

## Site Results for Pennsylvania-Maryland Border Sites

### Big Branch Deer Creek at Fawn Grove, Pa. (BBDC 4.1)

#### Group 2



#### **Water Quality:**

Alkalinity was the only parameter to exceed water quality standards, doing so in 2007 and 2008.

#### **Biological Condition:**

<b>2007</b>	Nonimpaired
<b>2008</b>	Slightly Impaired

#### **Habitat Assessment:**

<b>2007</b>	Supporting
<b>2008</b>	Supporting

#### **Trends:**

Water quality and habitat remained stable compared to previous years. Biological conditions improved to nonimpaired in 2007, but declined to slightly impaired in 2008.

#### **Other Notes:**

Sediment deposition, riparian vegetative width, and instream cover are concerns regarding habitat at BBDC 4.1. This site had the best Water Quality Index Value of all Pennsylvania–Maryland Interstate streams in the summer of 2007.

This site will be electrofished in 2009 to add a fish component to biological analyses.

Parameters Exceeding Standards				
Parameter	Date	Value	Standard	State
ALK	8/07/2007	16.0 mg/L	20.0 mg/L	Pa. aquatic life
ALK	7/23/2008	14.0 mg/L	20.0 mg/L	Pa. aquatic life

Date	WQI	Parameters Exceeding 90 <sup>th</sup> Percentile						
8/07/2007	32.4							
7/23/2008	34.6							

For information on the parameter abbreviations used above and data analysis procedures, go to [Methods](#).

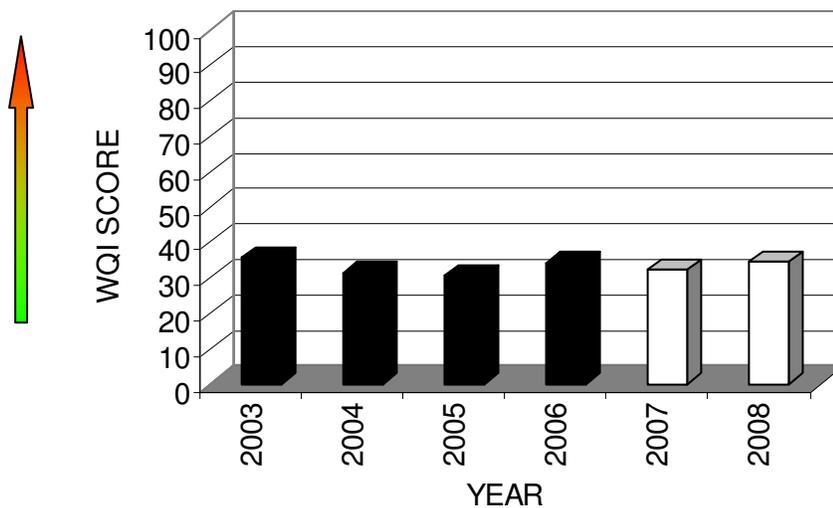
### 2007

Biological and Habitat Summary	
Number of Taxa	24
Diversity Index	2.18
RBP Score	32
RBP Condition	Nonimpaired
Total Habitat Score	174
Habitat Condition Category	Supporting

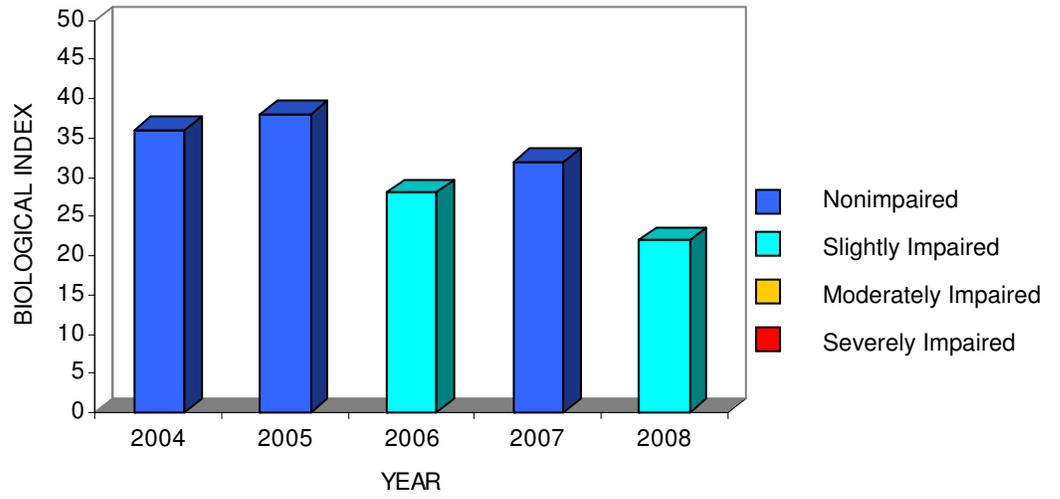
### 2008

Biological and Habitat Summary	
Number of Taxa	22
Diversity Index	2.03
RBP Score	22
RBP Condition	Slightly Impaired
Total Habitat Score	144
Habitat Condition Category	Supporting

### Water Quality Index



### Biological Index



## Conowingo Creek at Pleasant Grove, Pa. (CNWG 4.4)

### Group 1



#### Water Quality:

Nitrate plus Nitrite continued to exceed water quality parameters. Temperature also exceeded acceptable limits.

#### Biological Condition:

2007	NA
2008	Nonimpaired

#### Habitat Assessment:

2007	NA
2008	Excellent

#### Trends:

Water quality analysis revealed persistent problems with nitrogen and its compounds in CNWG 4.4. Only water quality sampling was done in July 2007 due to access issues. However, in 2008, biological conditions at CNWG 4.4 were upgraded to nonimpaired, an improvement over the moderately impaired conditions observed in 2006. Habitat ratings remained consistent in 2008, with excellent instream cover and velocity depth regimes highlighted by staff.

#### Other Notes:

CNWG 4.4 was moved to a nearby location in order to gain access to the stream. This location is noted on the Interstate Streams web page.

Fish sampling will occur at this site in 2009.

Parameters Exceeding Standards				
Parameter	Date	Value	Standard	State
Temperature	8/08/2007	27.5° C	25.0° C	Pa. aquatic life
Nitrate + Nitrite	11/01/2007	11.20 mg/L	10 mg/l	Pa. public water supply
Nitrate + Nitrite	2/20/2008	10.90 mg/L	10 mg/l	Pa. public water supply
Nitrate + Nitrite	10/23/2008	10.90 mg/L	10 mg/l	Pa. public water supply

Date	WQI	Parameters Exceeding 90 <sup>th</sup> Percentile							
08/08/2007	59.3	TNO3	TN						
11/01/2007	60.2	TNO3	TN						
02/20/2008	43.8	TNO3	TN						
05/20/2008	80.3	TFe	TS	TNO3	TPO4	TURB	TNH3	TAI	TN
		DO							
07/23/2008	66.4	TNO3	TN						
10/23/2008	57.4	TNO3	TN						

For information on the parameter abbreviations used above and data analysis procedures, go to [Methods](#).

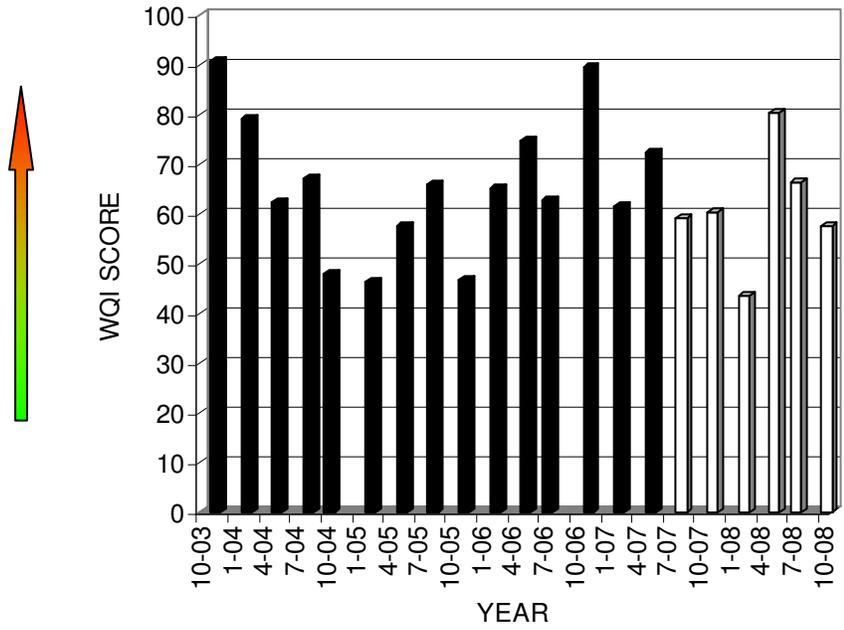
## 2007

Biological and Habitat Summary	
Number of Taxa	NA
Diversity Index	NA
RBP III Score	NA
RBP III Condition	NA
Total Habitat Score	NA
Habitat Condition Category	NA

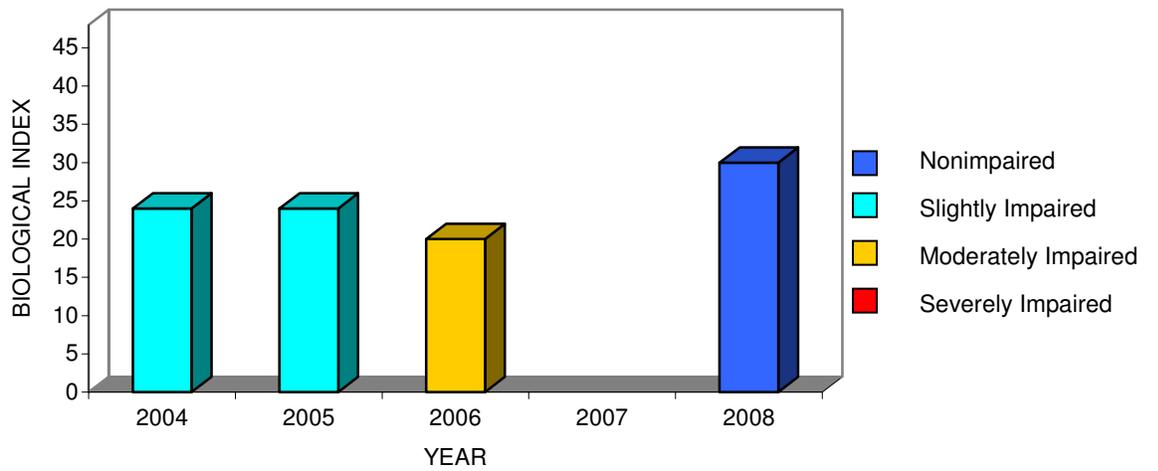
## 2008

Biological and Habitat Summary	
Number of Taxa	19
Diversity Index	2.27
RBP III Score	30
RBP III Condition	Nonimpaired
Total Habitat Score	191
Habitat Condition Category	Excellent

### Water Quality Index



### Biological Index



## Deer Creek at Gorsuch Milles, Md. (DEER 44.2)

### Group 1



#### **Water Quality:**

No parameters exceeded water quality standards.

#### **Biological Condition:**

<b>2007</b>	Nonimpaired
<b>2008</b>	Reference (Nonimpaired)

#### **Habitat Assessment:**

<b>2007</b>	Supporting
<b>2008</b>	Reference (Nonimpaired)

#### **Trends:**

Water quality remained similar to 2006. Biological condition slipped from its reference status in 2007 (but remained nonimpaired), surpassed by Falling Branch Deer Creek (FBDC 4.1). Deer Creek regained its reference condition in 2008, with a correlating increase in habitat rating that rebounded from a supporting ranking in 2007.

#### **Other Notes:**

During 2007 and 2008, macroinvertebrate populations continued to be of exceptional quality, especially for the agricultural character of the watershed. The only concerns at DEER 44.2 are erodible banks and sediment deposition.

Fish sampling will occur at DEER 44.2 in 2009 to add another component to biological analyses.

Parameters Exceeding Standards				
Parameter	Date	Value	Standard	State
None				

Date	WQI	Parameters Exceeding 90 <sup>th</sup> Percentile							
8/06/2007	45.1	SS							
10/31/2007	40.2	TCl							
2/19/2008	39.9								
5/20/2008	51.5								
7/23/2008	48.9	TCl							
10/22/2008	42.4								

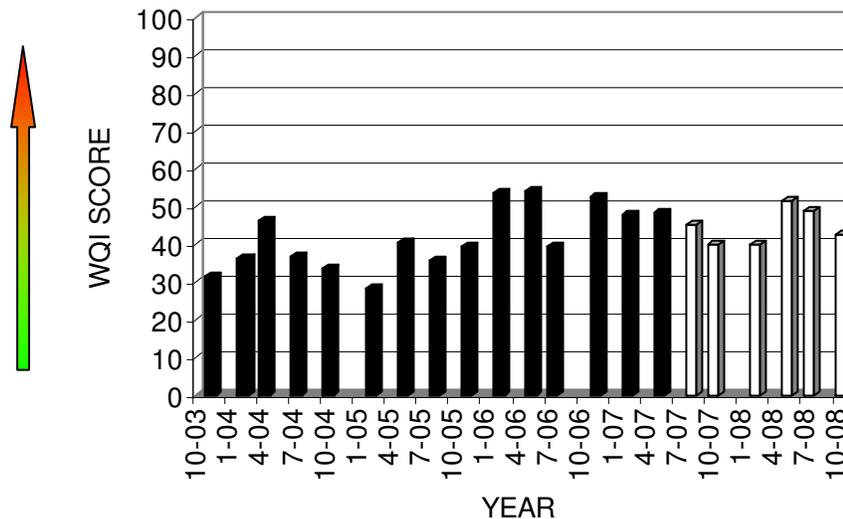
### 2007

Biological and Habitat Summary	
Number of Taxa	27
Diversity Index	2.60
RBP Score	34
RBP Condition	Nonimpaired
Total Habitat Score	143
Habitat Condition Category	Supporting

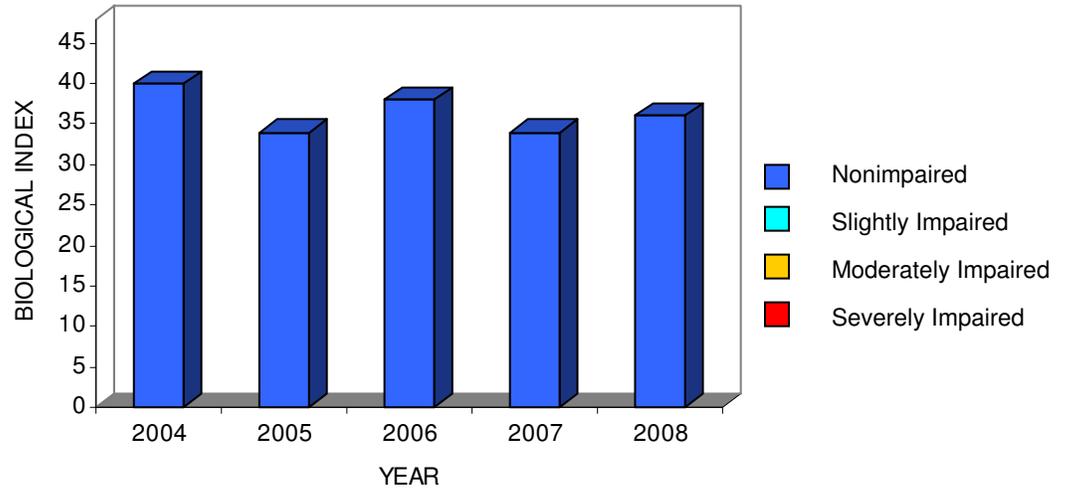
### 2008

Biological and Habitat Summary	
Number of Taxa	25
Diversity Index	2.64
RBP Score	36
RBP Condition	Reference (Nonimpaired)
Total Habitat Score	161
Habitat Condition Category	Reference (Excellent)

### Water Quality Index



### Biological Index



## Ebaughs Creek at Stewartstown, Pa. (EBAU 1.5)

### Group 1



#### **Water Quality:**

Total chlorine continues to be the only parameter that exceeds standards.

#### **Biological Condition:**

<b>2007</b>	Nonimpaired
<b>2008</b>	Moderately Impaired

#### **Habitat Assessment:**

<b>2007</b>	Excellent
<b>2008</b>	Supporting

#### **Trends:**

Habitat remained excellent in 2007, but fell a category to supporting in 2008. Water quality remained constant, with total chlorine consistently exceeding acceptable limits in 2007 and 2008. Biological condition was nonimpaired in 2007, but declined significantly in 2008 to moderately impaired status.

**Other Notes:**

EBAU 1.5 is located downstream of the Stewartstown Treatment Plant. However, in spring 2008, EBAU 1.5 possessed the best Water Quality Index value of all Pennsylvania–Maryland Interstate streams.

Fish sampling will take place at this site in 2009.

Parameters Exceeding Standards				
Parameter	Date	Value	Standard	State
TCln	8/06/2007	0.34 mg/L	0.019 mg/L	Md. aquatic life
TCln	10/31/2007	0.25 mg/L	0.019 mg/L	Md. aquatic life
TCln	2/19/2008	0.18 mg/L	0.019 mg/L	Md. aquatic life
TCln	5/20/2008	0.12 mg/L	0.019 mg/L	Md. aquatic life
TCln	10/22/2008	0.23 mg/L	0.019 mg/L	Md. aquatic life

Date	WQI	Parameters Exceeding 90 <sup>th</sup> Percentile						
8/06/2007	55.2	TCln						
10/31/2007	45.6	TCln						
2/19/2008	42.7	TCln						
5/20/2008	47.5	TCln						
7/23/2008	61.0	TP	TPO4					
10/22/2008	52.8	TCln	TFe					

For information on the parameter abbreviations used above and data analysis procedures, go to [Methods](#).

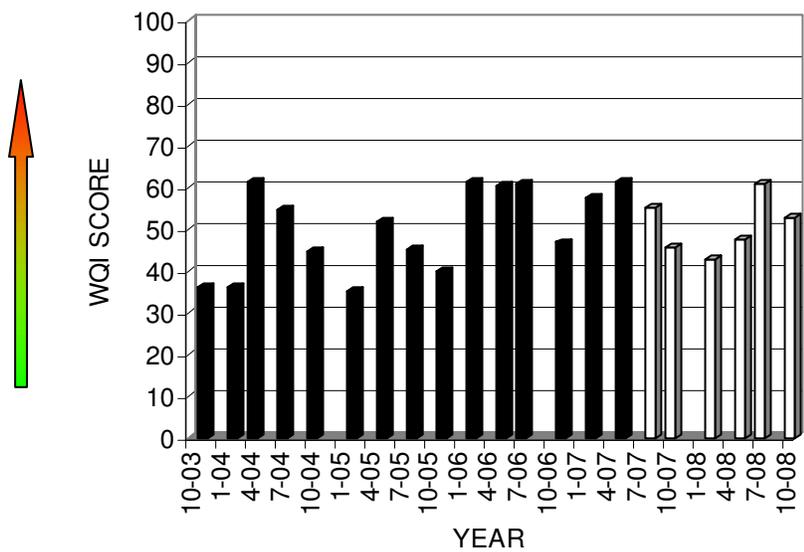
**2007**

Biological and Habitat Summary	
Number of Taxa	21
Diversity Index	2.41
RBP Score	30
RBP Condition	Nonimpaired
Total Habitat Score	186
Habitat Condition Category	Excellent

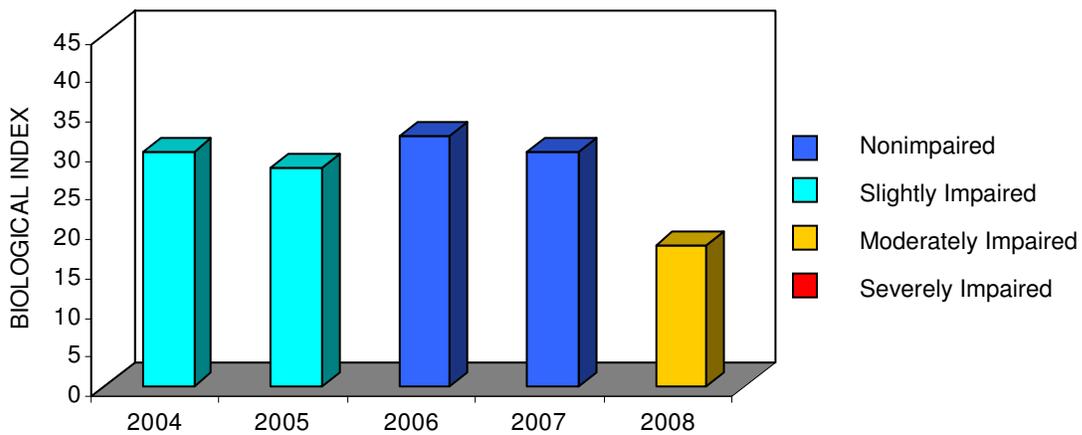
**2008**

Biological and Habitat Summary	
Number of Taxa	16
Diversity Index	1.96
RBP Score	18
RBP Condition	Moderately Impaired
Total Habitat Score	142
Habitat Condition Category	Supporting

### Water Quality Index



### Biological Index



**Falling Branch Deer Creek at Fawn Grove, Pa. (FBDC 4.1)**  
Group 2



**Water Quality:**

Alkalinity exceeded water quality standards in 2007 and 2008.

**Biological Condition:**

2007	Reference (Nonimpaired)
2008	Nonimpaired

**Habitat Assessment:**

2007	Reference (Excellent)
2008	Excellent

**Trends:**

Water quality and habitat remained excellent, near the top of all Pennsylvania-Maryland Interstate streams. Biological conditions improved to attain reference status in 2007, and remained nonimpaired in 2008.

**Other Notes:**

FBDC 4.1 possesses exceptional water quality and habitat, and its macroinvertebrate community shows few signs of impairment. The Water Quality Index value at FBDC 4.1 was the best of all Pennsylvania-Maryland streams in July/August 2008.

Fish sampling will occur at FBDC 4.1 in 2009.

Parameters Exceeding Standards				
Parameter	Date	Value	Standard	State
ALK	8/07/2007	16 mg/l	20 mg/l	Pa. aquatic life
ALK	7/23/2008	14 mg/l	20 mg/l	Pa. aquatic life

Date	WQI	Parameters Exceeding 90 <sup>th</sup> Percentile						
8/07/2007	32.8							
7/23/2008	34.3							

For information on the parameter abbreviations used above and data analysis procedures, go to [Methods](#).

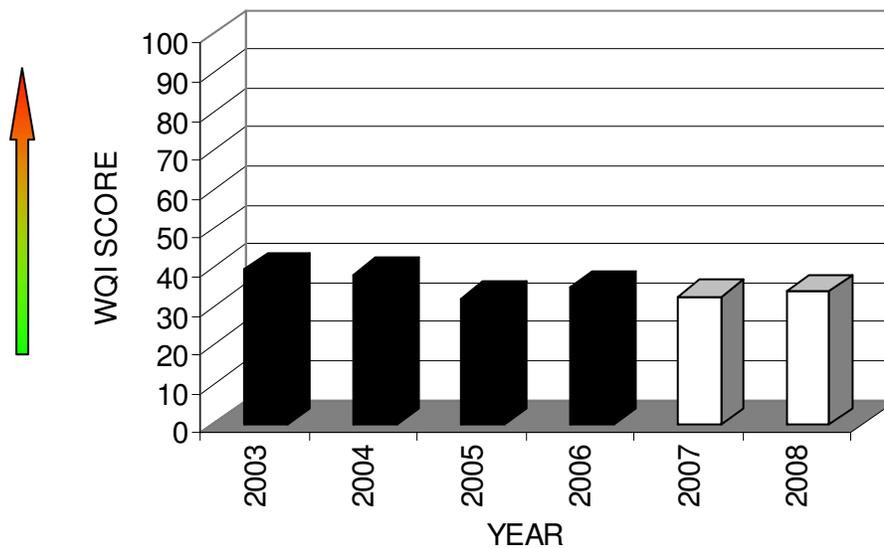
### 2007

Biological and Habitat Summary	
Number of Taxa	27
Diversity Index	2.51
RBP Score	36
RBP Condition	Reference (Nonimpaired)
Total Habitat Score	194
Habitat Condition Category	Reference (Excellent)

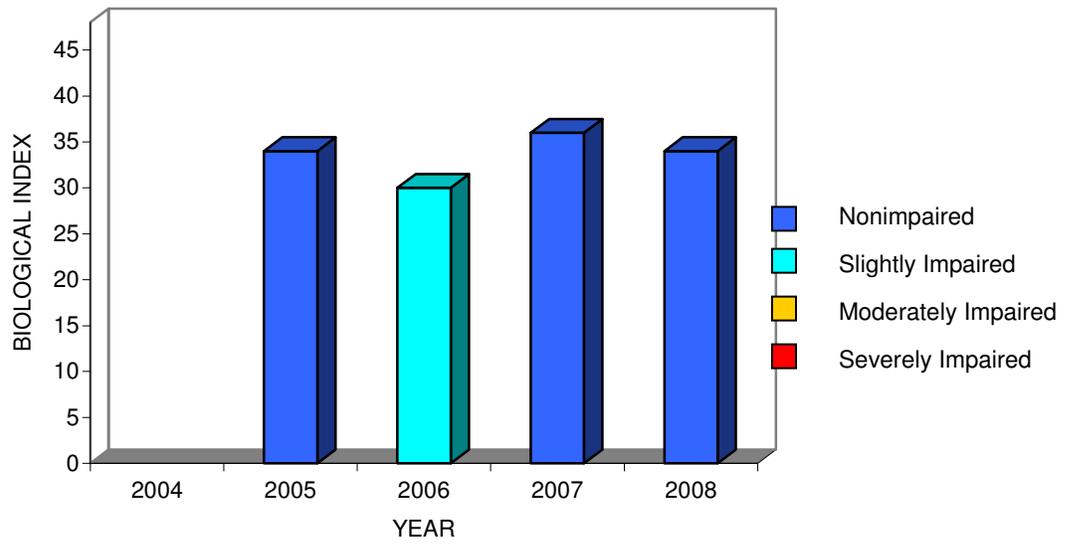
### 2008

Biological and Habitat Summary	
Number of Taxa	22
Diversity Index	2.33
RBP Score	34
RBP Condition	Nonimpaired
Total Habitat Score	172
Habitat Condition Category	Excellent

### Water Quality Index



**Biological Index**



## Long Arm Creek at Bandanna, Pa. (LNGA 2.5)

### Group 1



#### Water Quality:

No parameters exceeded water quality standards.

#### Biological Condition:

<b>2007</b>	Moderately Impaired
<b>2008</b>	Severely Impaired

#### Habitat Assessment:

<b>2007</b>	Partially Supporting
<b>2008</b>	Partially Supporting

#### Trends:

After improving to slightly impaired in 2006, biological condition declined dramatically to moderately impaired in 2007 and severely impaired in 2008. Water quality showed no major change. Habitat remained partially supporting, which places LNGA 2.5 in the bottom tier of all Pennsylvania-Maryland Interstate streams with respect to physical habitat.

#### Other Notes:

LNGA 2.5 is located directly above the Long Arm Creek Reservoir, which often inundates the sampling station. Very poor biological condition ratings, which were the worst of any Maryland Interstate stream, are partially attributed to poor numbers of macroinvertebrates collected due to little flow. Specifically, in 2008 only 29 macroinvertebrates were collected due

to little flow and resulting difficulties with sampling. Poor habitat at this site is due to marginal condition of banks, sediment deposition, and infrequent riffles.

Despite all the concerns with habitat and biology at this station, LNGA 2.5 possessed the best Water Quality Index value of all Pennsylvania-Maryland Interstate streams in fall 2007 and winter and fall 2008.

Parameters Exceeding Standards				
Parameter	Date	Value	Standard	State
None				

Date	WQI	Parameters Exceeding 90 <sup>th</sup> Percentile							
8/06/2007	64.0	TFe	TNO2	TURB	TAI	TOC			
10/31/2007	40.1								
2/19/2008	34.5	DO							
5/20/2008	56.8	DO							
7/23/2008	59.3	TFe	TURB	TAI					
10/22/2008	41.7								

For information on the parameter abbreviations used above and data analysis procedures, go to [Methods](#).

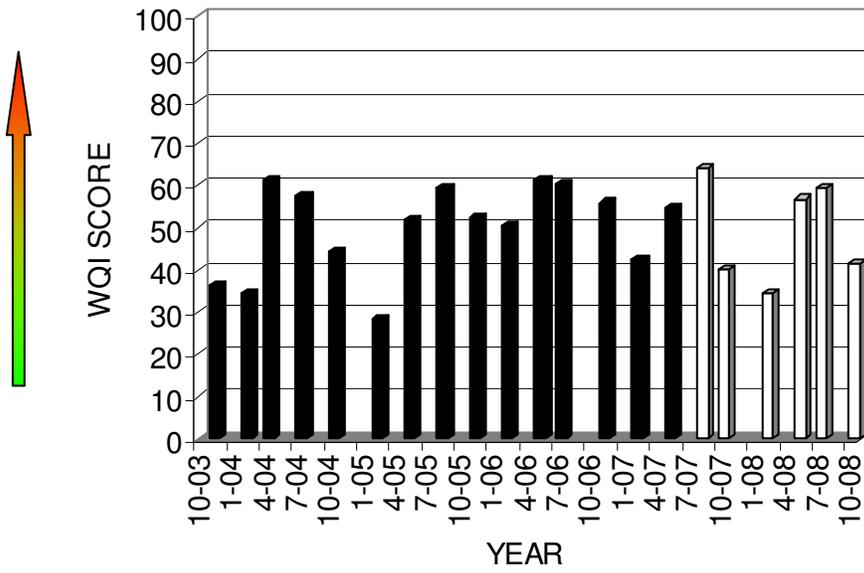
### 2007

Biological and Habitat Summary	
Number of Taxa	21
Diversity Index	1.87
RBP III Score	16
RBP III Condition	Moderately Impaired
Total Habitat Score	139
Habitat Condition Category	Partially Supporting

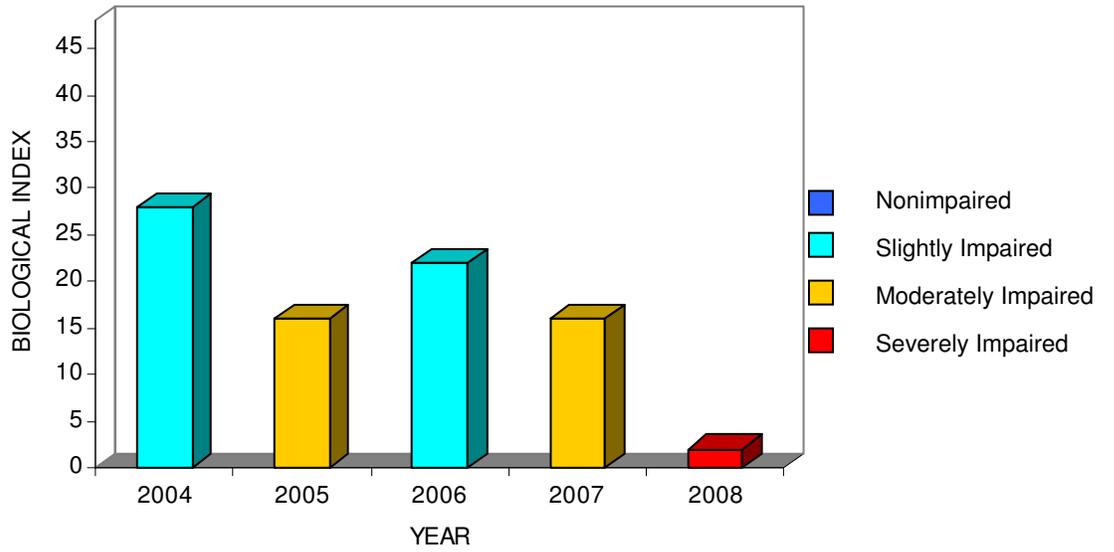
### 2008

Biological and Habitat Summary	
Number of Taxa	6
Diversity Index	1.22
RBP III Score	2
RBP III Condition	Severely Impaired
Total Habitat Score	118
Habitat Condition Category	Partially Supporting

### Water Quality Index



### Biological Index



## Octoraro Creek at Rising Sun, Md. (OCTO 6.6)

Group 1



### Water Quality:

Temperature exceeded acceptable limits during the summer sampling quarters of 2007 and 2008.

### Biological Condition:

<b>2007</b>	Nonimpaired
<b>2008</b>	Slightly Impaired

### Habitat Assessment:

<b>2007</b>	Supporting
<b>2008</b>	Excellent

### Trends:

Water quality conditions remained relatively stable, with temperature being the only parameter that exceeded standards. Habitat declined to receive a supporting rating in 2007, but regained excellent status in 2008. Biological conditions continue to alternate between nonimpaired and slightly impaired.

### Other Notes:

In 2007, biological conditions at OCTO 6.6 ranked among the best of all Pennsylvania-Maryland Interstate streams. This site had the highest percentage of Ephemeroptera taxa and the lowest percentage of Chironomidae taxa of all streams in the region.

SRBC is currently working on a Total Maximum Daily Load (TMDL) for the Pennsylvania portion of Octoraro Creek. Staff will conduct fish sampling at OCTO 6.6 in 2009, which will add an additional component to biological analyses.

Parameters Exceeding Standards				
Parameter	Date	Value	Standard	State
Temperature	8/08/2007	26.5° C	25.0 ° C	Pa. aquatic life
Temperature	7/23/2008	26.1° C	25.0 ° C	Pa. aquatic life

Date	WQI	Parameters Exceeding 90 <sup>th</sup> Percentile						
8/08/2007	49.63							
11/01/2007	65.3	TP	TPO4	TOC				
2/20/2008	63.9	TNO2	TP	TPO4	TNH3	TOC		
5/20/2008	72.2	TS	TOC	DO				
7/23/2008	49.2	TOC						
10/23/2008	48.2	TOC						

For information on the parameter abbreviations used above and data analysis procedures, go to [Methods](#).

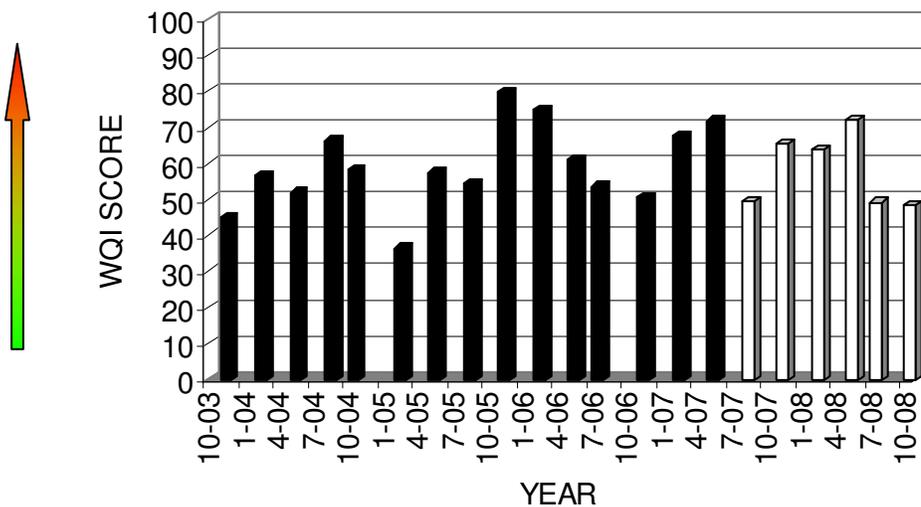
### 2007

Biological and Habitat Summary	
Number of Taxa	24
Diversity Index	2.34
RBP III Score	36
RBP III Condition	Nonimpaired
Total Habitat Score	157
Habitat Condition Category	Supporting

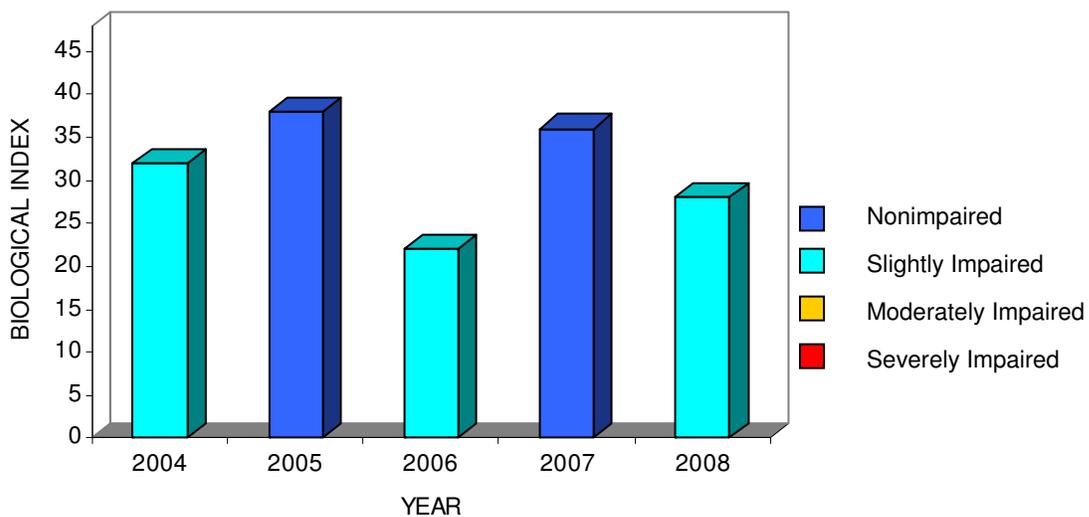
### 2008

Biological and Habitat Summary	
Number of Taxa	20
Diversity Index	2.18
RBP III Score	28
RBP III Condition	Slightly Impaired
Total Habitat Score	182
Habitat Condition Category	Excellent

### Water Quality Index



### Biological Index



**South Branch Conewago Creek at Bandanna, Pa. (SBCC 20.4)**  
Group 2



**Water Quality:**

No parameters exceeded water quality standards.

**Biological Condition:**

<b>2007</b>	Slightly Impaired
<b>2008</b>	Slightly Impaired

**Habitat Assessment:**

<b>2007</b>	Excellent
<b>2008</b>	Excellent

**Trends:**

A decline in water quality was observed, due to an increase in Water Quality Index values. Habitat remained excellent, while biological conditions remained slightly impaired for the fifth straight year.

**Other Notes:**

Velocity/depth regimes, sediment deposition, and condition of banks were the main concerns with physical habitat at SBCC 20.4.

SBCC 20.4 will be electrofished in 2009 to provide a fish component to biological analyses.

Parameters Exceeding Standards				
Parameter	Date	Value	Standard	State
None				

Date	WQI	Parameters Exceeding 90 <sup>th</sup> Percentile							
8/06/2007	39.4								
7/23/2008	43.9	TOC							

For information on the parameter abbreviations used above and data analysis procedures, go to [Methods](#).

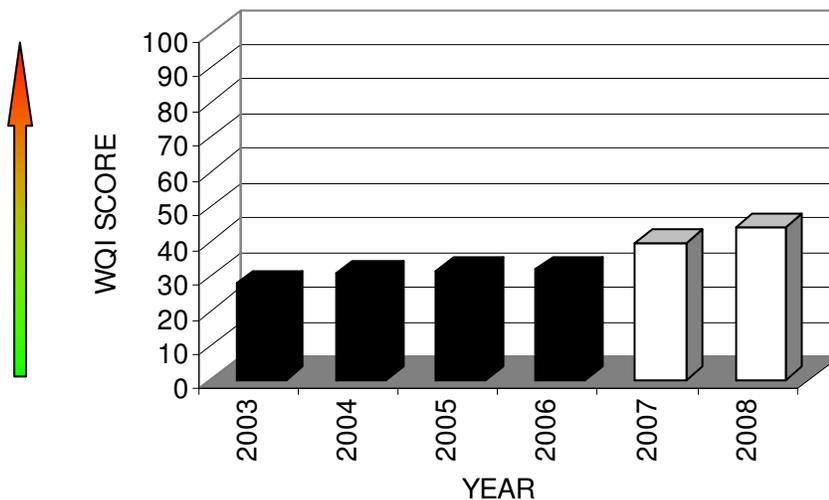
### 2007

Biological and Habitat Summary	
Number of Taxa	22
Diversity Index	1.98
RBP III Score	20
RBP III Condition	Slightly Impaired
Total Habitat Score	179
Habitat Condition Category	Excellent

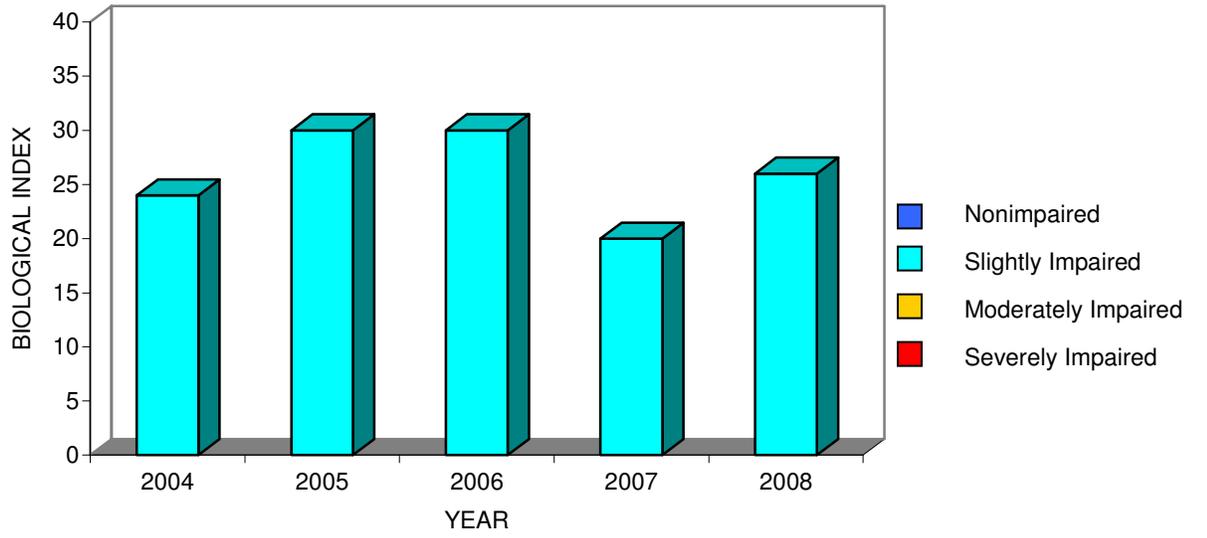
### 2008

Biological and Habitat Summary	
Number of Taxa	21
Diversity Index	2.36
RBP III Score	26
RBP III Condition	Slightly Impaired
Total Habitat Score	156
Habitat Condition Category	Excellent

### Water Quality Index



### Biological Index



**Scott Creek at Delta, Pa. (SCTT 3.0)**  
Group 1



**Water Quality:**

No parameters exceeded water quality standards.

**Biological Condition:**

<b>2007</b>	Moderately Impaired
<b>2008</b>	Moderately Impaired

**Habitat Assessment:**

<b>2007</b>	Partially Supporting
<b>2008</b>	Supporting

**Trends:**

Water quality remained about the same as last year. Biological conditions had been improving, but decreased to moderately impaired in 2007 and 2008.

**Other Notes:**

Scott Creek is typically one of the most impaired sites on the Pennsylvania-Maryland border, but it has shown some improvement in recent years. PADEP released a cause and effect survey on Scott Creek in March 2007, which concluded that Scott Creek is failing to attain its fish and aquatic life uses near the Delta Borough sewage treatment plant discharge. The main concerns are nutrients, siltation, and flow variability.

Parameters Exceeding Standards				
Parameter	Date	Value	Standard	State

Date	WQI	Parameters Exceeding 90 <sup>th</sup> Percentile								
8/07/2007	58.8	TP	TPO4	TCI						
10/31/2007	53.5	TS	TCI	DO	COND					
2/19/2008	48.2	TSO4	TS	TCI	COND	TEMP				
5/20/2008	63.2	TS	TPO4	TCI	DO	COND				
7/23/2008	58.6	TS	TCI							
10/22/2008	64.5	TP	TPO4	TCI	DO					

For information on the parameter abbreviations used above and data analysis procedures, go to [Methods](#).

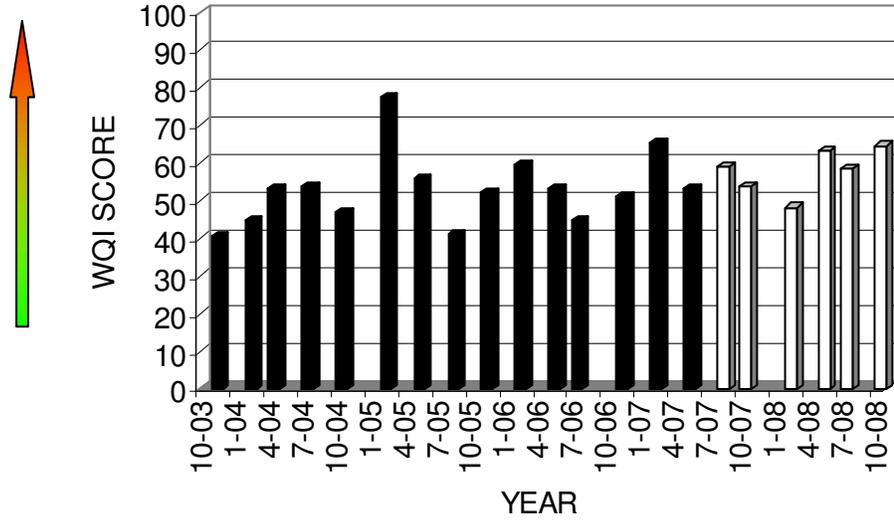
**2007**

Biological and Habitat Summary	
Number of Taxa	19
Diversity Index	1.63
RBP III Score	16
RBP III Condition	Moderately Impaired
Total Habitat Score	123
Habitat Condition Category	Partially Supporting

**2008**

Biological and Habitat Summary	
Number of Taxa	15
Diversity Index	1.81
RBP III Score	16
RBP III Condition	Moderately Impaired
Total Habitat Score	141
Habitat Condition Category	Supporting

### Water Quality Index



### Biological Index

