Memorandum
To: Shawn Seaman, Maryland DNR Power Plant Research Program
From: Steve Schreiner, Versar Inc.
RE: Analysis of Increasing the TER flow trigger

The flow threshold (above which the TER protocol is not implemented) is currently 150 cubic feet per second (cfs). Since 2010, there have been 5 temperature exceedances where flow was greater than 150 cfs. Of these 5 exceedances, 4 would have been avoided or minimized had the protocol been in effect, based on running the protocol equations with forecasted weather data and recorded water temperatures. The small exceedance on 6/23/13 would not have been avoided because a release would not have been predicted as needed by the protocol.

Date	DNR Max Temp at Sang Run, °C	Flow at 7 am (from TER Protocol)	Flow (Daily Average from Oakland Gage)	Flow (Daily Average from Hoyes Gage)	Lake Elevation ft.	Feet above LRB
7/14/2010	25.4	168	164	N/A	2459.9	+0.3
6/23/2013	25.1	151	147	227	2461.2	+1.2
7/14/2013	25.9	175	177	293	2460.9	+1.3
7/18/2017	25.8	179	171	286	2461.1	+1.6
7/4/2018	25.6	180	182	267	2461.2	+1.3

There would have been 2 additional unnecessary releases over that 9-year period, if the protocol had been implemented for flows between 150 and 200 cfs, on dates that otherwise had no releases. If the protocol trigger flow range was reduced to a maximum of 180 cfs, only one additional unnecessary release would have occurred. Since the highest flow with an exceedance to date was 180 cfs, ***we recommend changing the flow threshold from 150 cfs to 180 cfs.***

Based on potentially 5 additional releases over a 9-year period (assuming two-hour releases for each), there would have been an average annual change in lake level of about **0.17 or 1/6 of an inch** (using a 2-hour release is a worst-case assumption; since these exceedances were all less than 26°C, it is likely only a 1-hour release would have been needed to maintain a temperature of < 25°C for at least some of these releases). Only in 2010 was the lake level close to the LRB. In the other years, lake levels were more than 1 foot above the LRB.