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October 2, 1989

President and Board Members
Palo Pinto County Municipal Water District No. 1
P. O. Box 387
Mineral Wells, Texas 76067

Re: Preliminary Results of Channel Loss Investigation

Dear Gentlemen:

We have some preliminary results of our on-going channel loss measurements on Palo Pinto Creek. Even though this has been an unusually wet summer in the Mineral Wells area, we have been able to obtain meaningful flow measurements on several occasions.



The results of these measurements generally indicate that very little water is lost between Lake Palo Pinto Dam and the upstream end of the District's diversion reservoir. However, significant losses have been recorded from the diversion reservoir. On the basis of measurements taken on July 24, 1989 and on September 7, 1989, it appears that between 1.76 million gallons per day (mgd) and 1.95 mgd is lost directly from the reservoir. This water is lost to the bed and banks of the reservoir (and possibly enters the alluvial sands and gravels), to evaporation, and to transpiration from vegetation.

This quantity of water represents about 28 percent of the municipal yield of Lake Palo Pinto (i.e. 6.7 mgd). Insufficient data has been collected at this time to know how these losses vary throughout the year (they are likely to be less during the winter months) or to what degree they would increase during a dry year or during an extended drought.

We have also determined that a considerable amount of water is spilled over the diversion dam due to the need to keep debris from building up near the pump station intake. We believe that with proper management the amount of water spilled over the dam can be minimized. A figure of approximately 1 mgd is a reasonable estimate of spills lost if the lake outlet valve were monitored at least weekly. (As of last week, we provided plant personnel with the enclosed table of release rates for various valve settings.)

If the preliminary channel loss and spill volumes are combined (without further adjustments for time of year, intervening inflows or drought conditions), it is evident that the yield of Lake Palo Pinto is about 2.7 mgd less than previously estimated. This results in a present day municipal yield of about 4.0 mgd at the diversion dam. Projections of the District's water demand indicate this quantity of

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water will be adequate to meet the District's drought water demands until about 1992.

It is evident from the preliminary channel loss data collected to date that the Turkey Peak project needs to be brought on line as expeditiously as possible. Based on the volume of water lost, I believe the District should seriously consider extending their existing pipeline to Turkey Peak Reservoir. This issue is more fully addresses in the attached letter report regarding the proposed raw water storage site. The above findings and conclusions are preliminary and based on the limited data available at this time. We will keep the District appraised of any changes in these preliminary findings as additional data is obtained and evaluated.

Sincerely,

HDR Engineering, Inc.



Kenneth L. Choffel, P.E.
Vice President

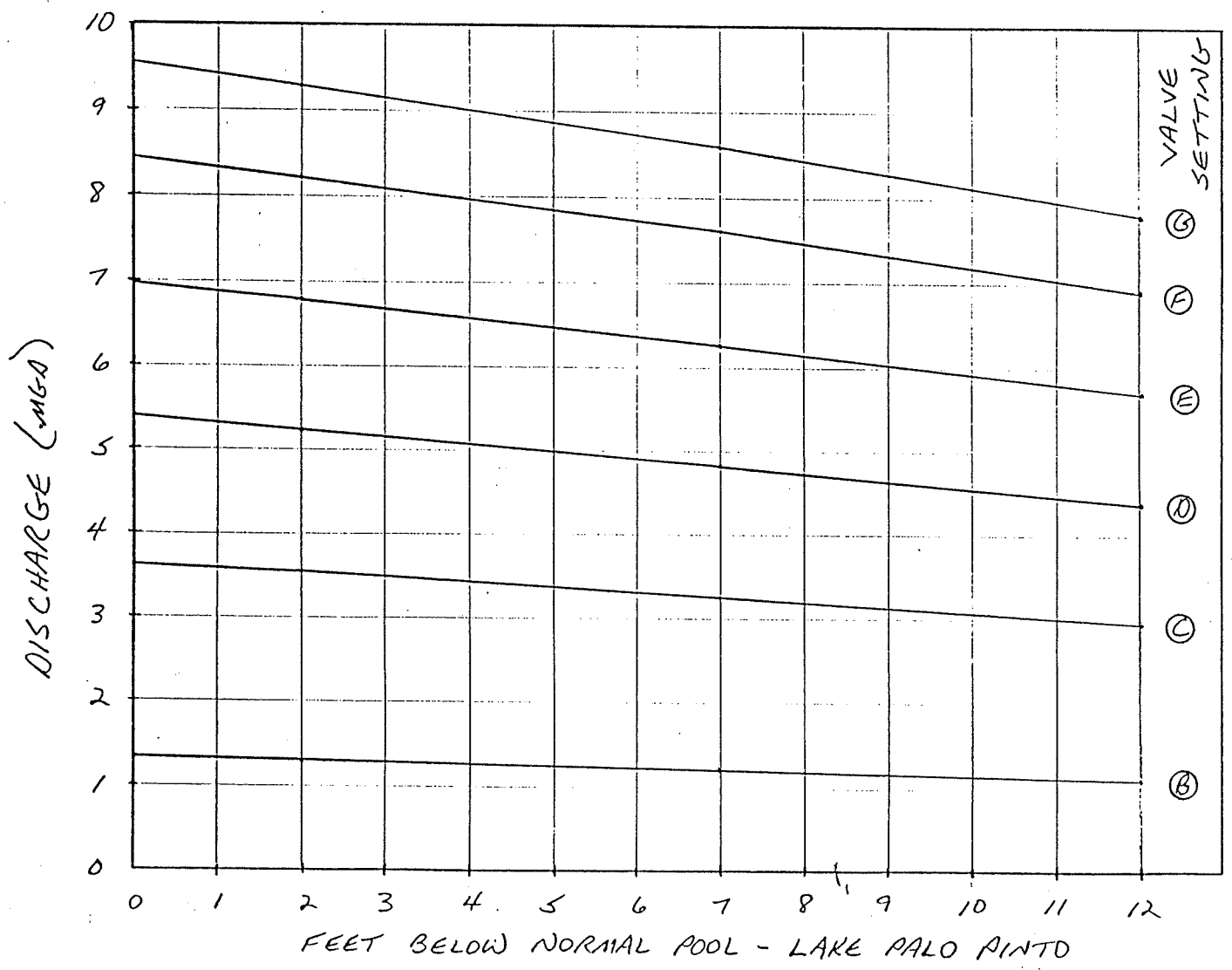
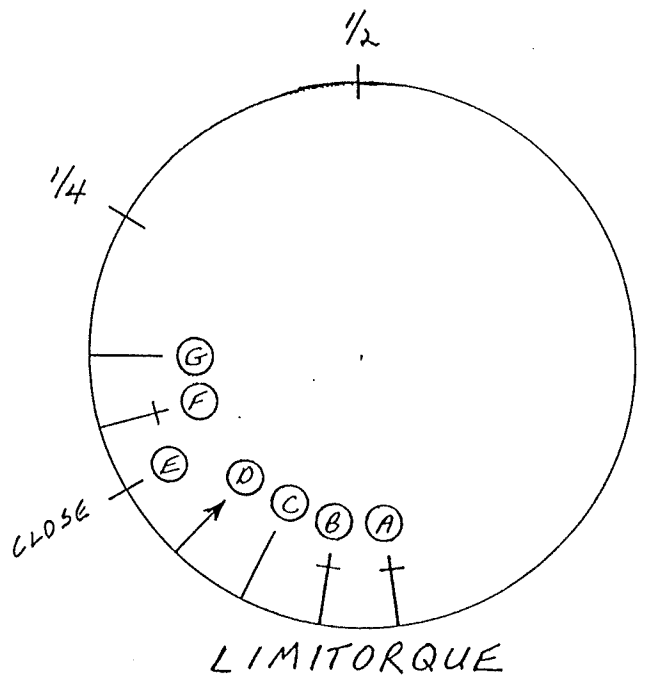
KCL/sp

cc: Mr. Jim Buzbee
Mr. Bill Graham
Mr. Fred Eubanks
Mr. Jess Turner
Mr. Blake Speer
Mr. John P. Ritchie
Mr. E. W. Hendrick

Enclosure



Project	PPCMWD #1	Computed	SKV	Date	9/17/89
Subject	LAKE PALO PINTO RELEASE VALVE	Checked		Date	
Task	POSITION INDICATOR CALIBRATION	Sht.		Of	



CHANNEL LOSS SUMMARY
PALO PINTO CREEK

<u>Date</u>	<u>Lake Palo Pinto Release (Acft/yr)</u>	<u>Channel Loss (Acft/yr)</u>	<u>Brazos Diversion Dam Spill (Acft/yr)</u>	<u>Percentage of Release Lost</u>
7/24/89	9,086	1,911	2,469	48.2
9/7/89	8,948	2,179	1,839	44.9
10/12/89	9,245	1,680	5,213	74.6
12/14/89	<u>5,017</u>	<u>492</u>	<u>934</u>	<u>28.4</u>
Average Annual	8,074	1,565	2,614	49.0

* Channel Loss = Flow at USGS Gage Site Near FM129 - Total Flow at Brazos Diversion Dam

** Brazos Diversion Dam Spill = Flow Over Brazos Diversion Dam - (Flow at USGS Gage Site Near FM129 - Lake Palo Pinto Release)