Flow Rate
Cubic Feet Per Second (C.F.S.)

1 Foot

Capacity
Time

=

Time

=

1 Foot

1 Second
Hydrographs
Skagit River Gage at Concrete

24 Feet or 40,000 C.F.S.
40 Feet or 147,000 C.F.S.
30 Feet or 75,000 C.F.S.

25 December
26 December
28 December

STAGE HYDROGRAPH

FLOW RATE IN C.F.S.

DISCHARGE HYDROGRAPH
Flood Control Responsibilities

NATIONAL WEATHER SERVICE — SEATTLE
Forecasts weather and river conditions

CORPS OF ENGINEERS — SEATTLE
Monitors weather, river and reservoirs
Provides regulating instructions to dams

PUGET SOUND POWER & LIGHT AND SEATTLE CITY LIGHT
Maintains flood storage space
Operate dams — gate changes

SKAGIT COUNTY PUBLIC WORKS DEPT.
Provides flood information to the public
Coordinates flood emergency activities
Reservoir Regulation Guidelines for Flood Control

- Regulate flows forecast to exceed 90,000 c.f.s. (32.2 feet) at Concrete
- Reduce outflow from dams (except minimum power flows)
- Store floodwater in reservoir
- Release stored water when flow at Concrete recedes
- Maintain recession at Concrete
Ross Lake and Dam

- Normal Full Pool
- Minimum Flood Storage Pool
- Flood Storage Space 10.4 Feet

Lake Elevation in Feet

October, November, December, January, February, March

1980 1981
Skagit River at Ross Dam
December 1980 Flood

Flow Rate in 1,000 C.F.S.

- Natural Inflow
- Dam Outflow

Time in Days
Skagit River at
Upper Baker Dam
December 1980 Flood

Flow Rate in 1,000 C.F.S.

Natural Inflow

Peak at Concrete

90,000 C.F.S.
at Concrete

90,000 C.F.S.
at Concrete

Time in Days

25 26 27 28 29 30

Dam Outflow
Skagit River at Concrete
December 1980 Flood

Flow Rate in 1,000 C.F.S.

Natural Flow

Observed Flow

Dam Outflow

Time in Days

Gage Height in Feet

0 24.0 30.8 36.5 41.5 46.0

0 20 40 60 80 120 160 200
Skagit River at Mount Vernon
December 1980 Flood

Flow Rate in 1,000 C.F.S.

Natural Flow

Observed Flow

Time in Days

Gage Height in Feet

0 25 26 27 28 29 30
Skagit River at Concrete

Effects of Reservoir Storage

![Graph showing flow rates and gage heights over water years 1960 to 1980. The graph compares observed flow, natural flow, and control flow. Flow rates are in 1,000 C.F.S. and gage heights are in feet.]
Summary

- Corps regulates flows above 90,000 c.f.s. (32.2 ft.) at Concrete

- Dams incidently regulate flows below 90,000 c.f.s.

- Dams provide flood damage reduction

- But dams cannot eliminate the possibility of flooding