# 5.0 Androscoggin River Basin

## 5.1 Watershed Description

The Androscoggin River Basin occupies 3,500 square miles in western Maine and northeastern New Hampshire. The Androscoggin River flows 169 miles from the headwaters in Umbagog Lake in Errol, New Hampshire (near Mount Washington) to its mouth at Merrymeeting Bay.

The Androscoggin River originates in the White Mountains. Below Rumsford, Maine the river basin becomes hilly and flat and is generally suitable for agriculture. Large communities in this basin include Bethel, Rumford, Mexico, Canton, Jay, Livermore, Lewiston, Auburn, and Brunswick/Topsham.

Table 40 presents the major tributaries to the Androscoggin River from upstream to downstream along with their respective drainage areas. The Androscoggin River is influenced by tidal process as far as Brunswick, Maine. Figure 28 illustrates the location of the Androscoggin River basin within Maine and the major tributaries.

**Table 40. Androscoggin River, Tributaries from Upstream to Downstream and Drainage Areas**

| Tributary | Drainage Area (square miles) |
|---|---|
| Mooselookmeguntic Lake | 470 |
| Umbagog Lake Drainage | 120 |
| Aziscohos Lake Drainage | 250 |
| Magalloway River | 200 |
| Clear Stream | 60 |
| Middle Androscoggin River | 270 |
| Gorham-Shelburne Tributaries | 150 |
| Androscoggin River (2) at Rumford Point | 310 |
| Ellis River | 160 |
| Ellis River | 200 |
| Androscoggin River (3) above Webb River | 250 |
| Androscoggin River (4) at Riley Dam | 200 |
| Androscoggin River (5) at Nezinscot River | 180 |
| Nezinscot River | 80 |
| Androscoggin River (6) above Little Androscoggin River | 350 |
| Little Androscoggin River | 260 |
| **Total** | **3530** |


**Figure 28. Androscoggin River Basin and Major Tributaries**

## 5.2 Dams and Reservoirs

In general, dams in Maine are not constructed as flood control structures. However, the dams with large impoundment capacity can be useful for controlling flood discharges if their reservoirs are below capacity. Many dams in the lower reaches of Maine's rivers are run-of-river dams, and have little or no capacity to capture and hold runoff during floods (MGS, 2005).

The collaborative dam database indicates that the Androscoggin River Basin contains over 100 dams. Of the 100 dams, thirty-two are used for recreation, nine for flood control and stormwater management, sixteen for

hydropower generation, nine for reservoir storage, twenty-eight for "other" purposes. The storage capacity of impoundments in the Androscoggin River Basin is approximately 215,300 acre-feet. Appendix E contains the list of dams located within the Androscoggin River Basin and included in the collaborative dam database.

## 5.3 Precipitation

The average annual precipitation in the Androscoggin River Drainage Basin is approximately forty inches uniformly distributed throughout the year. Snowfall contributes the equivalent of six to ten inches of rainfall. The average annual streamflow of the Androscoggin River Basin is approximately 1.8 cubic feet per second per square mile, equivalent to approximately twenty-five inches of runoff.

## 5.4 Population

The basin contains all or portions of sixty-three towns, three cities (Auburn, Bath, and Lewiston), thirty-seven unincorporated areas, and falls within six counties. Table 41 presents the US census data for the Androscoggin River basin from 1970 to 2000. The population within the drainage basin has increased since the 1970s, but the proportion of the population residing within cities has decreased by about 10% since 1990.

**Table 41. Androscoggin River Basin, Population within Maine**

| Census date | Population | Population in cities |
|---|---|---|
| 1970 | 141,000 | 62,000 |
| 1980 | 156,000 | 60,000 |
| 1990 | 168,000 | 60,000 |
| 2000 | 169,000 | 55,000 |

## 5.5 Historic Flooding Events (1970 – 2007)

Flooding within the Androscoggin River Basin is most often caused by rainfall in combination with snowmelt. Ice jams have been known to cause acute localized flooding. Conditions favorable for flooding typically occur during the spring. Table 42 presents the list of major and minor flood events identified within the Androscoggin River basin between 1970 and the present using the sources of data described in Section 1 of this report. The flood events indicated with an "x" are described in greater detail in the following section of the report.

**Table 42. Androscoggin River Basin, Identified Flood Events**

| | Date | Flood Location | Flood Documentation | Damages |
|---|---|---|---|---|
| | December 1973 | Androscoggin River | FIS Lewiston, Bethel | |
| | March 1977 | Nezinscot, Little Andro. River | USGS | |
| | January/February 1978 | Androscoggin River | CRREL | Major damages |
| | April 1984 | Androscoggin River | FIS Bethel, USGS | |
| | 1986 | | FIS Bethel | |
| x | March/April 1987 | Androscoggin, Wild, Swift, Nezinscot, Little Andro. Rivers | USGS, CRREL, ACOE | Flood of record |
| | February 1981 | Androscoggin River | CRREL, Newspaper | |
| | April 1992 | | FEMA 940-DR-ME | |
| | October 1995 | Wild River | USGS | |
| x | December 2003 | Oxford County | USGS, CRREL, Photos | Severe damages |
| x | April 2005 | Androscoggin River | CRREL, Photos | |
| | January 2006 | Androscoggin River | CRREL | Bethel |
| | July 2007 | Swift River | [Need reference] | Water supply in Bethel was destroyed |

CRREL – Ice jam database, USGS – Streamgage record, ACOE – 1990 study, FIS – Flood Insurance Study, IHMT – Interagency Hazard Mitigation Report

The USGS record of peak discharge and stage at streamgages within the Androscoggin drainage basin indicate major high flow events, which may have resulted in flooding. Appendix B contains a streamgage inventory of all active and historical gages in the Androscoggin River Basin. Table 43 presents the highest daily discharge recorded at selected streamgages. The floods of record on the Androscoggin River include events that occurred in March 1936, March 1953, October 1959, and March/April 1987. The 1936 flood was caused by heavy rainfall on a dense, melting snowpack. The March 1953 flood was primarily caused by a large quantity of rainfall. Information on the event of 1959 was not available at the time of publication. Photos shown below document the extent of flooding for both storms in Auburn, Maine. The March/April 1987 flood was caused by precipitation and snowmelt and the December 2003 event was caused by higher than average flows and extensive ice jams.

**Table 43. Androscoggin River Basin, Flood of Record at Streamgages**

| Site | Site Name | Date | Discharge (cfs) | Gage Height |
|---|---|---|---|---|
| 01054200 | Wild River at Gilead, Maine | 10/24/1959 | 28,300 | 15.6 |
| 01054300 | Ellis River at South Andover, Maine | 12/18/2003 | 7,830 | 19.26 |
| 01054500 | Androscoggin River at Rumford, Maine | 3/20/1936 | 74,000 | |
| 01055000 | Swift River near Roxbury, Maine | 10/24/1959 | 16,800 | 12.87 |
| 01055500 | Nezinscot River at Turner Center, Maine | 3/27/1953 | 13,900 | 11.18 |
| 01057000 | Little Androscoggin River near South Paris, Maine | 4/1/1987 | 9,340 | 12.22 |
| 01059000 | Androscoggin River near Auburn, Maine | 3/20/1936 | 135,000 | 27.57 |

### 5.5.1 Notable Historical Floods

Figure 29, Figure 30, and Figure 31 illustrate the extent of flooding during the floods of 1936 and 1953.

Figure 15 - March 1936 Flood - Little Androscoggin River overflows between Main and South Main Streets, Auburn.

**Figure 29. Little Androscoggin River, March 1936**

Figure 18 - March 1953 Flood - Little Androscoggin River, Auburn, looking west on Route 11 about 0.2 mile west of Haskell's Corner. High water mark is 4" below top of foundation.

**Figure 30. Little Androscoggin River, March 1953**

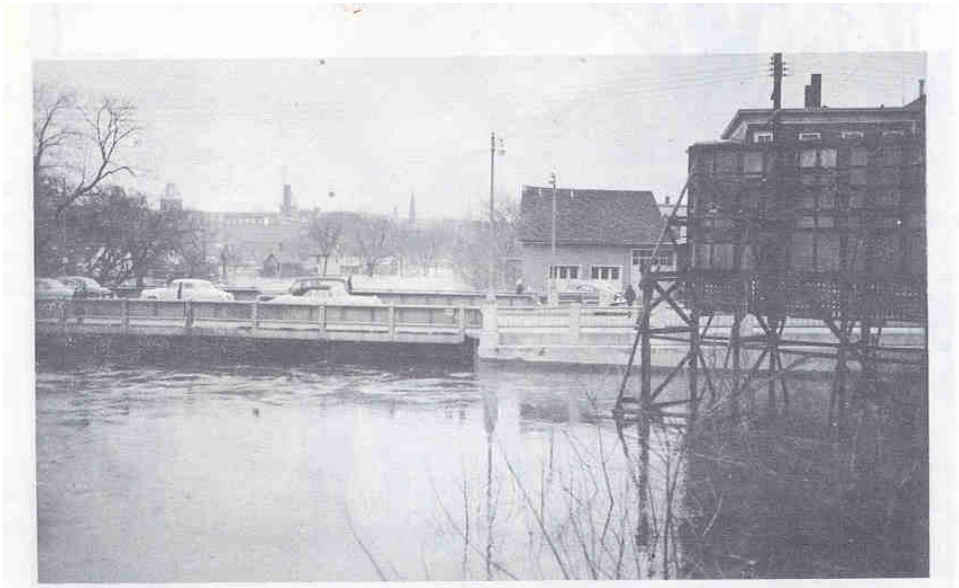

Figure 17 - March 1953 Flood - Little Androscoggin River looking downstream at Main Street Bridge, Auburn.

**Figure 31. Little Androscoggin River, March 1953**

### 5.5.2 March/April 1987

The Androscoggin River Basin received approximately three inches of precipitation between March 31 and April 1, 1987. The rainfall was accompanied by warm temperatures and melting snowpack. Three days later, a second storm dropped approximately two inches of rain over the saturated basin. The resultant runoff caused the flood of record for the Androscoggin River Basin. Table 44 presents the observed stage, discharge, and recurrence interval (where available) for the March/April 1987 flood. The photos presented in Figure 32, Figure 33, Figure 34, Figure 35, Figure 36, Figure 37, and Figure 38 illustrate the extent of flooding at various locations along the Androscoggin River and tributaries. The USGS estimated the return period of the flows on the Androscoggin River and tributaries to be one hundred to five hundred years or greater.

**Table 44. Androscoggin River Basin, USGS Streamgage Peaks, March/April 1987**

| Station | Name | Stage | Discharge (cfs) | Estimated Recurrence Interval (years) |
|---|---|---|---|---|
| 01054200 | Wild River at Gilead, Maine | 13.03 | 17,000 | 10-25 |
| 01054500 | Androscoggin River at Rumford, Maine | 23.22 | 63,900 | 100-500 |
| 01055000 | Swift River near Roxbury, Maine | 12.54 | 15,900 | 25-50 |
| 01055500 | Nezinscot River at Turner Center, Maine | 10.2 | 11,600 | 100-500 |
| 01057000 | Little Androscoggin River near South Paris, Maine | 12.22 | 9,340 | 100-500 |
| 01059000 | Androscoggin River near Auburn, Maine | 23.71 | 103,000 | >500 |

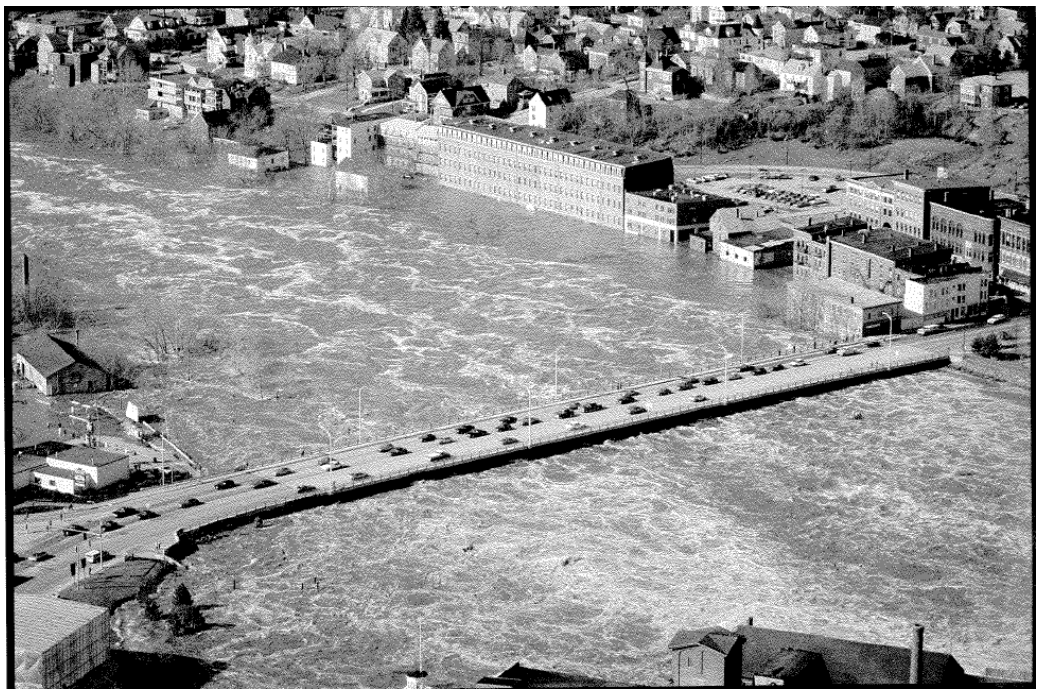

**Figure 32. Androscoggin River at the Longley Bridge between Lewiston and Auburn (Sun Journal)**

**Figure 33. Androscoggin River Lewiston's Great Falls from the Auburn Esplanade (Sun Journal)**

**Figure 34. Androscoggin River Newbury Street, Auburn (Sun Journal)**

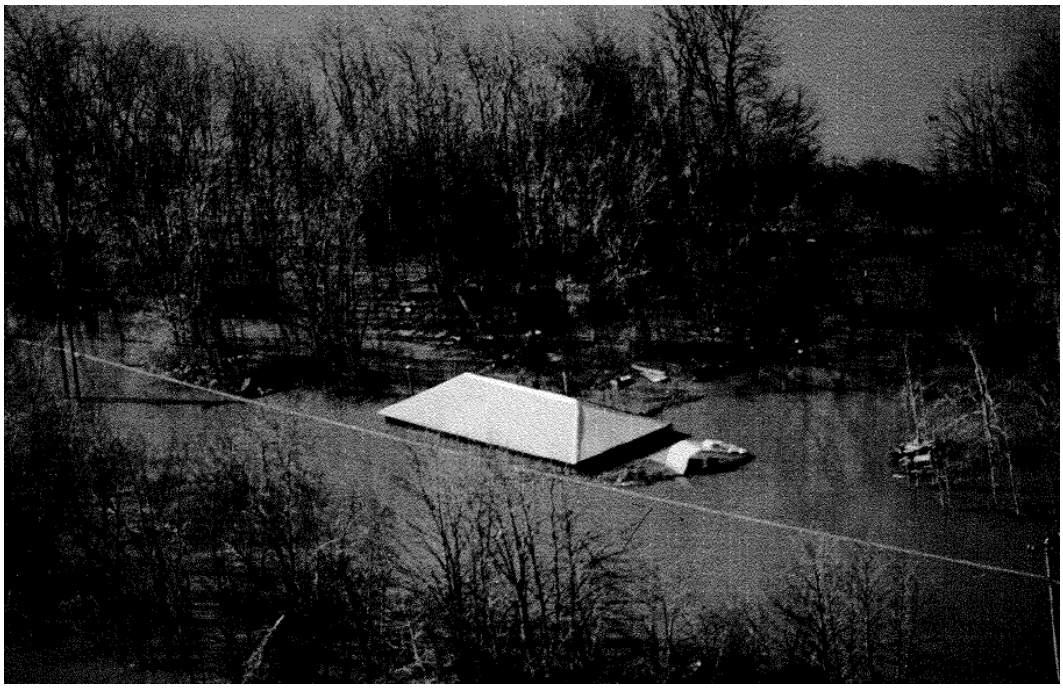

**Figure 35. Androscoggin River, Durham, April 1987 (Sun Journal)**

**Figure 36. Androscoggin River, Jay – Livermore Falls, April 1987 (Sun Journal)**

**Figure 37. Androscoggin River, Rumford, April 1987 (Sun Journal)**


**Figure 38. Androscoggin River, Miller Street and Road Block, Auburn, April 1987 (Sun Journal)**

### 5.5.3 December 2003

In December 2003, moderate to high flows coupled with ice jams caused extraordinary flooding in Oxford County. Farmington and Rumford were inundated and Bethel was isolated due to road closures. Vulnerable portions of the town of Canton were purchased and moved as a consequence of this event. Table 45 presents the observed stage, discharge, and recurrence interval (where available) for the December 2003 flood. Figure 39 and Figure 40 illustrate the damage caused by the flood event. The USGS estimated the return period of the flows on the Ellis River to be one hundred to five hundred years.

**Table 45. Androscoggin River Basin, USGS Streamgage Peaks, December 2003**

| Station | Name | Stage | Discharge (cfs) | Estimated Recurrence Interval (years) |
|---|---|---|---|---|
| 01054200 | Wild River at Gilead, Maine | 12.06 | 15,000 | 5-10 |
| 01054300 | Ellis River at South Andover, Maine | 19.26 | 7,830 | 100-500 |
| 01054500 | Androscoggin River at Rumford, Maine | 14.56 | 35,200 | 2-5 |
| 01055000 | Swift River near Roxbury, Maine | 10.91 | 11,900 | 5-10 |
| 01055500 | Nezinscot River at Turner Center, Maine | 5.81 | 3,790 | 2-5 |
| 01057000 | Little Androscoggin River near South Paris, Maine | 8.82 | 3,470 | 5-10 |
| 01059000 | Androscoggin River near Auburn, Maine | 14.18 | 48,000 | 2-5 |

**Figure 39. Canton Maine, Property Damage, December 23, 2003**

**Figure 40. Canton Maine, December 23, 2003**

### 5.5.4 April 2005

The CRREL ice jam database and the photo record document flooding along the Androscoggin River during April 2005. Ice jams and moderate flows caused road washouts along route 120 in Andover. Table 46 presents the observed stage, discharge, and recurrence interval (where available) for the April 2005 flood. The USGS estimated the return period of the flows on the Androscoggin River and tributaries to be two to twenty-five years.

**Table 46. Androscoggin River Basin, USGS Streamgage Peaks, April 2005.**

| Station | Name | Stage | Discharge (cfs) | Estimated Recurrence Interval (years) |
|---|---|---|---|---|
| 01054200 | Wild River at Gilead, Maine | 10.34 | 9,860 | 2-5 |
| 01054300 | Ellis River at South Andover, Maine | 17.67 | 5,180 | 5-10 |
| 01054500 | Androscoggin River at Rumford, Maine | 14.16 | 33,500 | 2-5 |
| 01055000 | Swift River near Roxbury, Maine | 9.41 | 8,820 | 2-5 |
| 01055500 | Nezinscot River at Turner Center, Maine | 8.72 | 8,630 | 25-50 |
| 01057000 | Little Androscoggin River near South Paris, Maine | 9.81 | 4,750 | 10-25 |
| 01059000 | Androscoggin River near Auburn, Maine | 16.44 | 58,500 | 10-25 |

**Figure 41. Route 120 Washout in Andover Caused by Blocked Culvert, Maine April 5, 2005**

**Figure 42. Route 120 Washout in Andover Caused by Blocked Culvert, Maine April 5, 2005**

**Figure 43. Route 120 Washout in Andover Caused by Blocked Culvert, Maine April 5, 2005**

### 5.5.5 July 2007

In July 2007, an unusually intense thunderstorm tracked up the Swift River basin into Bethel and Newry causing extensive localized damage. Culverts and bridges on Route 131 and Route 2 were washed out, the water supply from Bethel was destroyed, and the Sunday River Ski area sustained substantial damage. Rainfall estimates for this storm were four to seven inches over a period of two hours. [Additional information on this event was not available at the time of publication]