Philadelphia Water Department ***ANALYSIS OF PEAK WET WEATHER VS. PEAK DRY WEATHER FLOWS***

DESCRIPTION	**VALUE**		**NOTES / REFERENCES**	Date	1/22/2015
STEP 1: ESTIMATE THE PEAK WET WEATHER FLOW FOR TOTAL SYSTEM (COMBINED + SEPARATE STORM)					
Choose Option for Combined Sewer System Flow: 1 = Lower Estimate; 2 = Avg. Estimate; 3 = High Estimate	*2*				
Combined Sewer System (CSS) Wet Weather Volume					
CSS System-Wide Captured Volume	21,522	MG	Table 3-45 of LTCPU		
CSS System-Wide Overflow Volume	13,090	MG	Table 3-45 of LTCPU		
Total CSS Wet Weather Volume	34,612	MG	Table 3-45 of LTCPU		
Average Day CSS Wet Weather Flow	94.83	MGD	= 34,612 MG / 365 days		
Separate Storm Sewer System Wet Weather Estimate					
Ratio Wet Weather Flow From CSS to Separate Storm Sewer System					
94.83 MGD =	X	MGD			
60 % of City	*40*	% of City	CSS covers 60% of City; S4 covers 40%; See 5/24/2011 CAC Presentation.		
X =	63.22	MGD	= (94.83 MGD X 40%) / 60%		
Total Separate Sewer Wet Wthr. Est. =	23,075	MG	= 63.22 / 365 days		
Avg. Day System-Wide Wet Weather Flow	**158.05** **57,687**	**MGD** **MG**	= 94.83 MGD + 63.22 MGD = 34,612 MG + 23,075 MG		
# of Events > 0.05 inches (Assume = Wet Weather)	*77.6*		From Page 3-297 of LTCPU (Table 3-113)		
Estimated Peak Flow per Wet Weather Event =	**743.38**	**MGD**	= 57,687 MG / 77.6 daily events	901.43	0.82467239

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DESCRIPTION	VALUE		NOTES / REFERENCES	Date	1/22/2015
STEP 2: ESTIMATE THE PEAK DRY WEATHER FLOW FOR THE TOTAL SYSTEM					
Estimated Peak Dry Weather Flow					
Avg. Day Flows to WPCPs (FY 2012, 2013, & 2014)	*423.58*	MGD	Monthly Manager's reports. Average of FY 2012, 2013 and 2014 Year End Actual Average Flows.		
Less: Avg. Day Flow From DELCORA	*(26.19)*	MGD	DELCORA flow from rate model adjusted down 10% to reflect dry weather estimate.		
Less: Avg. Day Captured Stormwater	(58.96)	MGD	= 21,522 MG / 365 days. CSS System-Wide Captured Volume From Table 3-45 of LTCPU		
Estimated Dry Weather Flow to WPCPs	338.43	MGD			
Avg. Day Metered Data (Retail & Wholesale) =	*209.00*	MGD	Metered data from rate model used for Retail and Wholesale customers (excludes DELCORA and I/I).		
Diurnal Peaking Factor =	*1.5*				
Peak Flow From Retail & Wholesale =	313.50	MGD	= 209 MGD X 1.5		
Add Groundwater I/I =	129.43	MGD	= 338.43 MGD - 209.00 MGD. Assume no Groundwater peak.		
Estimated Dry Weather Peak Flow =	**442.93**	**MGD**	= 313.50 MGD + 129.43 MGD. Estimated Impact on PWD Collection System.		
STEP 3: COMPARE WET WEATHER AND DRY WEATHER PEAK EVENTS					
Total Wet Weather Peak + Dry Weather Peak =	**1,186.31**	**MGD**	Wet Weather Peak Event Flow of 743.38 MGD + Dry Weather Peak Flow of 442.93 MGD.		
% of Peak Wet Weather Flow to Combined Peak =	**62.66%**		= 743.38 MGD / 1,186.31 MGD.		
% of Peak Dry Weather Flow to Combined Peak =	**37.34%**		= 442.93 MGD / 1,186.31 MGD.		
Rounded Wet Wet Weather Flow to Combined Peak =	**60.00%**				
Rounded Dry Weather Flow to Combined Peak =	**40.00%**				

Note: Wet Weather reflects rainfall induced stormwater flows
Dry weather does not reflect rainfall induced stormwater flows