

**Water Quality Standards Review  
Stream Designation Evaluation Report**

**STONE CREEK  
BEDFORD COUNTY  
Segment: Basin  
Drainage List: N  
Stream Code: 14907**

WATER QUALITY MONITORING SECTION (APF)  
DIVISION OF WATER QUALITY STANDARDS  
BUREAU OF WATER STANDARDS AND FACILITY REGULATION  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OCTOBER 2006

## **INTRODUCTION**

During the compilation of Chapter 93, the Stone Creek basin was not assigned a “designated use.” The designated use listed for the next order stream, Dunning Creek, is Warm Water Fishes (WWF) but does not include Stone Creek. The purpose of this report is to review information and data gathered during this investigation in order to determine the proper Chapter 93 designated use for Stone Creek. The Department’s Central Office staff conducted aquatic life use stream survey work in the Stone Creek basin on July 20, 2001, August 9, 2001 and May 11, 2005.

## **GENERAL WATERSHED DESCRIPTION**

Stone Creek is a second order tributary to Dunning Creek at river mile index (RMI) 13.21 in East St. Clair Township, Bedford County near Reynoldsdale (Alum Bank quadrangle) and drains 3.36 mi<sup>2</sup> of land (Figure 1). Land use consists of light residential, forest, and agriculture. Beginning in June and continuing through summer, Stone Creek is normally dry above the confluence with its unnamed tributary (UNT 14908) at RMI 0.34. UNT 14908 (Spring Meadow Spring) is entirely spring fed. The Pennsylvania Fish and Boat Commission (PFBC) operates the Reynoldsdale Fish Culture Station, which captures all of the flow from Spring Meadow Spring, and has a NPDES permit (PA0044059) to discharge into UNT 14908. This discharge is continuous and represents “overtop” wastewater from the hatchery operation. A study conducted by the Department’s South Central Regional Office on October 28, 1999 found that UNT 14908 was severely impacted by organic enrichment from the Reynoldsdale Fish Culture Station (DEP 2000). At the time of this 1999 field investigation, the hatchery had no treatment capability for this overtop wastewater. As a result, given the hatchery’s flow-through design, the untreated discharge provided 100% of the downstream flow in UNT 14908. The Stone Creek basin is listed on Pennsylvania’s 303(d) list as impaired due to nutrient enrichment and siltation from agriculture and “other” sources. In October 2003, the Reynoldsdale Fish Culture Station started discharging waste water directly to Dunning Creek while maintaining a 20% flow bypass from the spring into UNT 14908. Since this represented a significant change in hatchery operations, UNT 14908 was resurveyed to see if water quality conditions have improved.

## **WATER QUALITY AND USES**

### **Surface Water**

Water temperature data was collected from Spring Meadow Spring by the PFBC from November 1998 through April 2005. Temperatures, ranging from 50 – 55°F, indicate consistent cold water habitat conditions are being maintained by the spring (Table 1). There is no historical data to adequately characterize the long-term water quality conditions of the Stone Creek basin. However, grab-samples taken August 9, 2001 and May 11, 2005 from two stations in the watershed (Table 2), revealed water quality typical of the spring-fed streams in this area that are characterized by relatively high alkalinities and hardness (Table 3). Because of the instantaneous nature of grab-

samples, the indigenous aquatic community is a better indicator of long-term conditions and is used to assess aquatic life use.

The only other water user documented in the Stone Creek basin is Fishertown Water Association, which has a permitted water withdraw for a groundwater spring source in the Stone Creek tributary 14912 basin.

### **Aquatic Biota**

Biological and habitat data were collected on July 20, 2001, August 9, 2001 and May 11, 2005 at 2 locations within the Stone Creek basin.

**Habitat.** An assessment of the physical habitat on the mainstem of Stone Creek revealed optimal/suboptimal habitat conditions for aquatic biota while the station on UNT 14908 revealed suboptimal conditions (Table 4).

**Benthos.** Benthic macroinvertebrate data collected during the Department's May 2005 survey revealed similar degraded conditions that were found in 1999.

**Fish.** Fish were sampled on 2 different occasions within the Stone Creek basin. An electrofishing survey was conducted by the Department on July 20, 2001. A 100-meter reach starting approximately 200 meters upstream from the mouth of Stone Creek was sampled using backpack electrofishing unit. UNT 14908 was sampled for fish using a backpack electrofisher on May 5, 2005. A 100-meter reach was sampled in an area below the PFBC Reynoldsdale Fish Culture Station. Eight fish species were collected in the reach on Stone Creek and 3 species were collected on UNT 14908 (Table 5).

The use of the stream as a water resource for the propagation of hatchery-raised brook trout, a cold water fish species, indicates that at a minimum, its existing aquatic life use would be Cold Water Fishes (CWF). Because of the impaired nature of this stream below the hatchery, the aquatic community is missing the more sensitive cold water fish species that could naturally occur – considering the good overall habitat score of the sampled station. As the water quality impacts of the hatchery are addressed, Stone Creek and its tributaries will be re-evaluated to determine their appropriate existing use.

The intermittent nature of the remainder of the Stone Creek basin (the upper mainstem and tributaries upstream of UNT 14908) precluded biological sampling in these reaches. The lack of cold water springs (like that found with UNT 14908) along with intermittent summer base flow indicates that the existing use of these stream segments is Warm Water Fishes (WWF).

## **PUBLIC RESPONSE AND PARTICIPATION SUMMARY**

The Department provided public notice of this designation evaluation and requested any technical data from the general public through publication in the Pennsylvania Bulletin on September 29, 2001 (39 Pa.B 5503) and by notifying the East St. Clair Township

and the Bedford County Planning Commission in a letter dated September 12, 2001. A similar notice was published in a local newspaper. No data were received in response to these notices.

## **RECOMMENDATIONS**

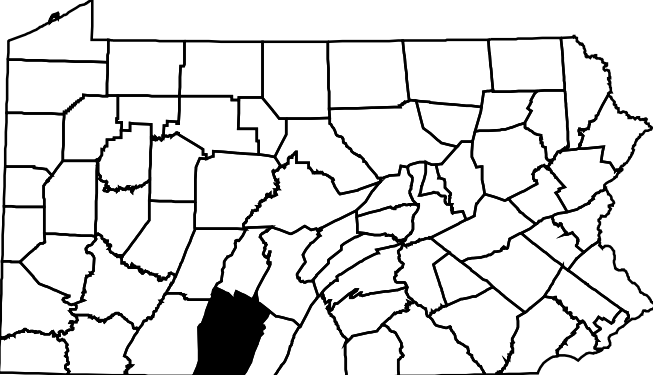
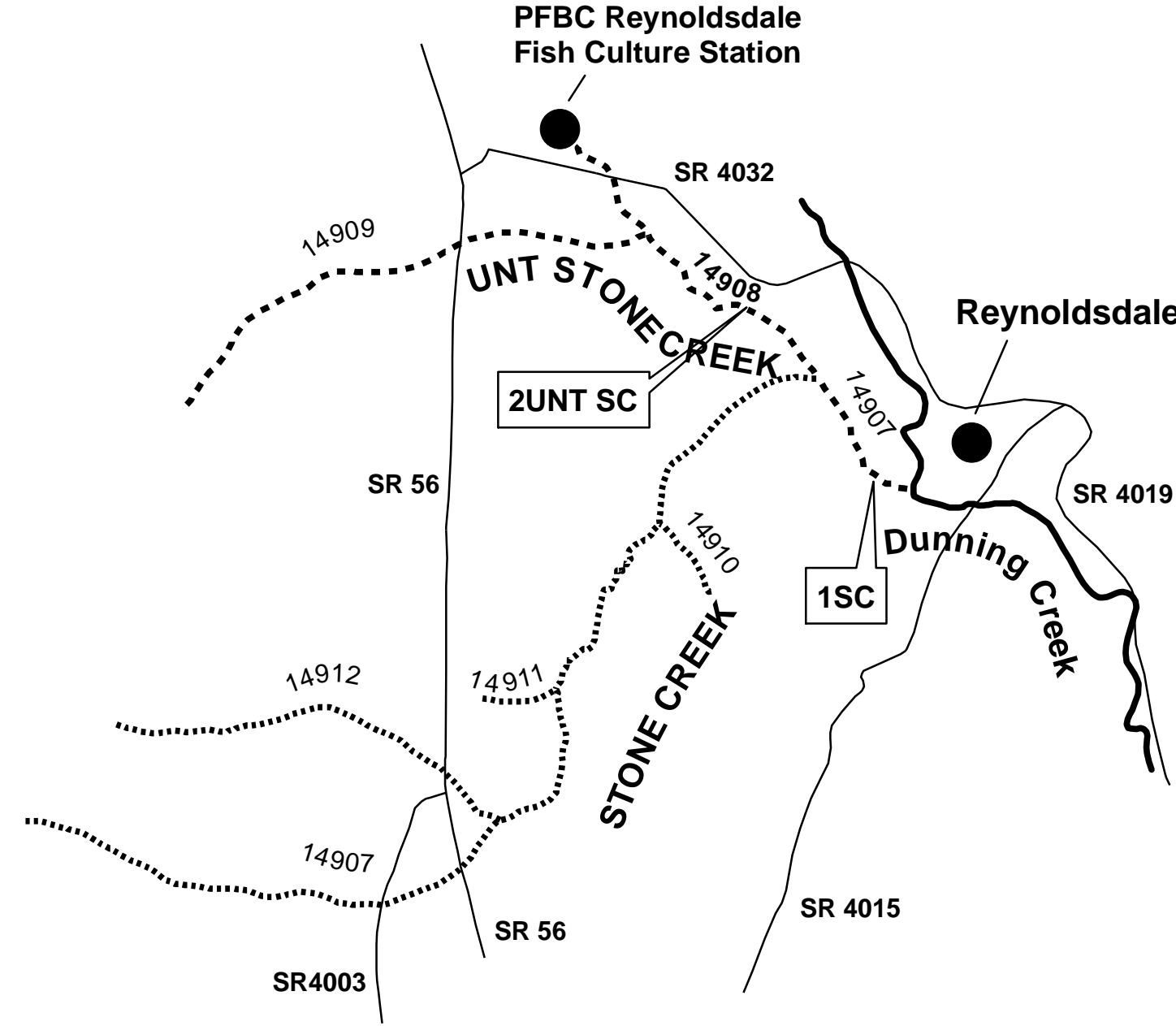
Based on applicable regulatory criteria, the Department recommends that the Stone Creek basin (including UNTs 14910, 14911, and 14912), from Stone Creek's source to its confluence with UNT 14908 at RMI 0.34, be designated in Chapter 93 as warm water fishes (WWF). Since these stream segments are normally dry during the summer, they cannot support any higher aquatic life use. The Department recommends that the remainder of Stone Creek (UNT 14908 basin and Stone Creek mainstem below 14908 to the mouth) be designated CWF. This recommendation is based on the cold water temperature regime emerging from Spring Meadow Spring and the established use of the Reynoldsdale Hatchery for the maintenance and propagation of brook trout, which indicates a coldwater fishery use. This recommendation designates approximately 3.9 miles of stream as WWF and 2.5 miles as CWF.

## **REFERENCES**




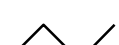
Department of Environmental Protection. 2000. *Aquatic Biological Investigation; Dunning Creek, UNT Stone Creek*. South Central Regional Office Memorandum; February 14, 2000 (on 7/28- and 10/28/99 surveys).



# FIGURE 1. STONE CREEK BEDFORD COUNTY



Bedford County

-  Proposed CWF
-  Proposed WWF
-  WWF
-  Roads



**TABLE 1.**  
**TEMPERATURE RECORDS FOR SPRING MEADOW SPRING**  
**NOVEMBER 1998 - 2005**  
**PFBC**

| Date      | Temp °F | Date      | Temp °F | Date      | Temp °F | Date      | Temp °F |
|-----------|---------|-----------|---------|-----------|---------|-----------|---------|
| 18-Nov-98 | 52      | 31-Dec-98 | 51      | 12-Feb-99 | 51      | 27-Mar-99 | 52      |
| 19-Nov-98 | 52      | 1-Jan-99  | 51      | 13-Feb-99 | 51      | 28-Mar-99 | 52      |
| 20-Nov-98 | 52      | 2-Jan-99  | 51      | 14-Feb-99 | 51      | 29-Mar-99 | 52      |
| 21-Nov-98 | 51      | 3-Jan-99  | 51      | 15-Feb-99 | 51      | 30-Mar-99 | 52      |
| 22-Nov-98 | 52      | 4-Jan-99  | 51      | 16-Feb-99 | 51      | 31-Mar-99 | 52      |
| 23-Nov-98 | 52      | 5-Jan-99  | 51      | 17-Feb-99 | 51      | 1-Apr-99  | 52      |
| 24-Nov-98 | 52      | 6-Jan-99  | 51      | 18-Feb-99 | 51      | 2-Apr-99  | 52      |
| 25-Nov-98 | 52      | 7-Jan-99  | 51      | 19-Feb-99 | 51      | 3-Apr-99  | 52      |
| 26-Nov-98 | 52      | 8-Jan-99  | 51      | 20-Feb-99 | 51      | 4-Apr-99  | 52      |
| 27-Nov-98 | 52      | 9-Jan-99  | 51      | 21-Feb-99 | 51      | 5-Apr-99  | 52      |
| 28-Nov-98 | 52      | 10-Jan-99 | 51      | 22-Feb-99 | 51      | 6-Apr-99  | 52      |
| 29-Nov-98 | 52      | 11-Jan-99 | 51      | 23-Feb-99 | 51      | 7-Apr-99  | 52      |
| 30-Nov-98 | 52      | 12-Jan-99 | 51      | 24-Feb-99 | 51      | 8-Apr-99  | 52      |
| 1-Dec-98  | 52      | 13-Jan-99 | 51      | 25-Feb-99 | 52      | 9-Apr-99  | 52      |
| 2-Dec-98  | 52      | 14-Jan-99 | 51      | 26-Feb-99 | 52      | 10-Apr-99 | 52      |
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| 9-Dec-98  | 51      | 21-Jan-99 | 51      | 5-Mar-99  | 52      | 17-Apr-99 | 52      |
| 10-Dec-98 | 51      | 22-Jan-99 | 51      | 6-Mar-99  | 52      | 18-Apr-99 | 52      |
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| 13-Dec-98 | 51      | 25-Jan-99 | 51      | 9-Mar-99  | 52      | 21-Apr-99 | 52      |
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| 15-Dec-98 | 51      | 27-Jan-99 | 51      | 11-Mar-99 | 52      | 23-Apr-99 | 52      |
| 16-Dec-98 | 51      | 28-Jan-99 | 51      | 12-Mar-99 | 52      | 24-Apr-99 | 52      |
| 17-Dec-98 | 51      | 29-Jan-99 | 51      | 13-Mar-99 | 52      | 25-Apr-99 | 52      |
| 18-Dec-98 | 51      | 30-Jan-99 | 51      | 14-Mar-99 | 52      | 26-Apr-99 | 52      |
| 19-Dec-98 | 51      | 31-Jan-99 | 51      | 15-Mar-99 | 52      | 27-Apr-99 | 52      |
| 20-Dec-98 | 51      | 1-Feb-99  | 51      | 16-Mar-99 | 52      | 28-Apr-99 | 52      |
| 21-Dec-98 | 52      | 2-Feb-99  | 51      | 17-Mar-99 | 52      | 29-Apr-99 | 52      |
| 22-Dec-98 | 51      | 3-Feb-99  | 51      | 18-Mar-99 | 52      | 30-Apr-99 | 52      |
| 23-Dec-98 | 51      | 4-Feb-99  | 51      | 19-Mar-99 | 52      | 1-May-99  | 52      |
| 24-Dec-98 | 51      | 5-Feb-99  | 51      | 20-Mar-99 | 52      | 2-May-99  | 52      |
| 25-Dec-98 | 51      | 6-Feb-99  | 51      | 21-Mar-99 | 52      | 3-May-99  | 52      |
| 26-Dec-98 | 51      | 7-Feb-99  | 51      | 22-Mar-99 | 52      | 4-May-99  | 52      |
| 27-Dec-98 | 51      | 8-Feb-99  | 51      | 23-Mar-99 | 52      | 5-May-99  | 52      |
| 28-Dec-98 | 51      | 9-Feb-99  | 51      | 24-Mar-99 | 52      | 6-May-99  | 51      |
| 29-Dec-98 | 51      | 10-Feb-99 | 51      | 25-Mar-99 | 52      | 7-May-99  | 52      |
| 30-Dec-98 | 51      | 11-Feb-99 | 51      | 26-Mar-99 | 52      | 8-May-99  | 52      |

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NOVEMBER 1998 - 2005  
PFBC**

| Date      | Temp °F | Date      | Temp °F | Date      | Temp °F | Date      | Temp °F |
|-----------|---------|-----------|---------|-----------|---------|-----------|---------|
| 9-May-99  | 51      | 22-Jun-99 | 52      | 5-Aug-99  | 52      | 18-Sep-99 | 52      |
| 10-May-99 | 52      | 23-Jun-99 | 52      | 6-Aug-99  | 52      | 19-Sep-99 | 52      |
| 11-May-99 | 52      | 24-Jun-99 | 52      | 7-Aug-99  | 52      | 20-Sep-99 | 52      |
| 12-May-99 | 52      | 25-Jun-99 | 52      | 8-Aug-99  | 52      | 21-Sep-99 | 52      |
| 13-May-99 | 51      | 26-Jun-99 | 52      | 9-Aug-99  | 52      | 22-Sep-99 | 51      |
| 14-May-99 | 51      | 27-Jun-99 | 52      | 10-Aug-99 | 52      | 23-Sep-99 | 52      |
| 15-May-99 | 52      | 28-Jun-99 | 52      | 11-Aug-99 | 52      | 24-Sep-99 | 52      |
| 16-May-99 | 52      | 29-Jun-99 | 52      | 12-Aug-99 | 52      | 25-Sep-99 | 52      |
| 17-May-99 | 52      | 30-Jun-99 | 52      | 13-Aug-99 | 52      | 26-Sep-99 | 52      |
| 18-May-99 | 52      | 1-Jul-99  | 52      | 14-Aug-99 | 52      | 27-Sep-99 | 52      |
| 19-May-99 | 52      | 2-Jul-99  | 52      | 15-Aug-99 | 52      | 28-Sep-99 | 52      |
| 20-May-99 | 52      | 3-Jul-99  | 52      | 16-Aug-99 | 52      | 29-Sep-99 | 52      |
| 21-May-99 | 52      | 4-Jul-99  | 52      | 17-Aug-99 | 52      | 30-Sep-99 | 52      |
| 22-May-99 | 52      | 5-Jul-99  | 52      | 18-Aug-99 | 52      | 1-Oct-99  | 52      |
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| 25-May-99 | 52      | 8-Jul-99  | 52      | 21-Aug-99 | 52      | 4-Oct-99  | 52      |
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| 27-May-99 | 52      | 10-Jul-99 | 52      | 23-Aug-99 | 53      | 6-Oct-99  | 51      |
| 28-May-99 | 52      | 11-Jul-99 | 52      | 24-Aug-99 | 53      | 7-Oct-99  | 51      |
| 29-May-99 | 52      | 12-Jul-99 | 52      | 25-Aug-99 | 52      | 8-Oct-99  | 51      |
| 30-May-99 | 52      | 13-Jul-99 | 52      | 26-Aug-99 | 53      | 9-Oct-99  | 52      |
| 31-May-99 | 52      | 14-Jul-99 | 52      | 27-Aug-99 | 53      | 10-Oct-99 | 52      |
| 1-Jun-99  | 52      | 15-Jul-99 | 52      | 28-Aug-99 | 54      | 11-Oct-99 | 52      |
| 2-Jun-99  | 52      | 16-Jul-99 | 52      | 29-Aug-99 | 54      | 12-Oct-99 | 51      |
| 3-Jun-99  | 52      | 17-Jul-99 | 52      | 30-Aug-99 | 52      | 13-Oct-99 | 52      |
| 4-Jun-99  | 52      | 18-Jul-99 | 52      | 31-Aug-99 | 52      | 14-Oct-99 | 51      |
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**NOVEMBER 1998 - 2005**  
**PFBC**

| Date      | Temp °F | Date      | Temp °F | Date      | Temp °F | Date      | Temp °F |
|-----------|---------|-----------|---------|-----------|---------|-----------|---------|
| 1-Nov-99  | 52      | 15-Dec-99 | 52      | 28-Jan-00 | 51      | 12-Mar-00 | 52      |
| 2-Nov-99  | 51      | 16-Dec-99 | 51      | 29-Jan-00 | 52      | 13-Mar-00 | 52      |
| 3-Nov-99  | 51      | 17-Dec-99 | 52      | 30-Jan-00 | 52      | 14-Mar-00 | 52      |
| 4-Nov-99  | 52      | 18-Dec-99 | 52      | 31-Jan-00 | 52      | 15-Mar-00 | 52      |
| 5-Nov-99  | 52      | 19-Dec-99 | 52      | 1-Feb-00  | 52      | 16-Mar-00 | 52      |
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| 11-Nov-99 | 52      | 25-Dec-99 | 51      | 7-Feb-00  | 52      | 22-Mar-00 | 52      |
| 12-Nov-99 | 52      | 26-Dec-99 | 51      | 8-Feb-00  | 52      | 23-Mar-00 | 52      |
| 13-Nov-99 | 52      | 27-Dec-99 | 51      | 9-Feb-00  | 52      | 24-Mar-00 | 52      |
| 14-Nov-99 | 52      | 28-Dec-99 | 51      | 10-Feb-00 | 52      | 25-Mar-00 | 52      |
| 15-Nov-99 | 51      | 29-Dec-99 | 51      | 11-Feb-00 | 52      | 26-Mar-00 | 52      |
| 16-Nov-99 | 51      | 30-Dec-99 | 51      | 12-Feb-00 | 52      | 27-Mar-00 | 52      |
| 17-Nov-99 | 52      | 31-Dec-99 | 51      | 13-Feb-00 | 52      | 28-Mar-00 | 52      |
| 18-Nov-99 | 52      | 1-Jan-00  | 52      | 14-Feb-00 | 52      | 29-Mar-00 | 51      |
| 19-Nov-99 | 52      | 2-Jan-00  | 52      | 15-Feb-00 | 52      | 30-Mar-00 | 52      |
| 20-Nov-99 | 52      | 3-Jan-00  | 52      | 16-Feb-00 | 52      | 31-Mar-00 | 52      |
| 21-Nov-99 | 52      | 4-Jan-00  | 51      | 17-Feb-00 | 52      | 1-Apr-00  | 52      |
| 22-Nov-99 | 52      | 5-Jan-00  | 51      | 18-Feb-00 | 52      | 2-Apr-00  | 52      |
| 23-Nov-99 | 52      | 6-Jan-00  | 51      | 19-Feb-00 | 52      | 3-Apr-00  | 52      |
| 24-Nov-99 | 52      | 7-Jan-00  | 51      | 20-Feb-00 | 52      | 4-Apr-00  | 52      |
| 25-Nov-99 | 52      | 8-Jan-00  | 51      | 21-Feb-00 | 52      | 5-Apr-00  | 51      |
| 26-Nov-99 | 52      | 9-Jan-00  | 51      | 22-Feb-00 | 52      | 6-Apr-00  | 52      |
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| 29-Nov-99 | 52      | 12-Jan-00 | 51      | 25-Feb-00 | 52      | 9-Apr-00  | 51      |
| 30-Nov-99 | 51      | 13-Jan-00 | 51      | 26-Feb-00 | 52      | 10-Apr-00 | 52      |
| 1-Dec-99  | 52      | 14-Jan-00 | 51      | 27-Feb-00 | 52      | 11-Apr-00 | 52      |
| 2-Dec-99  | 52      | 15-Jan-00 | 51      | 28-Feb-00 | 52      | 12-Apr-00 | 52      |
| 3-Dec-99  | 52      | 16-Jan-00 | 51      | 29-Feb-00 | 52      | 13-Apr-00 | 52      |
| 4-Dec-99  | 52      | 17-Jan-00 | 51      | 1-Mar-00  | 52      | 14-Apr-00 | 52      |
| 5-Dec-99  | 52      | 18-Jan-00 | 51      | 2-Mar-00  | 52      | 15-Apr-00 | 52      |
| 6-Dec-99  | 51      | 19-Jan-00 | 51      | 3-Mar-00  | 52      | 16-Apr-00 | 52      |
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| 9-Dec-99  | 52      | 22-Jan-00 | 51      | 6-Mar-00  | 52      | 19-Apr-00 | 52      |
| 10-Dec-99 | 51      | 23-Jan-00 | 51      | 7-Mar-00  | 52      | 20-Apr-00 | 52      |
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| 12-Dec-99 | 52      | 25-Jan-00 | 51      | 9-Mar-00  | 52      | 22-Apr-00 | 52      |
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**TABLE 1 (cont.).**  
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**NOVEMBER 1998 - 2005**  
**PFBC**

| Date      | Temp °F | Date      | Temp °F | Date      | Temp °F | Date      | Temp °F |
|-----------|---------|-----------|---------|-----------|---------|-----------|---------|
| 25-Apr-00 | 52      | 9-Jun-00  | 52      | 24-Jul-00 | 52      | 30-May-01 | 51      |
| 26-Apr-00 | 52      | 10-Jun-00 | 52      | 25-Jul-00 | 52      | 6-Jun-01  | 51      |
| 27-Apr-00 | 52      | 11-Jun-00 | 52      | 26-Jul-00 | 52      | 13-Jun-01 | 52      |
| 28-Apr-00 | 52      | 12-Jun-00 | 52      | 9-Aug-00  | 52      | 20-Jun-01 | 52      |
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| 5-May-00  | 52      | 19-Jun-00 | 52      | 27-Sep-00 | 52      | 15-Aug-01 | 52      |
| 6-May-00  | 52      | 20-Jun-00 | 52      | 4-Oct-00  | 52      | 22-Aug-01 | 52      |
| 7-May-00  | 52      | 21-Jun-00 | 52      | 11-Oct-00 | 52      | 29-Aug-01 | 52      |
| 8-May-00  | 52      | 22-Jun-00 | 52      | 18-Oct-00 | 52      | 5-Sep-01  | 52      |
| 9-May-00  | 52      | 23-Jun-00 | 52      | 25-Oct-00 | 52      | 12-Sep-01 | 52      |
| 10-May-00 | 52      | 24-Jun-00 | 52      | 1-Nov-00  | 52      | 19-Sep-01 | 52      |
| 11-May-00 | 52      | 25-Jun-00 | 52      | 8-Nov-00  | 52      | 26-Sep-01 | 52      |
| 12-May-00 | 52      | 26-Jun-00 | 52      | 15-Nov-00 | 52      | 3-Oct-01  | 52      |
| 13-May-00 | 52      | 27-Jun-00 | 52      | 22-Nov-00 | 51      | 10-Oct-01 | 52      |
| 14-May-00 | 52      | 28-Jun-00 | 52      | 29-Nov-00 | 51      | 17-Oct-01 | 52      |
| 15-May-00 | 52      | 29-Jun-00 | 52      | 6-Dec-00  | 51      | 24-Oct-01 | 52      |
| 16-May-00 | 52      | 30-Jun-00 | 52      | 16-Dec-00 | 51      | 31-Oct-01 | 52      |
| 17-May-00 | 52      | 1-Jul-00  | 52      | 20-Dec-00 | 51      | 7-Nov-01  | 52      |
| 18-May-00 | 52      | 2-Jul-00  | 52      | 27-Dec-00 | 51      | 14-Nov-01 | 52      |
| 19-May-00 | 52      | 3-Jul-00  | 52      | 3-Jan-01  | 51      | 21-Nov-01 | 52      |
| 20-May-00 | 52      | 4-Jul-00  | 52      | 10-Jan-01 | 51      | 28-Nov-01 | 52      |
| 21-May-00 | 52      | 5-Jul-00  | 52      | 17-Jan-01 | 51      | 5-Dec-01  | 51      |
| 22-May-00 | 52      | 6-Jul-00  | 52      | 26-Jan-01 | 51      | 12-Dec-01 | 52      |
| 23-May-00 | 52      | 7-Jul-00  | 52      | 31-Jan-01 | 51      | 19-Dec-01 | 51      |
| 24-May-00 | 52      | 8-Jul-00  | 52      | 7-Feb-01  | 51      | 27-Dec-01 | 51      |
| 25-May-00 | 52      | 9-Jul-00  | 52      | 14-Feb-01 | 51      | 2-Jan-02  | 51      |
| 26-May-00 | 52      | 10-Jul-00 | 52      | 21-Feb-01 | 51      | 9-Jan-02  | 51      |
| 27-May-00 | 52      | 11-Jul-00 | 52      | 28-Feb-01 | 51      | 16-Jan-02 | 51      |
| 28-May-00 | 52      | 12-Jul-00 | 52      | 7-Mar-01  | 51      | 23-Jan-02 | 51      |
| 29-May-00 | 52      | 13-Jul-00 | 52      | 14-Mar-01 | 51      | 30-Jan-02 | 51      |
| 30-May-00 | 52      | 14-Jul-00 | 52      | 21-Mar-01 | 51      | 5-Feb-02  | 52      |
| 31-May-00 | 52      | 15-Jul-00 | 52      | 28-Mar-01 | 51      | 13-Feb-02 | 51      |
| 1-Jun-00  | 52      | 16-Jul-00 | 52      | 4-Apr-01  | 51      | 20-Feb-02 | 51      |
| 2-Jun-00  | 52      | 17-Jul-00 | 52      | 11-Apr-01 | 51      | 27-Feb-02 | 51      |
| 3-Jun-00  | 52      | 18-Jul-00 | 52      | 18-Apr-01 | 51      | 6-Mar-02  | 52      |
| 4-Jun-00  | 52      | 19-Jul-00 | 52      | 25-Apr-01 | 51      | 13-Mar-02 | 52      |
| 5-Jun-00  | 52      | 20-Jul-00 | 52      | 2-May-01  | 51      | 20-Mar-02 | 51      |
| 6-Jun-00  | 52      | 21-Jul-00 | 52      | 9-May-01  | 51      | 27-Mar-02 | 52      |
| 7-Jun-00  | 52      | 22-Jul-00 | 52      | 16-May-01 | 51      | 3-Apr-02  | 52      |
| 8-Jun-00  | 52      | 23-Jul-00 | 52      | 23-May-01 | 51      | 10-Apr-02 | 52      |

**TABLE 1 (cont.).**  
**TEMPERATURE RECORDS FOR SPRING MEADOW SPRING**  
**NOVEMBER 1998 - 2005**  
**PFBC**

| Date      | Temp °F | Date      | Temp °F | Date      | Temp °F | Date      | Temp °F |
|-----------|---------|-----------|---------|-----------|---------|-----------|---------|
| 17-Apr-02 | 52      | 26-Feb-03 | 51      | 11-Feb-04 | 51      | 29-Dec-04 | 52      |
| 24-Apr-02 | 51      | 5-Mar-03  | 51      | 18-Feb-04 | 51      | 5-Jan-05  | 53      |
| 1-May-02  | 52      | 12-Mar-03 | 51      | 24-Feb-04 | 51      | 12-Jan-05 | 51      |
| 8-May-02  | 52      | 19-Mar-03 | 52      | 3-Mar-04  | 51      | 19-Jan-05 | 51      |
| 15-May-02 | 52      | 26-Mar-03 | 52      | 10-Mar-04 | 51      | 26-Jan-05 | 52      |
| 22-May-02 | 52      | 2-Apr-03  | 52      | 17-Mar-04 | 51      | 2-Feb-05  | 52      |
| 29-May-02 | 52      | 9-Apr-03  | 51      | 24-Mar-04 | 51      | 9-Feb-05  | 53      |
| 5-Jun-02  | 52      | 16-Apr-03 | 52      | 31-Mar-04 | 51      | 16-Mar-05 | 52      |
| 12-Jun-02 | 52      | 23-Apr-03 | 52      | 7-Apr-04  | 51      | 23-Feb-05 | 52      |
| 19-Jun-02 | 52      | 30-Apr-03 | 51      | 14-Apr-04 | 51      | 2-Mar-05  | 52      |
| 26-Jun-02 | 52      | 14-May-03 | 51      | 21-Apr-04 | 51      | 8-Feb-05  | 51      |
| 3-Jul-02  | 52      | 21-May-03 | 52      | 28-Apr-04 | 51      | 16-Mar-05 | 52      |
| 10-Jul-02 | 52      | 28-May-03 | 52      | 5-May-04  | 51      | 23-Mar-05 | 52      |
| 17-Jul-02 | 52      | 4-Jun-03  | 51      | 12-May-04 | 52      | 30-Mar-05 | 52      |
| 24-Jul-02 | 52      | 11-Jun-03 | 53      | 19-May-04 | 52      | 6-Apr-05  | 52      |
| 31-Jul-02 | 52      | 18-Jun-03 | 55      | 28-May-04 | 52      | 13-Apr-05 | 52      |
| 7-Aug-02  | 52      | 25-Jun-03 | 52      | 3-Jun-04  | 52      | 20-Apr-05 | 53      |
| 14-Aug-02 | 52      | 9-Jul-03  | 52      | 8-Jun-04  | 52      | 28-Apr-05 | 53      |
| 22-Aug-02 | 52      | 23-Jul-03 | 52      | 16-Jun-04 | 52      |           |         |
| 29-Aug-02 | 52      | 30-Jul-03 | 52      | 23-Jun-04 | 52      |           |         |
| 4-Sep-02  | 52      | 6-Aug-03  | 52      | 30-Jun-04 | 52      |           |         |
| 11-Sep-02 | 52      | 13-Aug-03 | 52      | 7-Jul-04  | 52      |           |         |
| 18-Sep-02 | 52      | 20-Aug-03 | 52      | 14-Jul-04 | 52      |           |         |
| 25-Sep-02 | 52      | 29-Aug-03 | 52      | 26-Jul-04 | 53      |           |         |
| 2-Oct-02  | 52      | 3-Sep-03  | 52      | 28-Jul-04 | 53      |           |         |
| 9-Oct-02  | 52      | 10-Sep-03 | 52      | 4-Aug-04  | 55      |           |         |
| 16-Oct-02 | 52      | 17-Sep-03 | 52      | 11-Aug-04 | 55      |           |         |
| 23-Oct-02 | 52      | 24-Sep-03 | 52      | 19-Aug-04 | 55      |           |         |
| 30-Oct-02 | 52      | 1-Oct-03  | 52      | 25-Aug-04 | 55      |           |         |
| 6-Nov-02  | 52      | 15-Oct-03 | 52      | 1-Sep-04  | 55      |           |         |
| 13-Nov-02 | 52      | 22-Oct-03 | 52      | 9-Sep-04  | 54      |           |         |
| 20-Nov-02 | 52      | 4-Nov-03  | 54      | 22-Sep-04 | 55      |           |         |
| 27-Nov-02 | 52      | 12-Nov-03 | 53      | 29-Sep-04 | 55      |           |         |
| 4-Dec-02  | 52      | 20-Nov-03 | 53      | 6-Oct-04  | 55      |           |         |
| 11-Dec-02 | 52      | 26-Nov-03 | 52      | 14-Oct-04 | 53      |           |         |
| 18-Dec-02 | 51      | 3-Dec-03  | 51      | 20-Oct-04 | 55      |           |         |
| 25-Dec-02 | 51      | 10-Dec-03 | 51      | 27-Oct-04 | 53      |           |         |
| 1-Jan-03  | 52      | 17-Dec-03 | 51      | 5-Nov-04  | 51      |           |         |
| 8-Jan-03  | 51      | 24-Dec-03 | 51      | 10-Nov-04 | 54      |           |         |
| 15-Jan-03 | 51      | 31-Dec-03 | 51      | 16-Nov-04 | 54      |           |         |
| 22-Jan-03 | 51      | 7-Jan-04  | 50      | 29-Nov-04 | 53      |           |         |
| 29-Jan-03 | 51      | 14-Jan-04 | 51      | 1-Dec-04  | 53      |           |         |
| 5-Feb-03  | 51      | 21-Jan-04 | 51      | 8-Dec-04  | 53      |           |         |
| 12-Feb-03 | 51      | 28-Jan-04 | 51      | 15-Dec-04 | 52      |           |         |
| 19-Feb-03 | 51      | 5-Feb-04  | 51      | 22-Dec-04 | 53      |           |         |

**TABLE 2**  
**STATION LOCATIONS**  
**STONE CREEK, BEDFORD COUNTY**

| <b><u>STATION</u></b> | <b><u>LOCATION</u></b>  |
|-----------------------|---|
| 1SC                   | Stone Creek 200 m upstream from confluence with Dunning Creek.<br>Lat: 40° 08' 43" Long: 78° 33' 51" RMI: 0.1 |
| 2 UNTSC               | Unnamed tributary Stone Creek (14908).<br>Lat: 41° 40' 06" Long: 75° 15' 18" RMI: 0.4                         |

**TABLE 3.  
STONE CREEK, BEDFORD COUNTY**

| STATION               | 1SC        | 2UNT SC   |
|-----------------------|------------|-----------|
| DATE                  | 8/9/2001   | 5/11/2005 |
| Field Parameters      |            |           |
| Temp (°C)             | -          | 19.5      |
| pH                    | -          | 6.69      |
| Cond (umhos)          | -          | 336       |
| Diss. O <sub>2</sub>  | -          | 10.06     |
| Laboratory Parameters |            |           |
| pH                    | 7.6        | 7.8       |
| Alkalinity            | 74         | 71        |
| Acidity               | 0          | -         |
| Hardness              | 193.9      | -         |
| T Diss. Sol.          | 312        | 2         |
| Susp. Sol.            | 28         | -         |
| NH <sub>3</sub> -N    | 0.76       | 0.02      |
| NO <sub>2</sub> -N    | 0.09       | <.01      |
| NO <sub>3</sub> -N    | 0.65       | 1.04      |
| T KJEL N              | -          | <1.00     |
| Total P               | 0.31       | 0.081     |
| Ca                    | 55.8       | -         |
| Mg                    | 13.2       | -         |
| Cl                    | 2          | 2.9       |
| SO <sub>4</sub>       | 103.9      | -         |
| As*                   | <4.0       | -         |
| As Diss*              | <4.0       | -         |
| Cd*                   | <0.2       | -         |
| Cd Diss*              | <0.2       | -         |
| hex Cr*               | <10.0      | -         |
| Cr*                   | <10        | -         |
| Cu*                   | <4         | -         |
| Cu Diss*              | <4         | -         |
| Fe*                   | 1170       | -         |
| Pb*                   | 1.1        | -         |
| Pb Diss.*             | <1         | -         |
| Mn*                   | 159        | -         |
| Ni*                   | <4.0       | -         |
| Ni Diss.*             | <4.0       | -         |
| Zn*                   | 13.8       | -         |
| Zn Diss*              | <5.0       | -         |
| Al*                   | 631        | -         |
| fecal coliforms       | 1800/100ml | -         |

<sup>1</sup>- Except for pH, conductance and indicated otherwise, all values are total concentrations in mg/l

\*-Total concentration in ug/l

**TABLE 4.**  
**HABITAT ASSESSMENT SUMMARY**  
**STONE CREEK, BEDFORD COUNTY**

| HABITAT<br>PARAMETER                   | scoring<br>range | 1SC                      | 2UNT SC     |
|--|------------------|--------------------------|-------------|
|  |                  | 8/9/2001                 | 5/11/2005   |
| 1 . instream cover                     | 0 - 20           | 17                       | 6           |
| 2 . epifaunal substrate                | 0 - 20           | 16                       | 9           |
| 3 . embeddedness                       | 0 - 20           | 11                       | 12          |
| 4 . velocity/depth                     | 0 - 20           | 15                       | 7           |
| 5 . channel alterations                | 0 - 20           | 16                       | 11          |
| 6 . sediment deposition                | 0 - 20           | 12                       | 17          |
| 7 . riffle frequency                   | 0 - 20           | 17                       | 5           |
| 8 . channel flow status                | 0 - 20           | 16                       | 17          |
| 9 . bank condition                     | 0 - 20           | 15                       | 18          |
| 10 . bank vegetation<br>protection     | 0 - 20           | 16                       | 16          |
| 11 . grazing/disruptive<br>pressures   | 0 - 20           | 16                       | 17          |
| 12 . riparian vegetation<br>zone width | 0 - 20           | 15                       | 18          |
| Total Score                            | 0 - 240          | 182                      | 153         |
|  |                  | Optiomal/<br>Suboptiomal | Suboptiomal |

**TABLE 5.**  
**FISH<sup>1</sup>**  
**STONE CREEK, BEDFORD COUNTY**

| Fish Species  | Station  |           |
|---|----------|-----------|
|   | 1SC      | 2UNT SC   |
|   | 8/9/2001 | 5/11/2005 |
| <i>Catostomus commersoni</i> , <b>white sucker</b>    | C        | P         |
| <i>Rhinichthys atratulus</i> , <b>blacknose dace</b>  | C        | C         |
| <i>R. cataractae</i> , <b>longnose dace</b>           | R        | -         |
| <i>Semotilus atromaculatus</i> , <b>creek chub</b>    | P        | C         |
| <i>Exoglossum maxillingua</i> , <b>cutlips minnow</b> | P        | -         |
| <i>Notropis atherinoides</i> , <b>emerald shiner</b>  | C        | -         |
| <i>Etheostoma olmsted</i> , <b>tessellated darter</b> | P        | -         |
| <i>Noturus insignis</i> , <b>marginied madtom</b>     | R        | -         |
| TOTAL TAXA  | 8        | 3         |

<sup>1</sup> - Occurrence: R - rare (<3), P - present (3-9), C - common (10-24),