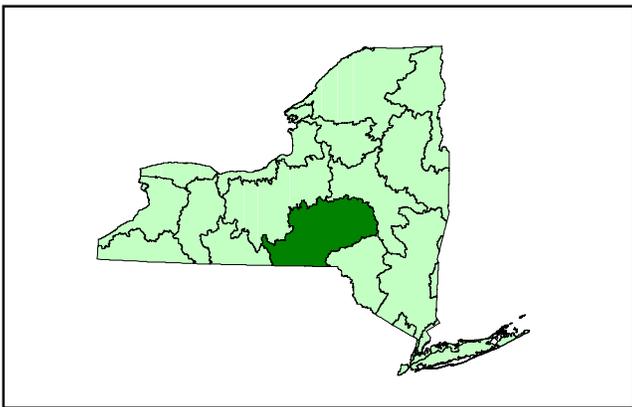
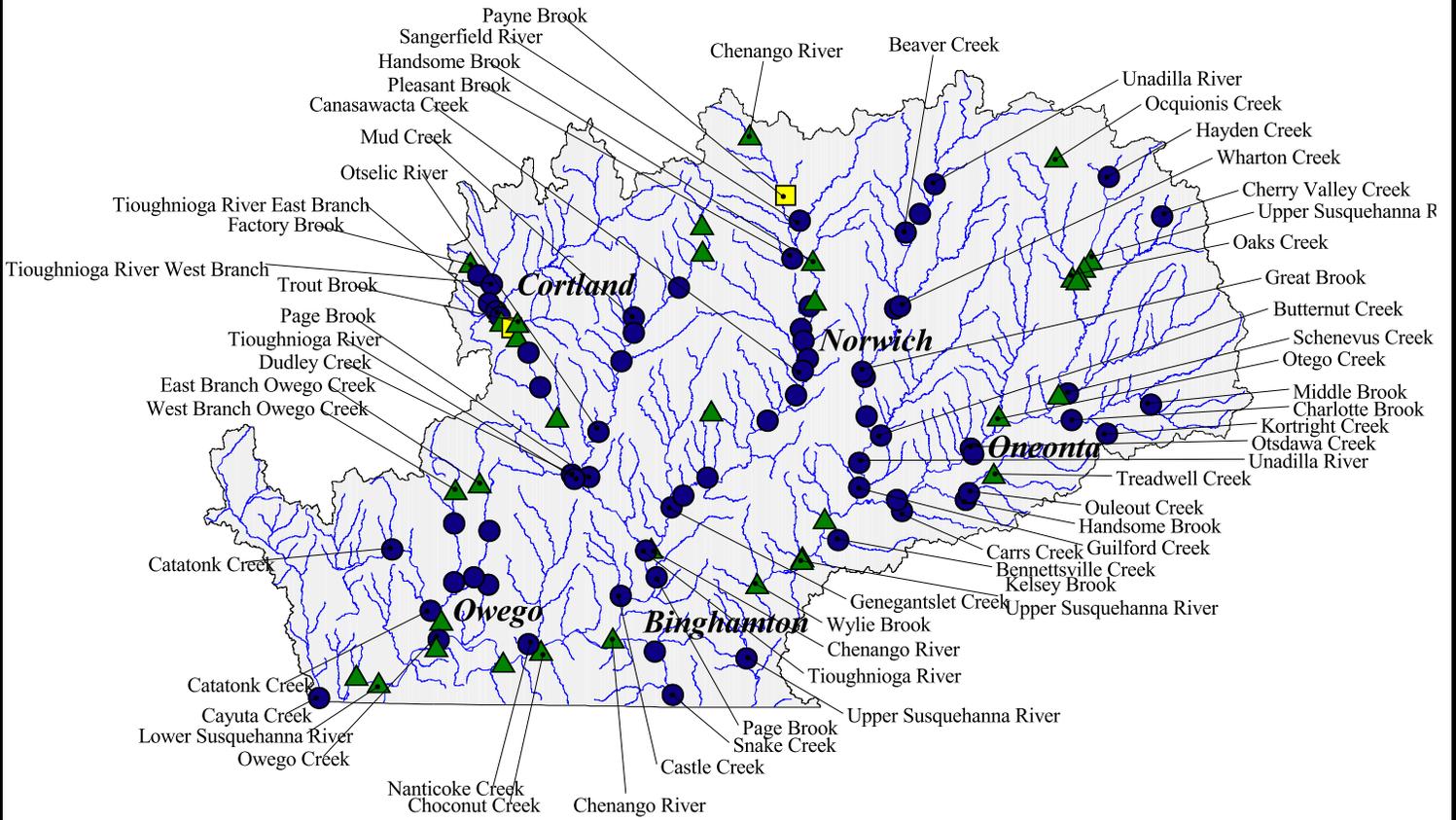


# Susquehanna River Drainage Basin



## Water Quality Assessment based on Resident Macroinvertebrates

- non-impacted
- ▲ slightly impacted
- moderately impacted
- ⬠ severely impacted



0 30 60 Miles

SUSQUEHANNA RIVER DRAINAGE BASIN SAMPLING SITES, 1972-2002

<u>STATION</u>	<u>LOCATION</u>	<u>YEAR SAMPLED</u>
<b>APALACHIN CREEK (APAL)</b>		
01	Apalachin, above Rte 434 bridge	91
02	Apalachin, below below Rt. 17 bridge	91 92
<b>BEAVER CREEK (BEVR)</b>		
01	South Brookfield, where South Brookfield Rd comes close to stream	97
<b>BENNETTSVILLE CREEK (BVIL)</b>		
01	Bennettsville, below Rt. 206 bridge	97
<b>BUTTERNUT CREEK (BTNT)</b>		
01	Mount Upton, below Flatiron Road bridge	97
<b>CANASAWACTA CREEK (NANG)</b>		
T	Norwich, above Rte 12 bridge	89 97
<b>CARRS CREEK (CARR)</b>		
01	Youngs, below Poplar Hill Rd bridge	97
<b>CASTLE CREEK (CSTL)</b>		
01	Hinmans Corners, under Rt. 11 bridge	97
<b>CATATONK CREEK (CATA)</b>		
01	Above Candor, above Griddleyville Cross Rd. bridge	98
02	Below Hubbardtown, off Rt. 96	98
03	Below Catatunk, below Glen Mary Dr bridge	97 98
<b>CAYUTA CREEK (CAYU)</b>		
01	Waverly, Broad St Ext	84 92
02	Waverly, below Rte 17W bridge, below STP	84 92
03	Milltown, (Penn.), above N. Thomas Ave bridge	84 92 97
<b>CHARLOTTE BROOK (CHAR)</b>		
01	Davenport, above Hollow Rd. bridge	97
<b>CHENANGO RIVER (NANG)</b>		
00	(West Branch) Morrisville, above Hart Rd. bridge	92 97
A	below Sherburne, where Tracy Rd is closer to river	97
01	North Norwich, Rtes 12 and 23A	89
03	Above Norwich, Plasterville bridge site (east)	89
03A	Above Norwich, Plasterville bridge site (west)	89
04	Above Norwich, opposite Mead Pond	79 89 98

SUSQUEHANNA RIVER DRAINAGE BASIN SAMPLING SITES, 1972-2002, cont'd.

<u>STATION</u>	<u>LOCATION</u>				<u>YEAR SAMPLED</u>
CHENANGO RIVER (NANG), cont'd.					
06	Norwich, below Rte 23 bridge			89	
13	Below Norwich, Railroad bridge			89	97 98
14	Oxford, under Oxford bridge			89	
15	Above Greene, below Hogsback Rd bridge site	79		89	
15A	Greene, above gaging station				97
16	Chenango Forks, below Rt 79 bridge				97
17	Binghamton, Lockwood St	73 79 84		91 92	97 98
CHERRY VALLEY CREEK (CHER)					
01	Cherry Valley, dirt rd. off Rt. 166				97
CHOCONUT CREEK (CHOC)					
01	Vestal, above Front St. bridge				97
DRY CREEK (TOGH)					
03A	Dry Creek, Cortland, North Main St				92
DUDLEY CREEK (DDL Y)					
01	Lisle, below Whiting Hill Rd bridge				97
FACTORY BROOK (FACT)					
01	Above Homer, above Rt. 41 bridge near Rt. 100 intersection				97 98
02	Above Homer, above Rt. 41 bridge				97 98
GENEGANTSLET CREEK (GENE)					
01	Below Greene, at Slater Rd behind EZ mart				97
GREAT BROOK (GREA)					
01	Holmesville, @Rte 8 bridge				97
GUILFORD CREEK (GUIL)					
01	East Guilford, below Rte 8 bridge				97
HANDSOME BROOK (HAND)					
01	Bartlett Hollow, @ Rte 357 bridge				97
HANDSOME BROOK (HANS)					
01	Sherburne, below Rt. 12B bridge				97
HAYDEN CREEK (HAYD)					
01	Springfield Center, below Co. Rt. 53 bridge culvert				97

SUSQUEHANNA RIVER DRAINAGE BASIN SAMPLING SITES, 1972-2002, cont'd.

<u>STATION</u>	<u>LOCATION</u>	<u>YEAR SAMPLED</u>
KELSEY BROOK (KELS)		
01	Afton, above Rt. 7 bridge	97
KORTRIGHT CREEK (KORT)		
01	East Meredith, above Co. Rt. 10 bridge	97
MIDDLE BROOK (MDDL)		
01	East of Butts Corner, above Rte 23 bridge	97
MUD CREEK (OTSL)		
03A	Above Pitcher, above closed bridge in Hydesville	97
NANTICOKE CREEK (NANT)		
01	Endicott, below Rte 17C bridge	97
OAKS CREEK (OAKS)		
01	Index, Rte 28 @gage above bridge	97
OCQUIONIS CREEK (OCQN)		
01	Richfield Springs, above Bronner St. bridge	97
OTEGO CREEK (OTGO)		
01	West of Oneonta, @gaging station off Co Rte 9	97
OTSDAWA CREEK (OTSD)		
01	Otego, below Main St bridge	97
OTSELIC RIVER (OTSL)		
A	Above Georgetown, below Lebanon Rd. bridge	98
01	Above Otselic, above Mill Rd. bridge	97
02	Otselic Center, above Co Rt 16 bridge	97
03	South Otselic, below Co. Rt. 13 bridge	97
04	Pitcher, above Rt. 26 bridge	97
05	Lower Cincinnatus, below Rte 23 bridge	97
06	Landers Corners, below Landers Corners Rd bridge	97 98
OTTER CREEK (TOGH)		
03B	Otter Creek, Cortland, North Main St	92
OULEOUT CREEK (OULE)		
01	Franklin, dirt rd opp. inters. of Rt 357 & Co. Rt. 21	97
OWEGO CREEK (OWGO)		
09	Above Owego, above Rt. 96 bridge	98
10	Owego, below Rt. 17C bridge	97 98

SUSQUEHANNA RIVER DRAINAGE BASIN SAMPLING SITES, 1972-2002, cont'd.

<u>STATION</u>	<u>LOCATION</u>			<u>YEAR SAMPLED</u>
OWEGO CREEK, EAST BRANCH (OWGO)				
05	Below Richford, below Rt. 38 bridge			98
06	Berkshire, above south crossing Brown Rd. bridge			98
07	Newark Valley, above Dr. Knapp Rd			97 98
OWEGO CREEK, WEST BRANCH (OWGO)				
01	Above Speedsville, above Blackman Hill Rd. bridge			98
02	Jenksville, below West Creek Rd. bridge			98
04	Weltonville, below West Creek Rd bridge			97 98
PAGE BROOK (PAGE)				
01	North of Chenango Bridge, below Rogers Rd. bridge			97
PAGE BROOK (PGBR)				
01	Triangle, below Rte 26 bridge			97
PAYNE BROOK (PAYN)				
02	Hamilton, above STP	84	92	
03	Hamilton, 300 m below STP	84		
04	Hamilton,at farm road bridge, off Rt. 12B	84	92	
05	Middleport, below Middleport Rd. bridge	84	92	97 98
PLEASANT BROOK (PLES)				
01	Sherburne, above Co.Rt. 80 bridge			97
SANGERFIELD RIVER (SANG)				
01	Earlville, below Earlville Rd bridge			97
SCHENEVUS CREEK (NVUS)				
03	Colliersville, below bridge on road off I-88 Exit 17		92	97
SNAKE CREEK (SNAK)				
01	Corbettsville, above Rt 7A bridge & RR bridge			97
SUSQUEHANNA RIVER, UPPER (USSQ)				
03	Cooperstown, below falls at Atwell St	85	91	
04	Cooperstown, Susquehanna Ave	85	91	
07	Below Cooperstown, below WWTF discharge	85	91	
10	Phoenix Mills, Cross Rd bridge	85	91	
11	Hyde Park, above Oak Ck confluence	85	91	98
14	Colliersville, above bridge off Rte 7		91 92	97
15A	Otego, above River St. old bridge abutment			97

SUSQUEHANNA RIVER DRAINAGE BASIN SAMPLING SITES, 1972-2002, cont'd.

<u>STATION</u>	<u>LOCATION</u>			<u>YEAR SAMPLED</u>
SUSQUEHANNA RIVER, UPPER (USSQ)				
15	Unadilla, @DEC fishing access			97 98
16A	Bainbridge, below Rt. 206 bridge			97
16	Afton, above Rte 41 bridge	84	91	
18	Windsor, above Rt. 17 bridge			98
SUSQUEHANNA RIVER, LOWER (SUSQ)				
02	Above Binghamton, Conklin Ave	73	79 84	
02A	Near Conklin Center, above Co.Rt.177 bridge			97
03	Binghamton, Laurel Ave	73	79	
04	Endwell, above Rte 17 bridge	73	79 84	
05	Apalachin, off Rte 17	73	79 84	91 92 97 98
06	Above Owego, above Hiawatha Island	73	79	
07	Below Owego, Rte 17 rest area	73	84	91 92 97
08	Lounsberry, East River Dr	73	79	
09	Smithboro, below Rt. 282 bridge	73		91 97 98
10	Below Barton, Barton Rd	73	79 84	92
TIOUGHNIOGA RIVER (TOGH)				
08A	Cortland, Port Watson Ave		91 92	
09	Below Cortland, railroad bridge		92	97
11	Below Cortland, Loop Rd		92	
12	Blodgett Mills, above Blodgett Mills Rd bridge		91 92	97
14	Hoxie Gorge, Rte 11 pulloff		92	
15	Messengerville, opposite Gridley Ck		92	
16	Marathon, above Rt. 221 bridge		92	98
17	Lisle, below Rte 79 bridge		92	97
19	Chenango Forks, above Rte 12 bridge			97
TIOUGHNIOGA RIVER, EAST BRANCH (TOGH)				
08	Cortland, at Rt. 12 and Rt. 81 overpasses		92	97
TIOUGHNIOGA RIVER, WEST BRANCH (TOGH)				
01	Above Homer, below Rte 11 bridge		92	
02	Below Homer, below Miller St. bridge		92	
04	Cortland, below Rte 13 bridge		92	97
TREADWELL CREEK (TRED)				
01	Near Franklin, above Rte 357 bridge			97
TROUT BROOK (TOGH)				
13	Pokeville, Ridge Rd, under Rt. 81 overpass			97

SUSQUEHANNA RIVER DRAINAGE BASIN SAMPLING SITES, 1972-2002, cont'd.

<u>STATION</u>	<u>LOCATION</u>	<u>YEAR SAMPLED</u>
UNADILLA RIVER (DILA)		
01	Leonardsville, Co. Rt. 13 bridge	98
02	West Edmeston, Welsh Rd. bridge	98
03	New Berlin, below Co. Rte 13 bridge	97 98
04	Holmesville, below Ditch Road bridge	97 98
05	Rockwells Mills, opposite Crandall Rd.	98
06	Rockdale, above Rt. 40 bridge	91 92 97 98
WHARTON CREEK (WHAR)		
01	New Berlin, below Co.Rt. 18 bridge	97
WYLIE BROOK (WYLI)		
01	Harpursville, below Rte 7 bridge	97

ASSESSMENTS OF WATER QUALITY OF STREAMS IN THE SUSQUEHANNA RIVER DRAINAGE BASIN, BASED ON MACROINVERTEBRATE COMMUNITIES

<u>Site/Reach</u>	<u>Water Quality Assessment</u>	<u>Change from 1992</u>
Beaver Creek, South Brookfield	non-impacted	no prior data
Bennettsville Creek, Bennettsville	non-impacted	no prior data
Butternut Creek, Mount Upton	non-impacted	no prior data
Canasawacta Creek, Norwich	non-impacted	no change
Carrs Creek, Youngs	non-impacted	no prior data
Castle Creek, Hinmans Corners	non-impacted	no prior data
Catatonk Creek, above Candor	non-impacted	no prior data
Catatonk Creek, below Hubbardtown	non-impacted	no prior data
Catatonk Creek, below Catatonk	non-impacted	no prior data
Cayuta Creek, Milltown, PA	slightly impacted	<b>DECLINED</b>
Charlotte Brook, Davenport	non-impacted	no prior data
Chenango River, West Br., Morrisville	slightly impacted	no change
Chenango River, below Sherburne	non-impacted	no prior data
Chenango River, above Norwich	non-impacted	no change
Chenango River, below Norwich	non-impacted	<b>IMPROVED</b>
Chenango River, Greene	non-impacted	no prior data
Chenango River, Chenango Forks	slightly impacted	no prior data
Chenango River, Binghamton	slightly impacted	no change
Cherry Valley Creek, Cherry Valley	non-impacted	no prior data
Choconut Creek, Vestal	slightly impacted	no prior data
Dudley Creek, Lisle	non-impacted	no prior data
Factory Brook, above Homer, near Rt.100	slightly impacted	no prior data
Factory Brook, Homer, above Rt. 41	non-impacted	no prior data
Genegantslet Creek, below Greene	non-impacted	no prior data
Great Brook, Holmesville	non-impacted	no prior data
Guilford Creek, East Guilford	non-impacted	no prior data
Handsome Brook, Bartlett Hollow	non-impacted	no prior data
Handsome Brook, Sherburne	slightly impacted	no prior data
Hayden Creek, Springfield Center	slightly impacted	no prior data
Kelsey Brook, Afton	slightly impacted	no prior data
Kortright Creek, East Meredith	non-impacted	no prior data
Middle Brook, east of Butts Corner	non-impacted	no prior data
Mud Creek, above Pitcher	non-impacted	no prior data
Nanticoke Creek, Endicott	non-impacted	no prior data

ASSESSMENTS OF WATER QUALITY OF STREAMS IN THE SUSQUEHANNA RIVER DRAINAGE  
BASIN, BASED ON MACROINVERTEBRATE COMMUNITIES

<u>Site/Reach</u>	<u>Water Quality Assessment</u>	<u>Change from 1992</u>
Oaks Creek, Index	slightly impacted	no prior data
Ocquionis Creek, Richfield Springs	slightly impacted	no prior data
Otego Creek, west of Oneonta	slightly impacted	no prior data
Otsdawa Creek, Otego	non-impacted	no prior data
Otselic River, above Georgetown	slightly impacted	no prior data
Otselic River, above Otselic	slightly impacted	no prior data
Otselic River, Otselic Center	slightly impacted	no prior data
Otselic River, South Otselic	non-impacted	no prior data
Otselic River, Pitcher	non-impacted	no prior data
Otselic River, Lower Cincinnatus	non-impacted	no prior data
Otselic River, Landers Corners	non-impacted	no prior data
Ouleout Creek, Franklin	non-impacted	no prior data
Owego Creek, East Branch, below Richford	slightly impacted	no prior data
Owego Creek, above Owego	slightly impacted	no prior data
Owego Creek, Owego	non-impacted	no prior data
Owego Creek, East Branch, Berkshire	non-impacted	no prior data
Owego Creek, East Branch, Newark Valley	non-impacted	no prior data
Owego Creek, West Branch, above Speedsville	slightly impacted	no prior data
Owego Creek, West Branch, Jenksville	non-impacted	no prior data
Owego Creek, West Branch, Weltonville	non-impacted	no prior data
Page Brook, north of Chenango Bridge	non-impacted	no prior data
Page Brook, Triangle	non-impacted	no prior data
Payne Brook, Middleport	moderately impacted	<b>DECLINED</b>
Pleasant Brook, Sherburne	non-impacted	no prior data
Sangerfield River, Earlville	non-impacted	no prior data
Schenevus Creek, Colliersville	non-impacted	no change
Snake Creek, Corbettsville	non-impacted	no prior data
Susquehanna River, Upper, Hyde Park	slightly impacted	no change
Susquehanna River, Upper, Colliersville	slightly impacted	no change
Susquehanna River, Upper, Otego	non-impacted	no prior data
Susquehanna River, Upper, Unadilla	non-impacted	no prior data
Susquehanna River, Upper, Bainbridge	slightly impacted	no prior data

ASSESSMENTS OF WATER QUALITY OF STREAMS IN THE SUSQUEHANNA RIVER DRAINAGE  
BASIN, BASED ON MACROINVERTEBRATE COMMUNITIES

<u>Site/Reach</u>	<u>Water Quality Assessment</u>	<u>Change from 1992</u>
Susquehanna River, Upper, Windsor	non-impacted	no prior data
Susquehanna River, Lower, near Conklin Center	non-impacted	no prior data
Susquehanna River, Lower, Apalachin	slightly impacted	<b>IMPROVED</b>
Susquehanna River, Lower, Owego	slightly impacted	<b>DECLINED</b>
Susquehanna River, Lower, Smithboro	slightly impacted	no change
Tioughnioga River, below Cortland	slightly impacted	<b>IMPROVED</b>
Tioughnioga River, Blodgett Mills	slightly impacted	no change
Tioughnioga River, Marathon	slightly impacted	<b>DECLINED</b>
Tioughnioga River, Lisle	non-impacted	no change
Tioughnioga River, Chenango Forks	non-impacted	no prior data
Tioughnioga River, East Branch, Cortland	slightly impacted	<b>DECLINED</b>
Tioughnioga River, West Branch, Cortland	non-impacted	<b>IMPROVED</b>
Treadwell Creek, Near Franklin	slightly impacted	no prior data
Trout Brook, Pokeville	slightly impacted	no prior data
Unadilla River, Leonardsville	non-impacted	no prior data
Unadilla River, West Edmeston	non-impacted	no prior data
Unadilla River, New Berlin	non-impacted	no prior data
Unadilla River, Holmesville	non-impacted	no prior data
Unadilla River, Rockwells Mills	non-impacted	no prior data
Unadilla River, Rockdale	non-impacted	no prior data
Wharton Creek, New Berlin	non-impacted	no prior data
Wylie Brook, Harpursville	slightly impacted	no prior data

REPORTS OF MACROINVERTEBRATE SURVEYS WITHIN THE SUSQUEHANNA RIVER WATERSHED

STREAM	YEAR OF SURVEY	REPORT
Cayuta Creek	1984	DOH,1985
Cayuta Creek	1992	SBU,1993
Chenango River	1972	AVON
Chenango River	1989	SBU,1990
Owego Creek	1998	SBU,1999
Payne Brook	1984	DOH,1984
Payne Brook	1992	SBU,1993
Susquehanna River/Tribs.	1965	FWPCA,1967
Susquehanna River	1972	AVON
Susquehanna River	1984	DOH,1985
Susquehanna River	1984	SRBC,1985
Susquehanna River, lower	1985	DOH,1986
Susquehanna River, upper	1985	DOH,1986
Susquehanna River, upper	1991	SBU,1991
Tioughnioga River	1972	AVON
Tioughnioga River	1992	SBU,1992
Unadilla River	1998	SBU,1999
Watershed Streams	1991-1992	RIBS,1994

AVON Avon Pollution Investigations Unit, Div. of Fish & Wildlife, NYS DEC  
 DOH New York State Department of Health  
 FWPCA Federal Water Pollution Control Administration  
 RIBS Rotating Intensive Basin System, Statewide Waters Assessment Section, NYS DEC  
 SBU Stream Biomonitoring Unit, Division of Water, NYS DEC  
 SRBC Susquehanna River Basin Commission

### Beaver Creek

Water quality of Beaver Creek at South Brookfield was assessed as non-impacted, based on 1997 macroinvertebrate sampling. The fauna was dominated by riffle beetles, and also contained mayflies, stoneflies, and caddisflies. Livestock were seen in the stream above the sampling site, but apparently did not impact the fauna substantially.

### Bennettsville Creek

Macroinvertebrate sampling was conducted at Bennettsville in 1997, and water quality was assessed as non-impacted. The field screening criteria were met, and the sample was not retained.

### Butternut Creek

Based on 1997 macroinvertebrate sampling at Mt. Upton, water quality was assessed as non-impacted. The field screening criteria were met, and the sample was not retained.

### Canasawacta Creek

Water quality was assessed as non-impacted, based on 1997 macroinvertebrate sampling at Norwich. The sample passed field screening criteria, and was not retained. Extensive bulldozing in the stream was noted at the Route 12 bridge site, the 1989 sampling site. The kick sample was taken near the Route 23 bridge, approximately 2 miles upstream. Water quality at the Route 12 bridge site was previously assessed as non-impacted in 1989.

### Carrs Creek

Based on 1997 macroinvertebrate sampling at Youngs, water quality was assessed as non-impacted. The field screening criteria were met, and the sample was not retained. No prior data were available for this stream.

### Castle Creek

Based on 1997 macroinvertebrate sampling at Hinmans Corners, water quality was assessed as non-impacted. The sample passed field screening criteria, and was not retained. No prior data were available for this stream.

### Catatonk Creek

Catatonk Creek is a tributary of Owego Creek. Three sites were sampled on the creek in 1998 for macroinvertebrates: above Candor, Hubbardtown, and below Catatonk. All three sites were assessed as non-impacted. The site below Catatonk was also assessed as non-impacted in 1997. This site had large growths of macrophytes on the stream bottom, and nutrient enrichment was indicated at all sites by Impact Source Determination.

### Cayuta Creek

Water quality was assessed as slightly impacted, based on 1997 macroinvertebrate sampling at Milltown (Pennsylvania). Filter-feeding caddisflies dominated the sample, and diatoms and filamentous algae were noted at the site. ISD denoted nutrient enrichment as the primary stressor. This site was previously assessed as non-impacted in 1984 and 1992, and the 1997 assessment represents an apparent decline in water quality. Since 1997 was a low-flow summer year, it is not determined if this is a trend or a flow-related event. Upstream sites on Cayuta Creek previously had

a documented improvement following the 1986 upgrading of the Waverly (V) Wastewater Treatment Plant.

#### Charlotte Brook

Macroinvertebrate sampling was conducted at Davenport in 1997, and water quality was assessed as non-impacted. The field screening criteria were met, and the sample was not retained.

#### Chenango River

Current water quality in the Chenango River is considered non-impacted from Sherburne to Greene, and slightly impacted downstream to Binghamton. Recent sampling at Sherburne, Norwich, and Greene confirms these assessments. Sampling downstream of Norwich in 1997 and 1998 showed apparent improvement from slightly impacted conditions documented in 1989. This site is downstream of the Norwich (C) Waste Disposal Plant discharge. The plant was upgraded in 1989, and the 1989 sampling may not have reflected upgraded conditions. The Chenango River at Binghamton has been sampled regularly since 1973. Water quality assessments continue to vary between non-impacted and slightly impacted. Current water quality appears unchanged since 1992, and is assessed as slightly impacted, likely due to nonpoint source nutrient enrichment.

Water quality in the West Branch Chenango River below Morrisville was assessed as slightly impacted, based on 1997 macroinvertebrate sampling. This assessment is similar to that assigned in 1992 for this site. Filter-feeding caddisflies and midges dominated the sample, and mayflies were scarce. The daytime dissolved oxygen level was high super-saturated. Impact Source Determination showed organic wastes to be the primary factor affecting water quality, likely reflecting effects of the effluent from the State Agricultural and Technical College.

#### Cherry Valley Creek

This stream was sampled in the town of Cherry Valley in 1997, and was assessed as non-impacted. The sample was not retained. No prior data were available for this stream.

#### Choconut Creek

Slightly impacted water quality was assessed at the Vestal site, based on 1997 macroinvertebrate sampling. Impact Source Determination indicated that nonpoint source nutrient enrichment was the primary source of impact.

#### Dudley Creek

Water quality was assessed as non-impacted, based on 1997 macroinvertebrate sampling at Lisle. The sample passed field screening criteria, and was not retained. Sedimentation appeared high at this site, and diatoms were numerous on rocks.

#### Factory Brook

The upstream site on Factory Brook above Homer was located immediately downstream of several farming operations, and was sampled to document possible nonpoint agricultural effects. Both the 1997 and 1998 kick samples showed slightly impacted conditions, although all 4 indices improved from 1997 to 1998, possibly reflecting improved management practices. The second site on Factory Brook was located downstream, and was sampled as a recovery site from nonpoint

effects. Water quality was assessed as non-impacted in both 1997 and 1998, with these years showing little change in the fauna or the indices derived from it.

#### Genegantslet Creek

Water quality was assessed as non-impacted, based on 1997 macroinvertebrate sampling at Greene. The sample passed field screening criteria, and was not retained.

#### Great Brook

Based on 1997 macroinvertebrate sampling at Holmesville, water quality was assessed as non-impacted. The fauna appeared diverse and well-balanced, dominated by midges. No prior data were available for this stream.

#### Guilford Creek

Water quality was assessed as non-impacted, based on 1997 macroinvertebrate sampling at East Guilford. The sample passed field screening criteria, and was not retained. Rocks at this site were slippery with diatoms.

#### Handsome Brook (Delaware County)

Macroinvertebrate sampling was conducted at Bartlett Hollow in 1997, and water quality was assessed as non-impacted. The field screening criteria were met, and the sample was not retained.

#### Handsome Brook (Chenango County)

Macroinvertebrate sampling was conducted in 1997 at Sherburne. Although this stream contained many mayflies, stoneflies, and caddisflies, it was overly productive, and water quality was assessed as slightly impacted. The fauna was heavily dominated by filter-feeding caddisflies. Impact Source Determination indicated nonpoint source nutrient enrichment to be the primary source of impact.

#### Hayden Creek

This small tributary of Otsego Lake was sampled for macroinvertebrates in 1997 near Springfield Center. The fauna was dominated by caddisflies, and algae was abundant in the stream, indicating nutrient enrichment. The sample was field-assessed as slightly impacted, and was not processed. No prior data were available for the stream.

#### Kelsey Brook

Macroinvertebrate sampling in 1997 indicated slight impact at Afton. Rocks were covered with filamentous algae and diatoms, and afternoon dissolved oxygen was only 6.2 ppm (65%). Impact Source Determination however pointed to siltation as the primary factor affecting the fauna. Nonpoint source runoff is an apparent issue in this stream.

#### Kortright Creek

Macroinvertebrate sampling was conducted at East Meredith in 1997, and water quality was assessed as non-impacted. The field screening criteria were met, and the sample was not retained.

### Middle Brook

Macroinvertebrate sampling was conducted at Butts Corner in 1997, and water quality was assessed as non-impacted. The field screening criteria were met, and the sample was not retained.

### Mud Creek

This tributary of the Otselic River was sampled for macroinvertebrates in 1997 near Pitcher. The macroinvertebrate fauna appeared diverse, with many mayflies, stoneflies, caddisflies, and dobsonflies. Water quality was assessed as non-impacted although ISD indicated influences of nonpoint source nutrient enrichment.

### Nanticoke Creek

This stream was sampled for macroinvertebrates in 1997 downstream of the Route 17C bridge near Endicott. The riffle-area rocks were covered with growths of filamentous algae, and these also dominated the kick sample. Nevertheless, indices placed water quality as non-impacted, due largely to high numbers of midge species. These results may not be representative, as this site has an obvious nutrient enrichment problem.

### Oaks Creek

Macroinvertebrate sampling in 1997 at Index indicated slightly impacted water quality. The site was a short distance downstream of a dammed pool, and this may have influenced the fauna. Impact Source Determination indicated nonpoint source nutrient and/or pesticide runoff as a likely source of impact.

### Ocuionis Creek

Based on 1997 macroinvertebrate sampling at Richfield Springs, water quality was assessed as slightly impacted. There was much urban debris in the stream at this site. Impact Source Determination indicated that nonpoint nutrients and/or pesticides were the primary source of impact.

### Otego Creek

Based on macroinvertebrate sampling conducted in 1997 west of Oneonta, water quality was assessed as slightly impacted. This site was located in an agricultural area with livestock upstream. Impact Source Determination indicated nonpoint source agricultural runoff as a possible source of impact, but similarity to natural communities was also indicated.

### Otsdawa Creek

Macroinvertebrate sampling in 1997 at Otego indicated non-impacted water quality. The fauna was dominated by midges, although mayflies, stoneflies, and caddisflies were well-represented. All index values were excellent.

### Otselic River

Six sites from Georgetown to Landers Corners were sampled for macroinvertebrates on Otselic River in 1997. The upstream portion was found to be slightly impacted by agricultural nonpoint sources. Livestock in the stream at Otselic were responsible for organic loads, erosion, and siltation. From South Otselic to Landers Corners, water quality was assessed as non-impacted. An upstream site above Georgetown was sampled in 1998, and was found to be slightly impacted.

Impact Source Determination indicated that this site was equally similar to natural communities as to those impacted by agriculture.

#### Ouleout Creek

Macroinvertebrate sampling conducted in 1997 at Franklin indicated non-impacted water quality. The site was field-assessed as non-impacted, and the sample was not retained.

#### Owego Creek

Current water quality in Owego Creek is assessed as non-impacted to slightly impacted. Two main stem sites were sampled for macroinvertebrates in 1998: upstream of Owego, and in Owego. The upstream site was assessed as slightly impacted; the macroinvertebrate community showed effects of siltation, probably from a large area of bank erosion present about the site. This is an effect of short duration, since less than 3 miles downstream in Owego, water quality was assessed as non-impacted. The site in Owego was assessed as slightly impacted in 1997, and appeared nutrient-enriched by nonpoint sources.

The upstream reaches of both branches of Owego Creek originate in agricultural areas, and water quality is slightly impacted by nonpoint source runoff. Three sites were sampled for macroinvertebrates on the West Branch in 1998: Speedsville, Jenksville, and Weltonville. Water quality was assessed as slightly impacted above Speedsville, and non-impacted at the other sites. The Weltonville site was also assessed as non-impacted in 1997. Three sites were sampled for macroinvertebrates on the East Branch in 1998: Richford, Berkshire, and Newark Valley. Water quality was assessed as slightly impacted below Richford, and non-impacted at the other sites. The Newark Valley site was also assessed as non-impacted in 1997.

#### Page Brook (Broome County)

Based on 1997 macroinvertebrate sampling at Chenango Bridge, water quality was assessed as non-impacted for this tributary of the Chenango River. The sample passed field screening, and was not retained.

#### Page Brook (Broome County)

This tributary of the Whitney Point Reservoir was assessed as non-impacted, based on 1997 macroinvertebrate sampling at Triangle. The field screening criteria were met, and the sample was not retained. The stream was mostly bedrock; pockets of rubble were sampled.

#### Payne Brook

This stream has been sampled since 1984 to measure effects of the Hamilton (V) Wastewater Treatment Plant discharge. Based on macroinvertebrate sampling at Middleport, water quality was assessed as slightly impacted in 1997, and moderately impacted in 1998. ISD indicated the primary stressor to be nutrient enrichment. Water quality at this site was moderately impacted in 1984, and slightly impacted in 1992. Since present water quality is moderately impacted, this represents a decline, but continued monitoring is recommended to verify this trend.

### Pleasant Brook

Water quality was assessed as slightly impacted, based on 1997 macroinvertebrate sampling at Sherburne. The field screening criteria were met, and the sample was not retained.

### Sangerfield River

Based on 1997 macroinvertebrate sampling at Earlville, water quality was assessed as non-impacted. The fauna included clean-water mayflies, stoneflies, caddisflies, riffle beetles, and hellgrammites, and most indices were within the range of non-impacted conditions.

### Schenevus Creek

Macroinvertebrate sampling at Colliersville in 1997 indicated non-impacted water quality, similar to the 1992 assessment. The fauna was diverse and well-balanced, with many mayflies, stoneflies, caddisflies, and riffle beetles.

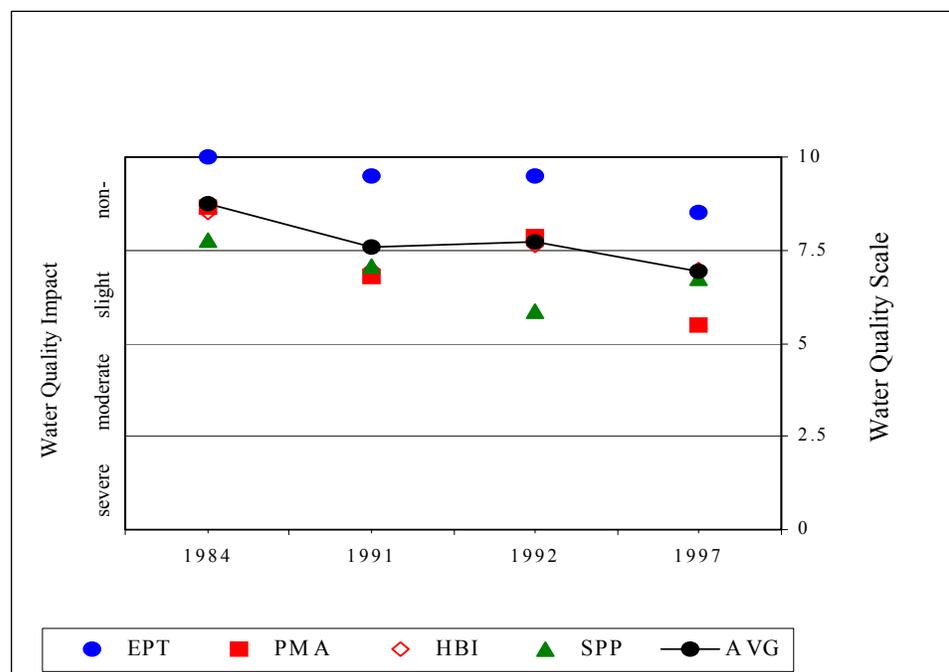
### Snake Creek

Water quality at Corbettsville was assessed as non-impacted based on 1997 macroinvertebrate sampling. Filter-feeding caddisflies were numerous, indicating some enrichment, but the fauna remained diverse.

### Susquehanna River

Overall, water quality in the Susquehanna River is currently considered slightly impacted from Cooperstown to Colliersville, mostly non-impacted from Otego to Binghamton, and slightly impacted from Binghamton to Barton. A small section of moderately impacted conditions was found downstream of the Cooperstown (V) Sewage Treatment Plant discharge in 1991, but this site has not been sampled recently.

Hyde Park, located 2.4 river miles downstream of the Cooperstown (V) Sewage Treatment Plant discharge, is considered a representative site for monitoring water quality in the upper river. This site was assessed as slightly impacted



**Figure 6-1. Susquehanna River below Owego, 1984-1997, showing declining water quality. SPP= species richness, HBI= Hilsenhoff biotic index, EPT= richness of mayflies, stoneflies, and caddisflies, PMA- Percent Model Affinity, AVG= Biological Assessment Profile value.**

by nutrient enrichment in 1985, 1991, and 1998. Based on macroinvertebrate sampling in 1997 and 1998 at Unadilla, water quality was clearly assessed as non-impacted. The fauna was very diverse and well-balanced. Water quality at Bainbridge was assessed as slightly impacted in 1997, indicating an enriched reach. Filamentous algae and diatoms were numerous at this site. Impact Source Determination indicated siltation as a primary factor affecting the macroinvertebrate fauna. A downstream site at Windsor was assessed as non-impacted.

Water quality at Apalachin, downstream of Binghamton and the Binghamton/Johnson City Wastewater Treatment Facility, has apparently improved, with recent samplings in 1997 and 1998 reflecting only slightly impacted conditions, compared to previous assessments of moderate impact. This site historically has exhibited delayed effects of sewage effluent discharges from the Binghamton-Johnson City metropolitan area. The site at Owego had been assessed as non-impacted from 1984-1992. Sampling in 1997 showed slight impact, representing an apparent decline (Figure 6-1). The fauna was dominated by filter-feeding caddisflies, and appeared very enriched. Continued monitoring of this site is recommended to determine if the decline is genuine. Water quality at Smithboro, the most downstream site, continues to be assessed as slightly impacted.

### Tioughnioga River

Present water quality in the Tioughnioga River is considered slightly impacted from Cortland to Marathon, and non-impacted from Lisle to Chenango Forks. The West Branch Tioughnioga River in Cortland was assessed as non-impacted in 1997, a possible improvement over 1992 conditions. Further sampling is recommended to verify this trend. Water quality in the East Branch Tioughnioga River was assessed in 1997 as slightly impacted by

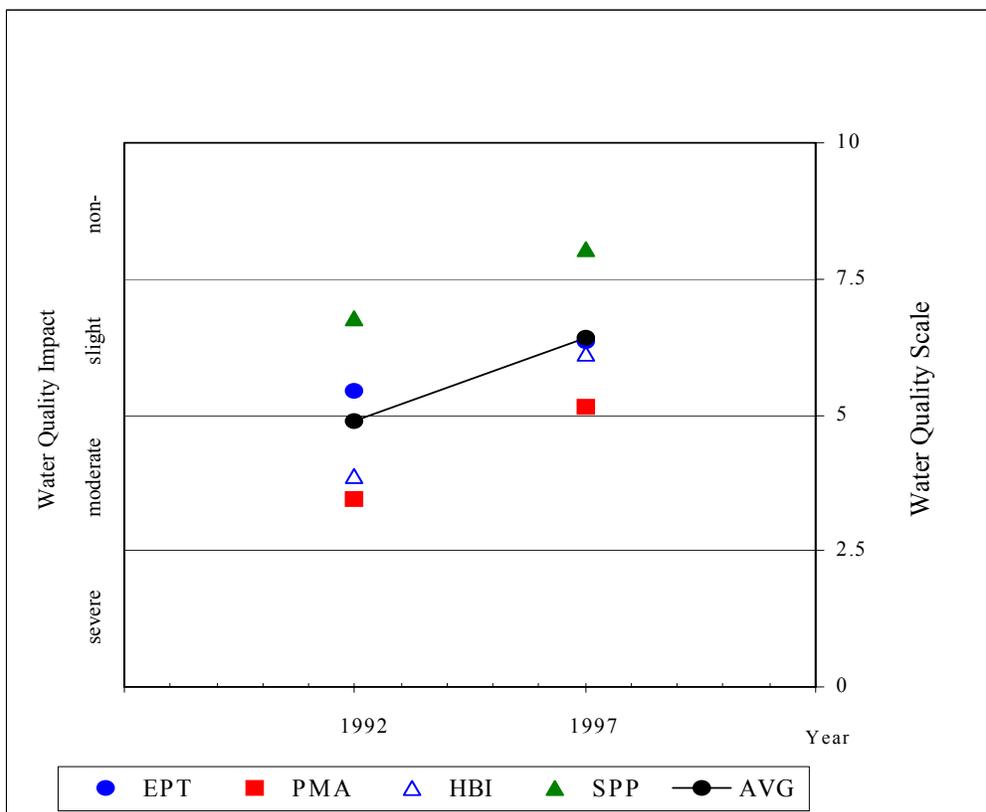


Figure 6-2. Tioughnioga River below Cortland (C) Wastewater Treatment Facility, 1992 and 1997. SPP= species richness, HBI= Hilsenhoff biotic index, EPT= richness of mayflies, stoneflies, and caddisflies, PMA- Percent Model Affinity, AVG= Biological Assessment Profile value.

nonpoint source nutrient enrichment. This may represent a decline from 1992 conditions, although only based on two samplings.

Water quality downstream of the Cortland (C) Wastewater Treatment Plant discharge was assessed as slightly impacted, based on 1997 macroinvertebrate sampling. Mayflies, stoneflies, and caddisflies were found, a substantial improvement over 1992 samples, which reflected moderate impact from the wastewater treatment plant discharge (Figure 6-2). The plant upgrade was completed in 1995, resulting in improved water quality downstream.

Water quality was assessed as slightly impacted at Blodgett Mills, based on sampling in 1991, 1992, and 1997. The stream contained many macrophytes and duckweed, and the invertebrate fauna was dominated by filter-feeding midges and riffle beetles.

#### Treadwell Creek

Based on 1997 macroinvertebrate sampling at Franklin, water quality was assessed as slightly impacted. The community was dominated by clean-water filter-feeding midges, but Impact Source Determination indicated that organic wastes may be affecting the fauna.

#### Trout Brook

Water quality was assessed as slightly impacted, based on macroinvertebrate sampling at Pokeville in 1997. This site appeared very productive, with much filamentous algae and an invertebrate fauna dominated by midges.

#### Unadilla River

Six sites were sampled for macroinvertebrates on the Unadilla River in 1998, from Leonardsville to Rockdale. Water quality was considered non-impacted for the entire length of the stream, although most assessments were close to the slightly impacted range. The Rockdale site was previously assessed as non-impacted in 1991, 1992, and 1997. The sites at New Berlin and Holmesville were sampled in 1997, a low-flow year, and were assessed as slightly impacted. The 1998 assessments are considered more typical of overall water quality for these sites.

#### Wharton Creek

Based on the macroinvertebrate kick sample from New Berlin in 1997, screening criteria were met, and water quality was assessed as non-impacted. The stream bottom at this site appeared to be rubble and gravel overlaying sand and silt. Streambanks were exposed, and large amounts of silt were kicked up by sampling.

#### Wylie Brook

Macroinvertebrate sampling in 1997 at Harpursville indicated slightly impacted water quality at this site. Impact Source Determination indicated that nonpoint source nutrient enrichment was the probable source of impact. No prior data were available for this stream.



**Figure 6-3. Sampling the Susquehanna River at Owego.**