HARZA-EBASCO SUSITNA JOINT VENTURE

INTRA-OFFICE MEMORANDUM

LOCATION Anchorage DATE October 25, 1984

TO Files NUMBER 42.2.7

FROM E.J. Gemperline E. J. Gemperline

SUBJECT Slough Discharge Regression Equations Memorandum from D. Beaver to E.J. Gemperline of October 12, 1984

We have continued to refine relationships between slough discharge and mainstem discharge presented in our report "Slough Geohydrology Studies," which was transmitted to the Federal Energy Regulatory Commission (FERC) with the Alaska Power Authority's comments on the Draft Environmental Impact Statement. The subject memorandum (attached) includes these refinements and additional information relating slough discharge to mainstem stage at locations for which mainstem rating curves are available. This information supports the conclusions in the referenced report. Based on the information contained in the subject memorandum the apparent relationships between the groundwater component of slough flow and mainstem stage and mainstem flow are given in the following table.

Apparent Relationships Between Groundwater Component of Slough Flow and Mainstem Stage and Mainstem Discharge (measured at Gold Creek)

Slough	Relationship to Mainstem Discharge	R^2	Mainstem Flows Used in Developing Relationship Minimum (cfs)	Mainstem Flows Used in Developing Relationship Maximum (cfs)	Estimated Slough Upstream Berm Overtopping Discharge (cfs)
8A	S= -0.627 + 0.000128G	0.631	16,000	28,000	30,000
9	S= 1.97 + 0.000351G	0.805	9,000	15,000	16,000
11	S= 1.51 + 0.000102G	0.766	9,000	35,000	42,000
21	S= -2.71 + 0.000803G	0.916	3,000	25,000	24,000-26,000

Slough	Relationship to Mainstem Water Surface Elevation	R^2	Location of Mainstem Water Surface Elevation[1/]
8A	S= -740.96 + 1.2737W	0.626	RM 127.1
9	S= -877.21 + 1.4658W	0.755	RM 129.3
11	S= -367.04 + 0.54004W	0.783	RM 136.68
21	S= -3244.1 + 4.3212W	0.938	RM 142.2

Definition of variables

S = apparent groundwater component of slough flow measured in cfs.

G = mainstem discharge measured at Gold Creek.

W = mainstem water surface elevation at given location.

[1/] The rating curves for the given locations are attached.

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EXHIBIT 43

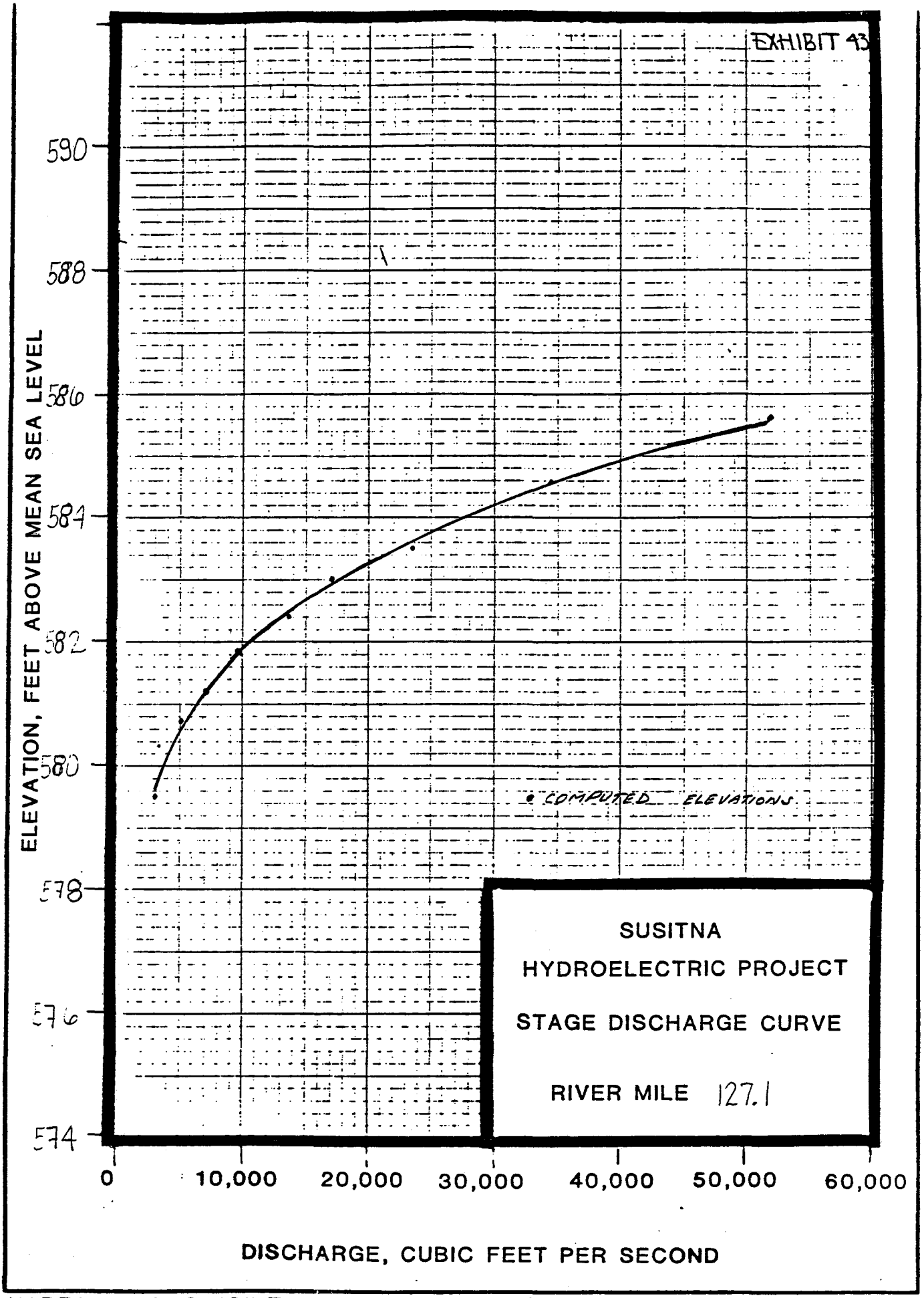

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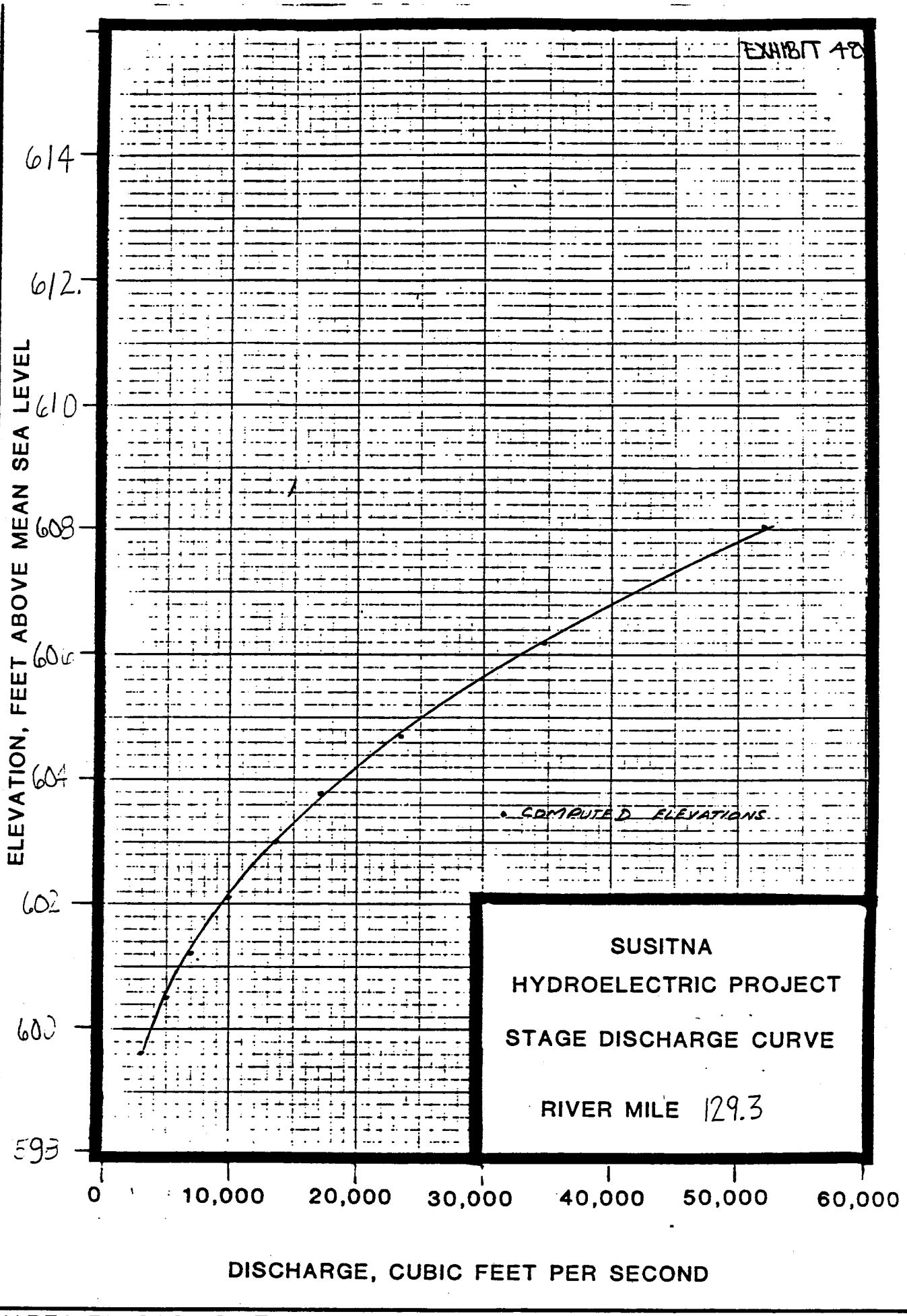
EXHIBIT 48



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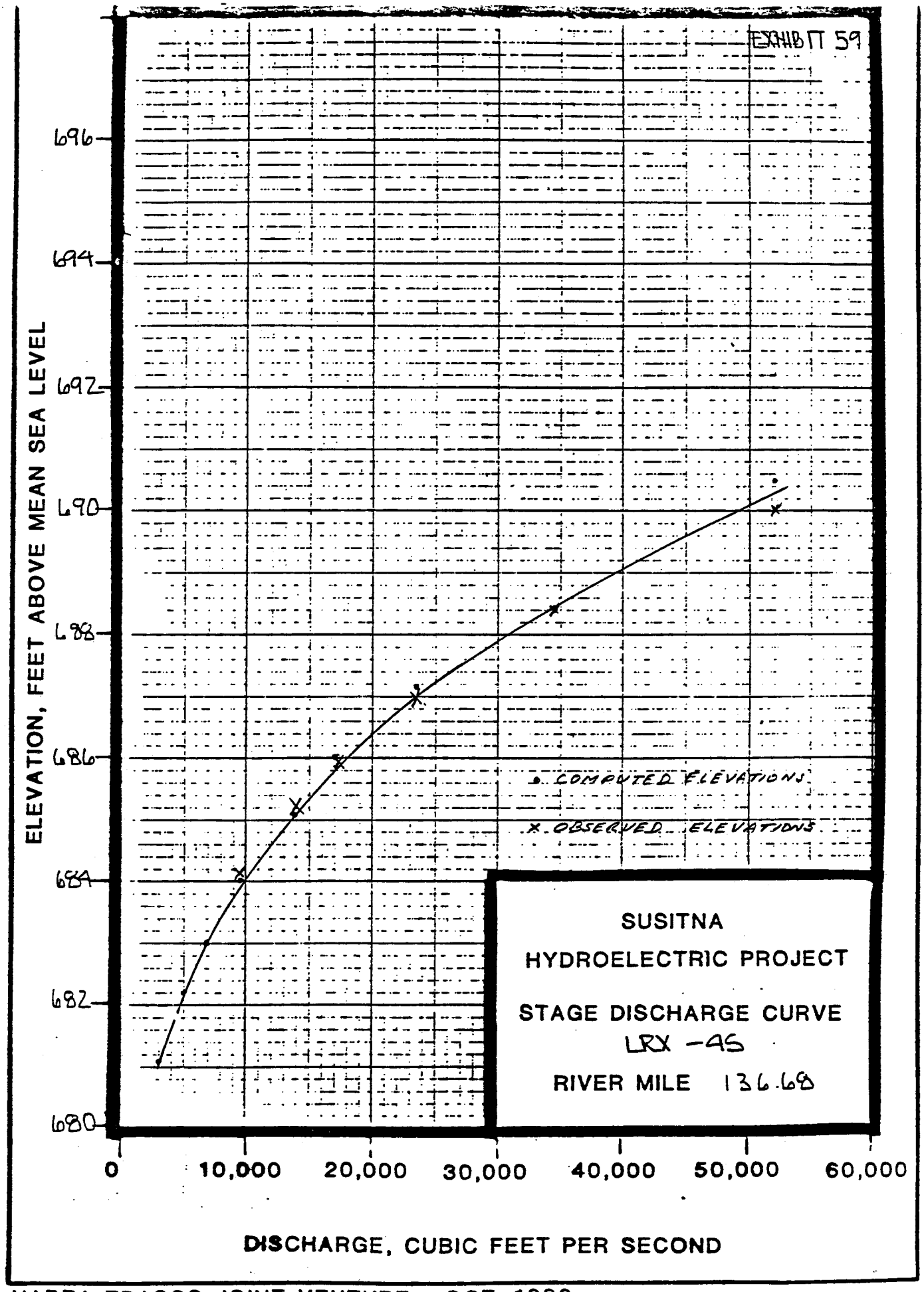

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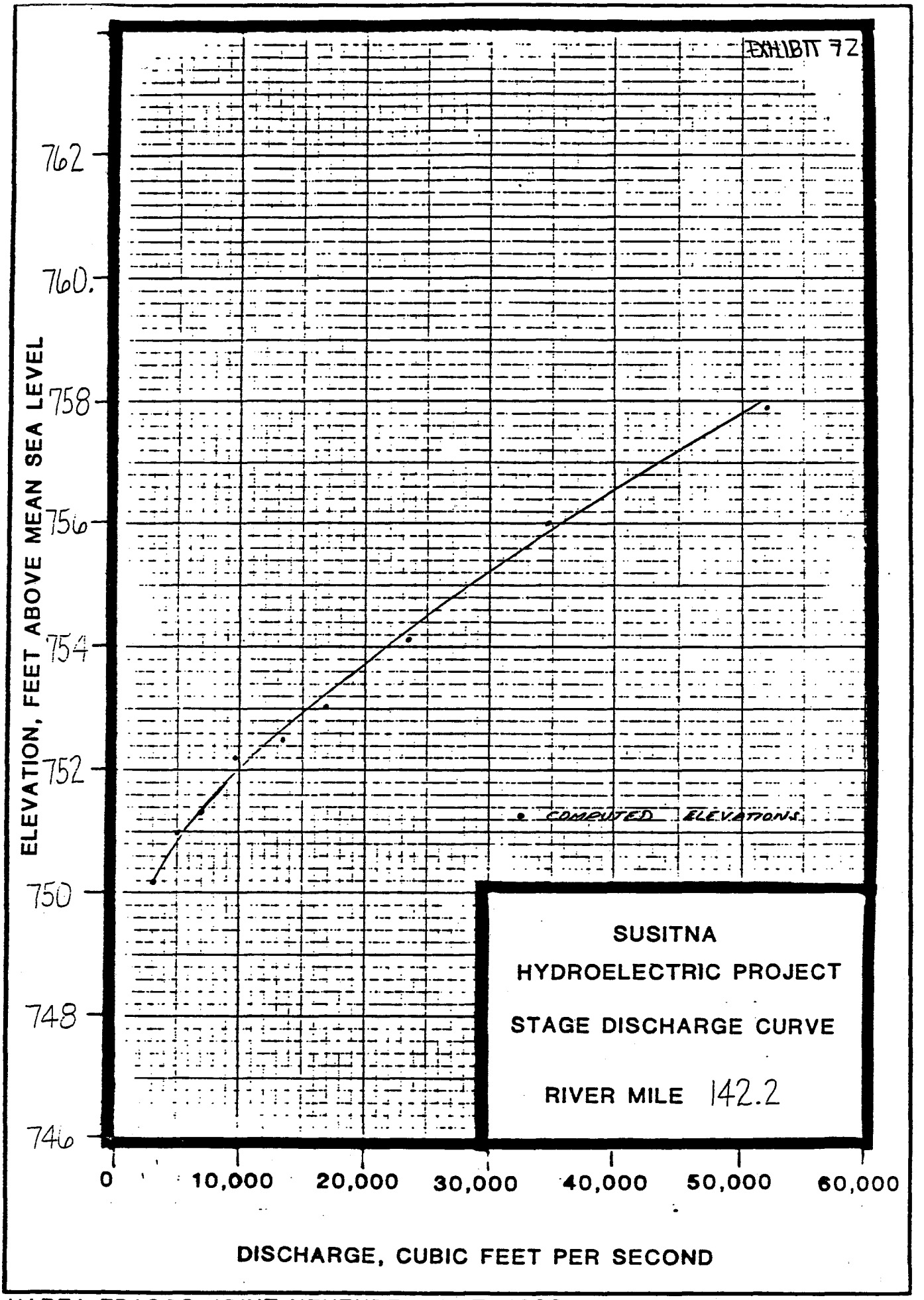

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