that Alternative 1 provides a 10-year level of service and does **not** require the installation of a new pump. The maximum inflow rate to the Pump Station under Alternative 1 is approximately 480 cfs for the 10-year event. Four pumps would be utilized during the 10-year storm event, which is 82% of the available rated capacity of the Pump Station. For the 100-year storm event, the maximum inflow rate to the Pump Station would be 585 cfs and all five pumps would be utilized. Under the maximum anticipated 100-year tailwater conditions, the existing Pump Station can meet this inflow flowrate with the existing five pumps. Alternative 1 was evaluated under a wide range of tailwater conditions, including the River at a 100-year flood elevation. Under all scenarios, the headwater elevation in the pump station would not exceed the allowable High Water Elevation (HWE) within the Pump Station of 615.9 ft during the 100-year flood event.

The additional storm sewer conveyance under Alternative 1 will provide additional flow to the Pump Station to more efficiently use the existing pump capacity and maintain consistent pumping rates. While the capacity of the inflow storm sewer will be increased under Alternative 1, it will not provide 100-year conveyance capacity to the Pump Station. The inflow storm sewer system will continue to limit conveyance to the Pump Station for storm events greater than the 10-year design storm. A 100-year storm event in the Village would not flood the Pump Station as it would only be required to pump the water that is conveyed to it while the additional runoff would remain in the upstream low-lying areas throughout the Village.

Alternative 1 will more efficiently utilize the existing pumping capacity and will therefore increase the flowrate to the River. CBBEL completed a hydrologic and hydraulic analysis for the North Branch Chicago River Watershed to determine if the increased pump flowrate would result in peak water surface elevation increases in the River during flood events. The HEC-HMS hydrologic and unsteady HEC-RAS hydraulic models developed as part of the Detailed Watershed Plan (DWP) in 2011 by HDR, Inc., for the Metropolitan Water Reclamation District of Greater Chicago (MWDRGC) were used to complete this analysis. The analysis showed that the increased pump flowrate for the 100-year storm event does not increase downstream water surface elevations more than 0.09 feet (less than 1 inch), which occurs several miles downstream of Wilmette. There would be no increase in River flood elevations within the Village of Glenview, which is immediately downstream of Wilmette.

CBBEL recommends installing a sixth pump (70,000 gpm) in the available empty chamber within the Pump Station as part of Alternative 1. This will allow for one pump to be out of service for maintenance at all times while maintaining the existing firm capacity (585 cfs) of the Pump Station. The firm capacity of the Pump Station is the capacity that is available at any time assuming the largest pump is out of service. The sixth pump should be a Variable Frequency Drive (VFD) pump to accommodate the limited wet well capacity of the inflow storm sewer system. It is envisioned that the sixth pump with VFD would be operated once the capacity of the first three pumps is exceeded, and the fourth or fifth pump would become the backup pump. Operation of the backup pump would be hardwired to occur only if one of the other pumps were out of service or in an emergency situation. Operation of all six pumps would not significantly reduce flooding in the Village in events up to and exceeding the 100-year storm event, as the inflow storm sewer system would still be the limiting element of the system. If the Village wished to operate all six pumps at the same time in the future, further analysis would be required to demonstrate there would be no downstream increases in River water surface elevations.