

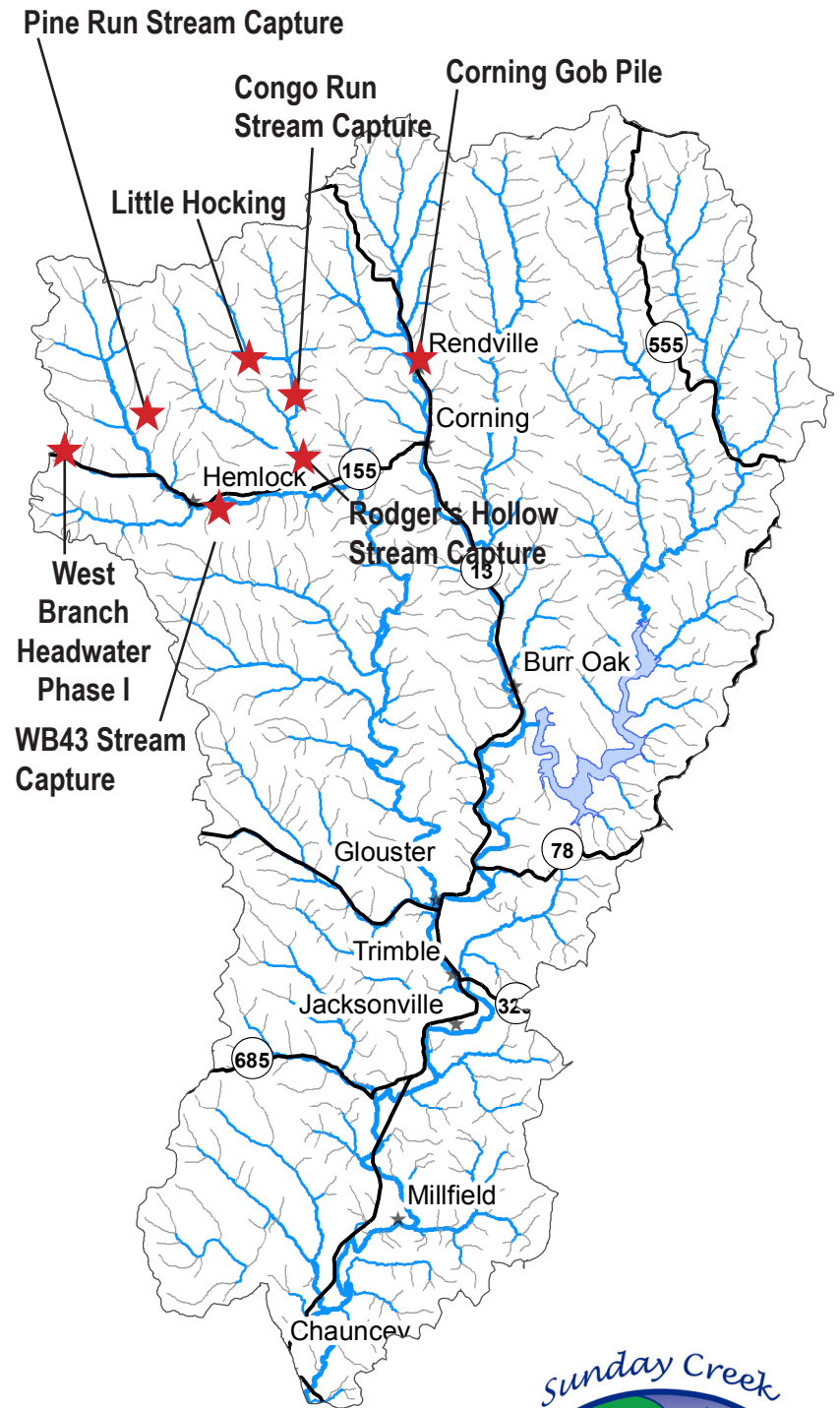
# 2010 NPS Report - Sunday Creek Watershed

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Sunday Creek Watershed Group (SCWG) is a nonprofit citizens group committed to restoring and preserving water quality through community interaction, conservation, and education in pursuit of a healthy ecosystem capable of supporting bio-diversity and recreation. Sunday Creek Watershed is a program of Rural Action, Inc., a non-profit group working to revitalize Appalachian Ohio. Sunday Creek Watershed covers 139 square miles (88,775 acres) and encompasses part of Perry, Athens, and Morgan Counties. Sunday Creek measures 27 miles long and starts flowing north of Corning and flows south through Chauncey where it enters into the Hocking River. Sunday Creek Watershed is primarily wooded (78%), 38% of the watershed has been deep mined for coal, and 15% of the land is public, owned by the Wayne National Forest. Major water quality impacts on Sunday Creek include acid mine drainage, improperly treated wastewater, illegal dumping, and sedimentation. The watershed group focuses restoration activities around these issues.

Since the group was founded in 1999, they have completed seven acid mine drainage reclamation projects within the Sunday Creek Watershed and are currently working on two new projects for next year. These projects have been funded by EPA Section 319 Grants and OSM Appalachian Clean Stream Initiative Grants with matching funds from the ODNR-DMRM. Over the last ten years, SCWG has also completed 17 upgrades of septic systems, planted thousands of trees, cleaned up over 200 tons of garbage, and educated thousands of children. The group is able to complete projects to improve water quality due to the strong partnerships of agency officials, residents, and other non-profits in the region. Sunday Creek Watershed Group completed their AM-DAT plan in 2003 and is currently working on updating this plan. The watershed group has also completed an updated watershed action plan that is now officially endorsed by the State of Ohio.

To learn more about the Sunday Creek Watershed Group, visit our website at [www.sunday-creek.org](http://www.sunday-creek.org) or call 740.767.2225.



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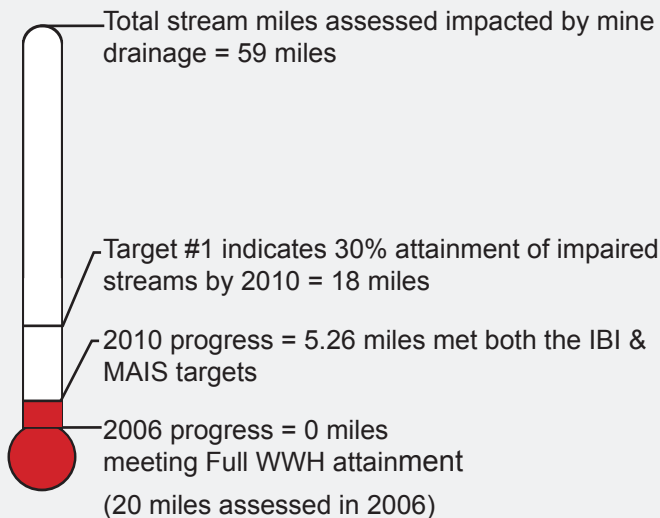
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## Reductions

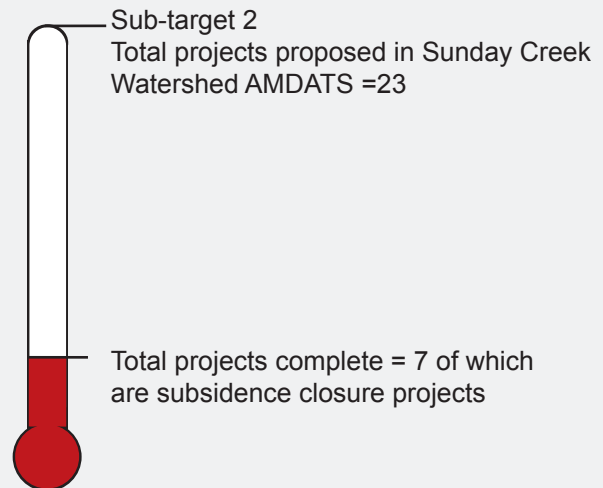
Project Name	Year Completed	Acres Captured	Agencies funding	Estimated water diverted from entering the deep mine
Congo Run CR-15	2004	72	ODNR-DMRM, OSM	24,000,000 gallons/yr
Pine Run	2007	138	ODNR-DMRM, OEPA	50,867,000 gallons/yr
Rodgers Hollow	2007	1,600	ODNR-DMRM, OEPA	589,290,000 gallons/y
Little Hocking	2009	286	ODNR-DMRM, OSM	105,400,00 gallons/yr
West Branch WB43	2010	65	ODNR-DMRM	26,000,000 gallons/yr

Five stream captures located in the Sunday Creek Watershed were closed and completed from 2004-2010. A total of 2161 acres surface drainage area drained year round into the deep mines and as a result of closing these subsidence holes 795,557,000 gallons per year were diverted from entering into the deep mine thus abating the generating of acid mine drainage. Expected additional alkaline loading from these closures returning clean water to the receiving streams is 986 lbs/day. As result of the Rodgers Hollow Subsidence closure, the deep mine discharge in Drakes has seen a reduction in Acidity loads by 18 lbs/day.

## Biological Health Performance



## Completion



## Costs

Design = \$208,941  
Construction = \$1,050,241

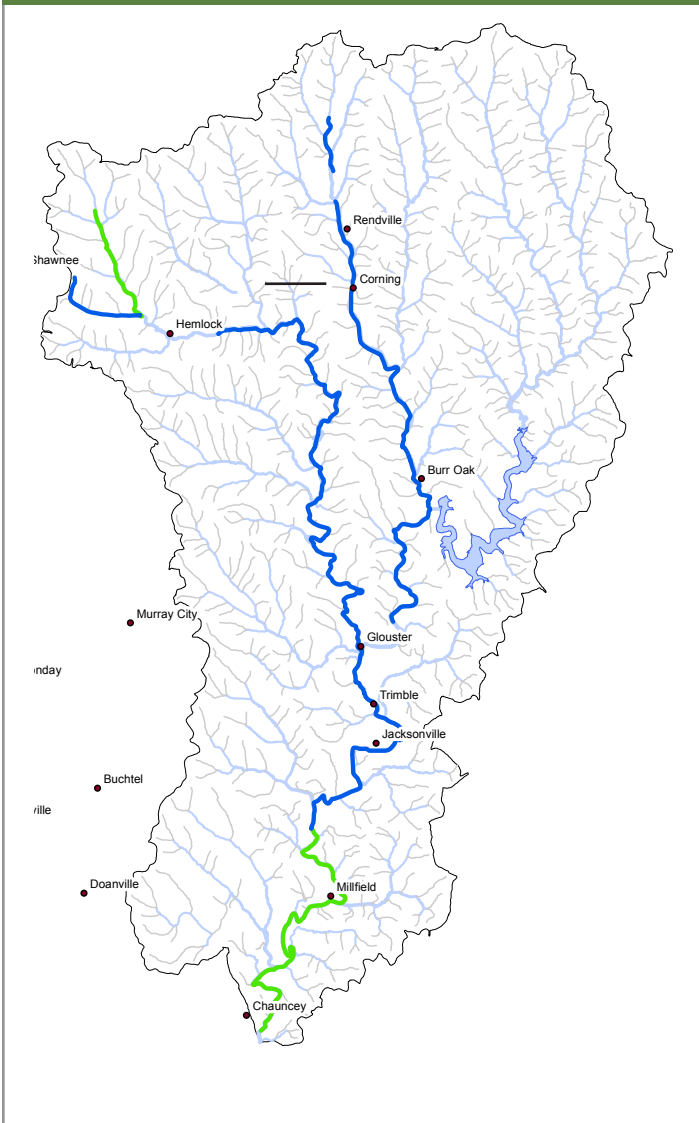
Total costs through 2010 = \$1,259,182  
(excluding Congo Run CR-15 & WB 43 design)

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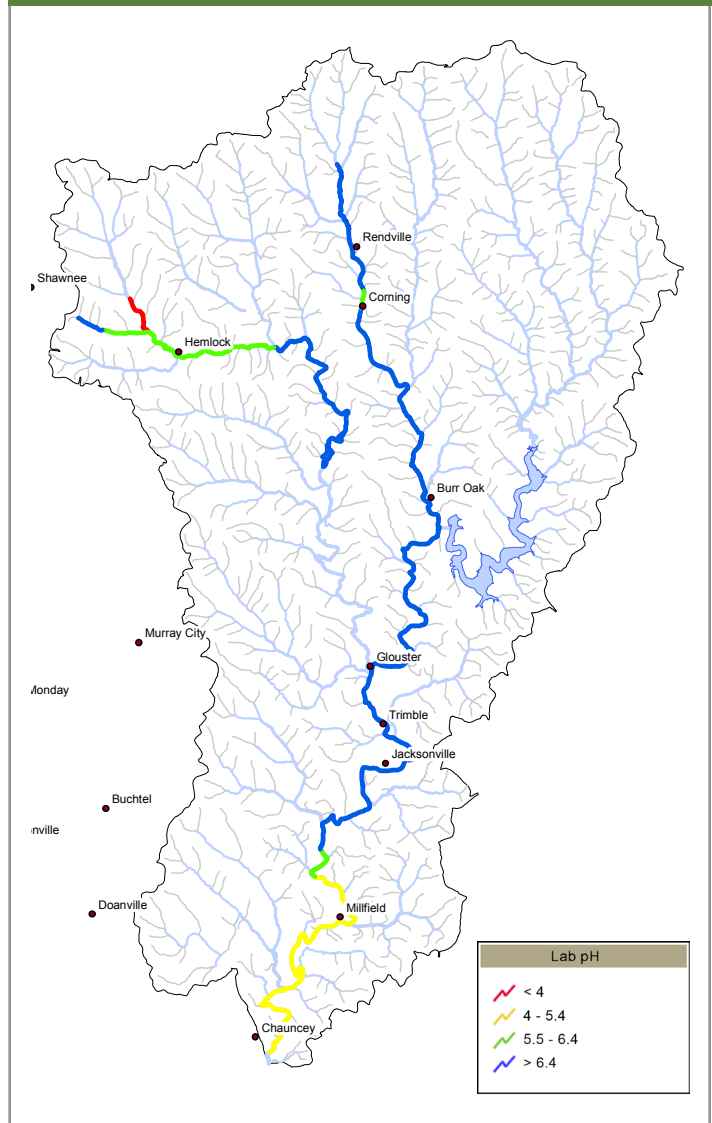
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## Chemical Water Quality

### Sunday Creek baseline pH



### Sunday Creek 2010 pH



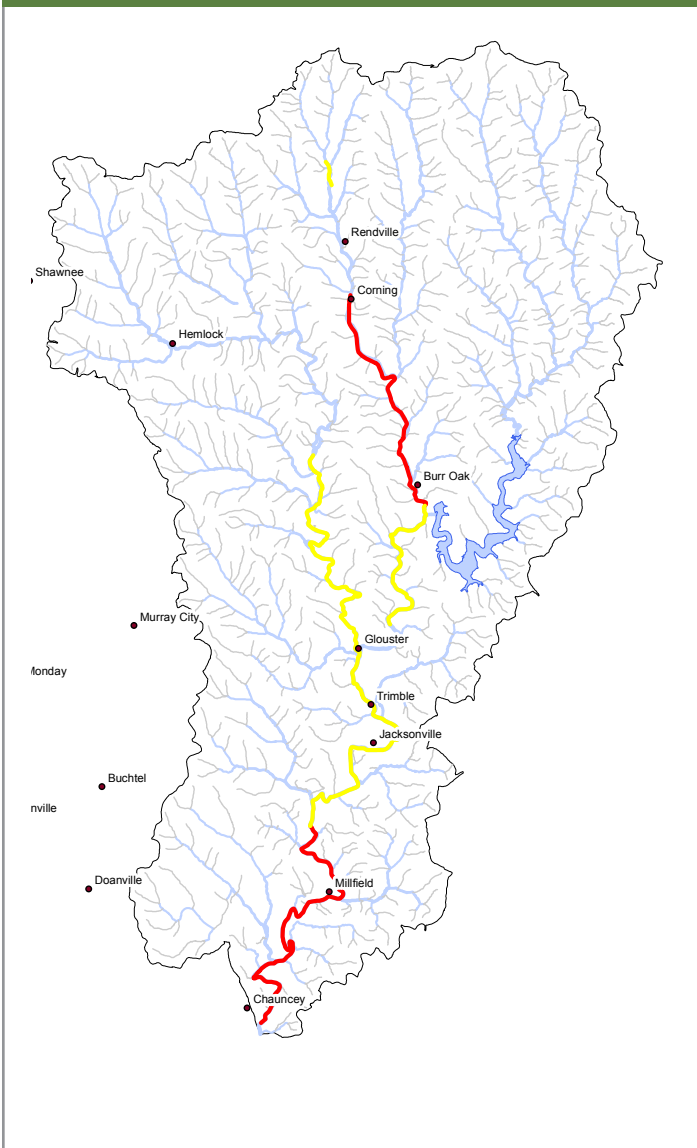
Water quality along the West Branch Sunday Creek has been degrading since baseline conditions in 2001. Values of average pH dropped from  $>6.4$  to 4.0-5.4 range in 2005 to 2006 and remained constant in 2007. When the subsidence features increased in Rodger's Hollow, funneling more water into the mine that generated AMD and discharged it into West Branch of Sunday Creek, the water quality decreased. However, since the subsidence closure in Rodger's Hollow in late 2007, the 2008 data for the first time shows an increase in pH along this stream segment. The average pH in 2007 at site WB 003 was 4.83, in 2008 5.97, in 2009 6.08, and 6.25 in 2010.

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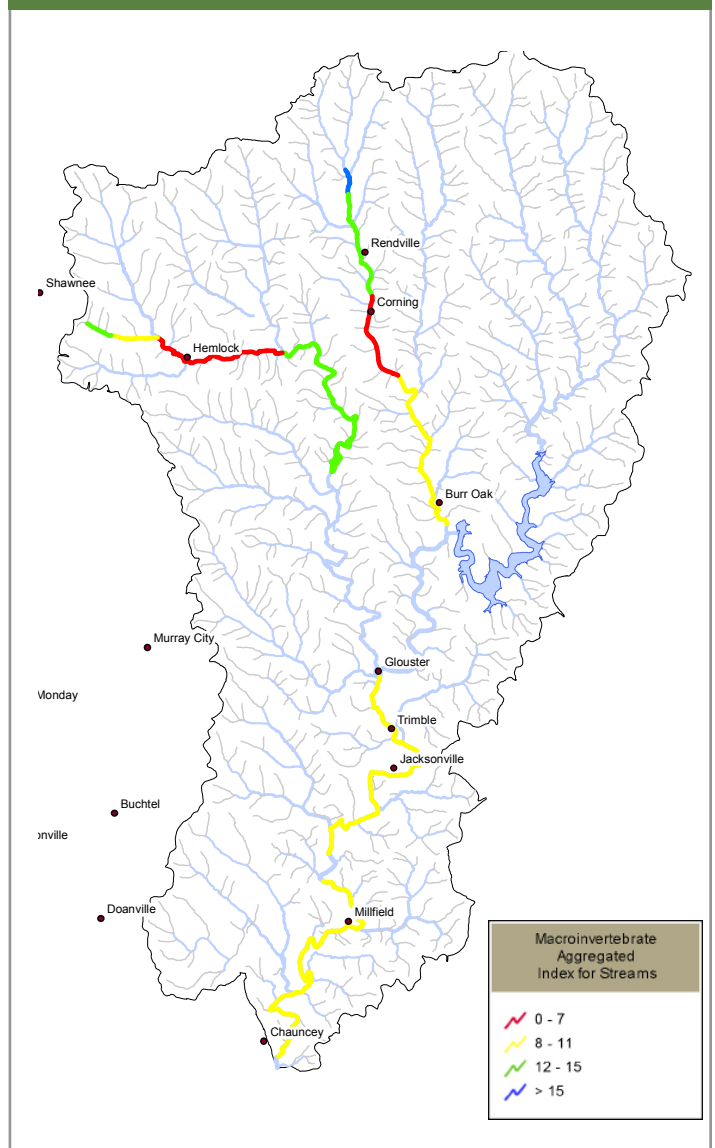
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## Biological Water Quality

### Sunday Creek baseline MAIS



### Sunday Creek 2010 MAIS



MAIS samples were collected throughout Sunday Creek at established annual monitoring stations from 2001 through 2010.

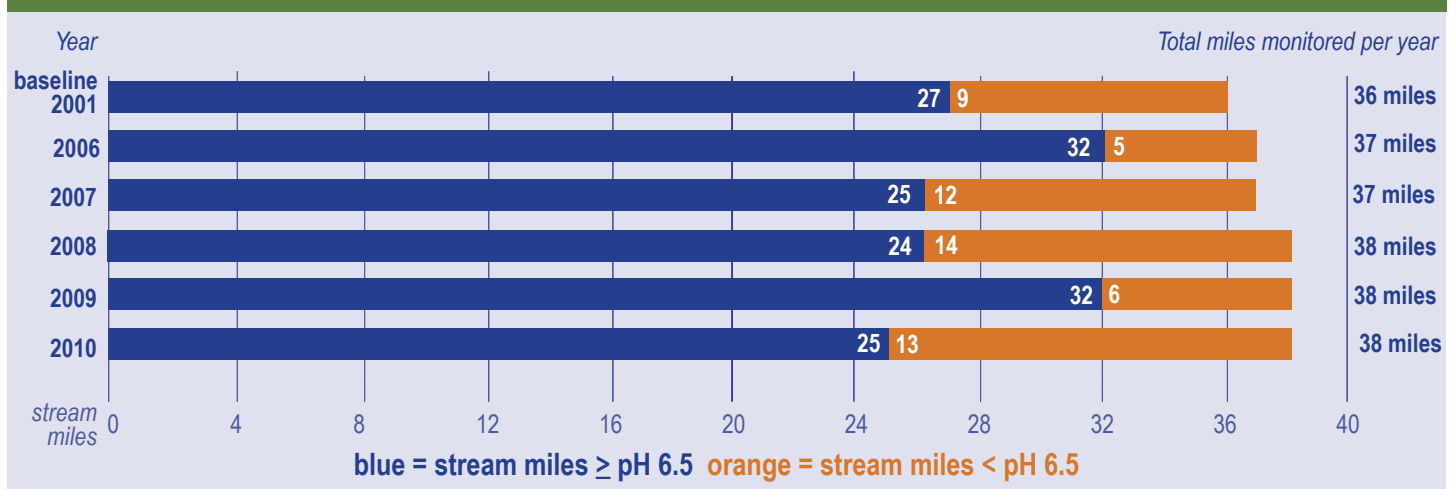
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## Chemical Water Quality

There are approximately 39 stream miles monitored each year along the mainstem of Sunday Creek and major tributary West Branch. A restoration target for pH has been set to 6.5. Since 2007 there have been increases and decreases in the number of stream miles that meet this target. In 2007 nearly 25 miles of the 35 monitored met this target. In 2008, this number remained constant. In 2009 a 25% increase was recorded with 32 stream miles of the 38 monitored met the pH target of 6.5. While in 2010, only 25 of the 38 miles met the target (Figure A).

Figure A. Sunday Creek pH

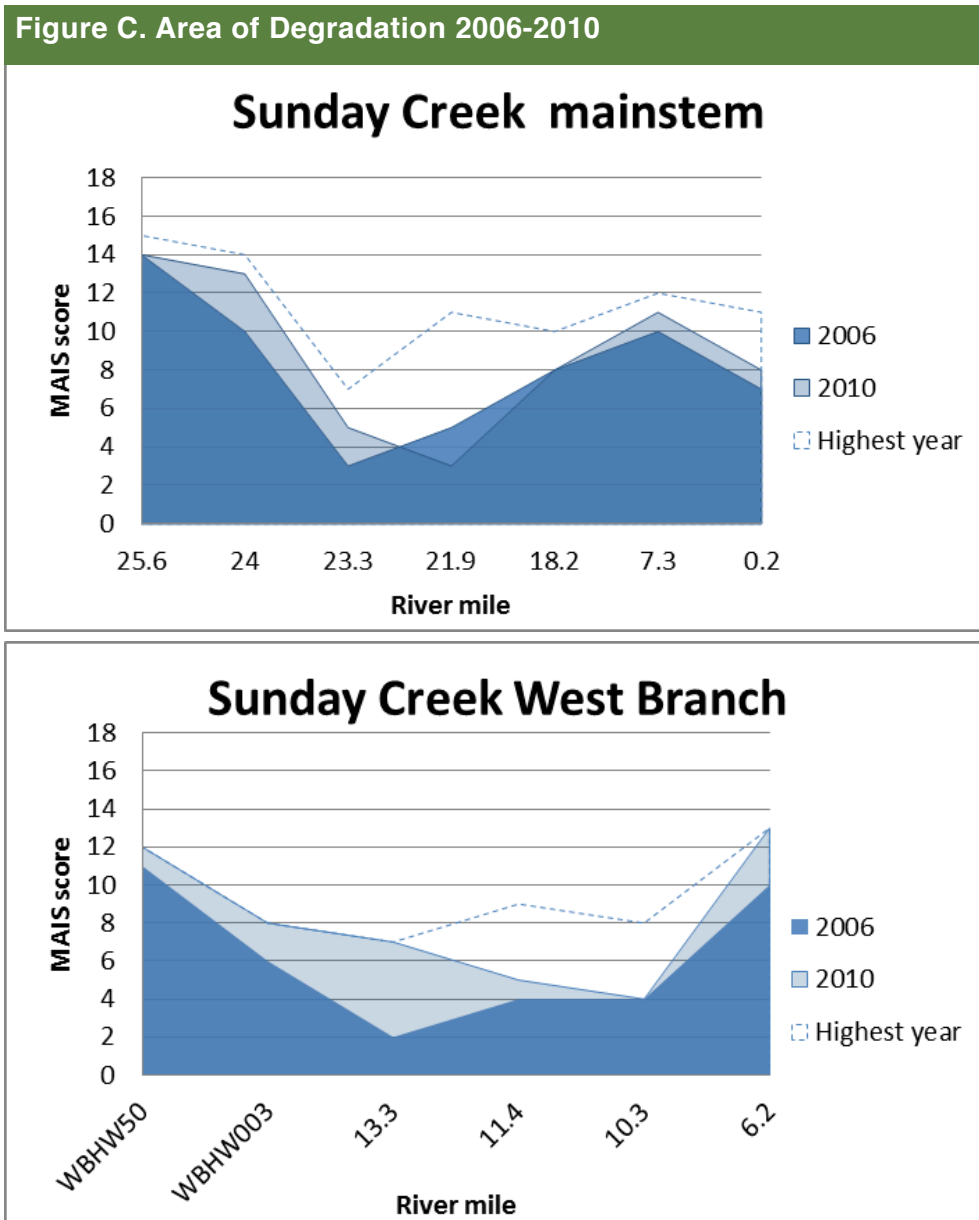


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## Biological Water Quality

The biological quality along the Sunday Creek mainstem reflects the longitudinal pattern in water chemistry, with poor scores immediately below Corning (RM 24) and gradual improvement to just upstream of the Truetown discharge (RM 7.3) (Figure C). Since 2006, most of the sites along the Sunday Creek mainstem have shown good potential for recovery by achieving notably higher scores in some years (highest year, dashed line). However, for most sites the gains were transient and often lost in subsequent years. This pattern is particularly apparent in the 16 miles between RM 23.3 and 7.3, below the Corning discharge. However, the lowermost site near the mouth (RM 0.2) shows a solid (statistically significant) trend of improvement since 2006, a good reflection of the cumulative effects of activities in the watershed. Improvements in biological quality are seen in the West Branch, again most notably at RM 13.3, which supported almost no macroinvertebrates in 2005 (MAIS score of "1") and at site river mile 6.2, both of which showed statistically significant trend of improvement since 2005. The site at river mile 6.2 of West Branch attained the target MAIS score of "12" in 2010 with a score of 13 (Figure D).



The blue dashed line identifies the highest MAIS score ever achieved at that site throughout the monitoring time period.



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## Biological Water Quality

**Figure D. Sunday Creek MAIS Regressions**

RM	MAIS Scores										Linear Regression	P-value	No. of years
	2001	2002	2003	2005	2006	2007	2008	2009	2010				
Mainstem													
24				12	10	10	14	13	13		no change	0.232	6
23.3				5	3	2	7	12	5		no change	0.334	6
21.9	2	1	2	11	5	5	9	2	3		no change	0.610	9
18.2	5	9	8	10	8	10	5	7	8		no change	1.000	9
7.3	10	11	11	11	10	10	10	12	11		no change	0.502	9
0.2	4	2	3	8	7	3	6	11	8		improved	0.047	9
West Branch													
WBHW50					11	10	11	8	12		no change	1.000	5
WBHW003				5	6	4	8	6	8		no change	0.176	6
13.3				1	2	2	5	5	7		improved	0.002	6
11.4				8	4	2	7	9	5		no change	0.848	6
10.3				8	4	3	4	8	4		no change	0.750	6
6.2				7	10	8	10	10	13		improved	0.042	6

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## Timeline for Sunday Creek Watershed Project Milestones

