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TO: M. A. Phifer, 773-42A

FROM: C. H. Hunter, 773-A

Probable Maximum Precipitation for the Z-area Saltstone Facility

The Atmospheric Technologies Group (ATG) has determined estimates of probable maximum precipitation (PMP) for use in modeling closure cap infiltration at the Z-area Saltstone facility. Based on our previous discussions, PMP estimates are provided for storm (drainage) areas ranging from 1 to 1000 miles $(mi)^2$ and rainfall durations from 15 minutes to 72 hours. These estimates are summarized in Table 1. A PMP is defined as the theoretically greatest depth of precipitation for a give duration that is physically possible over a given storm size area at a particular geographic location (AMS, 2000).

The SRS-specific PMP estimates for storm areas of 10, 200, and 1000 mi^2 and rainfall durations of 6 to 72 hours were based on interpolation from standard maps of generalized, all-season isohyets of PMP presented in Hydrometeorological Report (HMR)-51 (Schreiner and Riedel, 1978). The PMP estimates for a 1 mi^2 area and for rainfall durations less than 6 hours were based on procedures outlined in HMR-52 (Hansen, et al, 1982). The 1-hr duration rainfall over storm areas from 1 to 1000 mi^2 was obtained through interpolation from the standard PMP isohyetal maps. Additional maps presented in HMR-52 were used to obtain SRS-specific scaling factors that were then applied to the 1-hr PMP value to determine 5 and 15-minute amounts. The 1 mi^2 PMP is considered by HMR-52 equivalent to the rainfall at any point within that area.

References

American Meteorological Society, *Glossary of Meteorology, Second Edition,* Boston MA (2000).

Schreiner, L.C. and J. T. Riedel, *Probable Maximum Precipitation Estimates, United States East of the 105th Meridian*, Hydrometeorological Report No. 51, National Oceanic and Atmospheric Administration and U.S. Army Corps of Engineers (1978).

Hansen, E. M, L.C. Schreiner, and J. F. Miller, *Application of Probable Maximum Precipitation Estimates - United States East of the 105th Meridian*, Hydrometeorological Report No. 52, National Oceanic and Atmospheric Administration and U.S. Army Corps of Engineers (1982).

Table 1. Probable Maximum Precipitation Estimates for SRS, by Storm Area and Rainfall Duration. Values are in inches.

Rainfall Duration	Averaging Area			
	1 mi²	**10 mi²**	**200 mi²**	**1000 mi²**
5-minute	6.2	5.1	2.9	N/A
15-minute	9.7	8.0	4.6	N/A
1-hour	19.2	15.7	9.1	5.1
6-hour	N/A	31.0	23.0	16.8
12-hour	N/A	37.0	28.0	22.7
24-hour	N/A	43.5	35.0	31.0
48-hour	N/A	48.0	38.0	33.0
72-hour	N/A	51.5	42.0	36.0

N/A - Not Available from HMR-51 or HMR-52.