

Profiles of Water Surface Elevation and Terrain - Preliminary Draft, Subject to Revision

Purpose: Identify possible locations of seepage issues through a comparison of San Joaquin River water surface and terrain elevations. Assumes a flat groundwater gradient.

Method: Terrains were cut at a specified distance in feet from the centerline of the river. No attempt was made to remove roads or drainage ditches from profiles. Water Surface Elevations were taken from surveys as described below.

Reach	Terrain	Terrain Distance from Centerline (feet)	Water Surface Survey	Approximate Flow (cfs)
1B	2008 LiDAR	750	DWR, March - Sept 2009	50
2A	2008 LiDAR	750	TSC, November 2009	345
2B	TSC Reach 2B Terrain Model (2008 LiDAR + 2009 Bathymetry)	2200	TSC, November 2009	<50
3	TSC Reach 3 Terrain Model (2008 LiDAR + 2009 Bathymetry)	750	TSC, April 9-15, 2010	1030
4A	2008 LiDAR	750	TSC, April 9-15, 2010	800
ESB Section 2	2008 LiDAR	1300	TSC, April 9-15, 2010	760

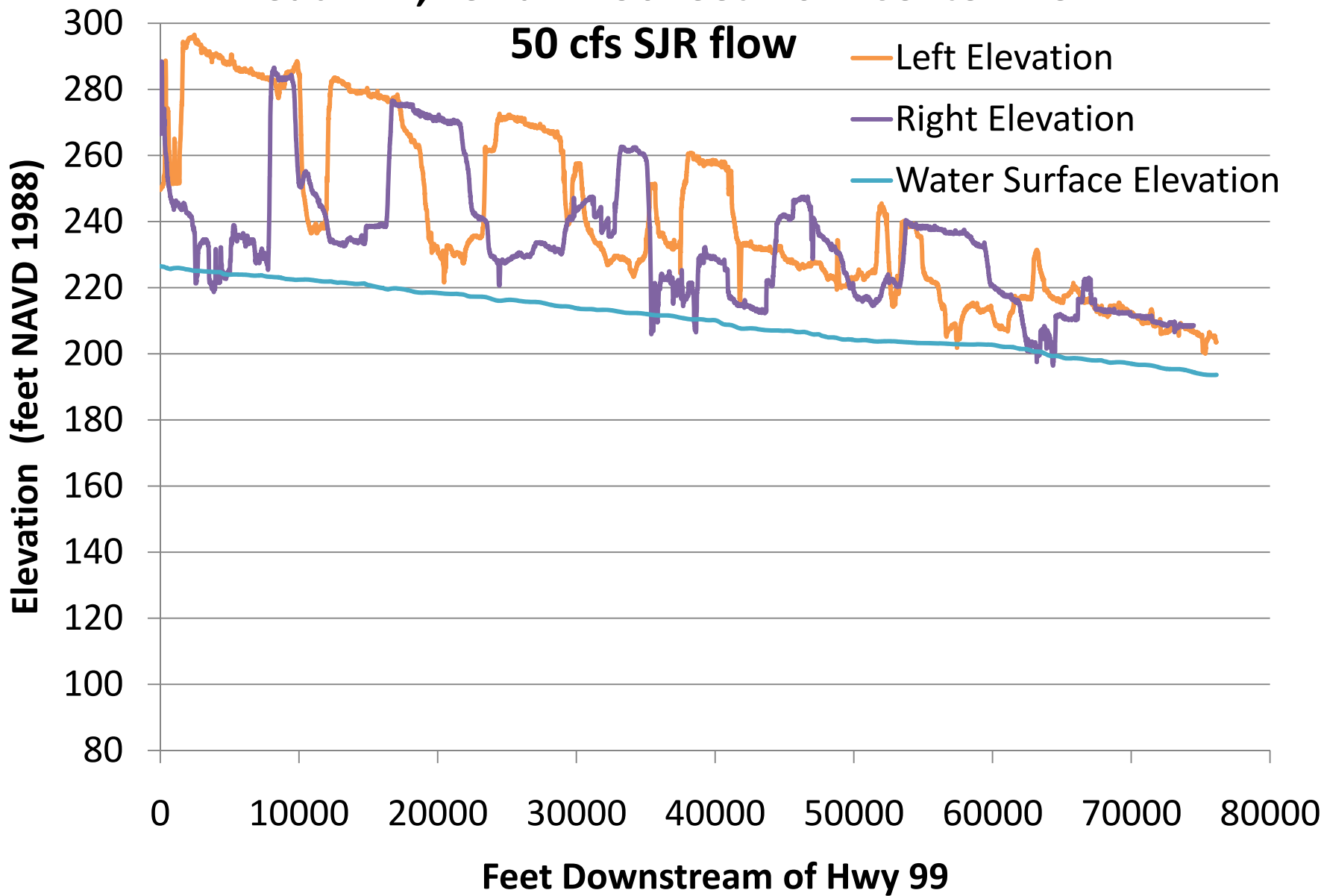
TSC surveys in Reaches 3 - 5 were conducted from April 9th to April 15th during the spring 2010 interim flow period, in which flow releases from Friant Dam were approximately 1275 cfs. However, flows in reaches below Mendota Dam had not yet approached steady state conditions and there was likely significant variability in space and time throughout the surveyed reaches below Mendota Dam. In addition, several irrigation diversions and return flow sources were present throughout the surveyed region, which caused further fluctuations in flows.

The DWR survey was conducted by State of California, Dept. of Water Resources, Field Surveys crews. The survey was taken March 10-12, 25, 2009, August 27, 2009, and Sept. 16,17,21-30, 2009. Hydrographic surveys in deeper water done by boat with Sonarmite and Valeport Single Beam Echosounders in conjunction with GPS RTK, also surveyors wading in shallows/riffles with GPS RTK Trimble 5800 units on 2 meter rods. GPS Base stations for hydrographic work were Trimble 5700's and Trimmark II & IIe radios.

In November, 2009, Reclamation conducted bathymetric surveys in Reach 2 of the San Joaquin River from Gravelly Ford to the Mendota Dam. Surveys were conducted during the interim flow period, in which flow releases from Friant Dam were 350 cfs from October 1st through October 31st and 700 cfs from November 1st to November 10th. Bathymetric surveys were conducted on November 5, 2009 in Reach 2A when flow at the Gravelly Ford gage measured approximately 345 CFS. Flow through the reach had not yet reached steady state and substantial losses to ground water continued to occur on the day of the survey. As a result, survey data were only collected between mile post (MP) 227.5 and MP 219.3. On November 6, 2009, bathymetric survey data were collected in Reach 2 B from San Mateo Road to Mendota Dam. No incoming flow was present upstream of the San Mateo Road at the time of the survey. All water in the channel was due to either backwater impacts from the Mendota Dam or irrigation return flows throughout the reach.

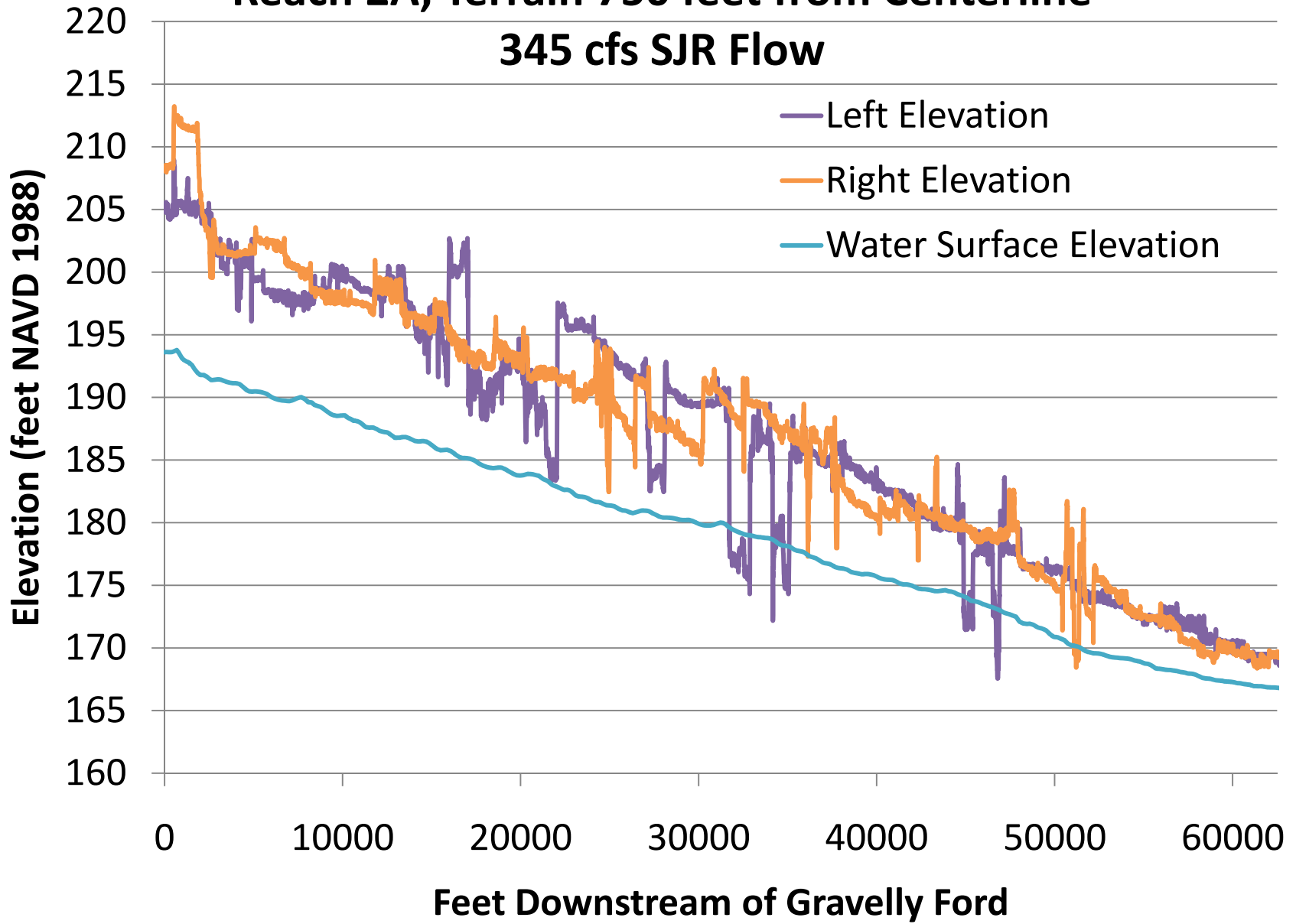
Reach 1B, Terrain 750 feet from Centerline

50 cfs SJR flow



Reach 2A, Terrain 750 feet from Centerline

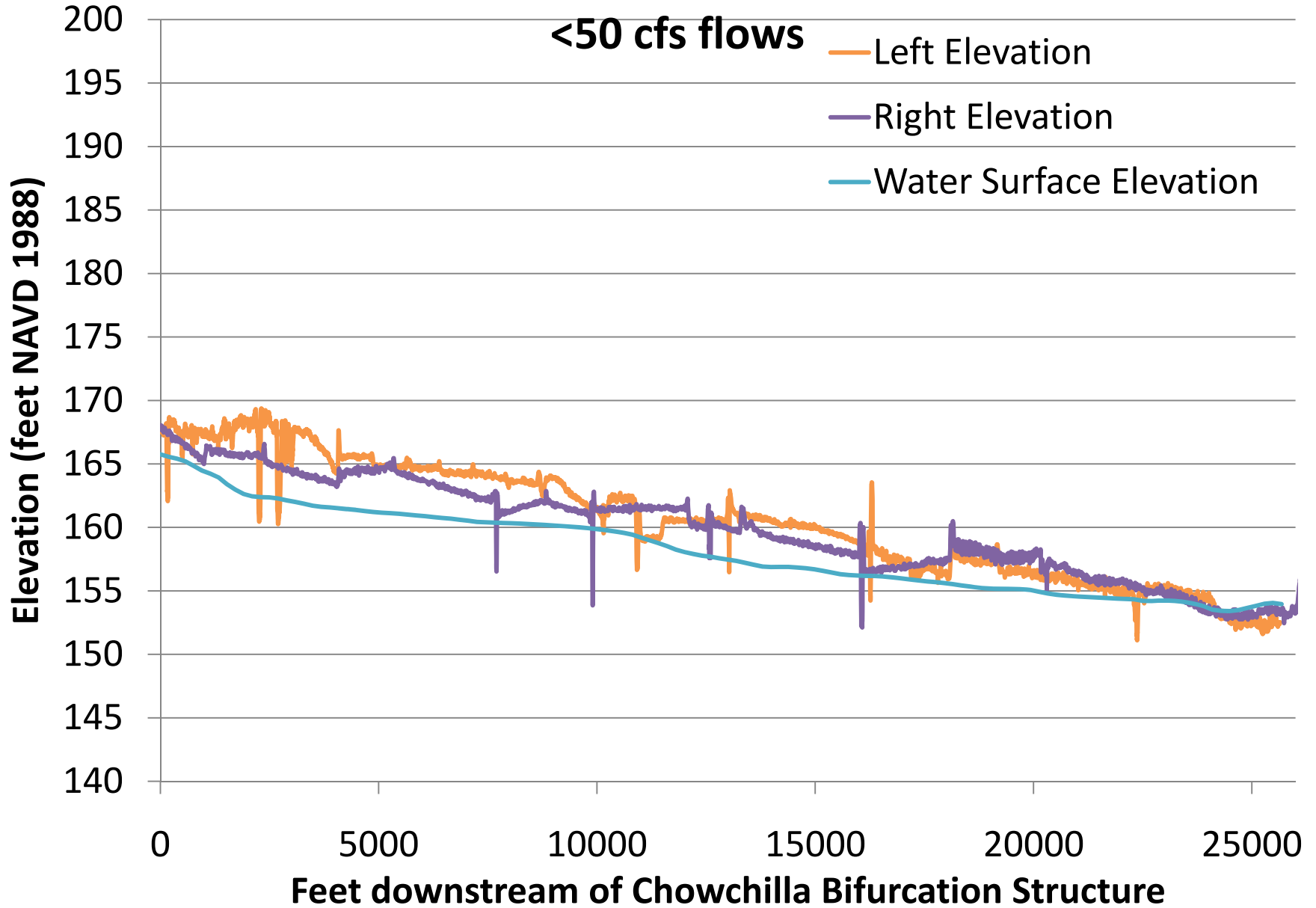
345 cfs SJR Flow



Reach 2B - Terrain 2200 feet from Centerline

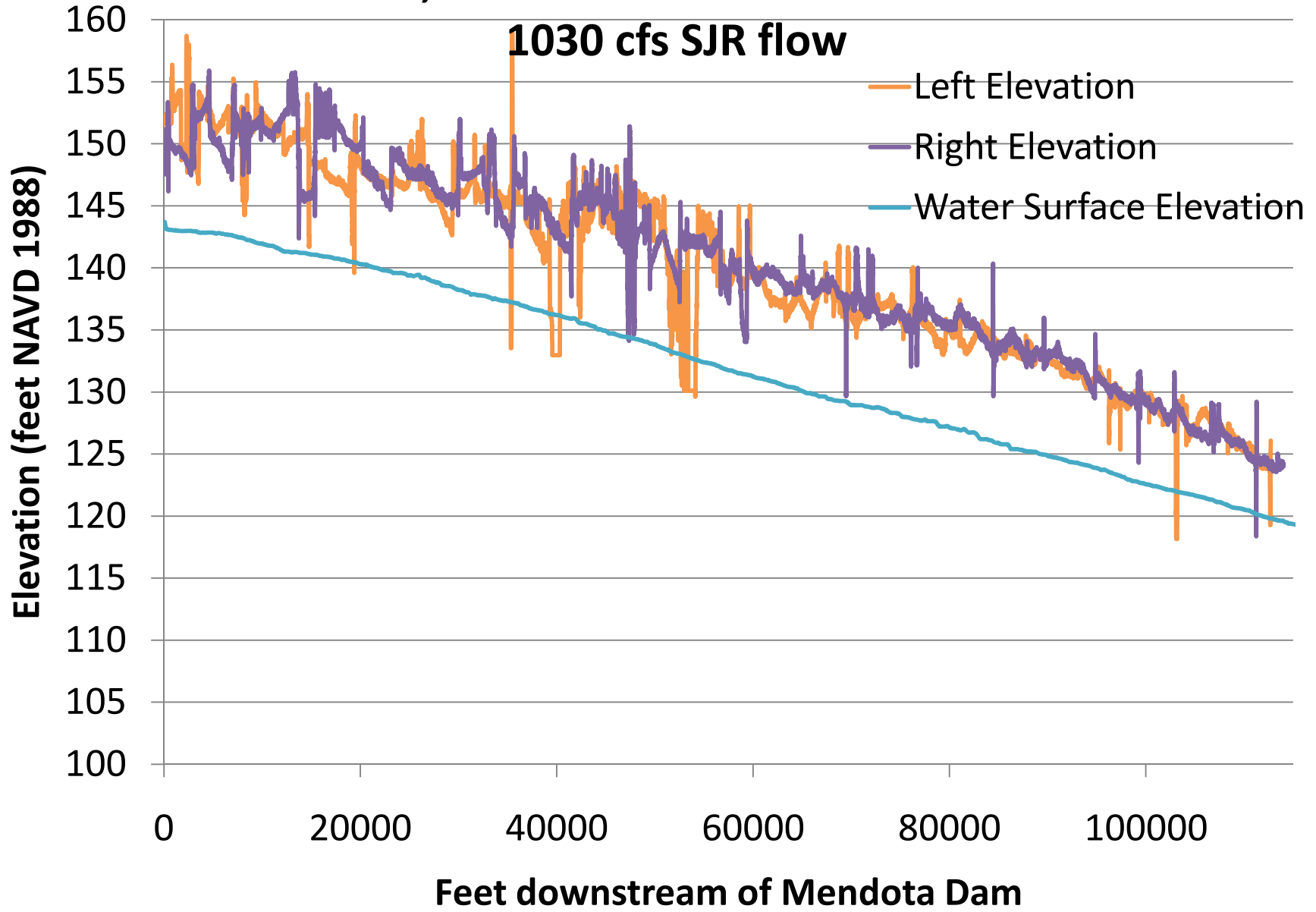
<50 cfs flows

- Left Elevation
- Right Elevation
- Water Surface Elevation



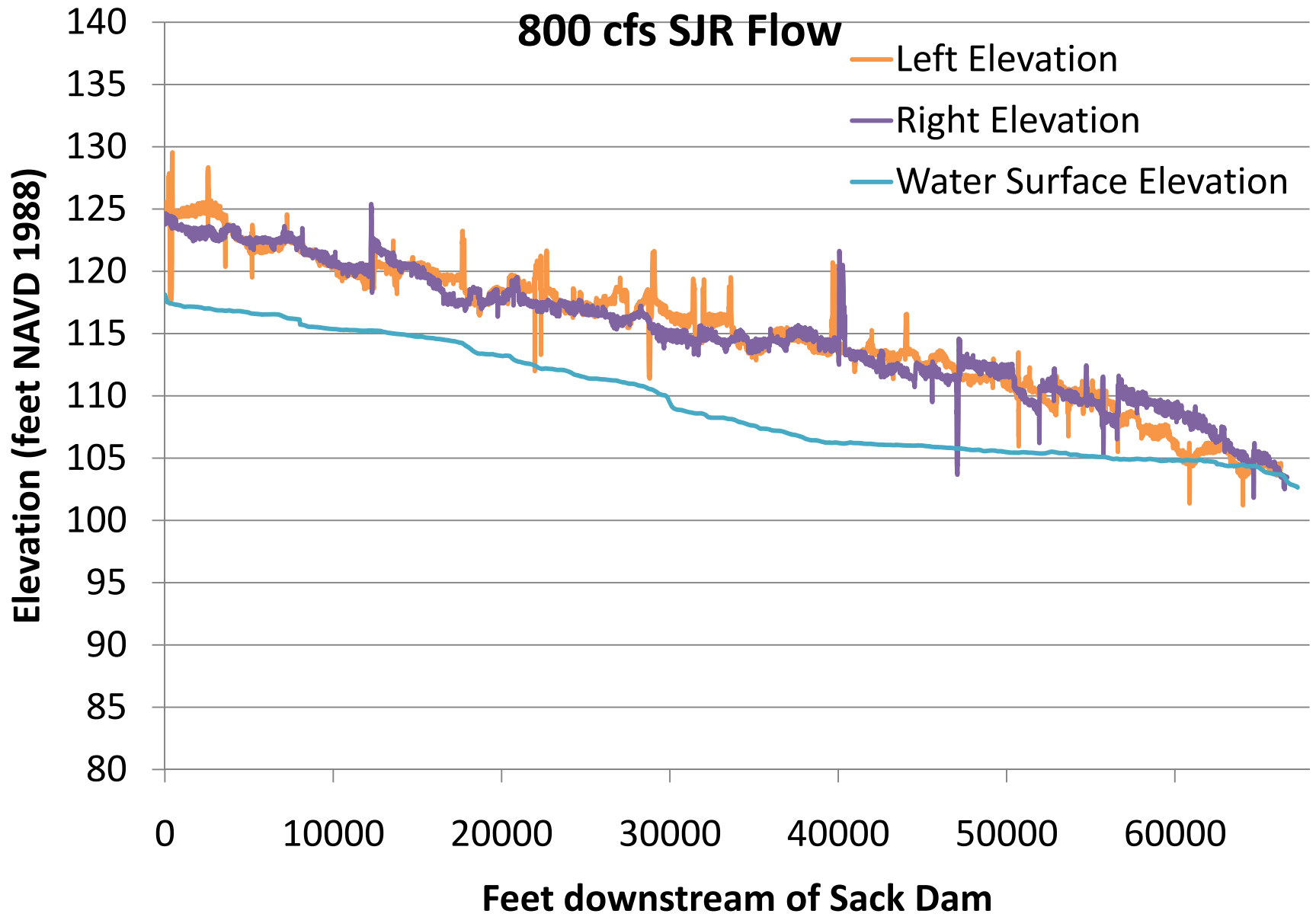
Reach 3, Terrain 750 feet from Centerline

1030 cfs SJR flow



Reach 4A, Terrain 750 feet from Centerline

800 cfs SJR Flow



Eastside Bypass Section 2, Terrain 1300 feet from Centerline, 760 cfs flows

