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WHITE PAPER
General Process for the Development of
CAP's Annual Operating Plan (AOP)

Determination of CAP's delivery capacity is centered on our process for developing an annual operating plan (AOP). Creation of an AOP begins with the submission of water orders (received in monthly acre-foot volumes) from all entities that desire to take water in a given year. Water is allocated by contract priority until the available water in a given year is allocated. Water schedules are reviewed and revised if needed, according to canal capacity, Underground Storage Facility capacity, energy programs, Lake Pleasant operations, and maintenance outages.

Maintenance planning occurs in several phases, all of which need to be considered in the AOP. Some maintenance activities are consistent from year-to-year, which typically includes planned maintenance in the West Aqueduct system during the summer and the Tucson Aqueduct system in the fall. Other types of outages are usually developed on a multi-year planning horizon. Siphon or Tunnel outages, for instance, are planned and communicated well in advance to customers. These are complete system outages that require specific customers to use alternative supplies for the duration of the outage or continue deliveries relying on the relatively small amount of canal storage. All of the maintenance work that impacts system capacity is included in the AOP process for that year. The result is a plan that projects the monthly acre-feet that will be pumped at each of CAP's pumping plants, and a daily average flow (cubic feet per second, cfs) that will result in each section of the aqueduct.

The AOP monthly interval is adequate for planning the above described activities for system operation. However, real-time operation is executed on a daily basis where customers call in water orders to the CAP Control Center. The daily water orders received are by flow in cfs and changes are tied to a specific hour of operation. Water ordering in real-time is directly dependent on customers' immediate needs. Given that daily water orders will vary as compared to the submitted monthly averages, close attention is paid to the average daily flow values when creating the AOP. System features that frequently represent constraints during real-time operations are evaluated for having sufficient peaking capacity available for real-time operations. Examples would be the capacity of the New River Siphon and Salt Gila pumping plant in the summer months, and capacity of the West Aqueduct in the winter months during

Lake Pleasant fill . CAP Operations carefully evaluates the relationship of the average monthly flows to potential daily peaks that may occur.

The final step in the AOP process—after the customer water schedules, recharge program, and maintenance schedules are finalized—focuses on defining what energy will be needed to execute the plan. Total system energy needs are determined along with available resources for meeting the pumping requirements. These data are used to reserve the needed energy from Reclamation's portion of the Navajo Generating Station. The reservation takes the form an hourly mega-watt schedule shown over a typical day for each month of the year. The water and energy plan are then provided to WAPA and Reclamation (Region). This plan represents CAP's energy reservation of Navajo for the subject calendar year.