

## **Appendix 4H**

### **Source Analysis Summary by Subbasin**

Figures 1 - 7 and Table 1 present the source category data by subbasin for each of the analysis time periods.

# Appendix 4H – Sediment Source Subbasin Summary

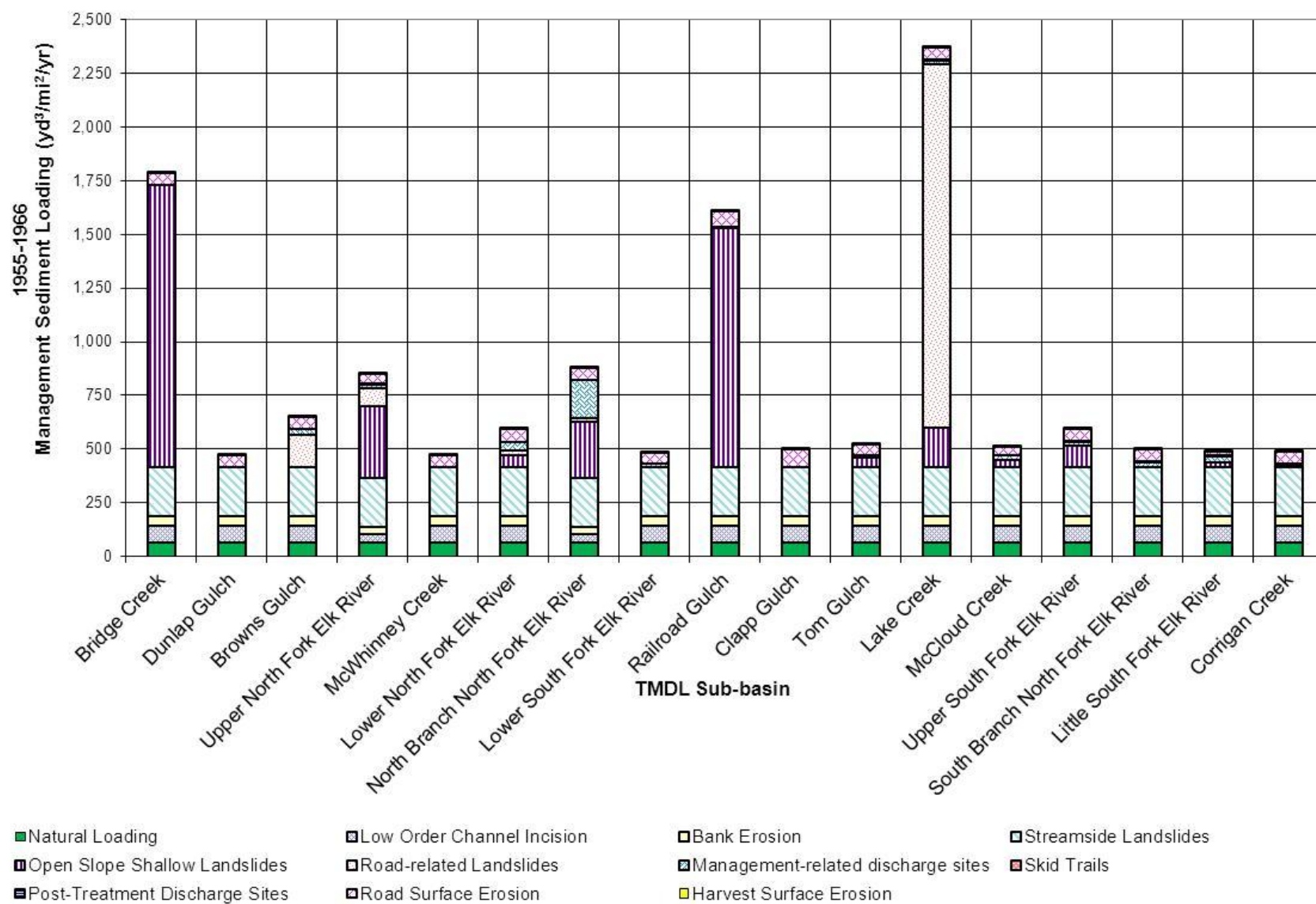
**Table 1 Summary of sediment loading (yd<sup>3</sup>/mi<sup>2</sup>/yr) from management-related sediment source categories for Upper Elk River subbasins by analysis time period.**

| Sub-basin |                                   | Area<br>(mi <sup>2</sup> ) | Low Order Channel Incision |           |           |           |           |           |           |           | Bank Erosion |           |           |           |           |           |           |           | Streamside Landslides |           |           |           |           |           |           |           | Open Slope Shallow Landslides |           |           |           |   |  |  |  |
|-----------|-----------------------------------|----------------------------|----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------------------------------|-----------|-----------|-----------|---|--|--|--|
|           |                                   |                            | 1955-1966                  | 1967-1974 | 1975-1987 | 1988-1997 | 1998-2000 | 2001-2003 | 2004-2011 | 1955-1966 | 1967-1974    | 1975-1987 | 1988-1997 | 1998-2000 | 2001-2003 | 2004-2011 | 1955-1966 | 1967-1974 | 1975-1987             | 1988-1997 | 1998-2000 | 2001-2003 | 2004-2011 | 1955-1966 | 1967-1974 | 1975-1987 | 1988-1997                     | 1998-2000 | 2001-2003 | 2004-2011 |   |  |  |  |
| 4         | Bridge Creek                      | 2.20                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 279       | 1314      | 0         | 10        | 922                           | 1603      | 0         | 0         | 0 |  |  |  |
| 5         | Dunlap Gulch                      | 0.66                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 0         | 0         | 0         | 0         | 0                             | 0         | 0         | 0         | 0 |  |  |  |
| 6         | Browns Gulch                      | 0.89                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 192       | 0         | 0         | 0         | 16                            | 0         | 0         | 0         | 0 |  |  |  |
| 7         | Upper North Fork Elk River        | 4.36                       | 37                         | 18        | 10        | 16        | 24        | 9         | 11        | 33        | 35           | 37        | 39        | 40        | 41        | 43        | 227       | 159       | 30                    | 265       | 294       | 294       | 6         | 334       | 559       | 0         | 63                            | 0         | 0         | 0         | 0 |  |  |  |
| 8         | McWhinney Creek                   | 1.27                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 283       | 0         | 0         | 0         | 2                             | 0         | 248       | 0         | 0 |  |  |  |
| 9         | Lower North Fork Elk River        | 5.02                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 141       | 57        | 0         | 0         | 92                            | 0         | 53        | 0         | 0 |  |  |  |
| 10        | North Branch North Fork Elk River | 4.02                       | 37                         | 18        | 10        | 16        | 24        | 9         | 11        | 33        | 35           | 37        | 39        | 40        | 41        | 43        | 227       | 159       | 30                    | 265       | 294       | 294       | 102       | 261       | 36        | 0         | 0                             | 0         | 0         | 0         | 0 |  |  |  |
| 11        | Lower South Fork Elk River        | 2.90                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 14        | 0         | 4         | 0         | 1414                          | 0         | 0         | 0         | 0 |  |  |  |
| 12        | Railroad Gulch                    | 1.20                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 226       | 1118      | 0         | 52        | 318                           | 32        | 0         | 0         | 0 |  |  |  |
| 13        | Clapp Gulch                       | 1.00                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 251       | 0         | 0         | 0         | 126                           | 0         | 0         | 0         | 0 |  |  |  |
| 14        | Tom Gulch                         | 2.51                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 734       | 48        | 0         | 0         | 112                           | 0         | 0         | 0         | 0 |  |  |  |
| 15        | Lake Creek                        | 2.12                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 224       | 183       | 97        | 54        | 525                           | 401       | 26        | 0         | 0 |  |  |  |
| 16        | McCloud Creek                     | 2.36                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 165       | 37        | 116       | 0         | 14                            | 0         | 0         | 0         | 0 |  |  |  |
| 17        | Upper South Fork Elk River        | 6.45                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 165       | 99        | 82        | 0         | 7                             | 103       | 249       | 37        | 0 |  |  |  |
| 18        | South Branch North Fork Elk River | 1.93                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 220       | 0         | 0         | 25        | 0                             | 0         | 0         | 0         | 0 |  |  |  |
| 19        | Little South Fork Elk River       | 3.59                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 165       | 25        | 3         | 0         | 0                             | 35        | 0         | 0         | 0 |  |  |  |
| 20        | Corrigan Creek                    | 1.66                       | 74                         | 25        | 14        | 23        | 34        | 13        | 15        | 46        | 49           | 52        | 55        | 57        | 57        | 60        | 227       | 159       | 30                    | 265       | 294       | 294       | 165       | 0         | 0         | 0         | 0                             | 0         | 0         | 0         | 0 |  |  |  |

| Sub-basin |                                   | Area<br>(mi <sup>2</sup> ) | Road-related Landslides |           |           |           |           |           |           |           | Management discharge sites |           |           |           |           |           |           |           | Skid Trails |           |           |           |           |           |           |           | Treatment of Management Discharge Sites |           |           |           |    |  |  |  |
|-----------|-----------------------------------|----------------------------|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------------------------------------|-----------|-----------|-----------|----|--|--|--|
|           |                                   |                            | 1955-1966               | 1967-1974 | 1975-1987 | 1988-1997 | 1998-2000 | 2001-2003 | 2004-2011 | 1954-1966 | 1967-1974                  | 1975-1987 | 1988-1997 | 1998-2000 | 2001-2003 | 2004-2011 | 1954-1966 | 1967-1974 | 1975-1987   | 1988-1997 | 1998-2000 | 2001-2003 | 2004-2011 | 1955-1966 | 1967-1974 | 1975-1987 | 1988-1997                               | 1998-2000 | 2001-2003 | 2004-2011 |    |  |  |  |
| 4         | Bridge Creek                      | 2.20                       | 0                       | 0         | 7         | 926       | 12        | 13        | 0         | 0         | 0                          | 0         | 10        | 8         | 0         | 8         | 2         | 8         | 7           | 8         | 16        | 15        | 15        |           |           |           |                                         |           | 1         | 0         | 8  |  |  |  |
| 5         | Dunlap Gulch                      | 0.66                       | 0                       | 0         | 1         | 12        | 0         | 0         | 0         | 0         | 13                         | 22        | 14        | 8         | 0         | 8         | 1         | 2         | 2           | 2         | 5         | 15        | 15        |           |           |           |                                         |           | 28        | 0         | 5  |  |  |  |
| 6         | Browns Gulch                      | 0.89                       | 154                     | 0         | 0         | 100       | 0         | 23        | 19        | 25        | 20                         | 20        | 46        | 35        | 0         | 35        | 1         | 3         | 3           | 3         | 6         | 15        | 15        |           |           |           |                                         |           | 17        | 0         | 10 |  |  |  |
| 7         | Upper North Fork Elk River        | 4.36                       | 83                      | 9         | 3         | 138       | 0         | 7         | 21        | 18        | 21                         | 13        | 49        | 39        | 30        | 39        | 4         | 15        | 13          | 15        | 31        | 15        | 15        |           |           |           |                                         |           | 47        | 10        | 39 |  |  |  |
| 8         | McWhinney Creek                   | 1.27                       | 0                       | 0         | 0         | 3         | 0         | 0         | 0         | 0         | 0                          | 3         | 8         | 6         | 0         | 6         | 1         | 4         | 4           | 4         | 9         | 15        | 15        |           |           |           |                                         |           | 0         | 0         | 18 |  |  |  |
| 9         | Lower North Fork Elk River        | 5.02                       | 24                      | 1         | 85        | 719       | 0         | 10        | 13        | 34        | 24                         | 16        | 29        | 21        | 240       | 21        | 5         | 18        | 15          | 17        | 36        | 15        | 15        |           |           |           |                                         |           | 22        | 11        | 23 |  |  |  |
| 10        | North Branch North Fork Elk River | 4.02                       | 21                      | 32        | 7         | 1245      | 21        | 22        | 3         | 175       | 143                        | 88        | 80        | 53        | 5         | 53        | 4         | 14        | 12          | 14        | 29        | 15        | 15        |           |           |           |                                         |           | 20        | 0         | 31 |  |  |  |
| 11        | Lower South Fork Elk River        | 2.90                       | 0                       | 14        | 29        | 31        | 0         | 0         | 318       | 17        | 83                         | 198       | 82        | 27        | 41        | 27        | 3         | 10        | 9           | 10        | 21        | 15        | 15        |           |           |           |                                         |           | 0         | 0         | 22 |  |  |  |
| 12        | Railroad Gulch                    | 1.20                       | 0                       | 25        | 3         | 753       | 0         | 13        | 0         | 0         | 6                          | 108       | 58        | 20        | 21        | 20        | 1         | 4         | 4           | 4         | 9         | 15        | 15        |           |           |           |                                         |           | 0         | 0         | 1  |  |  |  |
| 13        | Clapp Gulch                       | 1.00                       | 0                       | 1         | 0         | 773       | 0         | 0         | 0         | 0         | 2                          | 12        | 29        | 21        | 0         | 21        | 1         | 4         | 3           | 3         | 7         | 15        | 15        |           |           |           |                                         |           | 0         | 0         | 0  |  |  |  |
| 14        | Tom Gulch                         | 2.51                       | 0                       | 0         | 0         | 3         | 0         | 0         | 0         | 4         | 97                         | 26        | 24        | 17        | 64        | 17        | 3         | 9         | 8           | 9         | 18        | 15        | 15        |           |           |           |                                         |           | 0         | 0         | 40 |  |  |  |
| 15        | Lake Creek                        | 2.12                       | 1696                    | 0         | 0         | 141       | 0         | 112       | 2         | 17        | 19                         | 25        | 27        | 17        | 86        | 17        | 2         | 7         | 6           | 7         | 15        | 15        | 15        |           |           |           |                                         |           | 0         | 0         | 1  |  |  |  |
| 16        | McCloud Creek                     | 2.36                       | 1                       | 58        | 0         | 12        | 0         | 0         | 0         | 19        | 109                        | 127       | 266       | 203       | 203       | 203       | 2         | 8         | 7           | 8         | 17        | 15        | 15        |           |           |           |                                         |           | 0         | 0         | 57 |  |  |  |
| 17        | Upper South Fork Elk River        | 6.45                       | 5                       | 34        | 10        | 10        | 0         | 4         | 2         | 12        | 77                         | 189       | 68        | 17        | 91        | 17        | 7         | 23        | 19          | 22        | 47        | 15        | 15        |           |           |           |                                         |           | 0         | 0         | 17 |  |  |  |
| 18        | South Branch North Fork Elk River | 1.93                       | 4                       | 340       | 13        | 7         | 2         | 12        | 0         | 22        | 133                        | 142       | 160       | 115       | 0         | 115       | 2         | 7         | 6           | 7         | 14        | 15        | 15        |           |           |           |                                         |           | 46        | 6         | 35 |  |  |  |
| 19        | Little South Fork Elk River       | 3.59                       | 0                       | 0         | 0         | 0         | 0         | 0         | 0         | 28        | 49                         | 19        | 55        | 46        | 46        | 46        | 4         | 13        | 11          | 12        | 26        | 15        | 15        |           |           |           |                                         |           | 9         | 13        | 28 |  |  |  |
| 20        | Corrigan Creek                    | 1.66                       | 14                      | 2         | 6         | 6         | 2         | 229       | 0         | 2         | 66                         | 179       | 57        | 10        | 91        | 10        | 2         | 6         | 5           | 6         | 12        | 15        | 15        |           |           |           |                                         |           | 0         | 0         | 0  |  |  |  |

| Sub-basin |                                   | Area<br>(mi <sup>2</sup> ) | Road Surface Erosion |           |           |           |           |           |           |           | Harvest Surface Erosion |           |           |           |           |           |           |           | Totals    |           |           |           |           |  |  |  |  |  |  |  |  |
|-----------|-----------------------------------|----------------------------|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|--|--|--|--|--|--|--|
|           |                                   |                            | 1955-1966            | 1967-1974 | 1975-1987 | 1988-1997 | 1998-2000 | 2001-2003 | 2004-2011 | 1955-1966 | 1967-1974               | 1975-1987 | 1988-1997 | 1998-2000 | 2001-2003 | 2004-2011 | 1955-1966 | 1967-1974 | 1975-1987 | 1988-1997 | 1998-2000 | 2001-2003 | 2004-2011 |  |  |  |  |  |  |  |  |
| 4         | Bridge Creek                      | 2.20                       | 56                   | 84        | 94        | 147       | 69        | 71        | 6         | 2         | 6                       | 2         | 2         | 11        | 20        | 8         | 1,721     | 330       | 214       | 2,358     | 2,106     | 484       | 399       |  |  |  |  |  |  |  |  |
| 5         | Dunlap Gulch                      | 0.66                       | 58                   | 88        | 98        | 154       | 72        | 74        | 7         | 2         | 6                       | 2         | 4         | 0         | 0         | 11        | 408       | 341       | 220       | 530       | 498       | 454       | 120       |  |  |  |  |  |  |  |  |
| 6         | Browns Gulch                      | 0.89                       | 53                   | 80        | 89        | 140       | 66        | 68        | 12        | 2         | 6                       | 2         | 4         | 0         | 12        | 4         | 582       | 342       | 210       | 652       | 510       | 483       | 362       |  |  |  |  |  |  |  |  |
| 7         | Upper North Fork Elk River        | 4.36                       | 48                   | 72        | 81        | 127       | 60        | 61        | 24        | 2         | 6                       | 2         | 10        | 1         | 3         | 1         | 786       | 894       | 189       | 723       | 537       | 471       | 199       |  |  |  |  |  |  |  |  |
| 8         | McWhinney Creek                   | 1.27                       | 54                   | 81        | 91        | 143       | 67        | 69        | 5         | 2         | 6                       | 2         | 7         | 8         | 4         | 7         | 404       | 324       | 196       | 510       | 475       | 701       | 409       |  |  |  |  |  |  |  |  |
| 9         | Lower North Fork Elk River        | 5.02                       | 57                   | 86        | 97        | 152       | 71        | 73        | 17        | 2         | 6                       | 2         | 4         | 5         | 8         | 2         | 527       | 367       | 311       | 1,356     | 540       | 775       | 306       |  |  |  |  |  |  |  |  |
| 10        | North Branch North Fork Elk River | 4.02                       | 51                   | 77        | 86        | 136       | 64        | 66        | 22        | 2         | 6                       | 2         | 4         | 5         | 6         | 7         | 811       | 520       | 272       | 1,800     | 551       | 458       | 286       |  |  |  |  |  |  |  |  |
| 11        | Lower South Fork Elk River        | 2.90                       | 50                   | 75        | 84        | 131       | 38        | 40        | 18        | 2         | 6                       | 2         | 2         | 0         | 0         | 1         | 418       | 424       | 417       | 2,013     | 471       | 460       | 491       |  |  |  |  |  |  |  |  |
| 12        | Railroad Gulch                    | 1.20                       | 75                   | 113       | 127       | 199       | 94        | 96        | 24        | 2         | 6                       | 2         | 11        | 0         | 0         | 4         | 1,543     | 387       | 391       | 1,687     | 539       | 509       | 365       |  |  |  |  |  |  |  |  |
| 13        | Clapp Gulch                       | 1.00                       | 87                   | 130       | 146       | 229       | 107       | 110       | 18        | 2         | 6                       | 2         | 5         | 0         | 0         | 0         | 436       | 375       | 258       | 1,508     | 520       | 490       | 379       |  |  |  |  |  |  |  |  |
| 14        | Tom Gulch                         | 2.51                       | 52                   | 79        | 88        | 138       | 40        | 42        |           |           |                         |           |           |           |           |           |           |           |           |           |           |           |           |  |  |  |  |  |  |  |  |

## Appendix 4H – Sediment Source Subbasin Summary



**Figure 1. Annual sediment loading by management source category for TMDL subbasins for the 1955-1966 analysis time period.**

# Appendix 4H – Sediment Source Subbasin Summary

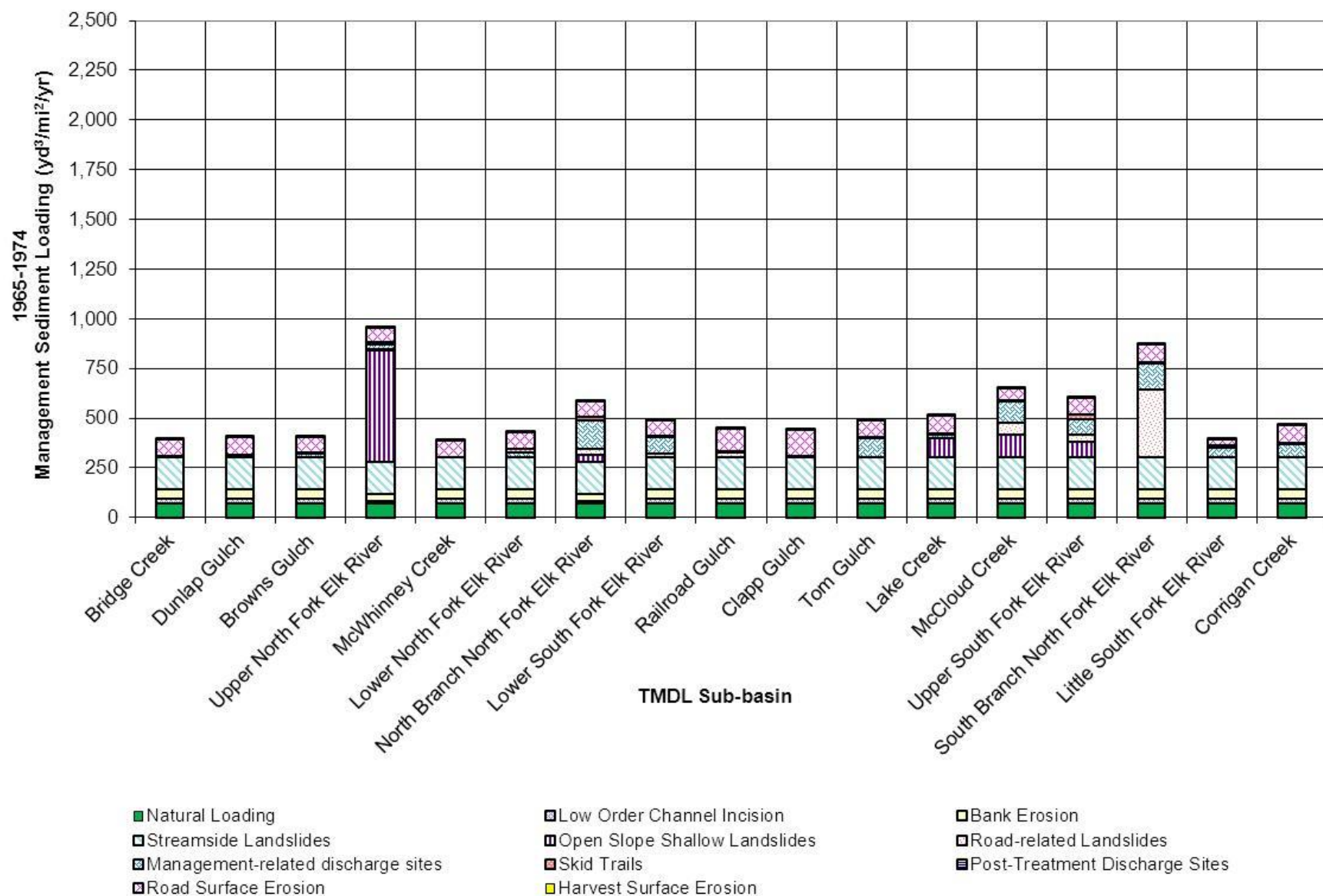


Figure 2. Annual sediment loading by management source category for TMDL subbasins for the 1965-1974 analysis time period.

Figure 3.50

## Appendix 4H – Sediment Source Subbasin Summary

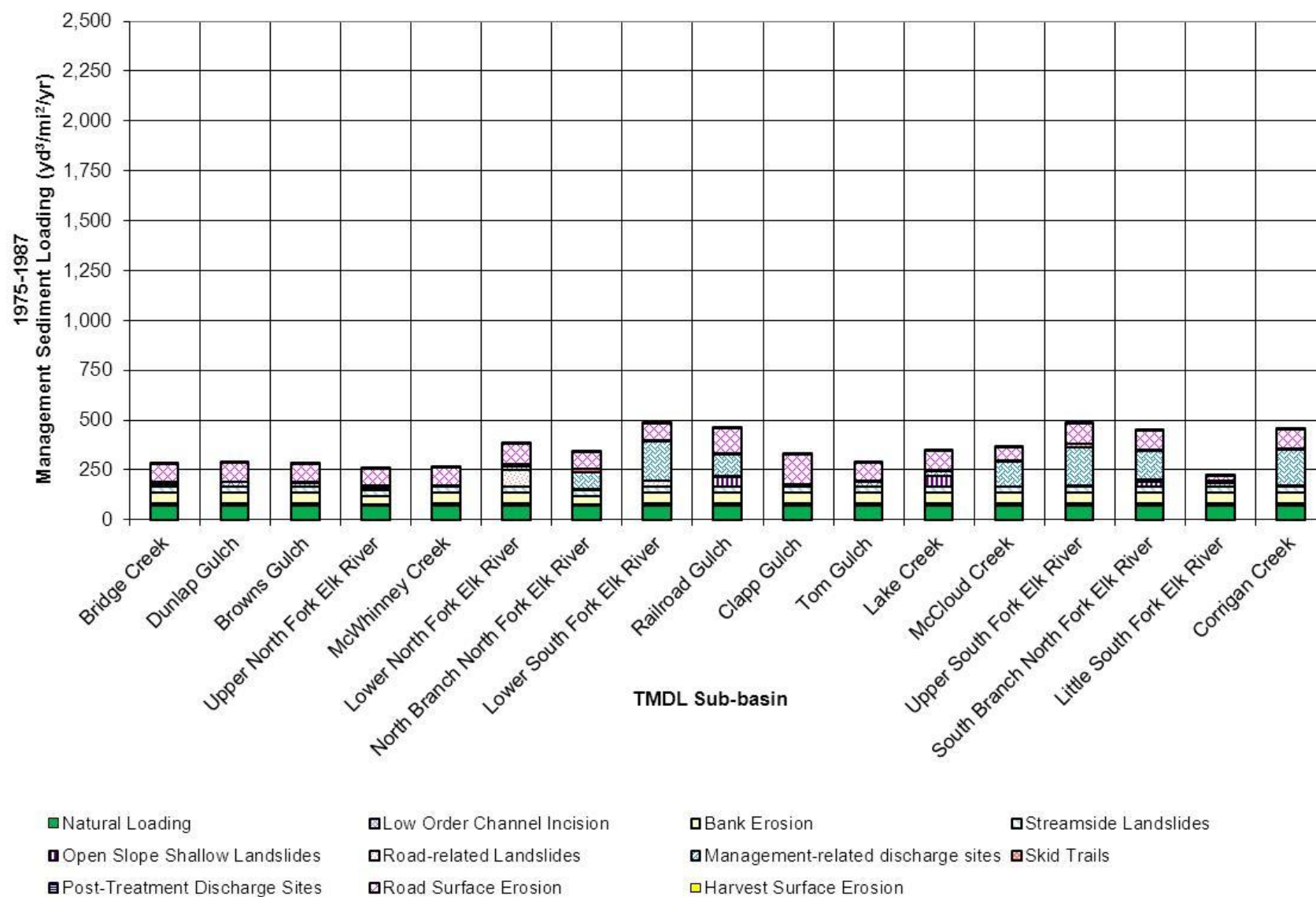
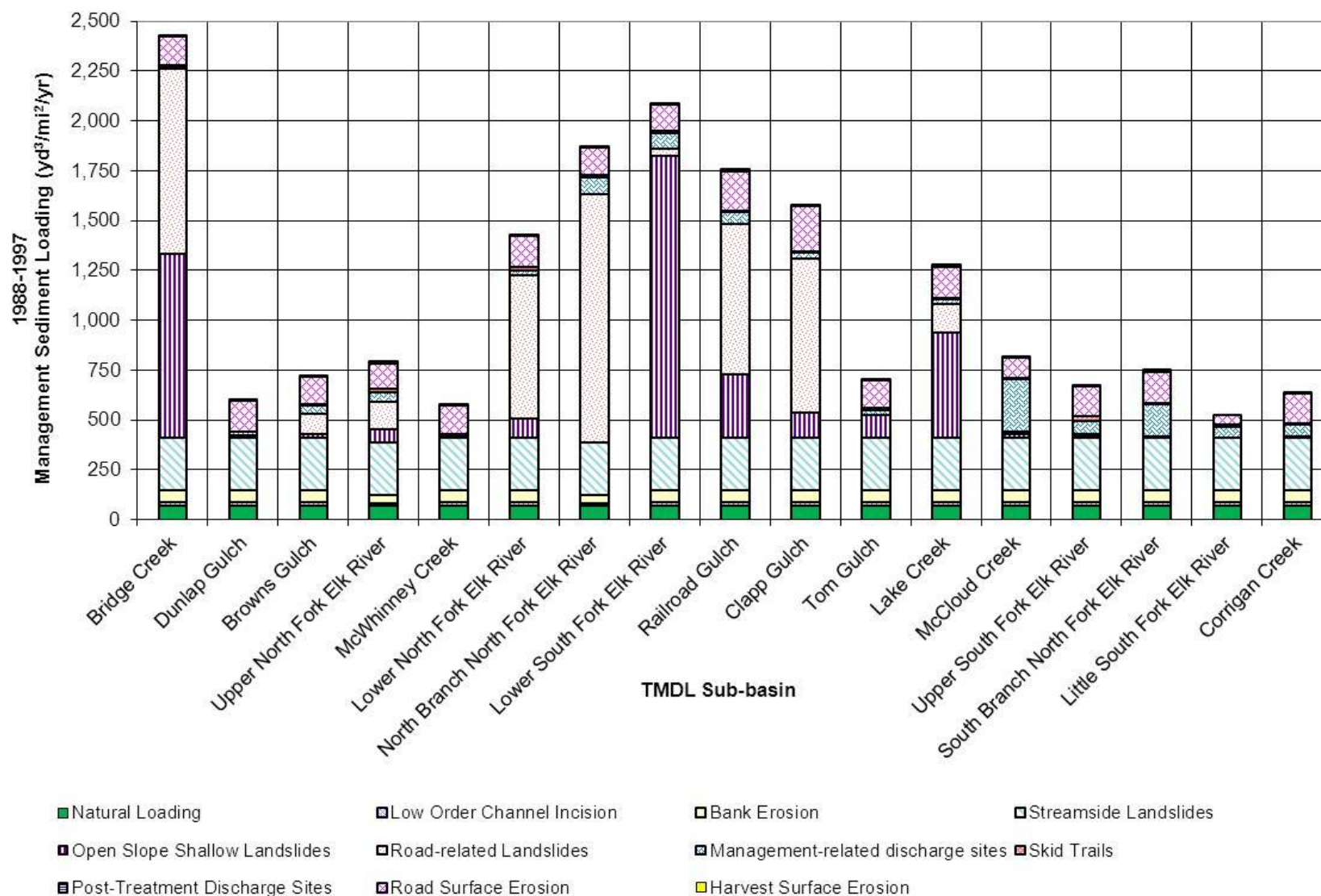


Figure 3. Annual sediment loading by management source category for TMDL subbasins for the 1975-1987 analysis time period.

## Appendix 4H – Sediment Source Subbasin Summary



**Figure 4. Annual sediment loading by management source category for TMDL subbasins for the 1988-1997 analysis time period.**



## Appendix 4H – Sediment Source Subbasin Summary

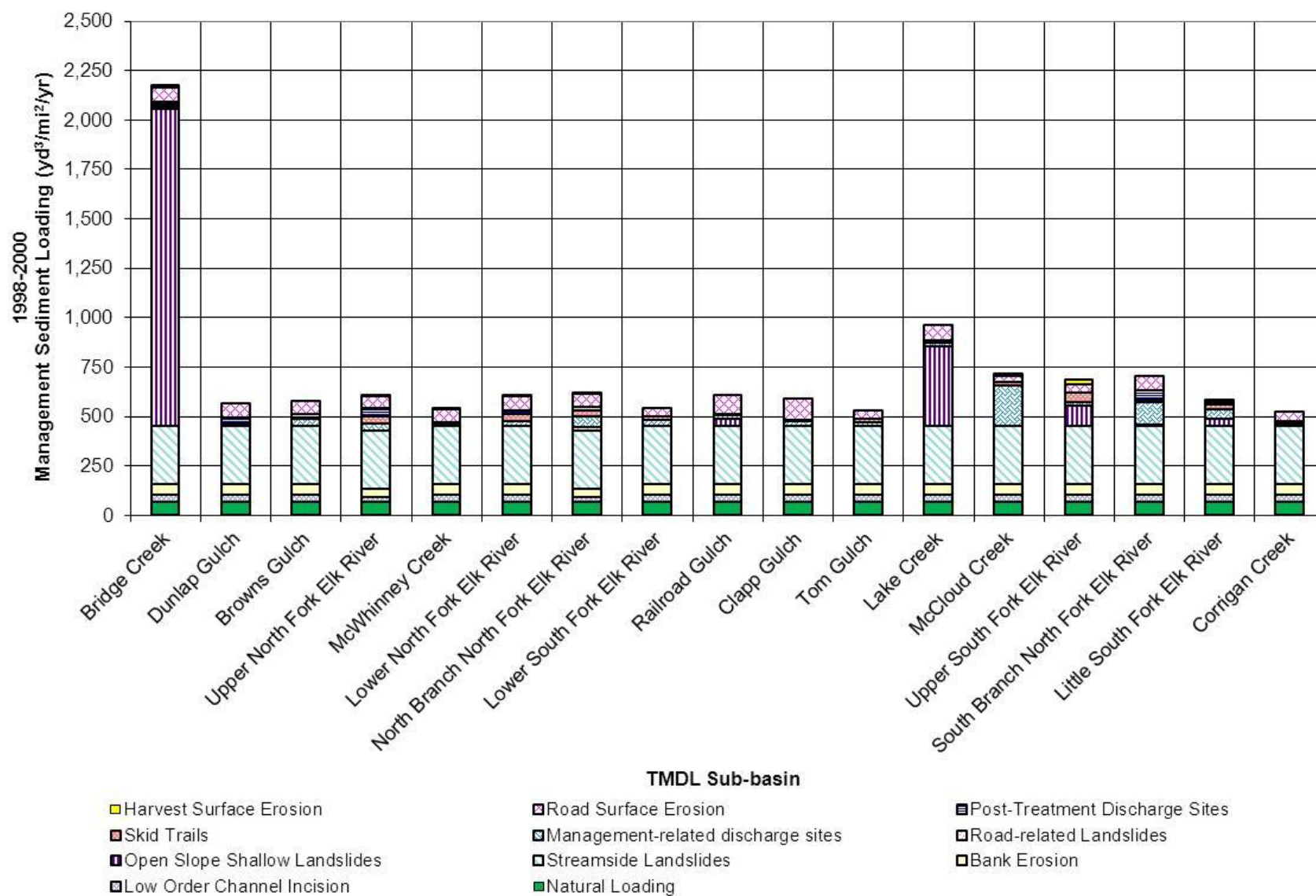


Figure 5. Annual sediment loading by management source category for TMDL subbasins for the 1998-2000 analysis time period.

## Appendix 4H – Sediment Source Subbasin Summary

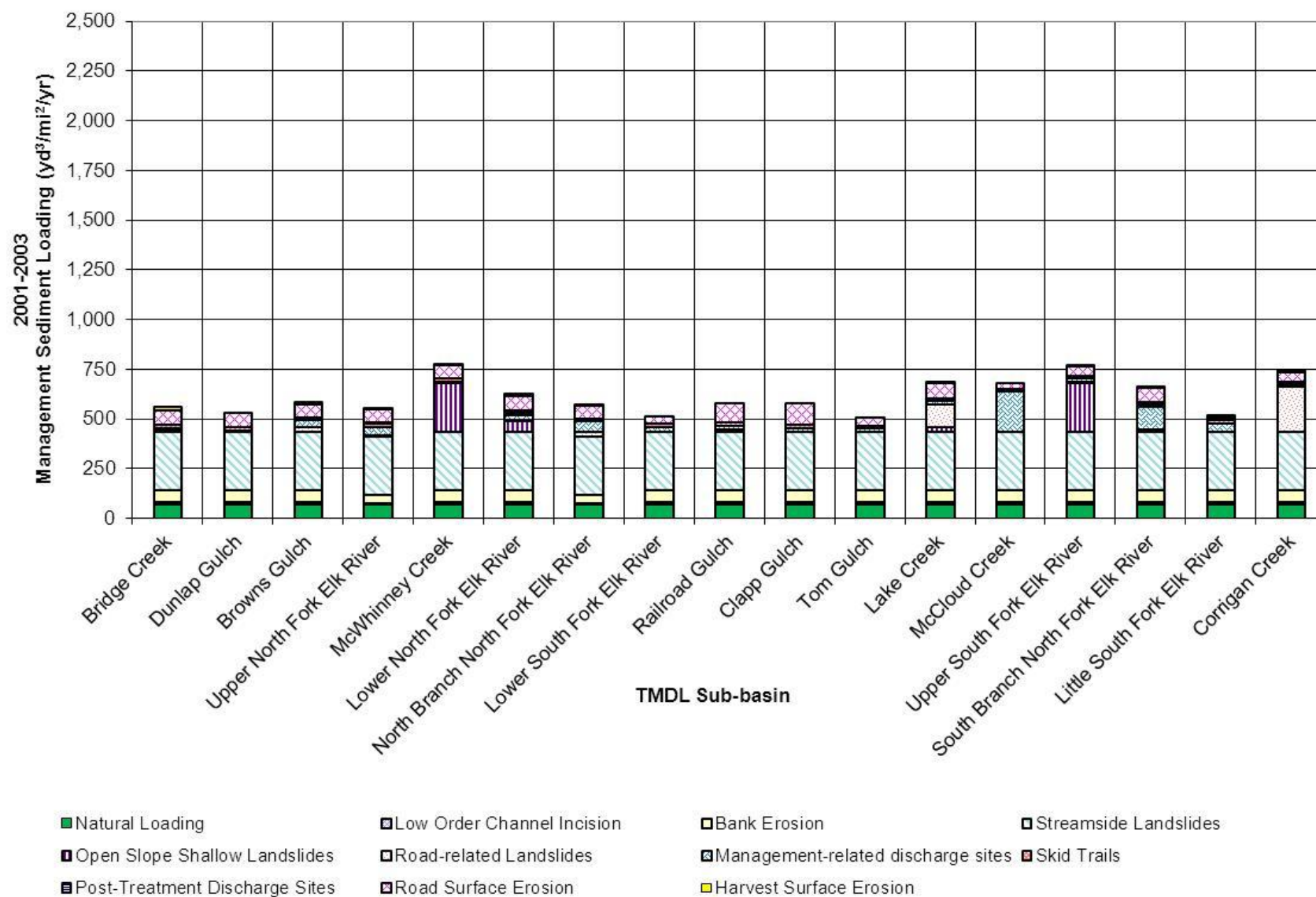


Figure 6. Annual sediment loading by management source category for TMDL subbasins for the 2001-2003 analysis time period.



## Appendix 4H – Sediment Source Subbasin Summary

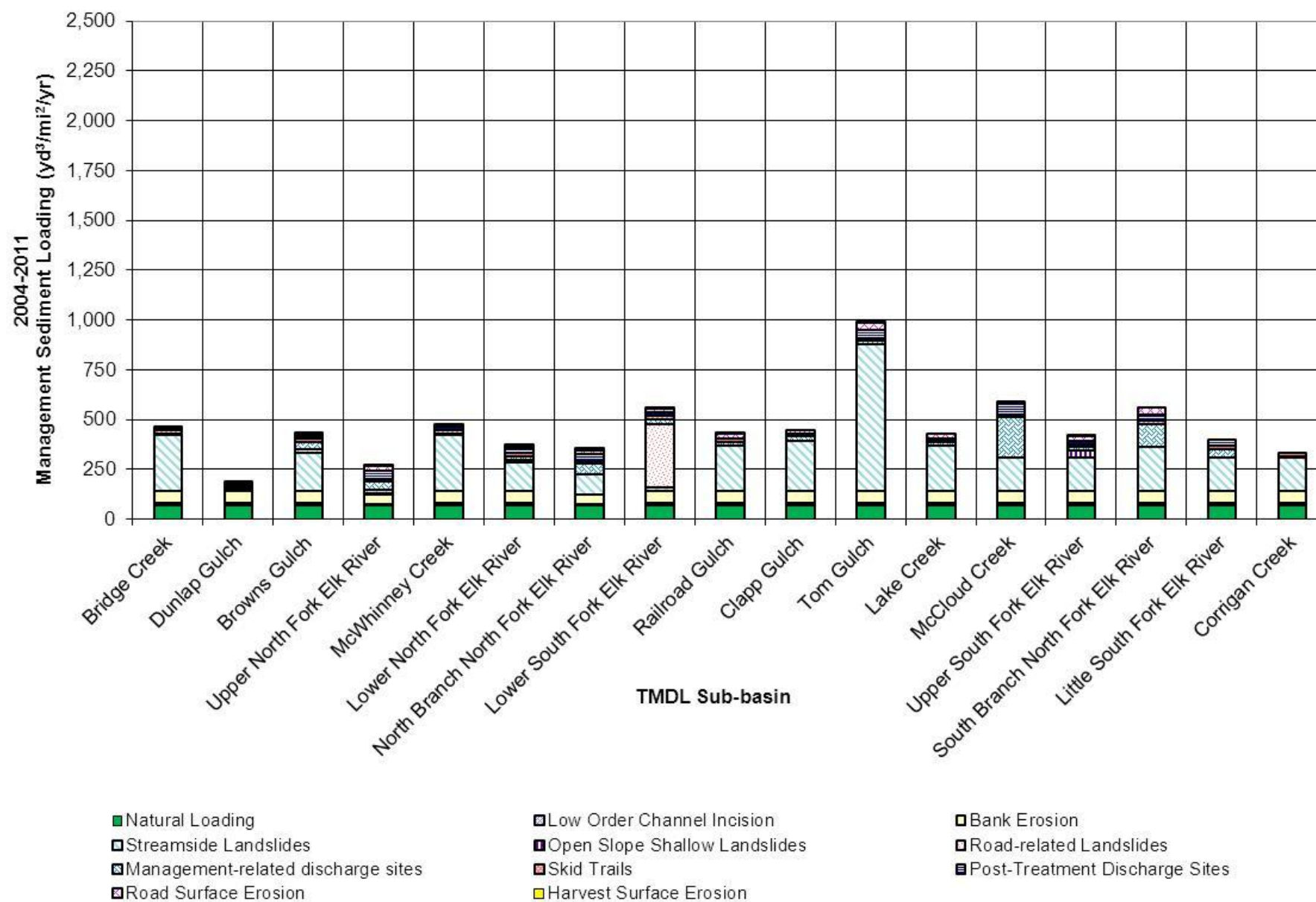


Figure 7. Annual sediment loading by management source category for TMDL subbasins for the 2004-2011 analysis time period.