



Meaford Water Pollution Control Plant Bighead Pump Station Annual Report for the year 2020

Certificate of Approval #3-0388-89-006

Executive Summary

This report consists of a description of the works, a general summary of issues relating to the operation of this facility, a tabulation of the station flows, and a tabulation of any bypass occurrences. It is felt that the information presented herein is complete in detail.

This report is a stated requirement of Certificate Approval #3-0388-89-006 dated October 3, 1989.

The Bighead Pump Station located at 98 Denmark Street is a below grade station consisting of four (4) 85 horsepower Flygt Submersible Pumps, of which two are variable speed and two constant speed, a two compartment wet well, a 210 kilowatt standby diesel generator, flow measurement equipment, and station by-pass provisions to the Bighead River. The Pump Station has a rated capacity of 160 litres per second with any three pumps operating simultaneously for a flow equivalent of 13,824 m³ per day.

Flow Review

The flow reporting consists of a full tabulation of recorded flows. This flow information provides daily flow, total monthly flow and various flow trend calculations. Also provided is an annual summary of the Bighead Station flows for 2020. The summarized results are as follows:

| Flow | Quantity (m ³) | Date (mm/dd/yy) |
|----------------------|----------------------------|-----------------|
| Total Annual Flow | 794,456 | |
| Average Daily Flow | 2,166 | |
| Maximum Daily Flow | 9,670 | 03/11/20 |
| Minimum Daily Flow | 1,405 | 06/09/20 |
| Maximum Monthly Flow | 92,072 | 03/20 |
| Minimum Monthly Flow | 50,724 | 06/20 |

The Bighead Pump Station operates within its design capacity of 15,640m³ per day.

Bypass Summary

There were no bypass events during 2020.

The following statement from the 1997 Report is still valid:

Past practice in response to high flow events has been to begin bypassing the Meaford Treatment Plant when three pumps are running at the Bighead Station. This procedure has been discussed and for short term events a revised strategy has been developed. The strategy will involve shutting off the aeration tank aerators and slowing down the secondary clarifier slip valves. This action will help to reduce the hydraulic load on both the aeration tanks and the secondary clarifiers and prevent potential solid loss while preventing unnecessary bypassing. This strategy can only be used for short term events in order to prevent anoxic conditions in the Aeration Tanks.

Summary

It is felt that this report is complete in detail and provides the necessary information as requested in the Certificate of Approval. The Bighead Pumping station operated with no major incidents or breakdowns in 2020. The over design capacity at the station continues to have operational issues, including excessive solids build up which is a contributing factor to odour issues at the Meaford Water Pollution Control Plant. This results in additional operator maintenance at the station. Staff continue to rake the bar screen of debris and rags on an as needed basis. Overall, the Bighead Pumping Station continues to operate within its design capacity of 15,640 m³/day exceptionally well.

Station Flow Data

| | TOTAL FLOW FLOW m3 | | AVERAGE DAILY FLOW m3 | | MAX. DAILY FLOW m3 | | MIN. DAILY FLOW m3 |
|-----------|--|--|-------------------------------|--|-----------------------------------|--|-----------------------------------|
| JANUARY | 80092 | | 2584 | | 5187 | | 1846 |
| FEBRUARY | 52358 | | 1805 | | 2276 | | 1564 |
| MARCH | 92072 | | 2970 | | 9670 | | 1786 |
| APRIL | 58853 | | 1962 | | 2795 | | 1564 |
| MAY | 55508 | | 1791 | | 2616 | | 1532 |
| JUNE | 50724 | | 1691 | | 2956 | | 1405 |
| JULY | 54351 | | 1753 | | 5501 | | 1410 |
| AUGUST | 75113 | | 2423 | | 7840 | | 1416 |
| SEPTEMBER | 57311 | | 1910 | | 2937 | | 1434 |
| OCTOBER | 65251 | | 2105 | | 3177 | | 1586 |
| NOVEMBER | 65980 | | 2199 | | 3679 | | 1547 |
| DECEMBER | 86843 | | 2801 | | 5619 | | 2010 |
| | Total Annual Flow 794456 | | Avg Daily Flow 2166 | | Max Daily Flow 9670 | | Min Daily Flow 1405 |

Bighead Station Daily Flow Data 2020

| Date | Daily m ³ |
|---------|----------------------|
| January | |
| | |
| 1 | 2469 |
| 2 | 2386 |
| 3 | 2338 |
| 4 | 2272 |
| 5 | 2185 |
| 6 | 2062 |
| 7 | 2087 |
| 8 | 1967 |
| 9 | 1846 |
| 10 | 1987 |
| 11 | 5187 |
| 12 | 5181 |
| 13 | 3443 |
| 14 | 2887 |
| 15 | 2798 |
| 16 | 2641 |
| 17 | 2463 |
| 18 | 2341 |
| 19 | 2310 |
| 20 | 2181 |
| 21 | 2130 |
| 22 | 2083 |
| 23 | 2015 |
| 24 | 1927 |
| 25 | 2604 |
| 26 | 3350 |
| 27 | 3204 |
| 28 | 2750 |
| 29 | 2530 |
| 30 | 2368 |
| 31 | 2100 |

| Date | Daily m ³ |
|----------|----------------------|
| February | |
| | |
| 1 | 2082 |
| 2 | 2022 |
| 3 | 2124 |
| 4 | 2276 |
| 5 | 2025 |
| 6 | 1920 |
| 7 | 1818 |
| 8 | 1753 |
| 9 | 1735 |
| 10 | 1685 |
| 11 | 1700 |
| 12 | 1633 |
| 13 | 1636 |
| 14 | 1605 |
| 15 | 1670 |
| 16 | 1658 |
| 17 | 1614 |
| 18 | 1555 |
| 19 | 1604 |
| 20 | 1556 |
| 21 | 1536 |
| 22 | 1633 |
| 23 | 1768 |
| 24 | 1968 |
| 25 | 2125 |
| 26 | 2121 |
| 27 | 1899 |
| 28 | 1837 |
| 29 | 1800 |

| Date | Daily m ³ |
|-------|----------------------|
| March | |
| | |
| 1 | 1786 |
| 2 | 2105 |
| 3 | 2271 |
| 4 | 2492 |
| 5 | 2213 |
| 6 | 2212 |
| 7 | 2141 |
| 8 | 2281 |
| 9 | 3155 |
| 10 | 6640 |
| 11 | 9670 |
| 12 | 3723 |
| 13 | 4124 |
| 14 | 3643 |
| 15 | 3128 |
| 16 | 2714 |
| 17 | 2592 |
| 18 | 2437 |
| 19 | 2327 |
| 20 | 3030 |
| 21 | 2760 |
| 22 | 2511 |
| 23 | 2371 |
| 24 | 2361 |
| 25 | 2271 |
| 26 | 2177 |
| 27 | 2020 |
| 28 | 2061 |
| 29 | 2566 |
| 30 | 3201 |
| 31 | 3089 |

Bighead Station Daily Flow Data 2020

| Date | Daily m ³ |
|-------|----------------------|
| April | |
| | |
| 1 | 2795 |
| 2 | 2497 |
| 3 | 2339 |
| 4 | 2164 |
| 5 | 2087 |
| 6 | 1944 |
| 7 | 1870 |
| 8 | 1863 |
| 9 | 2166 |
| 10 | 2078 |
| 11 | 1965 |
| 12 | 1825 |
| 13 | 2011 |
| 14 | 1953 |
| 15 | 1979 |
| 16 | 1931 |
| 17 | 1888 |
| 18 | 1871 |
| 19 | 1922 |
| 20 | 1782 |
| 21 | 2077 |
| 22 | 2078 |
| 23 | 1779 |
| 24 | 1717 |
| 25 | 1708 |
| 26 | 1690 |
| 27 | 1590 |
| 28 | 1564 |
| 29 | 1683 |
| 30 | 2037 |

| Date | Daily m ³ |
|------|----------------------|
| May | |
| | |
| 1 | 1985 |
| 2 | 1889 |
| 3 | 1865 |
| 4 | 1753 |
| 5 | 1784 |
| 6 | 1609 |
| 7 | 1667 |
| 8 | 1646 |
| 9 | 1705 |
| 10 | 1660 |
| 11 | 1620 |
| 12 | 1579 |
| 13 | 1539 |
| 14 | 1532 |
| 15 | 2140 |
| 16 | 1963 |
| 17 | 1828 |
| 18 | 2616 |
| 19 | 2214 |
| 20 | 2035 |
| 21 | 1878 |
| 22 | 1804 |
| 23 | 1802 |
| 24 | 1780 |
| 25 | 1717 |
| 26 | 1637 |
| 27 | 1644 |
| 28 | 1592 |
| 29 | 1665 |
| 30 | 1686 |
| 31 | 1674 |

| Date | Daily m ³ |
|------|----------------------|
| June | |
| | |
| 1 | 1620 |
| 2 | 1576 |
| 3 | 1555 |
| 4 | 1535 |
| 5 | 1528 |
| 6 | 1506 |
| 7 | 1543 |
| 8 | 1468 |
| 9 | 1405 |
| 10 | 1760 |
| 11 | 2956 |
| 12 | 1939 |
| 13 | 1749 |
| 14 | 1710 |
| 15 | 1577 |
| 16 | 1537 |
| 17 | 1584 |
| 18 | 1536 |
| 19 | 1510 |
| 20 | 1507 |
| 21 | 1456 |
| 22 | 1470 |
| 23 | 2613 |
| 24 | 2320 |
| 25 | 1819 |
| 26 | 1686 |
| 27 | 1610 |
| 28 | 1605 |
| 29 | 1563 |
| 30 | 1481 |

Bighead Station Daily Flow Data 2020

| Date | Daily m ³ |
|------|----------------------|
| July | |
| | |
| 1 | 1535 |
| 2 | 1497 |
| 3 | 1534 |
| 4 | 1490 |
| 5 | 1479 |
| 6 | 1410 |
| 7 | 1410 |
| 8 | 1470 |
| 9 | 1444 |
| 10 | 1666 |
| 11 | 2097 |
| 12 | 2251 |
| 13 | 1941 |
| 14 | 1730 |
| 15 | 1610 |
| 16 | 1628 |
| 17 | 1648 |
| 18 | 1533 |
| 19 | 2017 |
| 20 | 1809 |
| 21 | 1659 |
| 22 | 1778 |
| 23 | 1682 |
| 24 | 1595 |
| 25 | 1541 |
| 26 | 1500 |
| 27 | 1541 |
| 28 | 5501 |
| 29 | 1464 |
| 30 | 1460 |
| 31 | 1431 |

| Date | Daily m ³ |
|--------|----------------------|
| August | |
| | |
| 1 | 1416 |
| 2 | 3555 |
| 3 | 2888 |
| 4 | 2791 |
| 5 | 3263 |
| 6 | 2304 |
| 7 | 2026 |
| 8 | 1904 |
| 9 | 1880 |
| 10 | 1752 |
| 11 | 1809 |
| 12 | 1678 |
| 13 | 1613 |
| 14 | 1589 |
| 15 | 1517 |
| 16 | 3796 |
| 17 | 2660 |
| 18 | 2143 |
| 19 | 1914 |
| 20 | 1837 |
| 21 | 1773 |
| 22 | 1760 |
| 23 | 1649 |
| 24 | 1642 |
| 25 | 1669 |
| 26 | 1648 |
| 27 | 3401 |
| 28 | 2244 |
| 29 | 7840 |
| 30 | 4117 |
| 31 | 3035 |

| Date | Daily m ³ |
|-----------|----------------------|
| September | |
| | |
| 1 | 2611 |
| 2 | 2937 |
| 3 | 2664 |
| 4 | 2795 |
| 5 | 2397 |
| 6 | 2189 |
| 7 | 2472 |
| 8 | 2276 |
| 9 | 2030 |
| 10 | 1944 |
| 11 | 1820 |
| 12 | 1816 |
| 13 | 2129 |
| 14 | 1913 |
| 15 | 1781 |
| 16 | 1707 |
| 17 | 1674 |
| 18 | 1641 |
| 19 | 1587 |
| 20 | 1540 |
| 21 | 1472 |
| 22 | 1450 |
| 23 | 1476 |
| 24 | 1490 |
| 25 | 1444 |
| 26 | 1434 |
| 27 | 1491 |
| 28 | 1448 |
| 29 | 1779 |
| 30 | 1904 |

Bighead Station Daily Flow Data 2020

| Date | Daily m ³ |
|---------|----------------------|
| October | |
| | |
| 1 | 2505 |
| 2 | 2100 |
| 3 | 1829 |
| 4 | 1926 |
| 5 | 1915 |
| 6 | 1786 |
| 7 | 2048 |
| 8 | 2208 |
| 9 | 2015 |
| 10 | 2148 |
| 11 | 1739 |
| 12 | 1644 |
| 13 | 1670 |
| 14 | 1586 |
| 15 | 1610 |
| 16 | 2113 |
| 17 | 1890 |
| 18 | 1841 |
| 19 | 2096 |
| 20 | 2074 |
| 21 | 2448 |
| 22 | 2254 |
| 23 | 3177 |
| 24 | 3079 |
| 25 | 2596 |
| 26 | 2247 |
| 27 | 2474 |
| 28 | 2303 |
| 29 | 2124 |
| 30 | 1940 |
| 31 | 1866 |

| Date | Daily m ³ |
|----------|----------------------|
| November | |
| | |
| 1 | 2142 |
| 2 | 2464 |
| 3 | 2310 |
| 4 | 2021 |
| 5 | 1921 |
| 6 | 1789 |
| 7 | 1796 |
| 8 | 1723 |
| 9 | 1620 |
| 10 | 1585 |
| 11 | 1640 |
| 12 | 1584 |
| 13 | 1547 |
| 14 | 1587 |
| 15 | 2137 |
| 16 | 3411 |
| 17 | 2696 |
| 18 | 2286 |
| 19 | 2130 |
| 20 | 1993 |
| 21 | 1932 |
| 22 | 1879 |
| 23 | 2273 |
| 24 | 2635 |
| 25 | 2908 |
| 26 | 3679 |
| 27 | 2852 |
| 28 | 2617 |
| 29 | 2419 |
| 30 | 2404 |

| Date | Daily m ³ |
|----------|----------------------|
| December | |
| | |
| 1 | 2605 |
| 2 | 2702 |
| 3 | 2773 |
| 4 | 3145 |
| 5 | 3321 |
| 6 | 2925 |
| 7 | 2636 |
| 8 | 2387 |
| 9 | 2516 |
| 10 | 2879 |
| 11 | 2912 |
| 12 | 4998 |
| 13 | 5619 |
| 14 | 3782 |
| 15 | 3210 |
| 16 | 2817 |
| 17 | 2574 |
| 18 | 2352 |
| 19 | 2275 |
| 20 | 2378 |
| 21 | 2350 |
| 22 | 2196 |
| 23 | 2158 |
| 24 | 2232 |
| 25 | 2066 |
| 26 | 2010 |
| 27 | 2023 |
| 28 | 2603 |
| 29 | 2686 |
| 30 | 2600 |
| 31 | 3113 |