



# FISH PASSAGE CENTER

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## MEMORANDUM

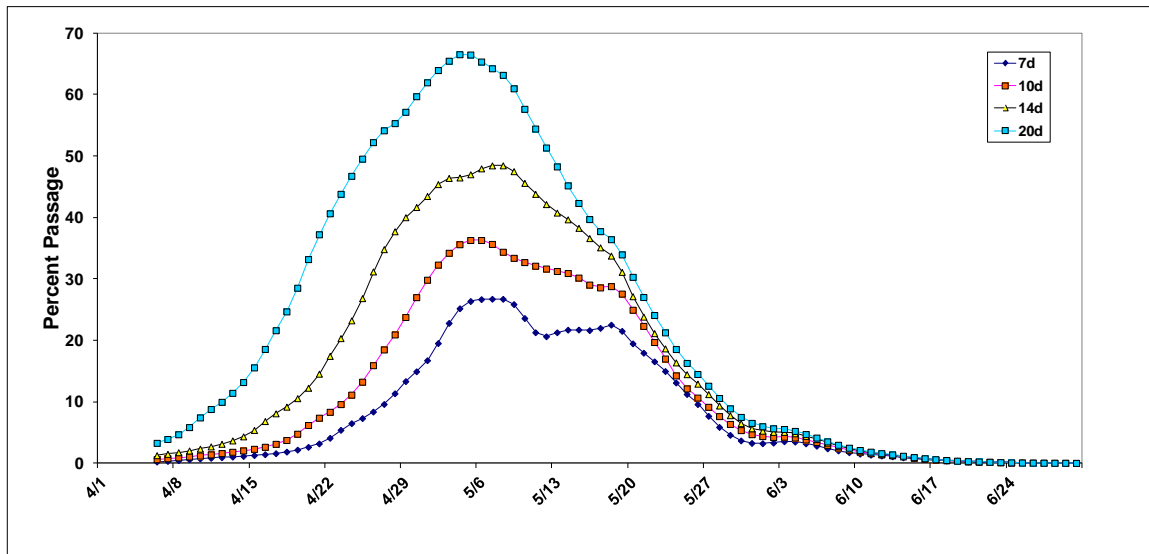
TO: FPAC

FROM: David Benner

DATE: May 19, 2015

RE: Updated Scenarios of Release of Non-Treaty Storage in 2015

In response to your request, several different strategies of potential release of the 0.5 Maf of Non-Treaty water were investigated. Using the combined juvenile passage at McNary in 2007 we constructed a plot (Figure 1) that combined the passage over four periods (7days, 10 days, 14 days, and 20 days) as a percent of the total passage. For example, over a 20-day period in 2007 beginning on May 5<sup>th</sup>, approximately 67% percent of combined juveniles passed McNary Dam.



**Figure 1.** Combined passage at McNary Dam in 2007. Each series represents percent passage on date for some period forward (i.e., 7 days, 10 days, 14 days, and 20 days).

Four scenarios of release of the 0.5 Maf of Non-Treaty Storage water were developed using the dates in Figure 1 that impacted the largest percentage of the combined run at McNary Dam in 2007. These dates were:

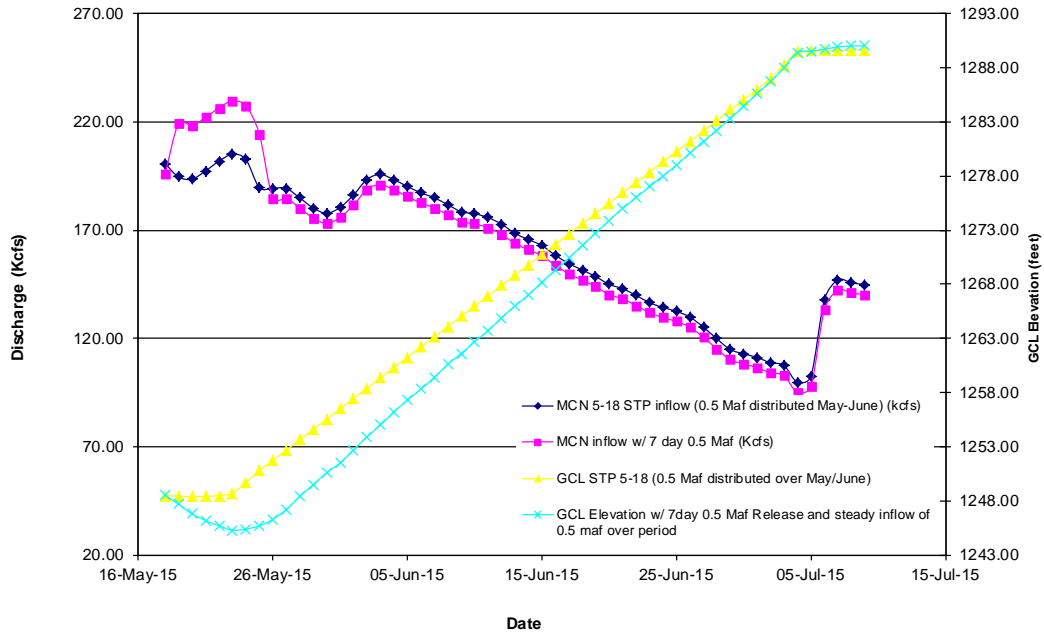
1. 7-day release of 29.3 Kcfs beginning May 19, a time period that impacted 22% of combined run in 2007.
2. 10-day release of 20.5 Kcfs beginning May 19, a time period that impacted 28% of combined run in 2007.
3. 14-day release of 14.7 Kcfs beginning May 19, a time period that impacted 31% of combined run in 2007.
4. 20-day release of 10.3 Kcfs beginning May 19, a time period that impacted 34% of combined run in 2007.

It should be pointed out that some portion of the 0.5 Maf of Non-Treaty storage was assumed to have already passed through Grand Coulee between May 8 and May 17, 2015 (approximately 93 Kaf). Therefore this exercise shaped only the remaining 407 Kaf of water from the original 500 Kaf (0.5 Maf) of Non-Treaty Storage water.

Using the 5-18-15 STP inflows, outflows, reservoir elevation and banks pumping (5-11 STP) at Grand Coulee along with McNary Dam inflows, the four scenarios were modeled with respect to impact to Grand Coulee elevations and flows at McNary. For modeling purposes it was assumed that the Non-Treaty storage water entered Grand Coulee at a constant rate of 4.7 Kcfs between May 8, 2015, and June 30, 2015. The Non-Treaty Storage water that entered Grand Coulee between May 8 and May 17, 2015, was assumed to have passed through Grand Coulee. The remaining 407 Kaf of Non-treaty storage water was then released in the four periods described above (7 days, 10 days, 14 days, and 20 days). In this exercise, it was assumed that changes in outflow at Grand Coulee were immediate at McNary Dam; in reality some degree of lag would occur but would not likely be more than one day.

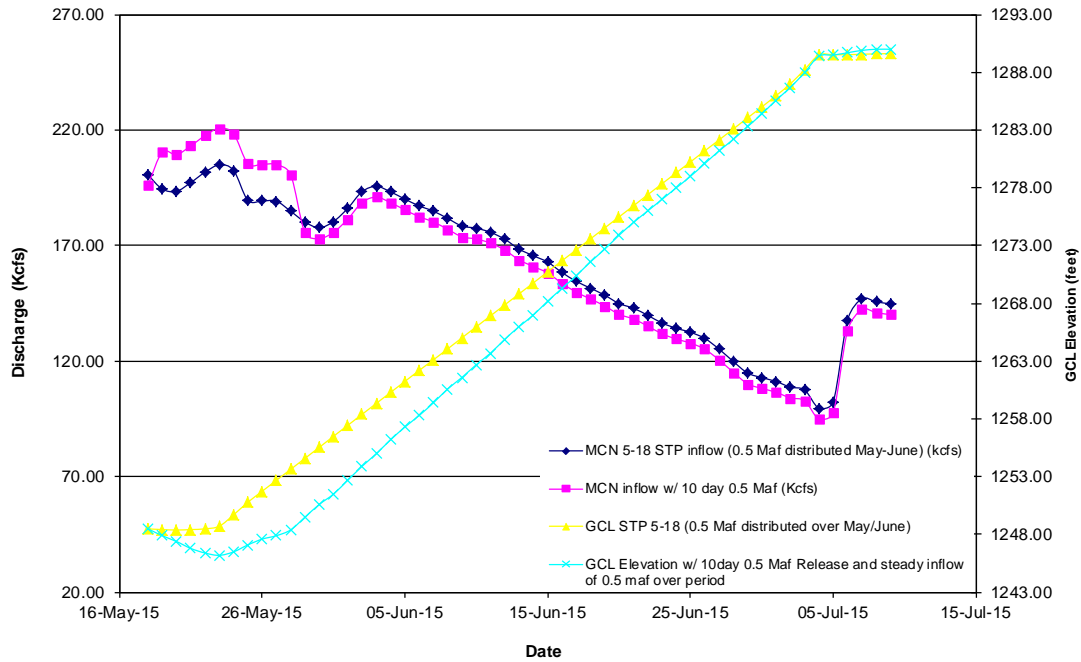
The following four plots show the results of this exercise.

McNary Flows w/ 0.5 Maf Release at GCL May 19-25 (7 days), in 2007 at MCN 22% of Combined fish passed during May 19-25

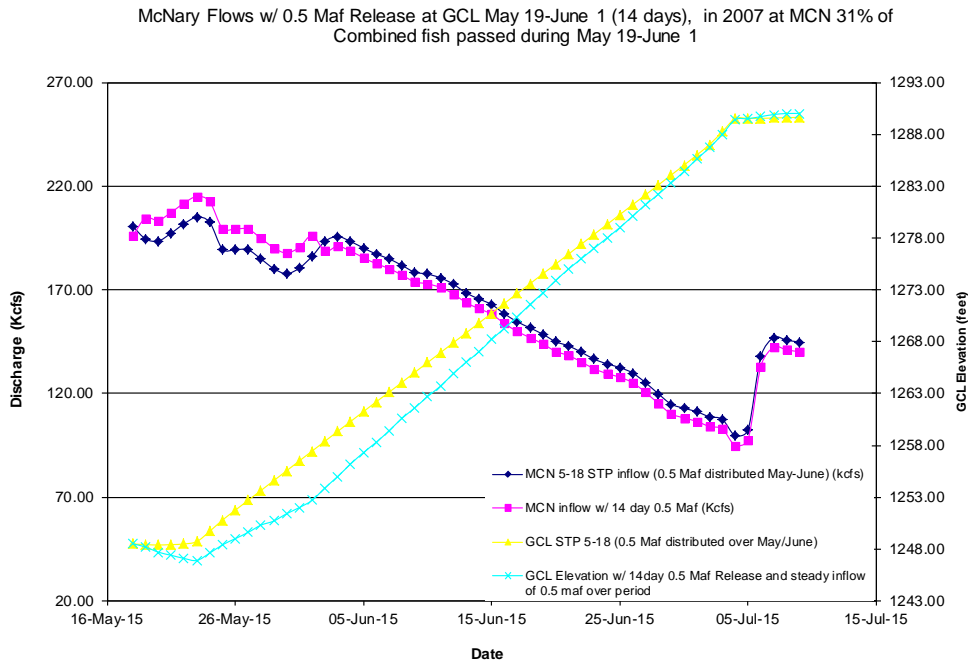


**Figure 2.** Release of Non-Treaty storage over 7-day period (29 Kcfs) between May 19 and May 25, with impact on Grand Coulee elevation and McNary Dam inflow.

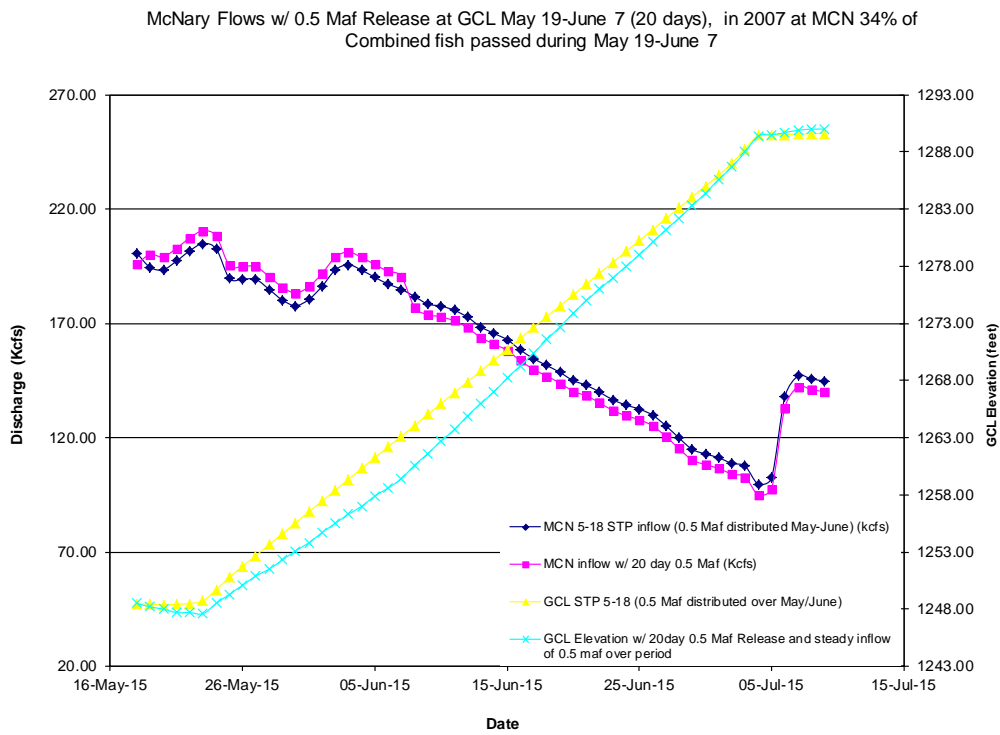
McNary Flows w/ 0.5 Maf Release at GCL May 19-28 (10 days), in 2007 at MCN 28% of Combined fish passed during May 19-28



**Figure 3.** Release of Non-Treaty storage over 10-day period (21 Kcfs) between May 19 and May 28, with impact on Grand Coulee elevation and McNary Dam inflow.



**Figure 4.** Release of Non-Treaty storage over 14-day period (15 Kcfs) between May 19 and June 1, with impact on Grand Coulee elevation and McNary Dam inflow.



**Figure 5.** Release of Non-Treaty storage over 20-day period (10 Kcfs) between May 19 and June 7, with impact on Grand Coulee elevation and McNary Dam inflow.