

MEMORANDUM

TO: Farrel Hobbs
FROM: Wright Water Engineers, Inc.
DATE: October 4, 1990
RE: Purchase of Great Western Reservoir for Option B Water Management: Coarse Mass Balance

We have not examined alternative mass balances within the total water disposition system, but at first look, we have reached the following assumptions.

1. The use of Option B as a zero discharge facility is a marginal proposition.
2. We believe sufficient flexibility would exist within a system that incorporates an enlarged Great Western Reservoir (GWR) to accommodate evaporative disposition of all Rocky Flats Plant (RFP) wastewaters including capacity for the 100-year runoff from the four square mile RFP site.
3. Major studies must be initiated to define the hydrologic mass balance for Option B. Present findings and assumptions are:
 - Average annual runoff into GWR from the four square mile RFP site is 500 acre feet.
 - Average annual runoff to GWR from the total RFP site and contributing Walnut and Woman Creek tributaries is 800 acre feet.
 - Additional drainage area, other than that above the tributary to GWR, has yet to be determined but is believed to be 1/2 to one sq. mile.
 - Runoff from west of RFP and from part of the ten square mile area contributing to Woman and Walnut Creeks will be diverted into Rock Creek and all waters presently reaching Rock Creek and Big Dry Creek on-site will continue to do so without discharge into GWR.

- The maximum surface area for an enlarged GWR would be 350 acres. If this surface area could be maintained, average annual evaporation from it could be 875 acre feet. Similarly, average annual evaporation from the present 160 acre reservoir would be 400 acre feet.
- Average annual evaporation from the present on-site A-, B-, and C-series ponds is estimated as 225 acre feet.
- Average annual evaporation from the new Option B Woman Creek 100-year capacity reservoir would be up to 150 acre feet.
- Total anticipated evaporation from the present GWR, and both present and contemplated on-site storage facilities, is about 800 acre feet.
- The total average annual water and wastewater discharge from the four square mile RFP site is about 800 acre feet consisting of annual runoff (500 AF), sanitary wastewater (280 AF) and groundwater (20 AF). Consequently, the presently available average annual evaporation, including that from GWR is barely sufficient to dispose of the average annual water flow. Furthermore, if flood flows are accounted for, the existing evaporation capability, including Great Western, is inadequate.
- Based upon the foregoing, lake evaporation as a means for disposing of RFP discharge is marginal for its average annual condition. Such a system could have its capacity augmented by construction of additional on-site storage facilities on Walnut Creek and/or by enlarging Great Western Reservoir. Also, further inflow/outflow (operations) studies must account for the fact that in the early years of Option B operation, there will be a substantial buffer because Great Western stores 3200 AF. That is, an equilibrium between inflow and outflow (800 AF in/800 AF out) will not be established until the capacity of Great Western is filled.
- In the event of occurrence of the 100-year runoff, another 500 acre feet of discharge from the four square mile RFP site would be expected. Considering the marginal evaporation capacity (800 acre feet) anticipated for Option B, it seems likely that additional discharge capacity of some sort will eventually be needed to accommodate major runoff events.