

Lake 17



Dam
Top Elev 3025.5

Low Pt
El 3009

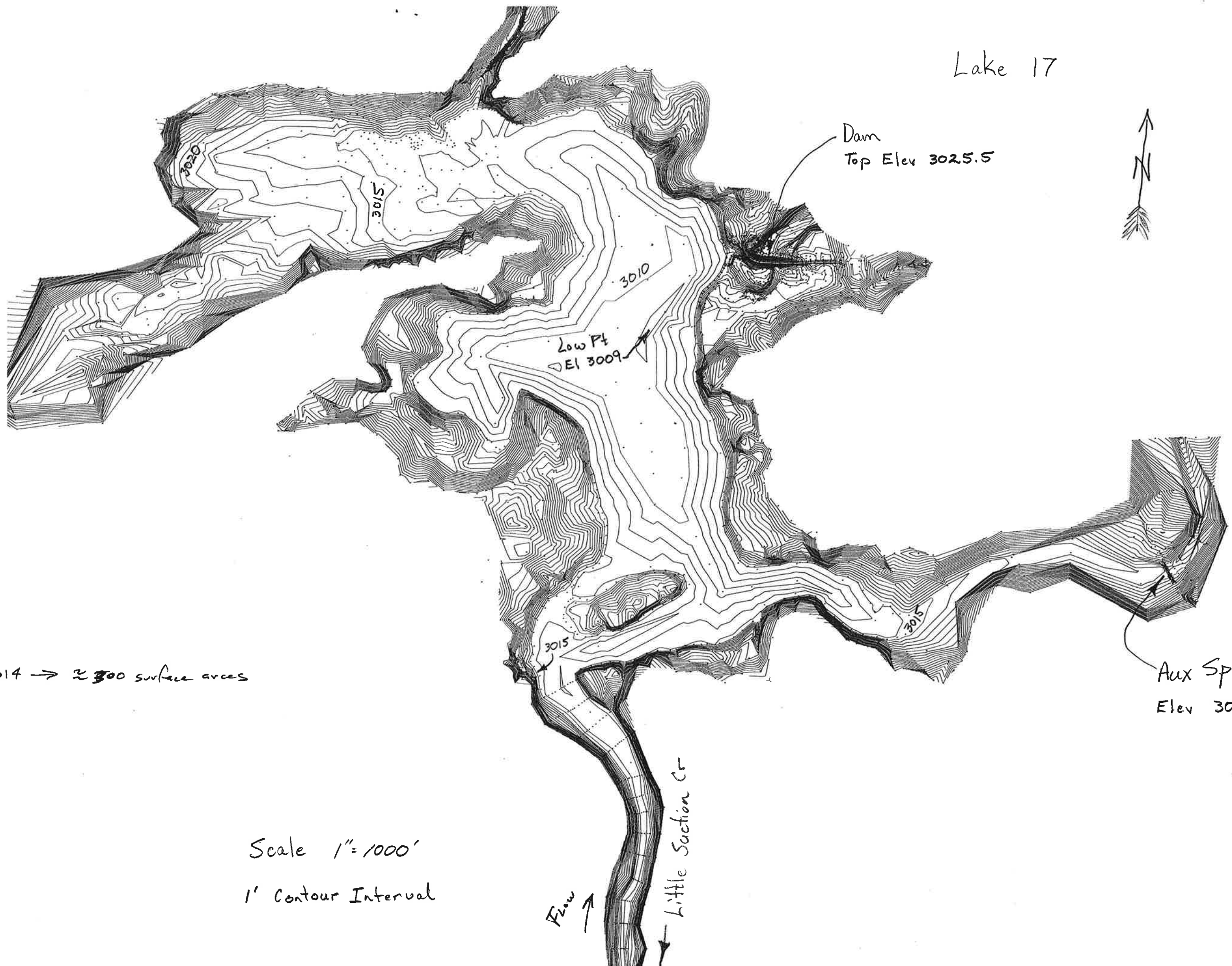
Aux Spillway
Elev 3022.1

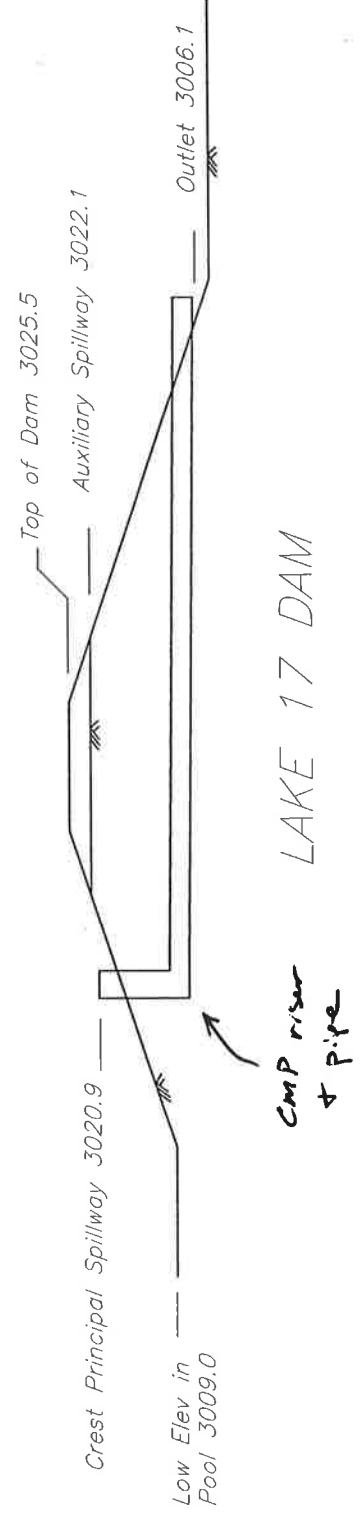
At Elev 3014 → ≈ 300 surface acres

Scale 1" = 1000'
1' Contour Interval

Flow

Little Section Cr



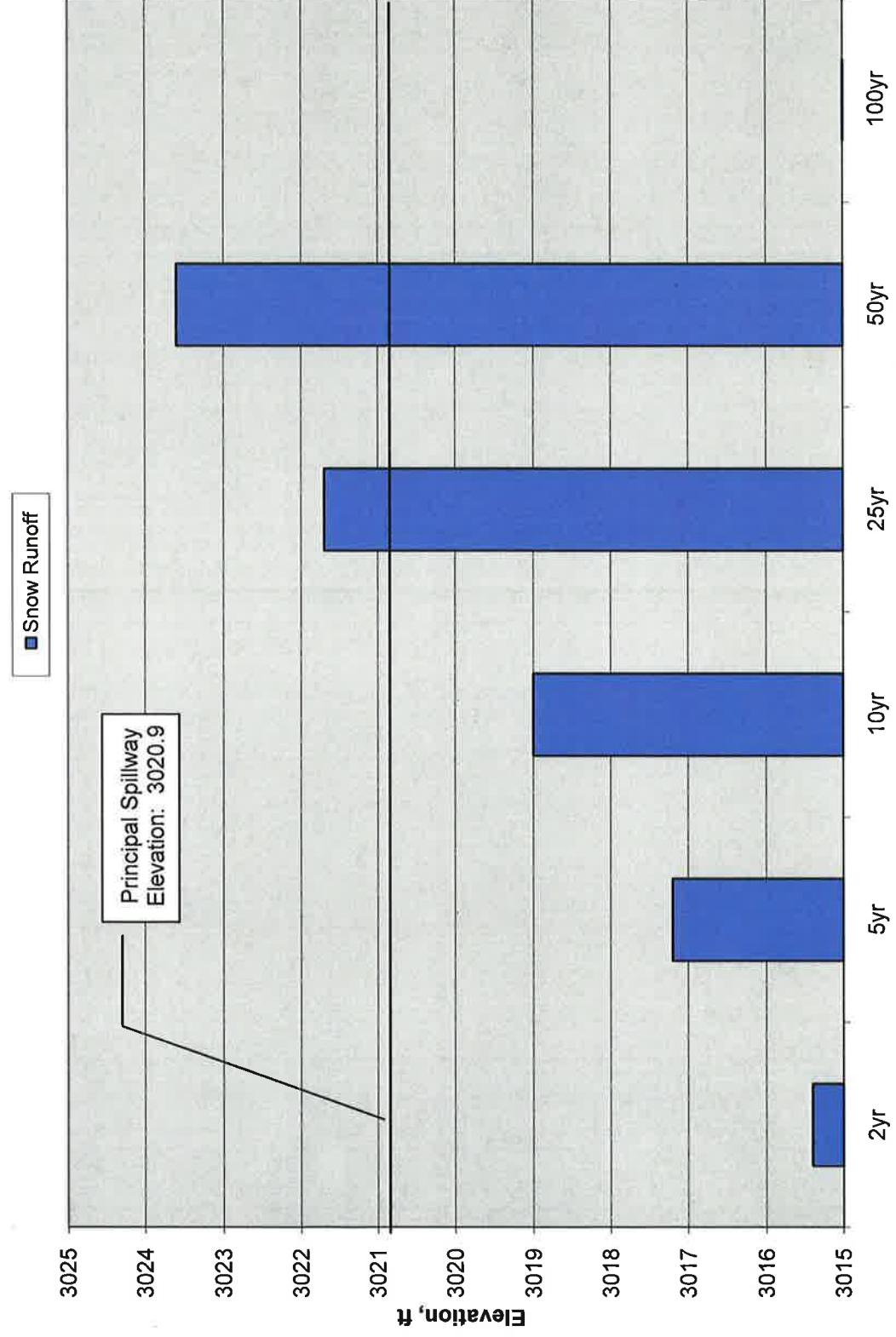


STATE MT		PROJECT	
BY	DATE 9/28/2010	CHECKED BY	JOB NO.
SUBJECT Lake 17 Stage Storage Curve			SHEET _____ OF _____

Ref.

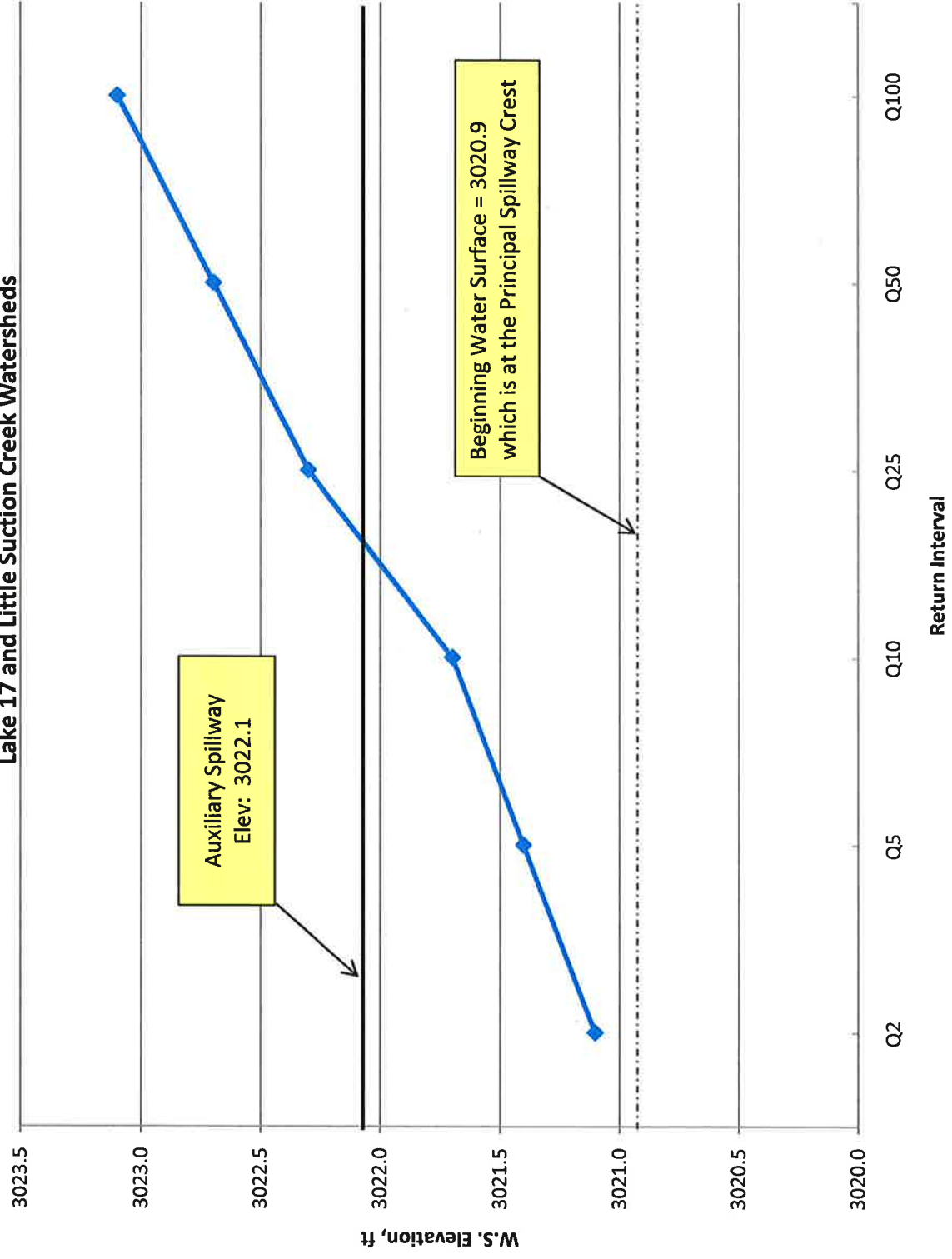
<u>Elevation</u>	<u>Ac</u>	<u>Area</u> <u>ft2</u>	<u>Cumulative</u>		<u>Elevation</u> <u>m</u>	<u>Cumulative</u>
			<u>Average</u> <u>Storage</u>	<u>Storage</u> <u>Ac Ft</u>		<u>Storage</u> <u>HA m</u>
3009.00	1.62	70470.00	0.8	0.8	917.1	0.1
3010.00	54.17	2359567.00	27.9	28.7	917.4	3.5
3011.00	94.39	4111465.00	74.3	103.0	917.8	12.7
3012.00	134.05	5839348.00	114.2	217.2	918.1	26.8
3013.00	187.89	8184471.00	161.0	378.2	918.4	46.6
3014.00	279.30	12166177.00	233.6	611.8	918.7	75.5
3015.00	350.78	15279764.00	315.0	926.8	919.0	114.3
3016.00	391.20	17040523.00	371.0	1297.8	919.3	160.1
3017.00	445.57	19408911.00	418.4	1716.2	919.6	211.7
3018.00	515.53	22456576.00	480.5	2196.7	919.9	271.0
3019.00	612.54	26682184.00	564.0	2760.8	920.2	340.5
3020.00	674.65	29387765.00	643.6	3404.3	920.5	419.9
3021.00	739.55	32214622.00	707.1	4111.4	920.8	507.2
3022.00	788.05	34327416.00	763.8	4875.2	921.1	601.4
3023.00	839.43	36565668.00	813.7	5689.0	921.4	701.7
3024.00	884.71	38537815.00	862.1	6551.1	921.7	808.1
3025.00	925.90	40332178.00	905.3	7456.4	922.0	919.7
3026.00	968.84	42202887.00	947.4	8403.7	922.3	1,036.6
3027.00	1018.61	44370711.00	993.7	9397.5	922.6	1,159.2
3028.00	1063.47	46324888.00	1041.0	10438.5	922.9	1,287.6
3029.00	1111.97	48437457.00	1087.7	11526.2	923.2	1,421.8

Lake 17 Elevation
Snow Runoff from Lake 17 and Little Suction Creek Drainage Area
Starting Water Surface: Elev 3015 ft

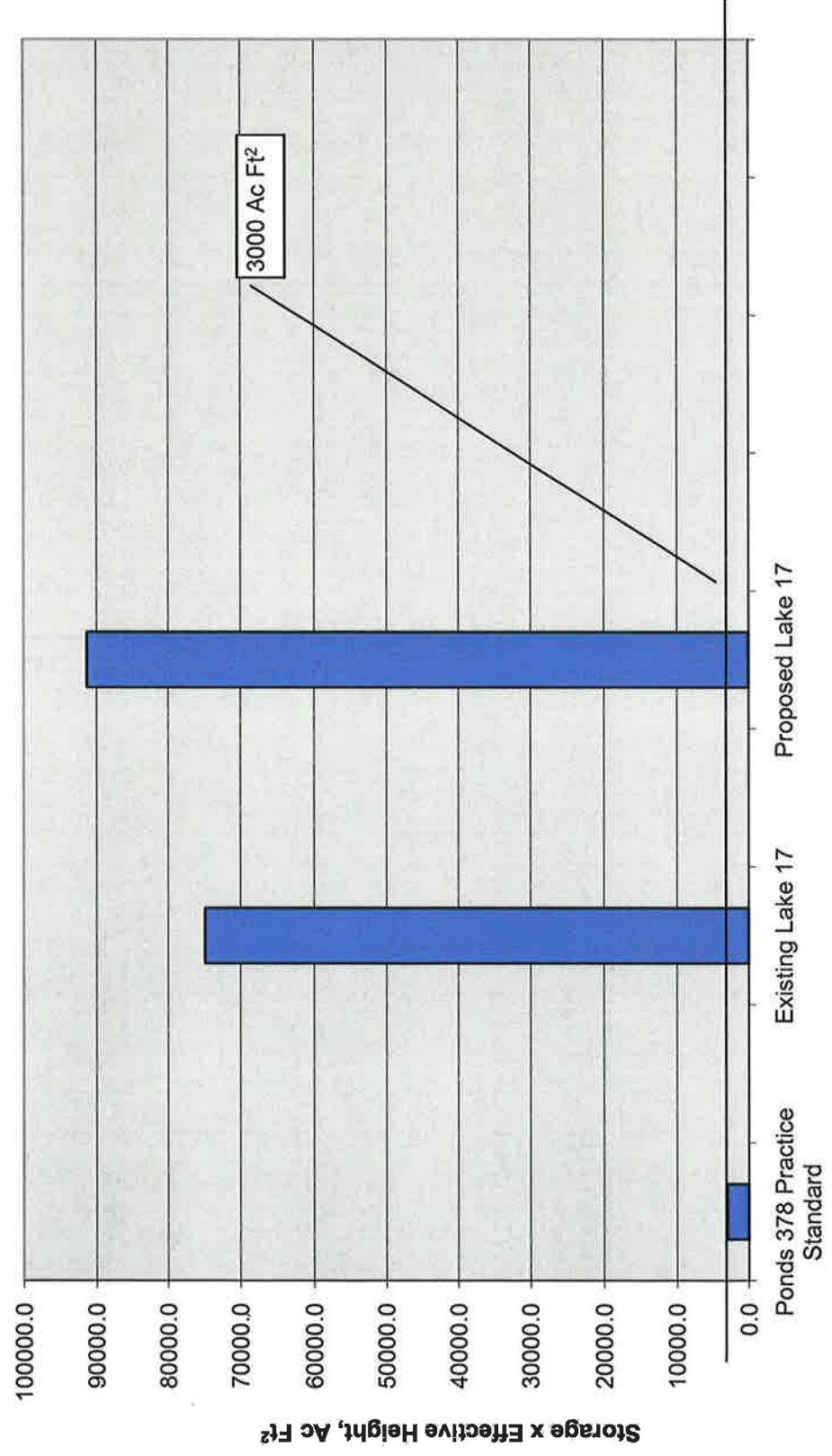


Lake 17 Water Surface Elevation 24-hr, Type II Storm

Lake 17 and Little Suction Creek Watersheds



Design Criteria Limits



Earth Dams and Reservoirs

Table 2-2 Minimum principal spillway hydrologic criteria

Class of dam	Purpose of dam	Product of storage X effective height	Existing or planned upstream dams	Precipitation data for maximum frequency of use of auxiliary spillway types: ^{1/}	
				Earth	Vegetated
Low	single irrigation only ^{2/}	less than 30,000	none	1/2 design life	1/2 design life
		greater than 30,000		3/4 design life	3/4 design life
	single or multiple ^{4/}	less than 30,000	none	P ₅₀	P ₂₅ ^{3/}
		greater than 30,000		1/2 (P ₅₀ + P ₁₀₀)	1/2 (P ₂₅ + P ₅₀)
		all	any ^{5/}	P ₁₀₀	P ₅₀
	Significant	single or multiple	all	none or any	P ₁₀₀
High	single or multiple	all	none or any	P ₁₀₀	P ₁₀₀

¹ Precipitation amounts by return period in years. In some areas, direct runoff amounts determined by figure 2-1 and 2-2 or procedures in chapter 21, NEH-4 should be used in lieu of precipitation data.

² Applies to irrigation dams on ephemeral streams in areas where the annual rainfall is less than 25 inches.

³ The minimum criteria are to be increased from P₂₅ to P₁₀₀ for a ramp spillway.

⁴ Low Hazard Class dams involving industrial or municipal water are to be designed with a minimum criteria equivalent to that of Significant Hazard Class.

⁵ Applies when the upstream dam is located so that its failure could endanger the lower dam.

Earth Dams and Reservoirs

Table 2-5 Minimum auxiliary spillway hydrologic criteria

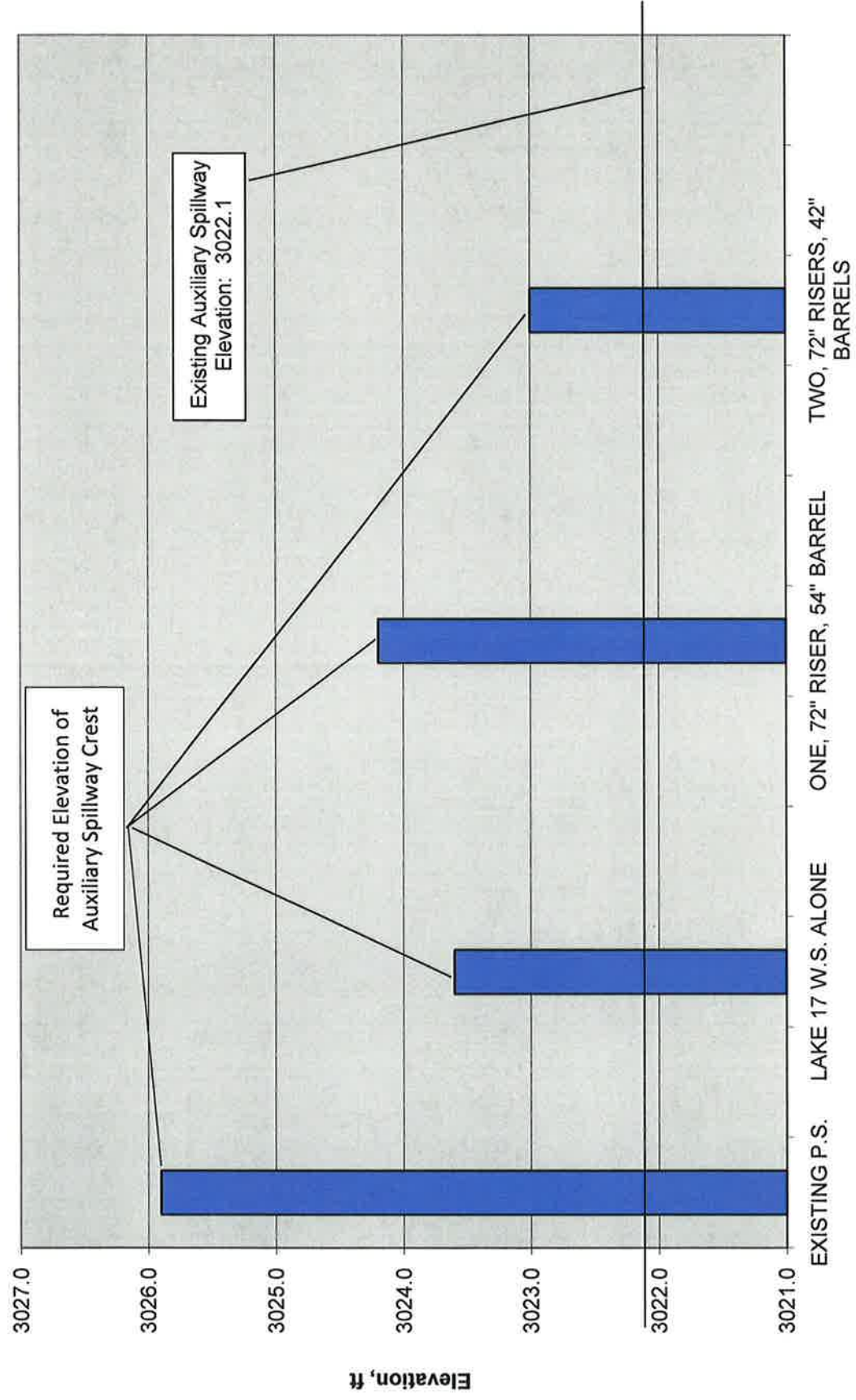
Class of Dam	Product of storage X effective height	Existing or planned upstream dams	Precipitation data for ¹	
			Auxiliary spillway hydrograph	Freeboard hydrograph
Low ²	less than 30,000	none	P ₁₀₀	P ₁₀₀ + 0.12(PMP - P ₁₀₀)
	greater than 30,000		P ₁₀₀ + 0.06(PMP - P ₁₀₀)	P ₁₀₀ + 0.26(PMP - P ₁₀₀)
	all	any ³	P ₁₀₀ + 0.12(PMP - P ₁₀₀)	P ₁₀₀ + 0.40(PMP - P ₁₀₀)
Significant	all	none or any	P ₁₀₀ + 0.12(PMP - P ₁₀₀)	P ₁₀₀ + 0.40(PMP - P ₁₀₀)
High	all	none or any	P ₁₀₀ + 0.26(PMP - P ₁₀₀)	PMP

¹ P₁₀₀ = Precipitation for 100-year return period. PMP = Probable maximum precipitation

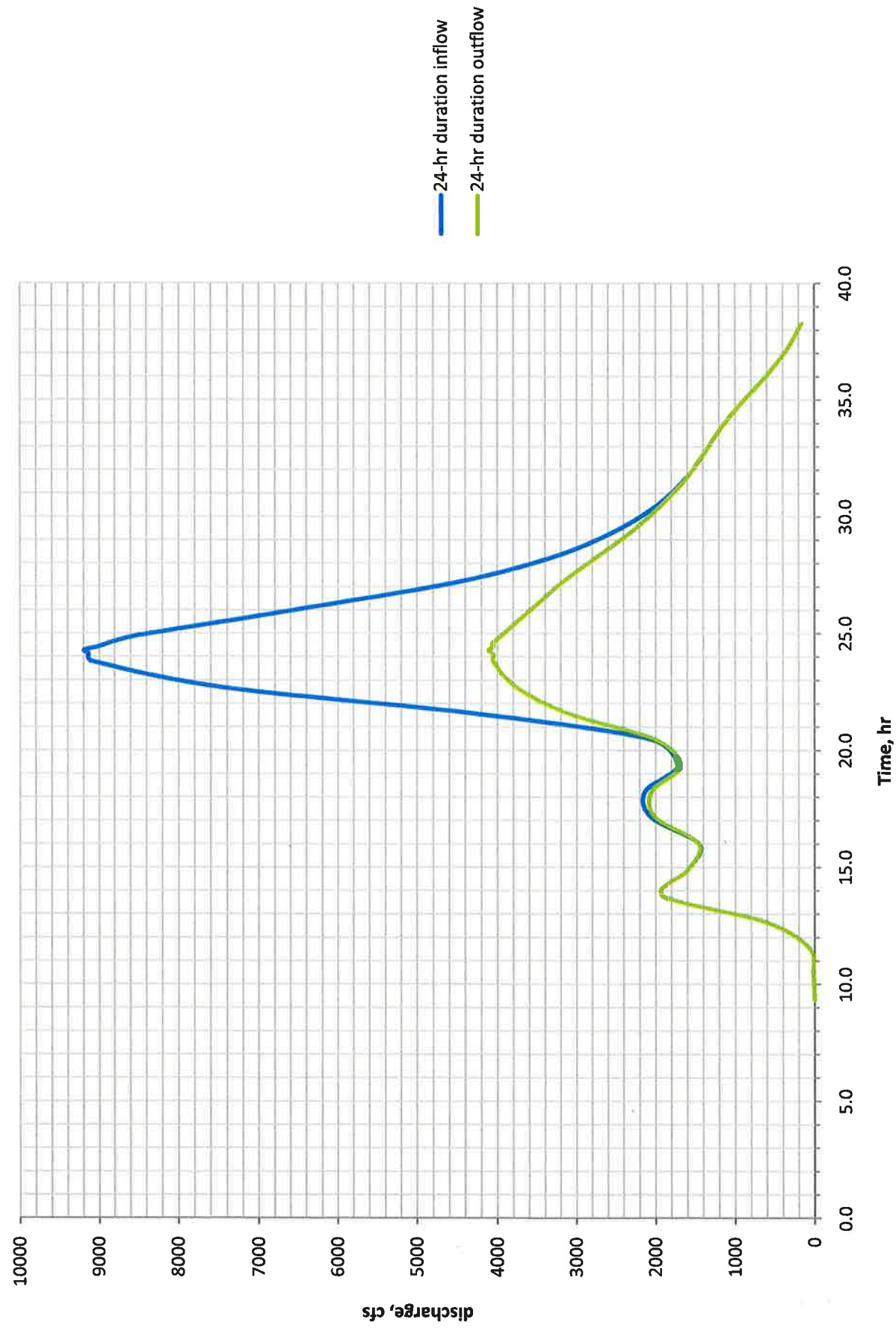
² Dams involving industrial or municipal water are to use minimum criteria equivalent to that of Significant Hazard Class.

³ Applies when the upstream dam is located so that its failure could endanger the lower dam

Lake 17 Required Auxiliary Spillway Elev



Lil Suction Ck Freeboard Hydrograph



USDA Service Center Locator

LEWISTOWN SERVICE CENTER
 211 MCKINLEY ST
 LEWISTOWN, MT 59457-2266
 (406) 538-3489
 (406) 538-9353 fax

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B1

Use or Lose	12.0
Comp Time	32.5
Travel Comp	55.0
	<hr/>
	99.5