



Meaford Water Pollution Control Plant Bighead Pump Station Annual Report for the year 2021

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 2021. The summarized results are as follows:

Flow	Quantity (m ³)	Date (mm/dd/yy)
Total Annual Flow	716,435	
Average Daily Flow	1,960	
Maximum Daily Flow	9,935	09/23/21
Minimum Daily Flow	1,079	09/01/21
Maximum Monthly Flow	84,828	03/21
Minimum Monthly Flow	41,168	06/21

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

Bypass Summary

There were no bypass events during 2021.

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 blowers 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 2021. 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	62633	2020	2742	1620
FEBRUARY	42801	1529	2226	1321
MARCH	84828	2736	5532	1774
APRIL	60387	2013	2811	1557
MAY	50162	1618	2828	1182
JUNE	41168	1372	2772	1135
JULY	59664	1925	4146	1339
AUGUST	41980	1354	1908	1146
SEPTEMBER	73554	2452	9935	1079
OCTOBER	54978	1773	2538	1430
NOVEMBER	64117	2137	3689	1437
DECEMBER	80163	2586	5465	1771
	Total Annual Flow 716435	Avg Daily Flow 1960	Max Daily Flow 9935	Min Daily Flow 1079

Bighead Station Daily Flow Data 2021

Date	Daily m ³
January	
1	2742
2	2569
3	2075
4	2338
5	2254
6	2270
7	2230
8	2107
9	2062
10	1988
11	1853
12	1827
13	1822
14	1900
15	2086
16	2579
17	2422
18	2217
19	2050
20	1936
21	1937
22	1856
23	1900
24	1849
25	1793
26	1721
27	1678
28	1652
29	1620
30	1652
31	1648

Date	Daily m ³
February	
1	1569
2	1526
3	1559
4	1545
5	1522
6	1515
7	1509
8	1448
9	1446
10	1413
11	1423
12	1377
13	1417
14	1365
15	1433
16	1333
17	1350
18	1321
19	1377
20	1405
21	1386
22	1434
23	1541
24	1739
25	1799
26	1765
27	2058
28	2226
29	1569

Date	Daily m ³
March	
1	3605
2	2608
3	2275
4	2163
5	2066
6	1944
7	1886
8	1932
9	2394
10	3033
11	5532
12	4351
13	3341
14	2893
15	2490
16	2276
17	2153
18	2131
19	2017
20	2006
21	1989
22	1890
23	1840
24	1850
25	1774
26	4580
27	3770
28	4212
29	3869
30	3135
31	2823

Bighead Station Daily Flow Data 2021

Date	Daily m ³
April	
1	2567
2	2419
3	2240
4	2156
5	2034
6	1973
7	1875
8	1791
9	1708
10	1745
11	2799
12	2811
13	2440
14	2208
15	2135
16	2043
17	2001
18	1911
19	1862
20	1877
21	1769
22	1752
23	1689
24	1653
25	1716
26	1557
27	1569
28	2165
29	2028
30	1894

Date	Daily m ³
May	
1	2828
2	1835
3	2445
4	2298
5	2187
6	1958
7	2218
8	1820
9	1725
10	1640
11	1581
12	1549
13	1526
14	1517
15	1483
16	1499
17	1216
18	1370
19	1432
20	1355
21	1521
22	1424
23	1294
24	1346
25	1182
26	1293
27	1415
28	1335
29	1285
30	1303
31	1282

Date	Daily m ³
June	
1	1292
2	1286
3	1300
4	1280
5	1315
6	1338
7	1342
8	1310
9	1335
10	1258
11	1167
12	1196
13	1186
14	1136
15	1182
16	1146
17	1153
18	1135
19	1218
20	1227
21	1209
22	1195
23	1174
24	1177
25	1327
26	2772
27	2536
28	1962
29	1490
30	1524

Bighead Station Daily Flow Data 2021

Date	Daily m ³
July	
1	1407
2	1427
3	1349
4	1339
5	1513
6	1712
7	1714
8	4146
9	3143
10	2316
11	1896
12	1735
13	1765
14	1788
15	2314
16	2262
17	1864
18	1761
19	1582
20	1600
21	1462
22	1463
23	1385
24	1690
25	3339
26	1958
27	1897
28	1678
29	2339
30	2012
31	1808

Date	Daily m ³
August	
1	1908
2	1851
3	1669
4	1492
5	1420
6	1445
7	1553
8	1412
9	1383
10	1370
11	1461
12	1539
13	1418
14	1336
15	1290
16	1253
17	1234
18	1286
19	1243
20	1257
21	1240
22	1221
23	1219
24	1180
25	1178
26	1146
27	1190
28	1154
29	1206
30	1238
31	1188

Date	Daily m ³
September	
1	1079
2	1096
3	1106
4	1111
5	1205
6	1258
7	1411
8	3342
9	2995
10	2025
11	1668
12	1544
13	1433
14	1407
15	1696
16	1438
17	1313
18	1315
19	1265
20	1220
21	1336
22	8816
23	9935
24	5056
25	3893
26	3697
27	2985
28	2535
29	2278
30	2096

Bighead Station Daily Flow Data 2021

Date	Daily m ³
October	
1	1930
2	1848
3	2028
4	1766
5	1670
6	1613
7	1558
8	1526
9	1572
10	1550
11	1486
12	1486
13	1492
14	1430
15	1519
16	2089
17	2538
18	2121
19	1833
20	1697
21	1796
22	1743
23	1713
24	1640
25	1841
26	2528
27	2077
28	1839
29	1655
30	1732
31	1662

Date	Daily m ³
November	
1	1899
2	2349
3	2466
4	2280
5	1994
6	1893
7	1777
8	1645
9	1537
10	1481
11	1437
12	1471
13	1655
14	1802
15	1715
16	1684
17	1729
18	2758
19	2477
20	2399
21	2234
22	2430
23	2323
24	2473
25	3689
26	3026
27	2595
28	2426
29	2255
30	2218

Date	Daily m ³
December	
1	2839
2	3600
3	3028
4	2686
5	2477
6	3913
7	3498
8	2920
9	2559
10	2500
11	5465
12	4486
13	3437
14	2884
15	2614
16	2431
17	2249
18	2145
19	2078
20	1998
21	1920
22	1901
23	1774
24	1844
25	1990
26	1915
27	1832
28	1796
29	1808
30	1805
31	1771