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How Healthy is Furnace Brook

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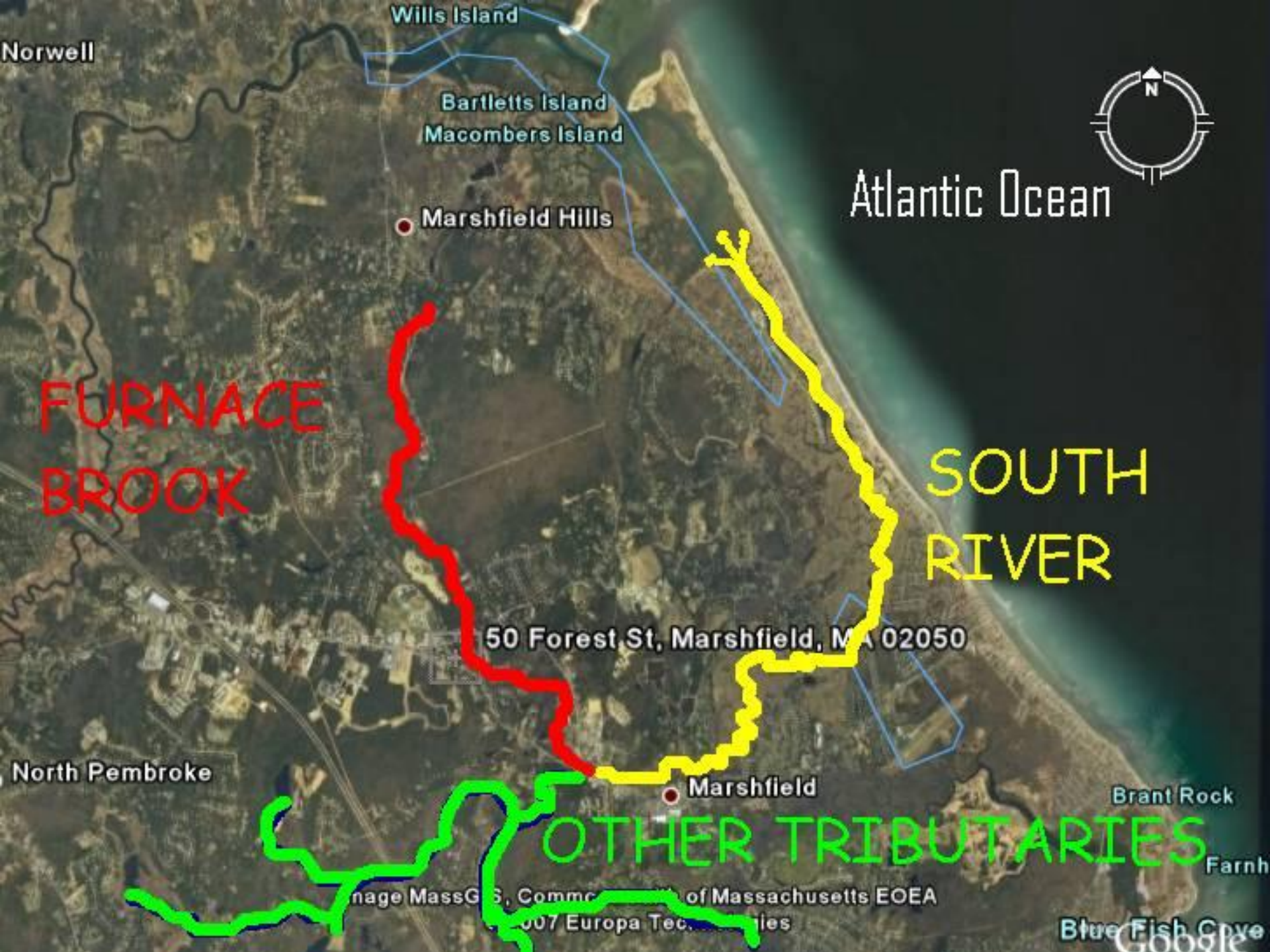
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How Healthy Is Furnace Brook?

By Michael Gilbert



Norwell

Wills Island

Bartletts Island
Macomers Island

Marshfield Hills

Atlantic Ocean



FURNACE
BROOK

SOUTH
RIVER

50 Forest St, Marshfield, MA 02050

North Pembroke

Marshfield

Brant Rock

Farnh

OTHER TRIBUTARIES

Image MassGIS, Comm. of Massachusetts EOE

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Blue Fish Cove
Google

Die Neüwen Inseln so hinder Hispanien gegen Orient/ bey dem Lande Indie ligen.

History of Sites



Old Maine & Furnace Street

A photograph of a small stream flowing over mossy rocks. A fallen log lies across the stream in the foreground. The water is clear and flows over the rocks, creating small rapids. The surrounding area is lush with green moss and vegetation.

The Old Maine and Furnace Street sites are both located on the Furnace Brook. The Furnace brook has influenced the surrounding area in a number of ways. Such as Furnace Street and The town Middle School. FBMS

VETERANS PARK



- Veterans Park is an old iron mine and because of this the water is a dark brown, rusty color

Furnace Brook

A black and white photograph showing the lower legs and feet of several people walking on a paved sidewalk. The people are moving away from the camera, and their legs are in various stages of a walking stride. The image is slightly blurred, emphasizing movement.

- Furnace Brook is located in a Highly Populated, suburban area

The Brook is subject to high pedestrian activity...

Furnace Brook

Traffic



Furnace Brook

• & HOUSING

**A CITY SCREAMS IN
TERROR!**



STARRING
JEFF MORROW • REX REASON • LEIGH SNOWDEN
with GREGG PALMER • MAURICE MANSON

DIRECTED BY JOHN SHERIDANO • STORY AND SCREENPLAY BY ARTHUR ROSS • BASED UPON THE STORY BY EDITHA W. MULLAND • A UNIVERSAL INTERNATIONAL PICTURE

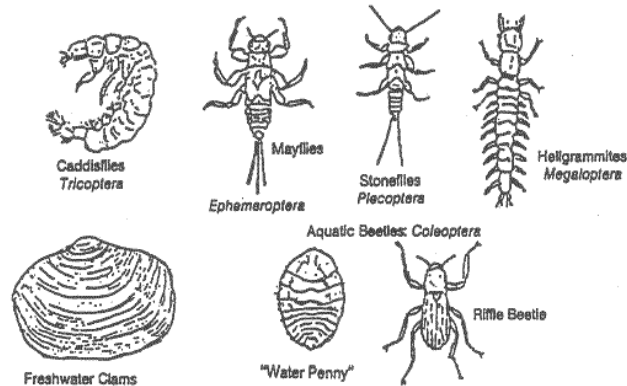
RATED CADDISFLIES

CREEPLY CRAWLIES

Macroinvertebrates According to Beck's Biotic Index Classes

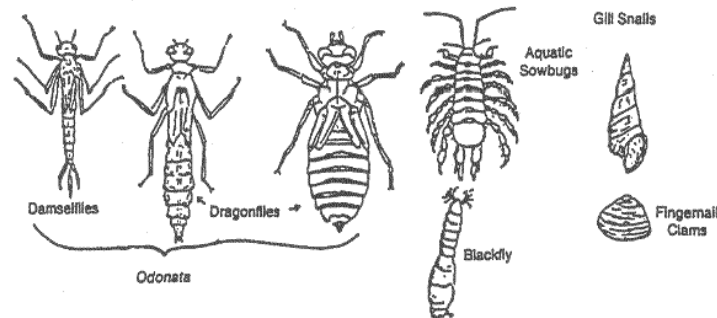
1. Intolerant (sensitive) to pollution:

C
L
A
S
S
1



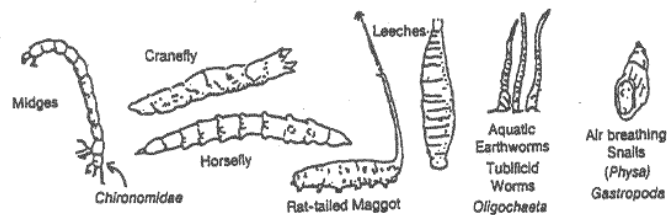
2. Facultative - Can tolerate some pollution:

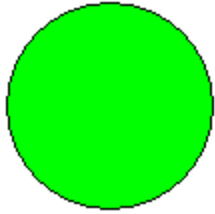
C
L
A
S
S
2



3. Tolerant to pollution:

C
L
A
S
S
3

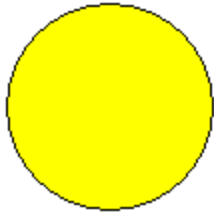




Caddis flies

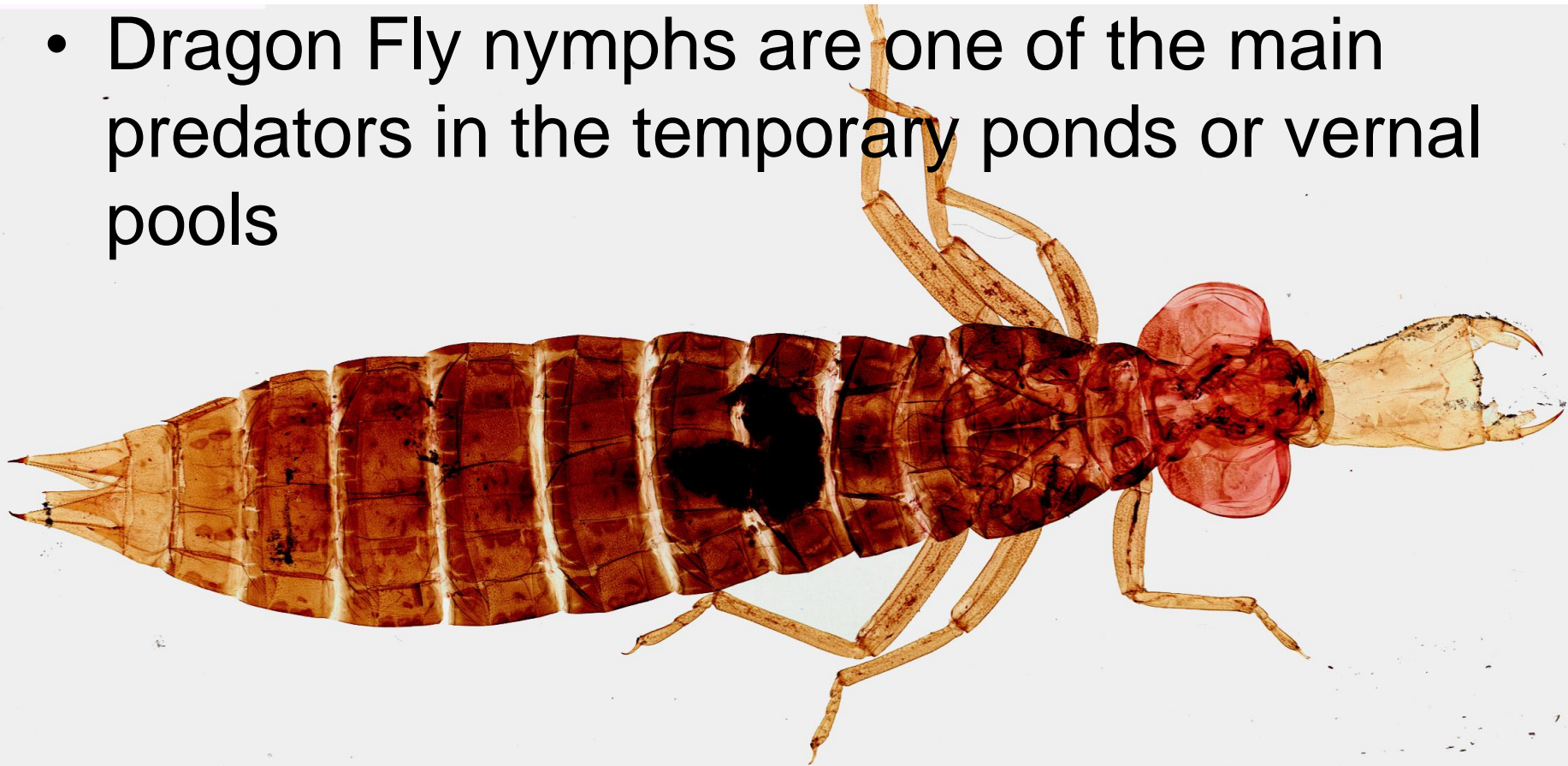
- Good Indication of excellent Water quality
- Use Casings to protect themselves in the immature stage.
- Feed on Detritus and micro-algae

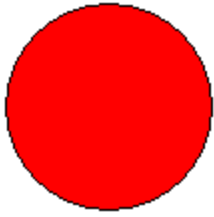




Dragon Fly

- Dragon Flies are an indication of fair water quality and can tolerate some pollution
- Dragon Fly nymphs are one of the main predators in the temporary ponds or vernal pools





Midges

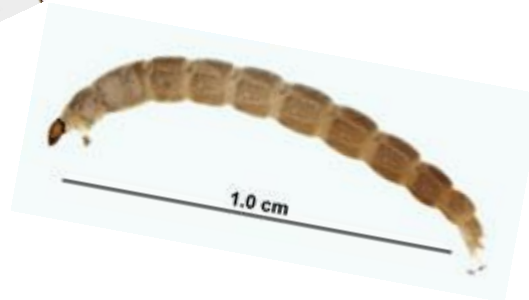
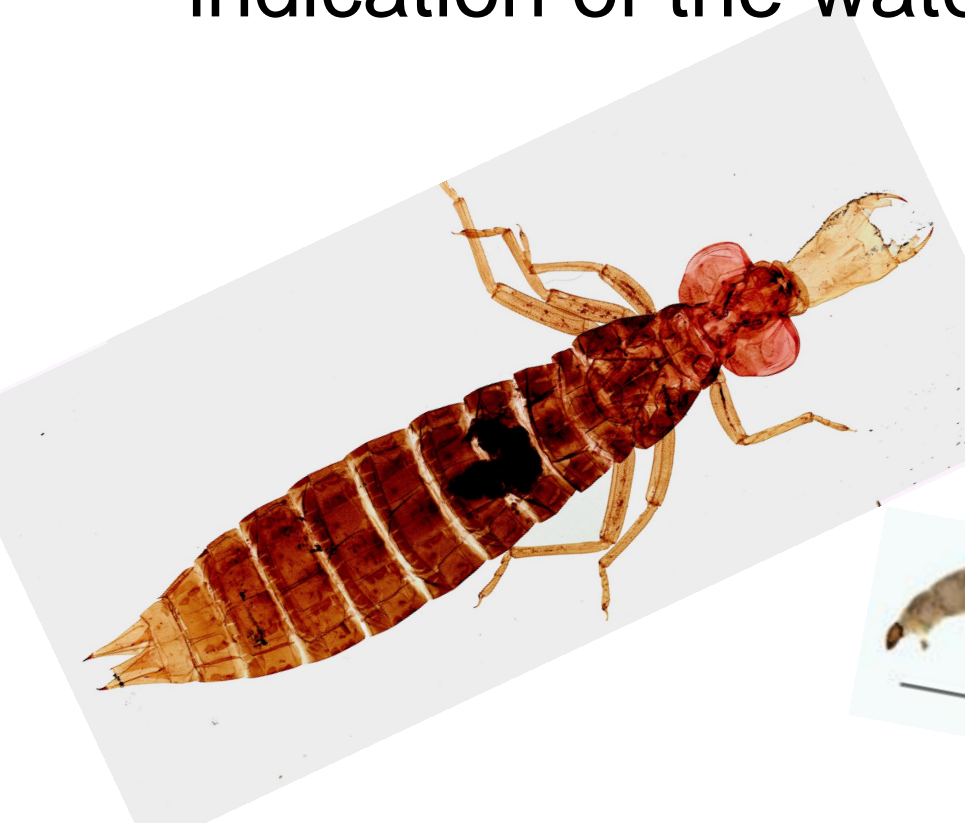


- Midges are an indication of poor water quality
- Biting and non-biting midges. Most males are non biting while many females are. They bite to nourish their eggs.



Good Indicators

- The macro invertebrates or insects gathered from the sites gave us a good indication of the water quality of our sites.



Biological Index

- We used Biological indexes to gain information on our sites regarding pollution and its probable sources.

Water Quality Rating

Score Range

Water Quality

0.0-3.75

Excellent

3.76-4.25

Very Good

4.26-5.00

Good

5.01-5.75

Fair

5.76-6.50

Fairly-Poor

6.51-7.25

Poor

7.26-10.00

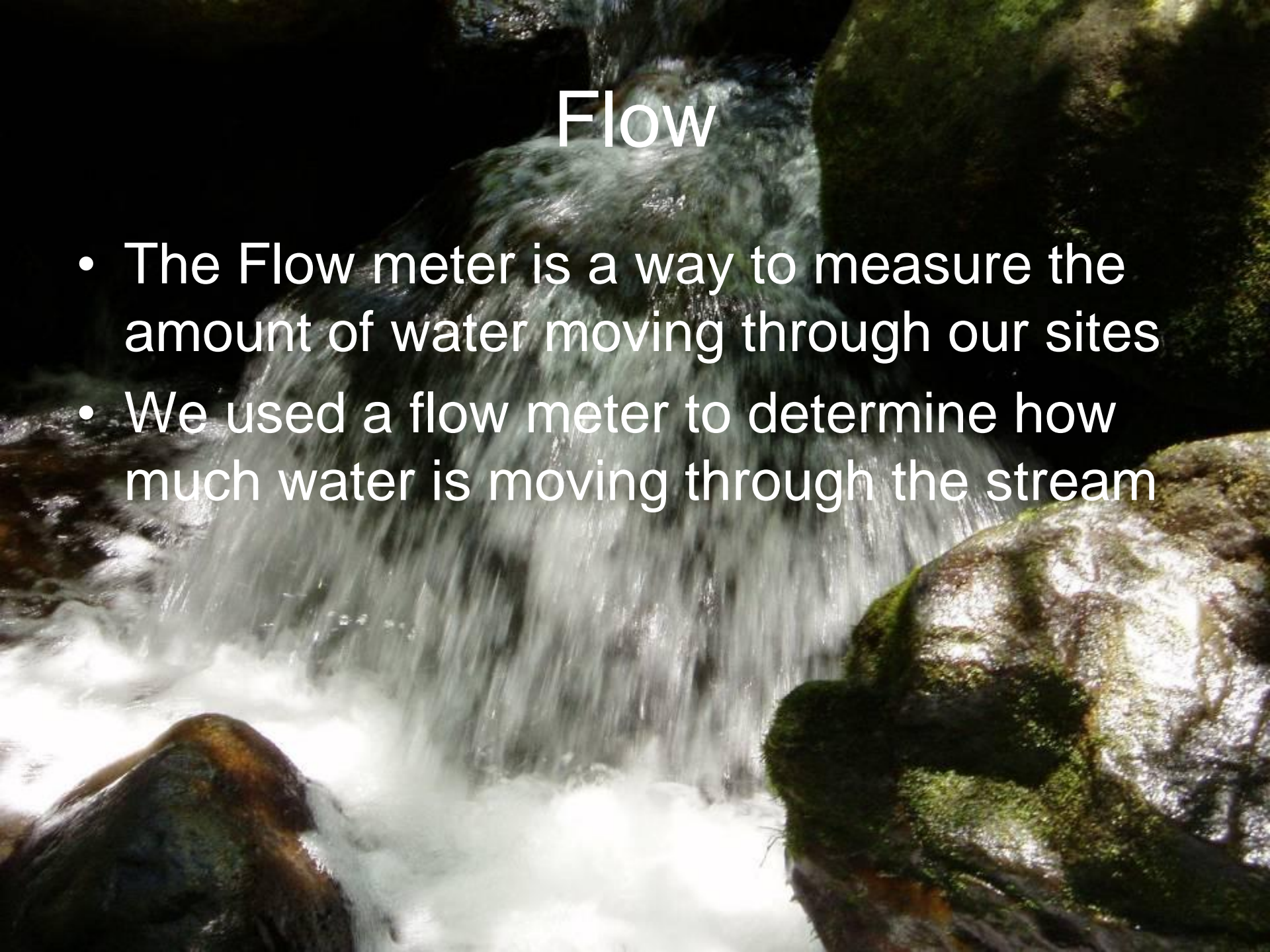
Very Poor

Taxanomic	Group	Actual Count	Actual Count	Avg. Count	Group %	Group	Avg. Org	Tolerance
Order Name	Toleranc e	Rep. #1 (Trio)	Rep. #2 (PJ)	per Group		Toleranc e	Densit y	*Avg Org. density
OLD MAINE SITE								
Ephemerotera	4	3	3	3	3	4	10.50	42.0
Trichoptera	3	12	12	12	13	3	42.00	126.0
Diptera (Chironomidea)	7	1	1	1	1	7	3.50	24.5
Diptera (Other)	4	0	0	0	0	4	0.00	0.0
Odonata	5	4	4	4	4	5	14.00	70.0
Coleoptera	4	9	9	9	10	4	31.50	126.0
Amphipoda	7	0	0	0	0	7	0.00	0.0
Isopoda	8	37	37	37	40	8	129.5 0	1036.0
Decapoda	6	0	0	0	0	6	0.00	0.0
Gastropoda	7	24	24	24	26	7	84.00	588.0
Pelecypodia	7	0	0	0	0	7	0.00	0.0
Hiruinea	10	2	2	2	2	10	7.00	70.0
Megaloptera	2	7	7	7				
Totals		92	92	92.00	100		322.0 0	2082.5

MGI 647

Flow

- The Flow meter is a way to measure the amount of water moving through our sites
- We used a flow meter to determine how much water is moving through the stream



11.3 ft wide

7.5 level

Seg #	d (dist.)	depth a	depth b	depth c	A	flow 0.6	Av. flow 0.6	Disch (CFS)
1	1.00	0.00	0.00	1.00	0.00		0.00	0.00
2	1.00	1.00	5.50	11.00	3.25		0.02	0.07
3	1.00	11.00	16.20	19.50	13.60		0.90	12.24
4	1.00	19.50	18.50	17.50	19.00		0.07	1.33
5	1.00	17.50	16.50	13.60	17.00		0.10	1.70
6	1.00	13.60	15.30	12.00	14.45		0.15	2.17
7	1.00	12.00	9.9	10.9	10.95		0.03	0.33
8	1.00	10.90	11.80	8.50	11.35		0.01	0.11
9	1.00	8.50	2.00	0.00	5.25		0.01	0.05

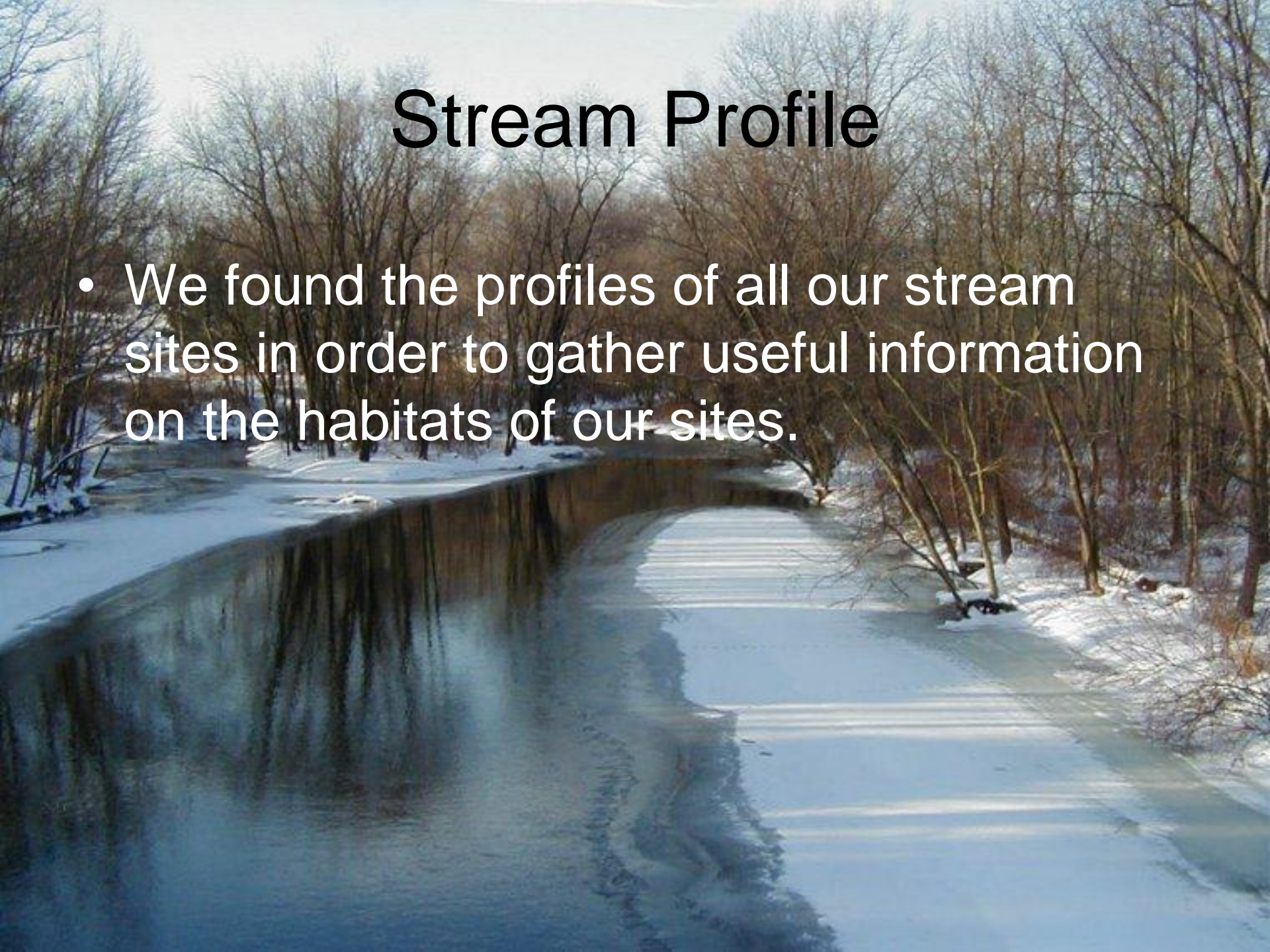
Q in L/s 509.68

Q in CFS

18.00

Stream Profile

- We found the profiles of all our stream sites in order to gather useful information on the habitats of our sites.



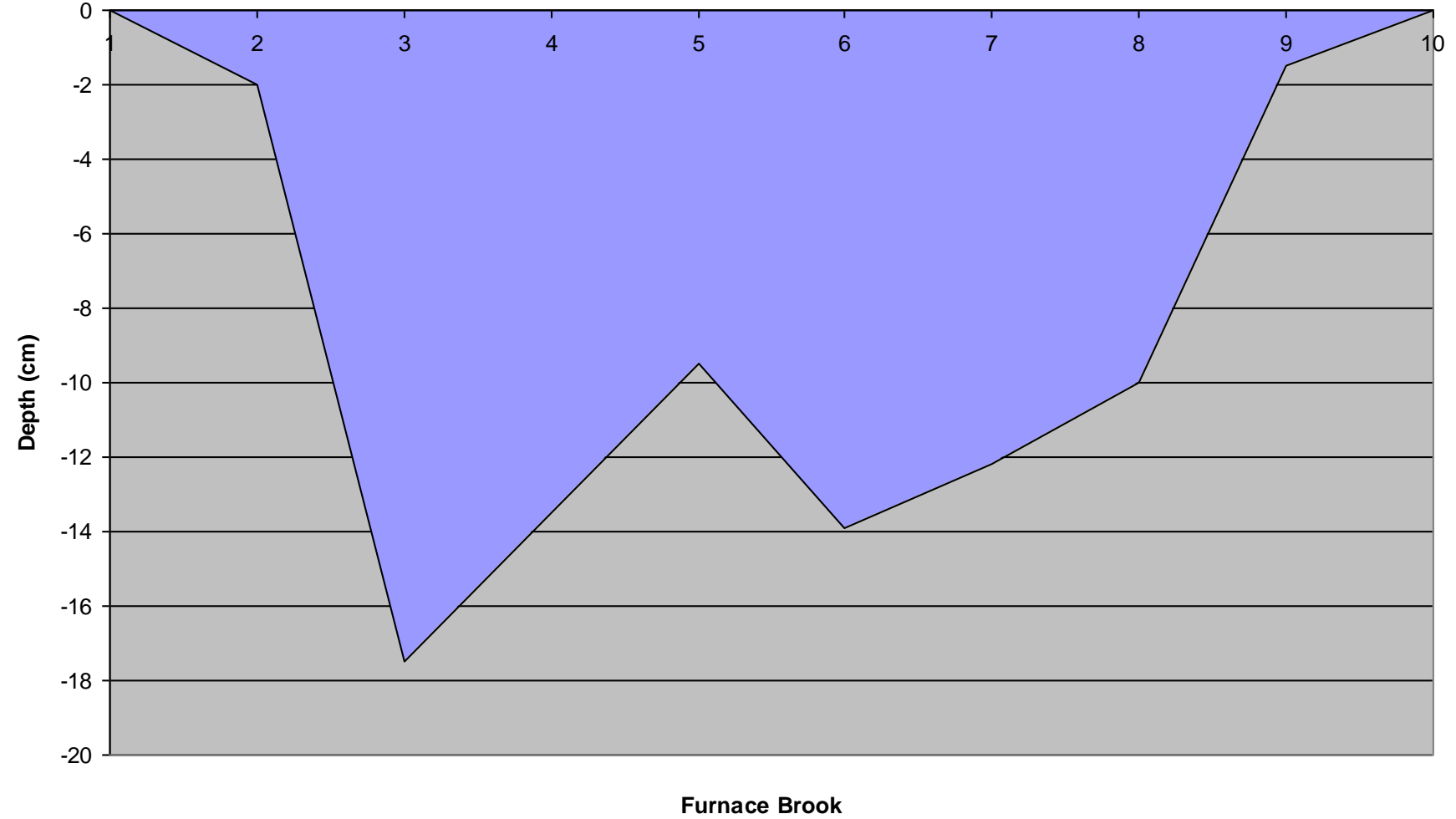
OLD MAINE

Old Maine Street 6.47 Fairly – Poor

Discharge- 495.30 L/S

River Miles- 9.84

Old Maine Depth Cross Sectional Profile



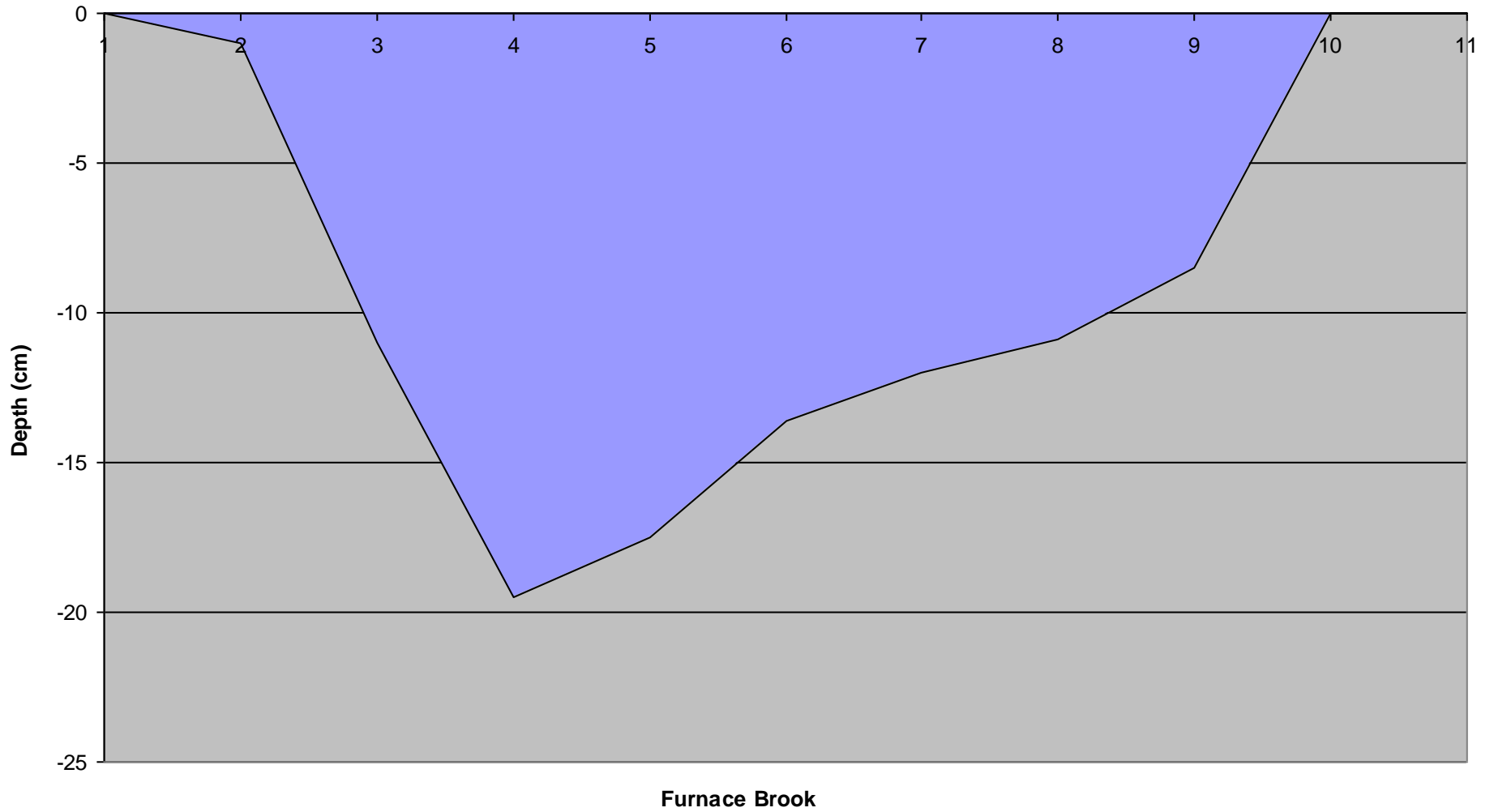
FURNACE STREET

Furnace Street 7.20 Poor

Discharge- 509.68 L/S

River Miles- 8.5

Furnace Street Depth Cross Sectional Profile



A photograph of a river with a bridge and buildings in the background. The river is flowing over a stone weir, creating white water. In the background, there is a bridge with a wooden railing, and behind it, several buildings including a two-story house and a long, single-story building. Bare trees and power lines are visible against a cloudy sky.

VETERANS PARK

Veterans Park

5.44

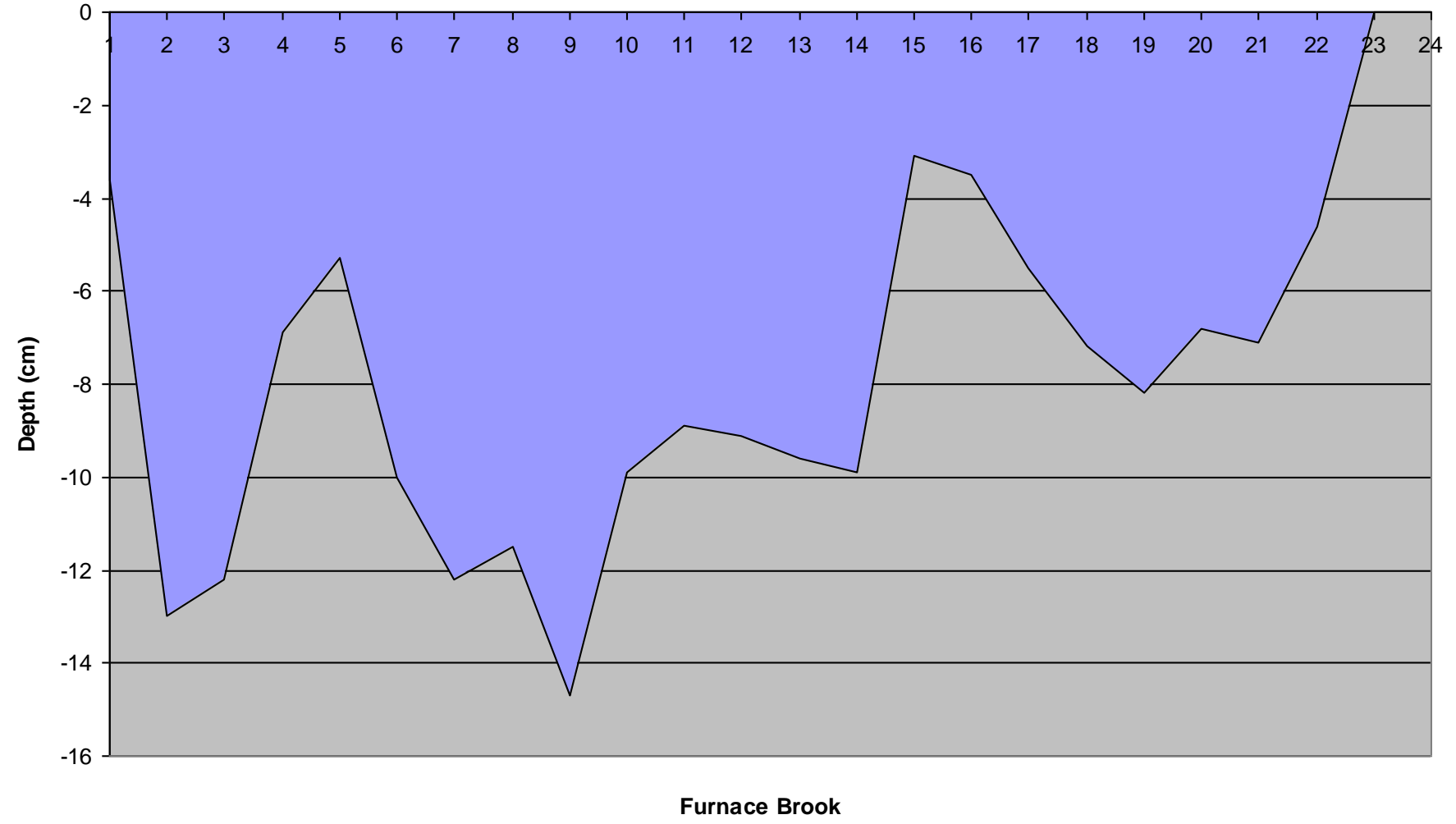
Fair

Discharge- 2738.56 L/S

River Miles- 7.3

Veterans Park

Depth Cross Sectional Profile



Percentage of Tolerant and Intolerant Organisms

Site Location	Tolerant	Intolerant
Old Maine Street	79%	21%
Furnace Street	84%	16%
Veterans Park	69%	31%

Conclusion

- From the information gathered from the Bio Index, flow, and stream profile, we were able to gain an understanding of how healthy Furnace Brook is.