



**MINNESOTA DEPARTMENT OF NATURAL RESOURCES**  
**DIVISION OF FISH AND WILDLIFE**  
**STREAM ASSESSMENT REPORT**

**Report Date:** January 23, 2014

Region	Area	Stream Name	Tributary No.	Stream Length
3	Lake City	Cold Spring Brook	M-34-48	2.2 miles
County	Watershed Name, No.	Source (T, R, S)	Mouth (T, R, S)	
Wabasha	Zumbro River-41	T110N.R14W.S25	T110N.R14W.S36	

**Date of Assessment:** October 24, 2013

**Assessment Purpose:** Long Term Monitoring

Station	Similar Reach	Stream Mile	Length (ft)	Mean Width (ft)	Acres	Water Temp (°F)	Air Temp (°F)	Downstream UTM's	
								utm <sub>x</sub> (↔)	utm <sub>y</sub> (↓)
0.5	1	0.5	1170	25	0.67			545185	4904438

**Summary:**

Station 0.5 on Cold Spring Brook is one of the Long Term Monitoring (LTM) stations in Southeastern Minnesota. This station has been sampled annually in the fall since 1998 as part of the LTM program. Estimates were obtained using a two pass depletion method using a stream shocking barge.

The Brown Trout population had an estimated 490 adults/mile and 187 recruits/mile. Size structure of Brown Trout was excellent with an estimated 197 Brown Trout  $\geq$  12 inches, 109  $\geq$  14 inches, and 41  $\geq$  16 inches per mile.

The Brook Trout population had an estimated 32 adults/mile and 24 recruits/mile. There was an estimated 5 Brook Trout  $\geq$  10 inches per mile.

There were no White Suckers sampled in Cold Spring Brook in this survey.

Station: 0.5      Date: 10/24/2013      Gear: Stream Shocking Barge      Method: Electrofishing      Station length (ft): 1170

Brown Trout			
In Station			
	Recruits	Adults	Total
n	41	108	150
95% CI	1.74	9.70	
Per Mile			
	Recruits	Adults	Total
n	187	490	677
	≥ 12 inches	≥ 14 inches	≥ 16 inches
n	197	109	41
95% CI	32.91	98.24	121.09
Per Acre			
	Recruits	Adults	Total
n	62	162	223
lbs	4.0	122.8	126.8

Brook Trout			
In Station			
	Recruits	Adults	Total
n	5	7	13
95% CI	1.99	1.27	
Per Mile			
	Recruits	Adults	Total
n	24	32	57
	≥ 10 inches		
n	5		
95% CI	0.00		
Per Acre			
	Recruits	Adults	Total
n	8	11	19
lbs	0.5	4.3	4.8

Length (in)	Brook Trout	Brown Trout	White Sucker
1			
2			
3		1	
4	2	13	
5	3	13	
6		16	
7			
8	2		
9	3	9	
10		29	
11		21	
12		10	
13	1	13	
14		6	
15		6	
16		3	
17		1	
18			
19			
20		1	
21			
22			
23			
24			
25			
26			
27			
28			
29			
30+			
<b>Total</b>	12	142	0

**Other Species Sampled:**

Common Name	Number Sampled
slimy sculpin	2

## Discussion of Fishery:

Station 0.5 on Cold Spring Brook is one of the stations in the Long Term Monitoring (LTM) program in southeastern Minnesota. This station has been sampled annually since the fall of 1998 to assess the Brown Trout and Brook Trout populations (Tables 1 & 2).

In the fall of 2013, the Brown Trout population was estimated at 490 adults/mile, which was lower than the 15 year mean of 1,090/mile and lower than the estimate in 2012 of 508/mile (Table 1). The estimated number of recruits was 187/mile, far lower than the 15 year mean of 1,816. (Table 1). There was an estimated 197 Brown Trout/mile  $\geq 12$  inches, 109/mile  $\geq 14$  inches, and 41/mile  $\geq 16$  inches. All of these values for size classes increased from 2012 (Table 1). The biomass of Brown Trout was 126.9 lbs/acre which is lower than the 15 year mean of 180 lbs/acre but similar to last year's (Table 1). The number of adult Brown Trout per mile has generally been lower in the last few years, but the number of Brown Trout  $> 12$  inches has generally been stable over time (Figure 1).

The estimated number of adult Brook Trout was 32/mile (Table 2). This is lower than the 15 year fall mean of 313/mile and half of the number estimate in 2012 (Table 2). The Brook Trout population had an estimated 24 recruits/mile which is lower than the 15 year mean of 897/mile and lower than the estimate in 2012 of 68/mile (Table 2). There were 5 Brook Trout  $\geq 10$  inches found in this survey. This was the same amount estimated in 2012 (Table 2). Brook Trout biomass was 4.8 lbs/acre which is lower than the 2012 value of 8.7 lbs/acre (Table 2). The number of adult Brook Trout in the LTM station has generally declined over time (Figure 2). This decrease may be the result of habitat changes and frequent flood events. It also appears that brook trout numbers may have increased in upstream portions of Cold Spring Brook, but long term data is not available to make a comparison.


There were no White Suckers found in this survey which is common for this stream.

The Coldwater Index of Biotic Integrity (Mundahl and Simon 1998) score has been variable over the last five years. A score of 105 was recorded in 2009 and decreased to 70 in 2010, but rebounded to 105 in 2011. It went down to 100 in 2012 and then down to 90 in 2013 (Table 3). This may be the result of the stations proximity to the Zumbro River. Different species may be immigrating/emigrating frequently to find desired water temperatures. The only other species sampled was Slimy Sculpin.

In 2013, the Minnesota Stream Habitat Assessment (MSHA) score was 63.35 (Table 3). The stream is characterized by moderate bank erosion but the recent flood added stress to banks. Shade, instream cover, channel stability, and sinuosity are moderate. The stream is also moderately embedded. Cold Spring Brook has good channel development with a good pool; riffle dynamic. A habitat improvement project was done in the summer of 2013. The work was done above and below the LTM station. More work will be done in 2014 in the LTM station. More stations are planned to be surveyed on Cold Spring Brook in 2014 to monitor fish populations in the areas where habitat work was done.

A habitat improvement project was completed by Trout Unlimited in 2013 upstream and downstream of the LTM station. The project will be extended through the LTM station in 2014 and will provide an excellent opportunity to measure effects on the trout population.

**Credits and Signatures:**

<b>Field Crew:</b>		
Randy Binder, Dan Spence, Kevin Stauffer		
<b>Report completed by:</b>		
<b>Name:</b>	<b>Title:</b>	<b>Date:</b>
Dan Spence	Fisheries Specialist	28-Jan-14
<b>Approved by:</b>		
<b>Area Fisheries Supervisor's Signature</b>	<b>Regional Fisheries Manager's Signature</b>	<b>Date:</b>
		

**Coldwater Index of Biotic Integrity (Mundahl and Simon 1998)**

<u>Metric (Max Score)</u>	<u>Value (Score)</u>
Total Captured	156
Number of Species (10)	3 (10)
Number of Coldwater Species (10)	3 (5)
Number of Minnow Species (10)	0 (10)
Number of Benthic Species (10)	1 (10)
Number of Tolerant Species (10)	0 (10)
Percent Salmonids as Brook Trout (10)	7.79 (0)
Percent Intolerant Individuals (10)	8.97 (0)
Percent Coldwater Individuals (10)	100 (10)
Percent White Suckers (10)	0 (10)
Percent Top Carnivores (10)	98.71 (10)
Number of Coldwater Individuals per 150m (10)	65.61 (5)
Number of Warmwater Individuals per 150m (10)	0 (10)
<b>TOTAL IBI SCORE (120 maximum)</b>	<b>90</b>
Percent of maximum score:	75.00%

**Stream Characteristics – Minnesota Stream Habitat Assessment (MSHA)**

MSHA Metric	Component score maximum	Component score
Surrounding Land Use	5	3.75
Riparian Zone	15	8
Instream Zone - Substrate	27	9.6
Instream Zone - Cover	17	14
Channel Morphology	36	28
	100	<b>MSHA Score</b> (Max = 100)
		<b>63.35</b>

Figure 1 - Trends in Brown Trout abundance for adults and fish > 12 inches in the Long Term Monitoring station of Cold Spring Brook.

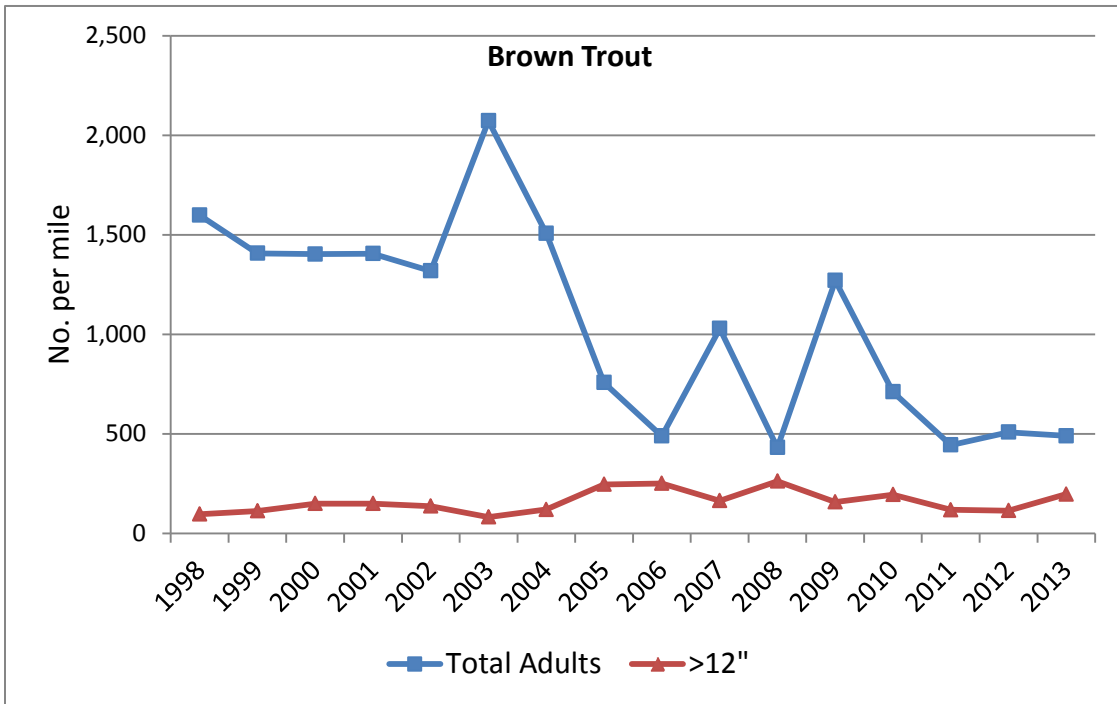


Figure 2 - Trends in Brook Trout abundance for adults and fish > 10 inches in the Long Term Monitoring station of Cold Spring Brook.

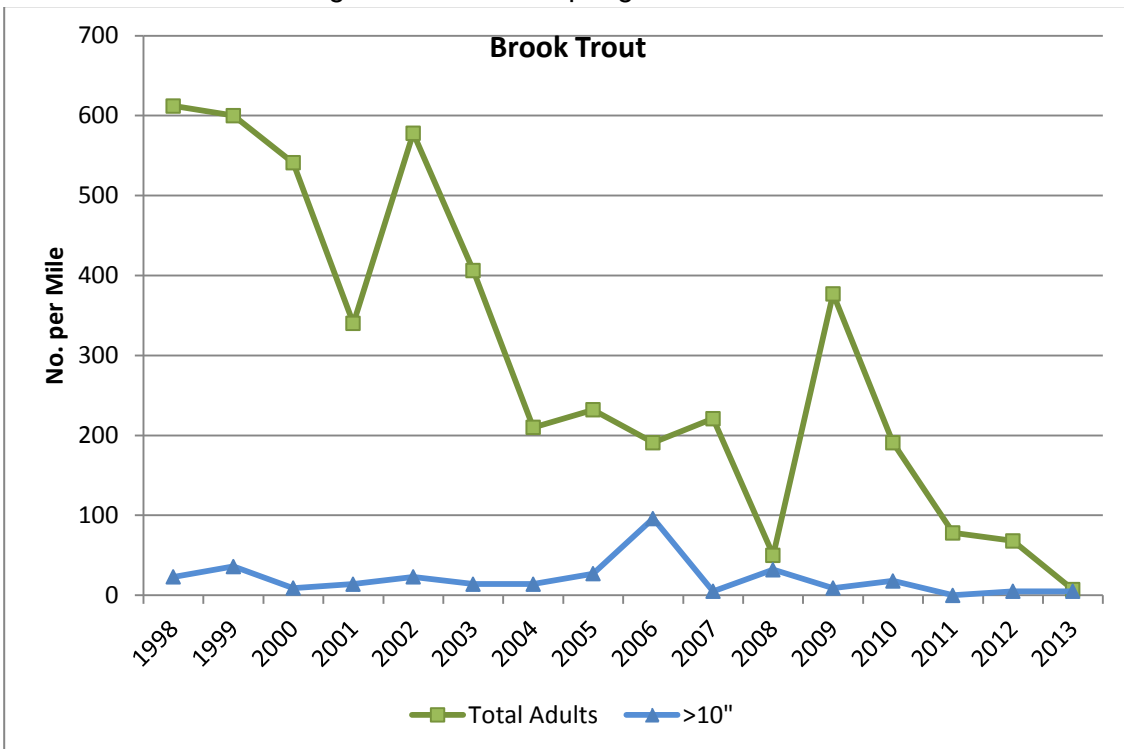


Table 1. Trends in Brown Trout population metrics for Cold Spring Brook, years 1998-2013.

Station	River Mile	Similar Reach	Date	No./mile (Adult)	No./mile (Recruits)	No./mile (≥12 in.)	No./mile (≥14 in.)	No./mile (≥16 in.)	lbs/acre (all sizes)
<b>0.5</b>	<b>0.5</b>	<b>1</b>	<b>10/24/2013</b>	<b>490</b>	<b>187</b>	<b>197</b>	<b>109</b>	<b>41</b>	<b>126.8</b>
0.5	0.5	1	9/28/2012	508	1703	114	45	5	122.9
0.5	0.5	1	9/29/2011	444	519	118	74	18	97.8
0.5	0.5	1	10/5/2010	711	689	195	95	45	193.97
0.5	0.5	1	9/16/2009	1,270	696	158	81	32	181.53
0.5	0.5	1	10/1/2008	431	1,825	262	81	27	133.11
0.5	0.5	1	9/27/2007	1,029	47	164	106	55	153.73
0.5	0.5	1	10/5/2006	489	4,395	251	120	41	200.8
0.5	0.5	1	9/27/2005	757	266	246	59	9	142
0.5	0.5	1	9/24/2004	1,506	1,727	120	27	5	178.3
0.5	0.5	1	9/22/2003	2,072	1,637	82	5	5	204
0.5	0.5	1	9/20/2002	1,318	3,017	137	27	9	193.7
0.5	0.5	1	9/21/2001	1,405	2,507	150	68	45	207.7
0.5	0.5	1	9/26/2000	1,403	3,118	150	55	27	230.7
0.5	0.5	1	9/30/1999	1,407	3,020	113	57	20	210.22
0.5	0.5	1	9/28/1998	1,598	2,080	97	63	36	179.7
0.5	0.5	1	Fall Mean	1090	1816	157	64	25	175.3

Table 2. Trends in Brook Trout population metrics for Cold Spring Brook, years 1998-2013.

Station	River Mile	Similar Reach	Date	No./mile (Adult)	No./mile (Recruits)	No./mile (≥10 in.)	lbs/acre (all sizes)
<b>0.5</b>	<b>0.5</b>	<b>1</b>	<b>10/24/2013</b>	<b>7</b>	<b>5</b>	<b>5</b>	<b>4.8</b>
0.5	0.5	1	9/28/2012	68	169	5	8.7
0.5	0.5	1	9/29/2011	78	554	0	12.9
0.5	0.5	1	10/5/2010	191	994	18	24.67
0.5	0.5	1	9/16/2009	377	115	9	20.93
0.5	0.5	1	10/1/2008	50	721	32	12.39
0.5	0.5	1	9/27/2007	221	139	5	12
0.5	0.5	1	10/5/2006	191	611	96	31.3
0.5	0.5	1	9/27/2005	232	72	27	22.7
0.5	0.5	1	9/24/2004	210	1,638	14	29
0.5	0.5	1	9/22/2003	406	99	14	21.64
0.5	0.5	1	9/20/2002	578	1,232	23	43
0.5	0.5	1	9/21/2001	340	1,633	14	30.6
0.5	0.5	1	9/26/2000	541	928	9	34.4
0.5	0.5	1	9/30/1999	600	3,525	36	53.17
0.5	0.5	1	9/28/1998	612	1,030	23	29.8
0.5	0.5	1	Fall Mean	313	897	22	25.8

Table 3. Trends in Index of Biotic Integrity (Mundahl and Simon 1998) and Minnesota Stream Habitat Assessment (Fisheries Stream Survey Manual 2007) scores for Cold Spring Brook, years 2003-2013.

Station	River Mile	Similar Reach	Date	IBI	Land Use	Riparian Zone	Instream Substrate	Instream Cover	Channel Morphology	Final Score
<b>0.5</b>	<b>0.5</b>	<b>1</b>	<b>10/24/2013</b>	<b>90</b>	<b>3.75</b>	<b>8</b>	<b>9.6</b>	<b>14</b>	<b>28</b>	<b>63.35</b>
0.5	0.5	1	9/28/2012	100	3.75	8	9.6	14	28	63.35
0.5	0.5	1	9/29/2011	105	3.75	8	9.6	14	28	63.5
0.5	0.5	1	10/5/2010	70	3.75	8	16.4	14	28	70.15
0.5	0.5	1	9/16/2009	105	3.75	9	16.4	14	28	71.15
0.5	0.5	1	10/1/2008	105	2.5	7.5	17.15	13	28	68.15
0.5	0.5	1	9/27/2007	85	3.5	7	17.05	13	28	67.55
0.5	0.5	1	10/5/2006	100	-	-	-	-	-	-
0.5	0.5	1	9/27/2005	105	-	-	-	-	-	-
0.5	0.5	1	9/24/2004	105	-	-	-	-	-	-
0.5	0.5	1	9/22/2003	100	-	-	-	-	-	-

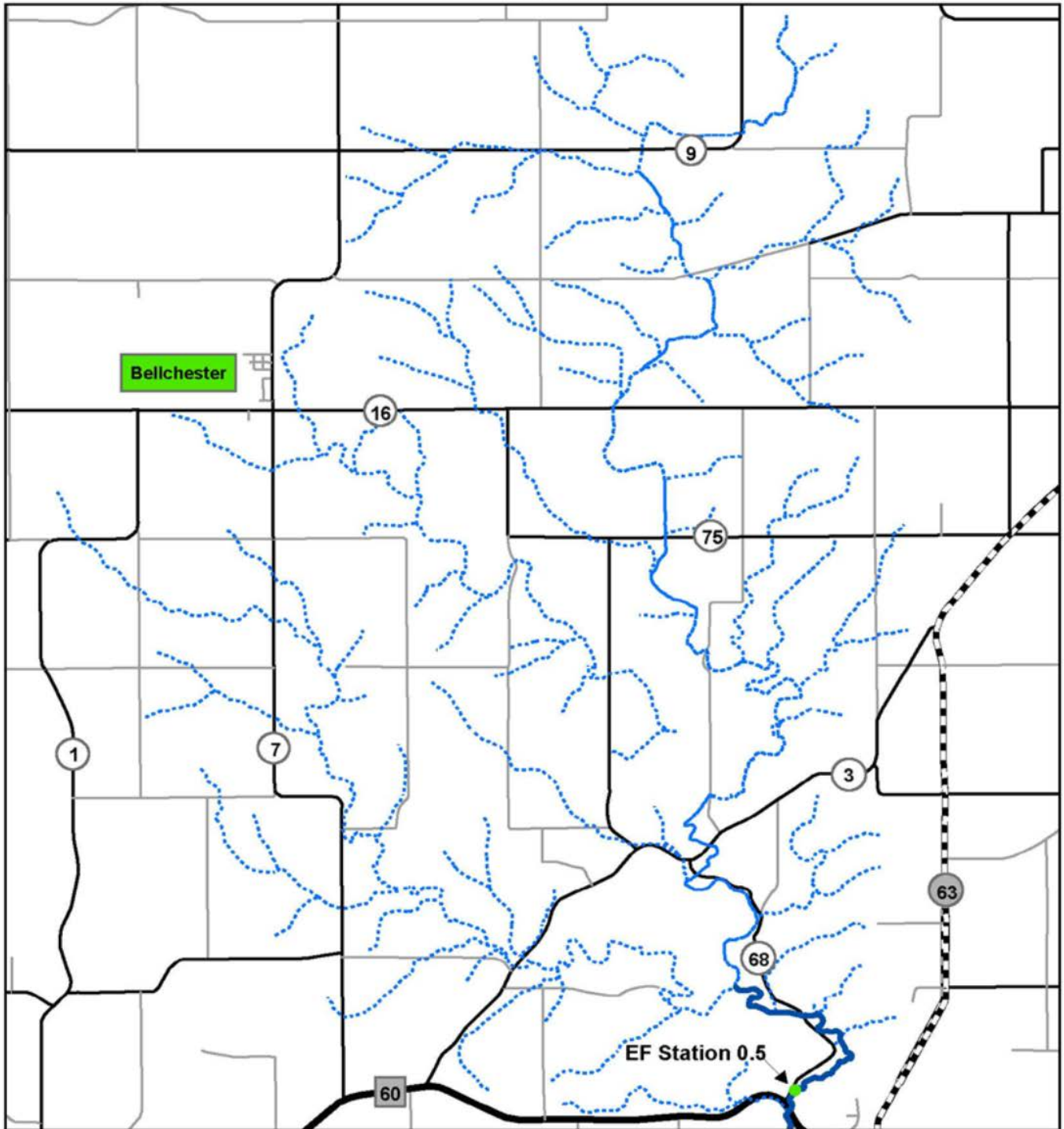


## References

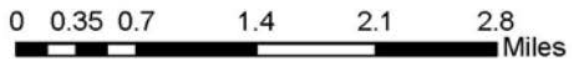
Fisheries Stream Survey Manual. 2007. Special Publication No. 165. Minnesota Department of Natural Resources.

Mundahl, N.D., and T.P. Simon. 1998. Development and application of an index of biotic integrity for coldwater streams of the upper Midwestern United States. Pages 383-415 In Thomas P. Simon (ed.). Assessing the Sustainability and Biological Integrity of Water Resources Using Fish Communities. CRC Press, Boca Raton, Florida.


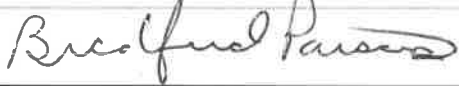
# Cold Spring Brook EF Station



EF Station UTM's  
545185, 4904438



**Credits and Signatures:**

<b>Field Crew:</b>		
Randy Binder, Dan Spence, Kevin Stauffer		
<b>Report completed by:</b>		
<b>Name:</b>	<b>Title:</b>	<b>Date:</b>
Dan Spence	Fisheries Specialist	28-Jan-14
<b>Approved by:</b>		
<b>Area Fisheries Supervisor's Signature</b>	<b>Regional Fisheries Manager's Signature</b>	<b>Date:</b>
		5-15-14

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