. never < 5.0	
	D	Not less than 3.0 mg/L	
Temperature		No standard	Trout, < 70°F (21.1°C) Non-trout, <80°F (26.7°C)
Total phosphorus (P) (To convert orthophosphate to total phosphorus divide the measurements by 3)	A, B, C, D, AA-Special	No numerical standard - None that will result in the growth of algae, weeds, and slime that will impair uses	The EPA water quality criteria state that phosphorus should not exceed 0.05 mg/L if streams discharge into lakes or reservoirs, 0.025 mg/L within a lake or reservoir, and 0.1 mg/L in streams or flowing waters not discharging into lakes or reservoirs to control algal growth (USEPA, 1986).
Nitrate-Nitrogen (NO_3-N)	A, AA-Special	10 mg/L	
	B, C, D	None that will result in the growth of algae, weeds, and slime that will impair uses	Natural levels generally <1 mg/L
Alkalinity		No Standard	0-5 mg/L endangered or critical 5-10 mg/L highly sensitive 10-20 mg/L sensitive 20 mg/L not sensitive
Conductivity	freshwaters	No standard	Generally 150-500 μS/cm
Fecal Coliform	A, B, C, D	< 200 colonies/100 mL	
Turbidity	A, B, C, D	"No increase that will cause a substantial visible contrast to natural conditions"	
Suspended and settleable Solids	AA-Special, A, B, C, D	None from sewage, industrial wastes or other wastes that cause deposition or impair the waters for their best usages	

Adapted from Hudson Basin River Watch Guidance Document June 2000 and NYS DEC website: www.dec.state.ny.us/website/regs/part703.html.

Appendix B.
CVMP 2003 and 2004 Weekly Data

Appendix B Weekly Chemical and Physical Data 2003/2004

Citizens' Volunteer Monitoring Program

Annsville Creek

Sample Date	Water Temperature °C	pH	Conductivity uS	Turbidity NTU	Alkalinity mg/L CaCO3	Salinity mg/L	Dissolved Oxygen mg/L	% Dissolved Oxygen	Nitrate mg/L	Phosphorus (mg/L)	Water Level	Flow m3/sec	Algae Growth	Air Temp°C	Weather	Past Precip.
7/8/2003		7.66	270	3.6	50.4		8.4	100		0.00	HIGH		No	24	Clear	
7/15/2003	22.8	7.31	280	0.85	50.9		5.55	63			LOW	0.1	No	23	Clear	
7/24/2003	24	7.65	263	2.39	38.4		6.65	77.5	0.7	0.07	MEDIUM	0.08	No	21	Light_Rain	
7/29/2003	24.7	7.48	274.5	1.35	50.35		6.25	69.5	0.35	0.07	MEDIUM	0.06	No	20		
8/5/2003	26.1	7.68	291	2.8	56.6		4.75	56.5	1.6	0.08	MEDIUM	0.1	No	23.3	Clear	
8/16/2003	20	7.61	311	2.5	61.05		4.35		1	0.22	MEDIUM	0.07	No	22.5	Clear	
8/31/2003	20	7.59	329.5	0.75	62.65		5.25	0	0.5	0.12	LOW	0.02	No	15.5	Clear	
9/6/2003	20	7.7	308	2.75	6.09		5.7		3.4	0.30	MEDIUM	0.06	No	17.5	Clear	
7/10/2004	17.1	7.78		1.7	80.6		8.25	84	0.85	0.04	LOW	0	No	21	Clear	
7/22/2004	19.2	7.77	434	2.2	80.8	0	7.115	78	1.05	0.14	LOW	0.02	No	23.9	Clear	0
7/30/2004	17.7	7.85	394	3.35	87.6	0	9.305	87	0.15	0.06	MEDIUM	0.03	No	23.9	Clear	0
8/6/2004	16.7	7.85	403	1.35	83.8	0	8.745	87	0.7	0.14	MEDIUM	0.02	No	15.5	Clear	0.2
8/13/2004	18.9	7.75	307	3.8	73	0	8.01	85	1.6	0.06	HIGH	0.09	No	24.4	Cloudy	6

Data was averaged between the two replicate samples taken for each parameter measurement.
Phosphorus was determined by dividing orthophosphate measurements by three.

Citizens' Volunteer Monitoring Program

Beaver Dam Creek

Sample Date	Water Temperature °C	pH	Conductivity uS	Turbidity NTU	Alkalinity mg/L CaCO3	Salinity mg/L	Dissolved Oxygen mg/L	% Dissolved Oxygen	Nitrate mg/L	Phosphorus (mg/L)	Water Level	Flow m3/sec	Algae Growth	Air Temp°C	Weather	Past Precip.
5/24/2003	12.33	7.79	248	1.45					0.75	0.06	MEDIUM	0.4	No	12.2	Light_Rain	
5/31/2003	15.9	7.76	245	1.55			10	100	0.35	0.05	MEDIUM	0.61	No	12.7	Light_Rain	
6/8/2003	14.7	7.64	191.05	3.1			16.15		0.15	0.17	HIGH	1.4	No	16.7	Light_Rain	
6/14/2003	16	7.59	192.95	3.7			8.75	87	0.05	0.04	HIGH	2.02	No	18	Clear	
6/21/2003	16.4	7.71	228	2.7			8.6	88	0.4	0.05	MEDIUM	0.92	No	20	Cloudy	
6/28/2003	20.5	7.82	500	2.95	56.35		8.1	84.5	0.45	0.05	MEDIUM	0.38	No	20	Cloudy	
7/5/2003	21.9	7.62	559	2.7	60.65		6.725	73.5	0.35	0.84	MEDIUM	0.27	No	26.7	Cloudy	
7/12/2003	19	8.09	302.5	2.25	66.95		8.85	95	0.5	0.05	MEDIUM	0.29	No	21.1	Clear	
7/19/2003	19	7.89	311.5	2.95	71.85		8.55	91	0.1	0.09	LOW	0.18	No	19	Other	
7/26/2003	19.7	7.9	317	2.15			8.2	86.5	0.3	0.18	LOW	0.19	No	18.3	Clear	
8/2/2003	20.7	7.83	314	4.35	71.6		7.625	84	0.45	0.06	LOW	0.21	No	23.9	Light_Rain	
8/9/2003	21.1	7.86	284	2.7	63.6		7.85	90	0.15	0.03	MEDIUM	0.42	No	23.3	Clear	
8/16/2003	21.9	7.86	308	2.65	71.6		8.9	100	0.15	0.28	LOW	0.19	No	21.1	Clear	
8/23/2003	21.4	7.91	289	3.7	69		7.35	82	0.4	0.08	LOW	0.21	No	20	Clear	
9/6/2003	16.8	7.92	266	1.5	61.4		9.605	97	0.65	0.13	LOW	0.25	No	14.4	Clear	
9/13/2003	17	7.75	287	1.85	268.4		8.335	100	0.6	0.01	MEDIUM	12.68	No	17.7	Cloudy	
9/20/2003	19.6	7.77	250	2.2	5.66		8.47	91	0	0.12	MEDIUM	0.57	No		Cloudy	
9/27/2003	16.9		212	1.8	36.4		8.305	85	0.15	0.36	MEDIUM	0.51	No	21.1	Clear	
5/15/2004	17.8	7.86	285		63.4	0	16.96	97.5	0.15	0.03	MEDIUM	0	No	21	Clear	
5/22/2004	19	7.82	302.5	4	68.2	0	8.04	86	1.85	0.12	MEDIUM	0.34	No		Clear	0
5/29/2004	14.8	7.85	268	4.1	60	0	9.105	88	0.85	0.16	HIGH	0.69	No	15	Clear	1.5
6/5/2004	16.1	7.84	299	3.4	64.4	0	9.87	104	0.05	0.08	EDIUM/LO	0.33	No	13.95	Cloudy	0.4
6/12/2004	15.5	7.91		3.25	75.8	0	9.01	100	1	0.11	HIGH	0.3	No		Clear	
6/19/2004	21.9	7.82	271	6.15	98	0	7.74	93	0.55	0.07	MEDIUM	0.47	No	29	Cloudy	1.5
6/26/2004	18.6	7.7	214	9.25	52.2	0	9.175	95	0.45	0.09	MEDIUM	1.04	No	19	Cloudy	0.8
7/3/2004	20.3	7.7	324	5.05	76	0	8.25	95	0.3	0.09	LOW	0.17	No	18	Clear	0
7/10/2004	19	7.75	342	4.4	82.8	0	8.28	85	1.05	0.10	LOW	0.11	No	18	Other	0
7/17/2004	20.2	7.77	3.45	4.15	95.6	0	9.075	96	0.3	0.09	LOW	0.19	No	22.2	Clear	0
7/24/2004	20.6	7.68	227	18.25	35.5	0	8.11	93	0.1	0.06	HIGH	1.5	No	18.9	Light_Rain	
7/31/2004	22	7.78	294	3.3	6.5	0	8.71	93	0.55	0.10	MEDIUM	0.29	No	23.9	Cloudy	0
8/7/2004	17.6	7.82	307	3.8	68.15	0	8.575	88	0.55	0.13	MEDIUM	0.23	No	15.6	Cloudy	0
8/14/2004	20.5	7.79	288	4.45	64.8	0	8.81	97	0.55	0.16	MEDIUM	0.4	No	21.1	Cloudy	2.15
8/21/2004	22.2	7.71	294	5.85	74.6	0	8.41	96	0.3	0.11	MEDIUM	0.37	No	22.8	Cloudy	0.7
8/28/2004	20.5	7.84	297	2.85	7.2	0	8.175	92.5	0.7	0.08	MEDIUM	0.28	No	22	Clear	0

Data was averaged between the two replicate samples taken for each parameter measurement.

Phosphorus was determined by dividing orthophosphate measurements by three.

Citizens' Volunteer Monitoring Program

Brady's Brook

Sample Date	Water Temperature °C	pH	Conductivity uS	Turbidity NTU	Alkalinity mg/L CaCO3	Salinity mg/L	Dissolved Oxygen mg/L	% Dissolved Oxygen	Nitrate mg/L	Phosphorus (mg/L)	Water Level	Flow m3/sec	Algae Growth	Air Temp°C	Weather	Past Precip.
5/27/2004	15	7.63	393	6.95	89.4	0	7.28	71.5	1.45	0.06	MEDIUM	0	No	16.1	Cloudy	1.3
6/3/2004	15.4	7.73	403.5	4.35	88	0	7.92	90	0.9	0.15	HIGH	0.12	No		Cloudy	
6/10/2004	20.3	7.71	433.5	3	94.4	0	6.985	120	1.15	0.10	MEDIUM	0.06	No	24.4	Cloudy	
6/17/2004	19.6	7.81	484	2.15	103.2	0	7.945	110	0.75	0.11	LOW	0.05	No	19.4	Cloudy	0
6/24/2004	22.6	8.12	665	3.1	60.6	0	7.275	95	0.7	0.05	MEDIUM	0.11	No	15	Cloudy	0
7/1/2004	17.4	7.86	488	2.55	108	0	8.7		1.4	0.04	LOW	0.03	No	18.3	Clear	
7/8/2004	20.1	7.84	506	2.25	109.6	0	6.885	82	1.3	0.06	LOW	0.01	No	20	Cloudy	0.05
7/15/2004	19.3	7.84	484	1.95	103.6	0	7.98	80	0.7	0.09	LOW	0.02	No	18.3	Light_Rain	
7/22/2004	19.1	7.89	521.5	1.7	120.6	0	8.21	95	0.65	0.09	LOW	0.01	No	17.2	Clear	0
7/29/2004	19.4	7.67	437	2.7	88.4	0	7.55	82	0.4	0.08	MEDIUM	0.1	No	17.2	Clear	
8/5/2004	20.8	7.86	490	3.4	126	0	7.15	85	0.55	0.18	MEDIUM	0.05	No	20	Cloudy	
8/12/2004	19.7	7.39	405.5	6.5	83.6	0	6.95	77	1.65	0.12	MEDIUM	0.05	No	19.4	Light_Rain	
8/19/2004	19.3	7.79	481	1.9	109.8	0	9.61	100	1.25	0.12	MEDIUM	0.06	No	19.4	Cloudy	0
8/25/2004	17.2	7.83	472	1.8	98.8	0	8.745	87	1.55	0.13	MEDIUM	0.09	No	13.3	Clear	0
9/1/2004	17.2	7.88	496	1.45	112.7	0	8.215	85	1.15	0.07	MEDIUM	0.06	No	13.3	Clear	0.2
9/9/2004	20.4	7.34	331.5	18.1	65	0	5.915		1.95	0.05	HIGH	0.73	No	20	Light_Rain	5
9/16/2004	17.7		406.5	7.4	83.8	0	7.45		0.4	0.21	MEDIUM	0.16	No	16.6	Light_Rain	0
9/22/2004	16.1	7.69	409	7.3	82.4	0	10.44	110	1	0.08	MEDIUM	0.22	No	18	Clear	0
9/30/2004	15.8	7.42	381.5	9.15	83.8	0	7.445	74	0.45	0.35	HIGH	0.69	No	12.8	Clear	6

Data was averaged between the two replicate samples taken for each parameter measurement.
Phosphorus was determined by dividing orthophosphate measurements by three.

Citizens' Volunteer Monitoring Program

Bronx River

Sample Date	Water Temperature °C	pH	Conductivity uS	Turbidity NTU	Alkalinity mg/L CaCO3	Salinity mg/L	Dissolved Oxygen mg/L	% Dissolved Oxygen	Nitrate mg/L	Phosphorus (mg/L)	Water Level	Flow m3/sec	Algae Growth	Air Temp°C	Weather	Past Precip.
9/6/2003	17.5	8.11	944	2.05	150.3		8.75	90.5	0.4	0.11	MEDIUM	0.19	No	19.4	Clear	
9/13/2003	18.8	8.05	672.5	1.7	106.3		8.65	91.5	0.25	0.08	MEDIUM	0.29	No	19.9	Light_Rain	
9/20/2003	20	7.93	647.5	2.3	283		7.8	84	1.7	0.08	MEDIUM	0.45	No	23	Clear	
9/27/2003	18	8.09	938	2.3	127.2		8.44	88	0.4	0.06	MEDIUM	0.54	No	20.6	Light_Rain	
5/19/2004	17.7	7.94	981.5	3.05	147.8		9.775	107.5	1.7	0.08	MEDIUM		Yes	15.4	Clear	0
5/22/2004	15.7	7.45	664	2	9.24	0	14.64		1.5	0.13	MEDIUM	44.65	No	16	Cloudy	0
6/5/2004		7.94	981.5	3.05	147.8	1	9.775	107.5	1.7	0.08			No			
6/12/2004	16.7	8.85	10.11	2	154.8	1	7.88		1	0.09	LOW	48.15	No	23.9	Clear	0
6/19/2004	21.6	7.89	7.57	2.9	115.8	0			0.7	0.20	LOW	57.4	No	28	Cloudy	1
6/26/2004	19.8	7.86	5.25	6.95	85.6	0	8.945	92.5	1.05	0.16	HIGH	56.65	No	24	Light_Rain	
7/3/2004	19.9	8.13	18.215	1.9	159.5	1	9.38		1.35	0.13	LOW	33.76	No	27	Clear	0
7/10/2004	20	8.15	1000.365	1.6	159.4	1	10.575	95	1	0.07	LOW	26.75	No	27	Clear	0
7/24/2004	21	7.74	361	23.65	63.1	0	8.315	88	0.15	0.11	HIGH	405.26	No	20	Light_Rain	1
7/31/2004	20.6	8.09	908	1.9	131.8	0	8.05	90	1.05	0.11	LOW	70.11	No	28	Cloudy	0
8/7/2004	17.6										LOW	0.61	No	18	Cloudy	0
8/14/2004	21.1	7.88	441	7.55	75.8	0	9.11	102	0.45	0.08	MEDIUM	0.89	No	25	Cloudy	2
8/21/2004	21.6	8.08	968	3.3	145.8	1	10.21	95	1.4	0.09	LOW	0.88	No	26	Cloudy	0
8/28/2004	20.3	8.17	997	2.3	154.4	1	8.745	91	0.95	0.06	LOW	0.66	No	27	Cloudy	0
9/4/2004	19.3	8.2	1020	1.8	155	1	7.61	82	0.7	0.07	MEDIUM	0.4	No	26	Clear	0

Data was averaged between the two replicate samples taken for each parameter measurement.
Phosphorus was determined by dividing orthophosphate measurements by three.

Citizens' Volunteer Monitoring Program

Cross River

Sample Date	Water Temperature °C	pH	Conductivity uS	Turbidity NTU	Alkalinity mg/L CaCO3	Salinity mg/L	Dissolved Oxygen mg/L	% Dissolved Oxygen	Nitrate mg/L	Phosphorus (mg/L)	Water Level	Flow m3/sec	Algae Growth	Air Temp°C	Weather	Past Precip.
7/26/2003		7.47	961	8.4	77.2		7.6	80	0.7	0.05			No	20.6		
8/2/2003	20.5	7.34	961	3.15	66.5		12	135	0.3	0.10	MEDIUM	0.1798	No	23.8	Light_Rain	
8/16/2003							5.9	65	0.3	0.92	MEDIUM	0.3786	No		Clear	
8/23/2003	21.6	7.57		1.6	61.7		10.2	112	0	0.17	MEDIUM	0.3125	No	21.6	Clear	
8/30/2003	20	7.62					8.6	95	0.5	0.08	LOW	0.095	No	21.4	Clear	
9/6/2003	17.3	7.76	320	2.5	57.9		7.9	80	0.1	0.15	HIGH	0.275	No	17.1	Clear	
9/14/2003	25						4.4	55			HIGH	1.43	No	25	Clear	
10/5/2003	10.5	7.67		3.3					0.6	0.08	HIGH	0.729	No	10.1	Clear	

Data was averaged between the two replicate samples taken for each parameter measurement.
Phosphorus was determined by dividing orthophosphate measurements by three.

Citizens' Volunteer Monitoring Program

Hollow Brook

Sample Date	Water Temperature °C	pH	Conductivity uS	Turbidity NTU	Alkalinity mg/L CaCO3	Salinity mg/L	Dissolved Oxygen mg/L	% Dissolved Oxygen	Nitrate mg/L	Phosphorus (mg/L)	Water Level	Flow m3/sec	Algae Growth	Air Temp°C	Weather	Past Precip.
7/7/2003	19.5	7.86	339.5		62.2		8.35	87	1.55	0.57	HIGH	1	No	21.1	Clear	
7/12/2003	18.2	7.85	373.5						0.3	0.22	HIGH		No	21	Clear	
7/25/2003	19.5	7.86	339.5		62.2		8.35	88.5	1.55	0.57	HIGH	1	No	251.1	Cloudy	
8/23/2003	20	7.95	918	0.65	72		9	96	1.5	0.09	LOW	0.89	No	19.4	Clear	
9/9/2003	16.8	8.04	390	0.65	20.8		13.65	140.5	1.05	0.92	MEDIUM		No	14.4	Clear	

Data was averaged between the two replicate samples taken for each parameter measurement.
Phosphorus was determined by dividing orthophosphate measurements by three.

Citizens' Volunteer Monitoring Program

McGregory Brook

Sample Date	Water Temperature °C	pH	Conductivity uS	Turbidity NTU	Alkalinity mg/L CaCO3	Salinity mg/L	Dissolved Oxygen mg/L	% Dissolved Oxygen	Nitrate mg/L	Phosphorus (mg/L)	Water Level	Flow m3/sec	Algae Growth	Air Temp°C	Weather	Past Precip.
6/7/2003	13.3	8	5	1.4			9.2	90	0.7	0.15	LOW		No	13.9	Light_Rain	
6/16/2003	14	8.06	680	5.4					1.55	0.10	LOW	0.1	No	19	Clear	
6/28/2003	16.5	7.95	807.5	1.2	134		9.35	94	1.3	0.06	MEDIUM		No	18.3	Clear	
7/5/2003		7.99	870.5		145		8.2		1.55	0.06	LOW	0.01	No	26.7	Clear	
7/19/2003	17.4	7.92	738		73.84		7.25	75	1.05	0.33	LOW	0.02	No	18.3	Clear	
8/2/2003	19.9	5.74	794	3.2	135.55		10.75	10.75	1.65	0.05	MEDIUM	77.58	Yes	71	Other	
8/16/2003	19.9	8.05	897.5	5.5	153.8		7.8	88	2.25	0.20	LOW	0.01	No	22.7	Clear	

Data was averaged between the two replicate samples taken for each parameter measurement.
Phosphorus was determined by dividing orthophosphate measurements by three.

Citizens' Volunteer Monitoring Program

Mianus River at Middle Patent Road

Sample Date	Water Temperature °C	pH	Conductivity uS	Turbidity NTU	Alkalinity mg/L CaCO3	Salinity mg/L	Dissolved Oxygen mg/L	% Dissolved Oxygen	Nitrate mg/L	Phosphorus (mg/L)	Water Level	Flow m3/sec	Algae Growth	Air Temp°C	Weather	Past Precip.
5/29/2004	16.8	7.97	411	1.95	70.1	2.5	7.11	73.5	0.25	0.07	MEDIUM	0	No	12.2	Clear	2.5
6/6/2004	15.6	7.97	341	1.6	75.8	2	10.27	121	0.2	0.03	MEDIUM		No	13.3	Cloudy	0.25
6/12/2004	15.5	7.94	346	1.7	74.2	0	9.145	86	0.35	0.05	LOW		No	13.9	Clear	0.25
6/19/2004	22.6	7.83	932.5	2.45	74.2	1	8.475	95	0.55	0.06	HIGH	0.07	No	22.2	Cloudy	0.25
6/27/2004	17.9	8		1.55	79.2		8.3	87	0.7	0.05	MEDIUM	0.04	No	14.4	Clear	0
7/3/2004	17.9	7.95	317	1.3	55.4	0	8.01	82.5	0.7	0.05	MEDIUM	0.01	No	19.4	Clear	0
7/9/2004	17.5	8.04	316	2.45	36.8	0	8.145	90	0.3	0.10	LOW	0.01	No	21.1	Clear	0
7/16/2004	18.7	8.07	320	1.75	84	0	10.275	99	1.15	0.07	MEDIUM	0.02	No	17.8	Clear	1
7/23/2004	20.1	7.61	313	23.6	50.4	0	7.145	79	0.48	0.02	LOW	0	No	23.9	Cloudy	0
7/31/2004	21.9	8.01	288	7.15	67.8	0	8.51	94	0.35	0.16	MEDIUM	0.02	No	22.8	Cloudy	0
8/6/2004	20	8.07	294	3.75	76.8	0	9.11	99	0.475	0.11	MEDIUM	0.03	No	18.3	Cloudy	0.5
8/13/2004	21.2	8.03	299	3.45	81.6	0	9.11	98	2.5	0.05	MEDIUM	0.02	No	22.2	Light_Rain	1
8/20/2004	20.6	8	301	2.8	81.4	0	7.35	85	0.35	0.04	MEDIUM	0.01	No	21.1	Cloudy	0
8/27/2004	19	8.07	302.5	4.1	80.4	0	7.815	80	0.4	0.06	LOW	0.01	No	21.1	Cloudy	0
9/11/2004	19.9	7.9	261	3.3	50.4	0	12.27	139	0.095	0.08	HIGH	0.03	No	19.4	Cloudy	4.5
9/18/2004	17.4	7.85	253	5.5	53.7	0	8.81	93	1.9	0.09	HIGH	0.37	No	15.5	Clear	
9/26/2004	17.8	7.99	283	1	88.8	0	9.24	96	1.1	0.03	MEDIUM	0.03	No	16.6	Clear	0
10/3/2004	12.9	8	269	1.65	17.4	0	10.14	93	0.4	0.06	MEDIUM	0	No	12.7	Clear	

Data was averaged between the two replicate samples taken for each parameter measurement.
Phosphorus was determined by dividing orthophosphate measurements by three.

Citizens' Volunteer Monitoring Program

Mianus River at Miller's Mill Road

Sample Date	Water Temperature °C	pH	Conductivity uS	Turbidity NTU	Alkalinity mg/L CaCO3	Salinity mg/L	Dissolved Oxygen mg/L	% Dissolved Oxygen	Nitrate mg/L	Phosphorus (mg/L)	Water Level	Flow m3/sec	Algae Growth	Air Temp°C	Weather	Past Precip.
8/5/2004	21.4		327	12.95	68	0	12.1	135	1.05	0.02	MEDIUM		No	21.1	Cloudy	1
8/9/2004	17.8	7.46	354	12.7	33.6	0	8.38	88	1.4	0.09	MEDIUM	0.09	No	22	Clear	0
9/12/2004	17.6	7.31	266.5	2.65	50.6	0	9.51	103	0.2	0.08	HIGH	1.09	No	17.6	Clear	0.25
9/19/2004	15.6	7.25	198.35	4.45	43.8	0	9.74	85	0.5	0.11	HIGH	2.73	No	15.6	Clear	2.5
9/26/2004	17.3	7.55	294	0.05	70.8	0	7.915	81	0.55	0.05	MEDIUM	1	No	18.3	Clear	0

Data was averaged between the two replicate samples taken for each parameter measurement.
Phosphorus was determined by dividing orthophosphate measurements by three.

Citizens' Volunteer Monitoring Program

Pocantico River at Gate P7

Sample Date	Water Temperature °C	pH	Conductivity uS	Turbidity NTU	Alkalinity mg/L CaCO3	Salinity mg/L	Dissolved Oxygen mg/L	% Dissolved Oxygen	Nitrate mg/L	Phosphorus (mg/L)	Water Level	Flow m3/sec	Algae Growth	Air Temp°C	Weather	Past Precip.
6/8/2004	20.1	8.07	537.5	1.35	94	0	7.85		1.4	0.07	MEDIUM	2.19	No	33	Clear	
6/15/2004	22.6	8.05	514.5	2.2	86.8	0	7.85		1.05	0.04	MEDIUM	0.79	No	30	Clear	
6/23/2004	23.4	7.96	416	1	65	0	8.11		1.15	0.06	LOW	0.72	No	28	Clear	
6/29/2004	22.6	8.01	1442	1.25	288.2	1	18.62		1.5	0.03	MEDIUM	0.75	No	27	Clear	
7/6/2004	24.5	8.11	453.5	1.1	91	0	8.65		0.35	0.08	LOW	0.57	Yes		Clear	0
7/13/2004	22.2	8.24	551.5	3.55	115.4	0	9.11	110	1.1	0.05	HIGH	1.93	No	23	Light_Rain	
7/20/2004	25	8.11	543.5	0.85	93	0	8.78		1.1	0.06	LOW	0.42	No	26.7	Clear	

Data was averaged between the two replicate samples taken for each parameter measurement.
Phosphorus was determined by dividing orthophosphate measurements by three.

Citizens' Volunteer Monitoring Program

Sheldrake River

Sample Date	Water Temperature °C	pH	Conductivity uS	Turbidity NTU	Alkalinity mg/L CaCO3	Salinity mg/L	Dissolved Oxygen mg/L	% Dissolved Oxygen	Nitrate mg/L	Phosphorus (mg/L)	Water Level	Flow m3/sec	Algae Growth	Air Temp°C	Weather	Past Precip.
6/20/2003	17.6	7.55	449.5	3.05			12.15	115.5			MEDIUM		No	18.8	Cloudy	
6/27/2003	21.9	7.35	569	1.35			7.7	86.5			LOW		No	23.3	Cloudy	
7/3/2003	19.9	7.56	399				8		0.55	0.35	MEDIUM	0.38	No	18.9	Cloudy	
7/7/2003	19.6	7.3	751	3.1	11.85		5.7	61	0.5	0.22	MEDIUM	0.01	No	18.8	Clear	
7/10/2003	19.9	7.26	761.5	2.45	12.75		5	55	1.65	0.12	MEDIUM	0.02	No	17.2	Cloudy	
7/14/2003	16.1	7.6	378.5				12.95	131.5			HIGH	1.63	No	16	Clear	
7/25/2003	20.9	7.45	555	2.65	101.7		8.55	94	1.15	0.13	LOW	0.04	No	17.7	Clear	
8/1/2003	20.2	7.26	806	8	108.7		4.95	53	0.65	0.13	MEDIUM	0.04	No		Clear	
8/8/2003	22.4	7.57	281	11.7	59.7		7.4	84	0.8	0.50	HIGH	0.77	No	20.55	Light_Rain	
8/14/2003	23.8	7.5		2.85	80.5				0.1	0.84	MEDIUM	0.21	No	24.4	Clear	
8/23/2003	21.9	7.39	667	2.2	108		7.7	87	0.95	0.72	LOW	0.06	No	24	Clear	
8/29/2003	19.7	7.37	845	4	127.2			49		0.09	LOW		Yes	19.7	Clear	
4/25/2004			647	1.8	88.4	0	12.3		0.9	0.13	MEDIUM	0	No	10	Light_Rain	0.1
4/30/2004	18.6	8.23	643.5	1.75	84.6	0	11.605	125	0.85	0.06	MEDIUM	0.15	No	20	Clear	0
5/14/2004	17	7.76	536.5	2.95	87.8		7.815	73	0.6	0.09	MEDIUM	0.39	No	17	Clear	1.5
5/28/2004	18.9	7.72	476	3.15	81		10.05	107	0.85	0.18	MEDIUM	0.29	No	22	Other	0.1
6/11/2004	19.8	7.46	617.5	3.3	99.4	0	6.38	63	1.35	0.16	LOW	0.05	No	24.4	Clear	0
6/25/2004	21.9	7.48	659	3.25	111.2	0	6.185	64	0.6	0.15	LOW	0.02	No	28	Clear	0.25
7/30/2004	23.3	7.57	502.5	2.05	84	0	6.93	79	1.4	0.12	MEDIUM	0.14	No	32	Clear	0
8/27/2004	22.6	7.88	656.5	2.4	109.8	0	6.085	69	0.65	0.17	LOW	0.05	No	29	Clear	0
9/10/2004	22.8		292	7.4	65.8	0	7.4	79	0.955	0.27	HIGH	1.12	No	22.6	Clear	4
9/24/2004	19.8	8.44	527	1.75	90.4	0	10.75	117	1.45	0.09	MEDIUM	0	No	24	Clear	0

Data was averaged between the two replicate samples taken for each parameter measurement.
Phosphorus was determined by dividing orthophosphate measurements by three.

Citizens' Volunteer Monitoring Program

Sprout Brook

Sample Date	Water Temperature °C	pH	Conductivity uS	Turbidity NTU	Alkalinity mg/L CaCO3	Salinity mg/L	Dissolved Oxygen mg/L	% Dissolved Oxygen	Nitrate mg/L	Phosphorus (mg/L)	Water Level	Flow m3/sec	Algae Growth	Air Temp°C	Weather	Past Precip.
7/7/2003	22.5	7.77	0	0.85	49.7		19.4	0			MEDIUM	3.9	No	21	Cloudy	
7/16/2003	21.3	7.79	302.5	0.7	64.85		5.25	58			MEDIUM	0.12	No	20	Clear	
7/22/2003	22.1	8.09	286	15.63	6.5		5	75		0.02	HIGH	1.75	No	23	Heavy_Rain	
7/28/2003	23	7.75	226	2.4	42.2		12.25	115	0.55	0.05	MEDIUM	0.17	No	20.6	Clear	
8/4/2003	23.2	7.6	270	3.5	72		10.15	115.5	0.8	0.07	MEDIUM	0.07	No	21.7	Cloudy	
8/25/2003	19.7	8.03	292	1	63.2		7.85	81	1.85	0.05	LOW	0.12	No		Cloudy	
9/11/2003	17.7	7.81	233	0.7	44					0.78	LOW	1.52	No	16.1	Cloudy	
9/15/2003		7.56	227	0.9			7.1	77	1	0.03	MEDIUM		No		Cloudy	
9/22/2003	19.1		222	1.05	46		10	100	0.3	0.38	MEDIUM	0.72	No	21.7	Clear	
10/3/2003	11.8	7.73	182	3.9	8.5		8.5	135	0.1	0.12	MEDIUM		No	1.1	Clear	
6/11/2004	17	7.77	255	0.9	57.2	0	7.515	83	5.2	0.07	MEDIUM	0.12	No	11.1	Clear	0.25
6/18/2004	22.2	7.86	272	1.85	65.2	0	7.315	86	1.85	0.08	MEDIUM	0.23	No	23	Cloudy	1.48
6/25/2004	19.4	7.81	301	0.65	62	0	8.21	90	1.1	0.07	LOW	0.09	No	20	Cloudy	0
7/2/2004	17.1	7.72		1.45	74		7.71		0.45	0.05	LOW	0.01	No	20	Clear	0
7/12/2004	21.1	7.88	311.5	2	71.6	0	7.745	89	0.9	0.04	MEDIUM	0.09	No	18.8	Clear	0.09
7/29/2004	21.2	7.88	255.5	3.85	64.8	0	6.915	70	1	0.04	HIGH	0.14	No	17.8	Clear	1.52

Data was averaged between the two replicate samples taken for each parameter measurement.
Phosphorus was determined by dividing orthophosphate measurements by three.

Citizens' Volunteer Monitoring Program

Stone Hill River

Sample Date	Water Temperature °C	pH	Conductivity uS	Turbidity NTU	Alkalinity mg/L CaCO3	Salinity mg/L	Dissolved Oxygen mg/L	% Dissolved Oxygen	Nitrate mg/L	Phosphorus (mg/L)	Water Level	Flow m3/sec	Algae Growth	Air Temp°C	Weather	Past Precip.
5/25/2003	12.6	7.48	248	2.35					0.15	0.09	MEDIUM	0.305	No	15	Cloudy	
5/30/2003	16.3	7.38	242.5	1.45					0.45	0.10	MEDIUM	0.29	No	12.8	Cloudy	
6/8/2003	15	7.02	187.9	1.65			6.8	66.5		0.92	HIGH	1.195	No	16.7	Light_Rain	
6/14/2003	16.4	6.97	190.15	1.5			7.6	77.5	0.15	0.83	HIGH	1.5	No	18.3	Cloudy	
6/21/2003	16.7	7.15	223	1.55			6.9	69.5	0.4	0.05	MEDIUM	0.5	No	18.3	Cloudy	
6/28/2003	20.1	7.3	483	2.55	42.75		6.95	74.2	0.25	0.07	MEDIUM	0.13	No	23.5	Cloudy	
7/5/2003	21.6	7.37	552	2.5	48.15		7.7	82.5	0.35	0.65	MEDIUM	0.13	No	26.7	Clear	
7/12/2003	19.1	7.78	311	2.1	52.6		7.15	76	0.35	0.06	MEDIUM	0.11	No	23.8	Clear	
7/19/2003	19	7.66	325	1.7	58.15		8.55	91	0.35	0.92	LOW	0.05	No	21	Other	
7/26/2003	20.1	7.64	348	1.2			8.15	89	0.5	0.38	LOW	0.07	No	21.1	Clear	
7/27/2003	17.4		212	1.1	32		2.5		0.05	0.03	MEDIUM	0.37	No	21.1	Cloudy	
8/2/2003	20.3	7.62	336	1.2	64.6		7.6	82.5	0.25	0.03	LOW	0.05	No	24.4	Heavy_Rain	
8/9/2003	21.4	7.35	313	1.5	55.6		6.65	74		0.04	MEDIUM	0.23	No	23.8	Cloudy	
8/16/2003	21.2	7.53	302	1.15	59		7.05	78.5		0.08	LOW	0.1	No	24.4	Clear	
8/23/2003	21.2	7.38	286	1.5	54.6		6.515	72.5	0.35	0.17	LOW	0.11	No		Clear	
8/30/2003	20.25	7.78	312	1.425	71.5		7.605	83.25	0.25	0.17	LOW	0.085	No	24.7	Clear	
9/6/2003	16.8		275	1.3	59.2		9.1	93	0.1	0.12	LOW	0.15	No	17.2	Clear	
9/13/2003	16.6	4.94	288	1.55	236.4		6.74	67.5	0.4	0.09	MEDIUM	3.3	No	17.7	Clear	
9/20/2003	19.9	5.35	250	1.7	3.94		6.235	68		0.07	MEDIUM	0.39	No		Cloudy	
5/15/2004	19.7	7.36	267.5		46.4	0	6.47	71	0.6	0.04	MEDIUM	0.28	No	28	Clear	0.5
5/22/2004	18.7	7.38	283	2.25	56.4	0	7.7	81	0.5	0.12	HIGH	0	No		Clear	
5/29/2004	14.6	7.37	265	2.65	49	0	6.67	66	0	0.09	HIGH	0.4	No	15	Clear	1.5
6/12/2004		7.57	297	3.9	64.8	0	16.32		0.85	0.12	HIGH	0.1	No		Clear	
6/26/2004	19.1	7.14	263	1.09	51	0	7.25	79	0	0.07	HIGH	0.66	No	19	Cloudy	0.8
7/3/2004	19.6	7.65	317	3.95	60	0	7.25	78	0.2	0.07	LOW	0.1	No	21	Clear	0
7/10/2004	18.2	7.87	337.5	4	69.2	0	8.015	84	0.65	0.16	LOW	0.04	No	18	Other	0
7/24/2004	20.6	7.67	343.5	2.9	64.8	0	8.175	95	0.15	0.08	HIGH	0.07	No	18.9	Light_Rain	2.4
7/31/2004	21.7	7.4	287	2.1	52	0	7.91	89	0.65	0.12	MEDIUM	0.17	No	23.8	Cloudy	0
8/4/2004	16.8	7.65	310	2	57.6	0	8.275	84	0.45	0.10	MEDIUM	0.1	No	19	Clear	0
8/21/2004	21.2	7.35	272	5.1	60	0	6.715	76	0.4	0.11	MEDIUM	0.18	No	22.8	Cloudy	0.7
8/28/2004	19.9	7.58	288	1.7	57.6	0	9.74	102	0.6	0.05	MEDIUM	0.12	No	22	Clear	0

Data was averaged between the two replicate samples taken for each parameter measurement.
Phosphorus was determined by dividing orthophosphate measurements by three.

Appendix C.
CVMP 2003 and 2004 Biannual Data

Appendix C Biannual Data 2003/2004

Citizens' Volunteer Monitoring Program

Annsville Creek

Sample Date	Stream Width	Channel Alteration	Flow Pattern	Gradient	Shelter for Fish	Riffle Size	Vegetative Coverage	Bank Cover and Stability	Land Use	Preservation of Bank	Litter	Substrate Size	Embedded-ness	% Embedded-ness
7/8/2003	7	Good	Good	Varied	Good	Good	Excellent	Good	Dense_Forested	Excellent	Fair	Good	Good	25
10/14/2003	6.5	Good	Fair	Varied	Good	Good	Excellent	Excellent	Dense_Forested	Excellent	Fair			25
7/10/2004		Good	Fair	Fast	Fair	Excellent	Poor	Good	Rural_Residential	Good	Good			

Embeddedness, percent embeddedness, and substrate size have not been reported for 2004 due to technical complications with the WCCVMP website.

Citizens' Volunteer Monitoring Program

Beaver Dam Creek

Sample Date	Stream Width	Channel Alteration	Flow Pattern	Gradient	Shelter for Fish	Riffle Size	Vegetative Coverage	Bank Cover and Stability	Land Use	Preservation of Bank	Litter	Substrate Size	Embedded-ness	% Embedded-ness
5/15/2004		Excellent	Excellent	Varied	Good	Good	Good	Excellent	Dense_Forested	Excellent	Excellent			

Embeddedness, percent embeddedness, and substrate size have not been reported for 2004 due to technical complications with the WCCVMP website.

Citizens' Volunteer Monitoring Program

Brady's Brook

Sample Date	Stream Width	Channel Alteration	Flow Pattern	Gradient	Shelter for Fish	Riffle Size	Vegetative Coverage	Bank Cover and Stability	Land Use	Preservation of Bank	Litter	Substrate Size	Embedded-ness	% Embedded-ness
5/27/2004		Good	Fair	Varied	Excellent	Good	Fair	Good	Suburban_Residential	Good	Good			
10/2/2004		Excellent	Good	Varied	Fair	Good	Poor	Good	Suburban_Residential	Good	Good			

Embeddedness, percent embeddedness, and substrate size have not been reported for 2004 due to technical complications with the WCCVMP website.

Citizens' Volunteer Monitoring Program

Bronx River

Sample Date	Stream Width	Channel Alteration	Flow Pattern	Gradient	Shelter for Fish	Riffle Size	Vegetative Coverage	Bank Cover and Stability	Land Use	Preservation of Bank	Litter	Substrate Size	Embedded-ness	% Embedded-ness
6/5/2004		Fair	Good	Varied	Fair	Good	Fair	Good	Urban_Commercial	Fair	Fair			

Embeddedness, percent embeddedness, and substrate size have not been reported for 2004 due to technical complications with the WCCVMP website.

Citizens' Volunteer Monitoring Program

Cross River

Sample Date	Stream Width	Channel Alteration	Flow Pattern	Gradient	Shelter for Fish	Riffle Size	Vegetative Coverage	Bank Cover and Stability	Land Use	Preservation of Bank	Litter	Substrate Size	Embedded-ness	% Embedded-ness
7/26/2003		Good	Fair	Varied	Fair	Good	Fair	Good	Dense_Forested	Good	Good			25
10/5/2003	8	Good	Fair	Varied	Excellent	Excellent		Good	Dense_Forested	Good	Good			30

Embeddedness, percent embeddedness, and substrate size have not been reported for 2004 due to technical complications with the WCCVMP website.

Citizens' Volunteer Monitoring Program

Hollow Brook

Sample Date	Stream Width	Channel Alteration	Flow Pattern	Gradient	Shelter for Fish	Riffle Size	Vegetative Coverage	Bank Cover and Stability	Land Use	Preservation of Bank	Litter	Substrate Size	Embedded-ness	% Embedded-ness
7/12/2003		Excellent	Good	Slow	Fair	Good	Good	Excellent	Dense_Forested	Excellent	Good			5
9/9/2003	14	Good	Good	Varied	Good	Good	Good	Good	Dense_Forested	Good	Good			

Embeddedness, percent embeddedness, and substrate size have not been reported for 2004 due to technical complications with the WCCVMP website.

Citizens' Volunteer Monitoring Program

McGregory Brook

Sample Date	Stream Width	Channel Alteration	Flow Pattern	Gradient	Shelter for Fish	Riffle Size	Vegetative Coverage	Bank Cover and Stability	Land Use	Preservation of Bank	Litter	Substrate Size	Embedded-ness	% Embedded-ness
6/7/2003		Excellent	Good	Varied	Excellent	Excellent	Fair	Good	Dense_Forested	Good	Fair			5

Embeddedness, percent embeddedness, and substrate size have not been reported for 2004 due to technical complications with the WCCVMP website.

Citizens' Volunteer Monitoring Program

Mianus River at Middle Patent Road

Sample Date	Stream Width	Channel Alteration	Flow Pattern	Gradient	Shelter for Fish	Riffle Size	Vegetative Coverage	Bank Cover and Stability	Land Use	Preservation of Bank	Litter	Substrate Size	Embedded-ness	% Embedded-ness
5/29/2004		Good	Fair	Varied	Poor	Fair	Fair	Excellent	Suburban_Residential	Excellent	Good			
10/3/2004		Good	Fair	Varied	Poor	Good	Fair	Excellent	Suburban_Residential	Good	Good			

Embeddedness, percent embeddedness, and substrate size have not been reported for 2004 due to technical complications with the WCCVMP website.

Citizens' Volunteer Monitoring Program

Mianus River at Miller's Mill Road

Sample Date	Stream Width	Channel Alteration	Flow Pattern	Gradient	Shelter for Fish	Riffle Size	Vegetative Coverage	Bank Cover and Stability	Land Use	Preservation of Bank	Litter	Substrate Size	Embedded-ness	% Embedded-ness
9/26/2004		Excellent	Good	Varied	Excellent	Good	Excellent	Good	Suburban_Residential	Excellent	Excellent			

Embeddedness, percent embeddedness, and substrate size have not been reported for 2004 due to technical complications with the WCCVMP website.

Citizens' Volunteer Monitoring Program

Sheldrake River

Sample Date	Stream Width	Channel Alteration	Flow Pattern	Gradient	Shelter for Fish	Riffle Size	Vegetative Coverage	Bank Cover and Stability	Land Use	Preservation of Bank	Litter	Substrate Size	Embedded-ness	% Embedded-ness
6/20/2003	9	Good	Poor	Slow	Poor	Good	Fair	Good	Suburban_Residential	Good	Fair	Excellent	Excellent	
4/25/2004		Fair	Poor	Varied	Poor	Fair	Poor	Good	Suburban_Residential	Fair	Fair			
9/24/2004		Fair	Fair	Fast	Poor	Good	Poor	Good	Suburban_Residential	Fair	Fair			

Embeddedness, percent embeddedness, and substrate size have not been reported for 2004 due to technical complications with the WCCVMP website.

Citizens' Volunteer Monitoring Program

Sprout Brook

Sample Date	Stream Width	Channel Alteration	Flow Pattern	Gradient	Shelter for Fish	Riffle Size	Vegetative Coverage	Bank Cover and Stability	Land Use	Preservation of Bank	Litter	Substrate Size	Embedded-ness	% Embedded-ness
7/16/2003	3.5	Good	Fair	Varied	Good	Good	Poor	Good	Sparse_Forested	Good	Good			40

Embeddedness, percent embeddedness, and substrate size have not been reported for 2004 due to technical complications with the WCCVMP website.

Citizens' Volunteer Monitoring Program

Stone Hill River

Sample Date	Stream Width	Channel Alteration	Flow Pattern	Gradient	Shelter for Fish	Riffle Size	Vegetative Coverage	Bank Cover and Stability	Land Use	Preservation of Bank	Litter	Substrate Size	Embedded-ness	% Embedded-ness
5/22/2004		Good	Poor	Fast	Poor	Good	Excellent	Excellent	Dense_Forested	Excellent	Excellent			

Embeddedness, percent embeddedness, and substrate size have not been reported for 2004 due to technical complications with the WCCVMP website.

Appendix D.
CVMP 2003 and 2004 Macroinvertebrate Data

Appendix D Macroinvertebrate Data 2003/2004

Citizens' Volunteer Monitoring Program

Percent of Macroinvertebrates

Sample Date	Replicate Number	Mayfly	Stonefly	Caddisfly	Beetle	Worm	Other
Annsville Creek							
7/8/2003	1	50	0	50	0	0	N/A
10/14/2003	1	25	0	25	25	25	N/A
7/10/2004	1	N/A	N/A	N/A	N/A	N/A	N/A
Beaver Dam Creek							
5/15/2004	1	N/A	N/A	N/A	N/A	N/A	N/A
Brady's Brook							
5/27/2004	1	50	0	0	50	0	N/A
5/27/2004	2	25	25	0	25	25	N/A
10/2/2004	2	25	25	25	25	0	N/A
10/2/2004	1	33.33	33.33	0	0	33.33	N/A
Bronx River							
6/5/2004	1	N/A	N/A	N/A	N/A	N/A	N/A
Cross River							
7/26/2003	1	25	25	25	25	0	N/A
10/5/2003	1	N/A	N/A	N/A	N/A	N/A	N/A
Hollow Brook							
7/12/2003	1	N/A	N/A	N/A	N/A	N/A	N/A
9/9/2003	1	0	50	0	0	50	N/A
McGregory Brook							
6/7/2003	1	N/A	N/A	N/A	N/A	N/A	N/A
Mianus River at Middle Patent Road							
5/29/2004	1	20	20	20	20	20	N/A
5/29/2004	2	25	25	25	25	0	N/A
10/3/2004	1	25	25	25	0	25	N/A
10/3/2004	2	0	0	0	0	0	N/A
Mianus River at Miller's Mill Road							
9/26/2004	1	25	25	25	25	0	N/A
9/26/2004	2	25	25	25	25	0	N/A
Sheldrake River							
6/20/2003	1	N/A	N/A	N/A	N/A	N/A	N/A
4/25/2004	2	0	0	50	0	50	N/A
4/25/2004	1	0	0	100	0	0	N/A
9/24/2004	1	0	0	50	0	50	N/A
Sprout Brook							
7/16/2003	1	N/A	N/A	N/A	N/A	N/A	N/A
Stone Hill River							
5/22/2004	1	N/A	N/A	N/A	N/A	N/A	N/A

N/A = No data available.

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