



THE CASE FOR A GATED INLET TOWER AT EL VADO DAM

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Rio Chama Flow Project**

El Vado Dam Built in 1935



EXISTING WATER QUALITY PROBLEMS

- **Cold, non-varying water temperatures due to constant bottom release: adversely effects macroinvertebrates (Jacobi & McGuire, 1992).**
- **Chronic, year-round turbidity: adversely effects macroinvertebrates and sight-feeding fish species (Hanson, 1992; Fogg et al., 1992)**

Contrasting Turbidities

EV Inflow: 6/18/2018 – 70 cfs



Turbidity = 5.7 NTU

EV Outflow: 6/19/2018 – 600 cfs



Turbidity = 52 NTU

CAUSES OF THE CHRONIC TURBIDITY

- Reservoir management between 1935 and late 1970's led to accumulation of silts and clays to the elevation of the power station inlet: El. 6775'
- Capacity of power plant (1,200 cfs) is exceeded about 1% of the time in the Summer, Spring and Fall and about 40% in the Spring, therefore most flows exit the dam through the power station and are turbid.

Sediment Outflow

- Based on BOR surveys (1984, 2007, 2019) the sediment elevation at the dam has not changed since 1984.
- As a result, annual fine sediment pass through is about 114,000 tons which results in an average concentration of about 190 mg/l which exceeds the EPA impairment standard of 100 mg/l.
- Consequentially, only 3.7% of reservoir capacity has been lost since 1935.

Reservoir Surveys, 1984, 2007

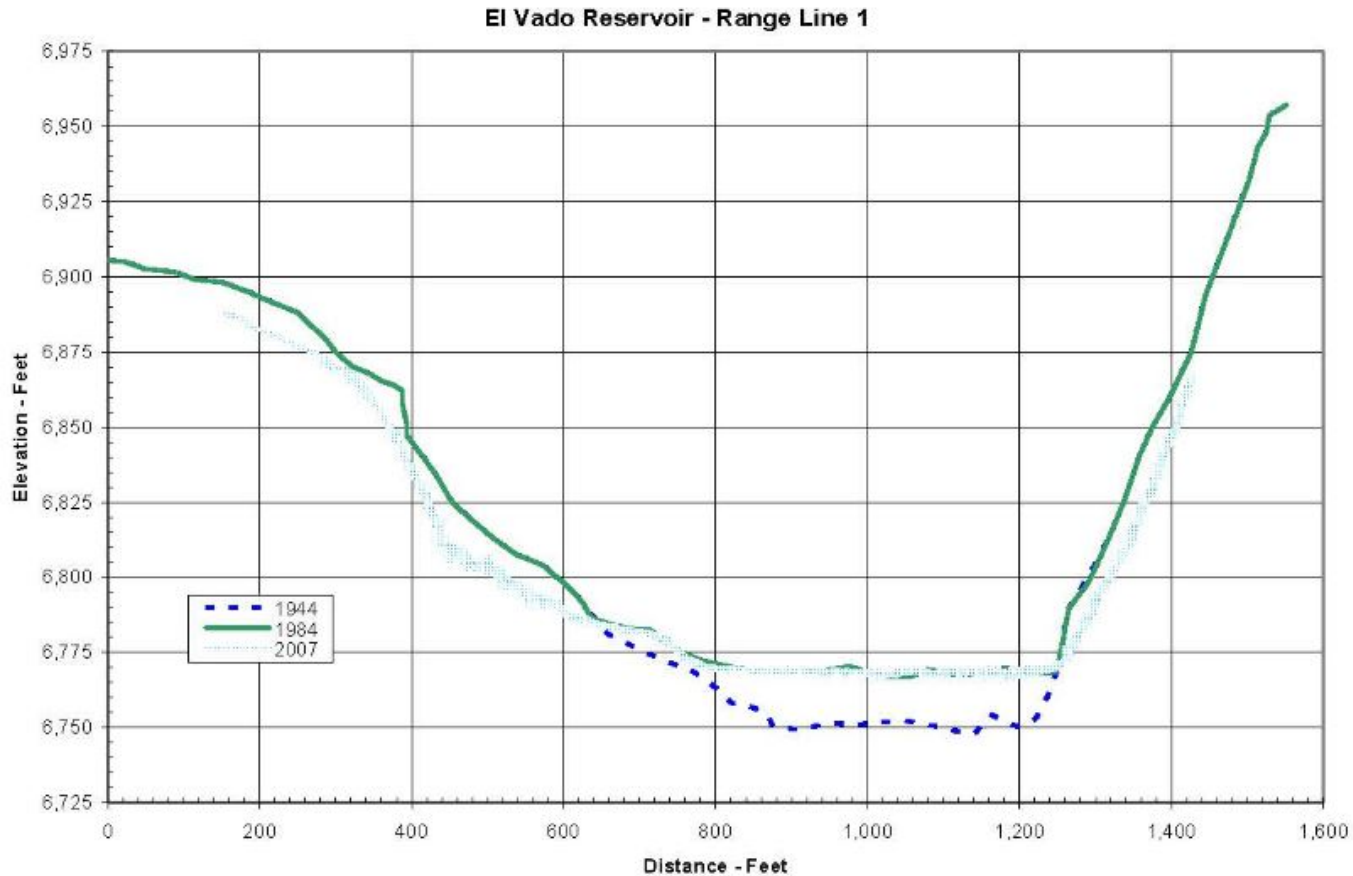
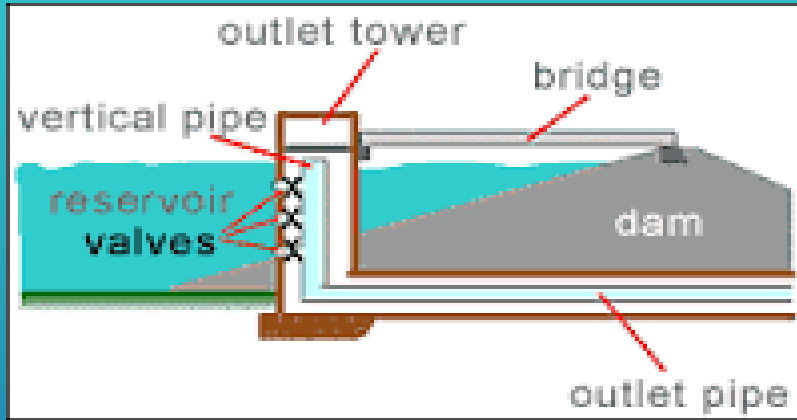


Figure 9 - Range Line 1, Rio Chama.

POTENTIAL SOLUTIONS

- Periodically dredge the reservoir.
- Increase elevation of power station inlet.
- Add a gated inlet tower to the power station inlet:
 - Vary the water temperatures
 - Eliminate year-round turbidity
 - Allow flushing of sediment to match timing of seasonal inflows
 - Maintain reservoir capacity
 - Reduce wear on the new turbines

Intake/Outlet Towers



COSTS

- **Gated towers at Santa Fe's Mclure and Nichols Reservoirs \$3-5M each**
- **El Vado Corrective Action (CA) will be more expensive because preferred alternative is to only take water elevation down to about El. 6785'**
- **Will need a coffer dam to isolate the low level outlet.**
- **Rough Estimate: \$10M**

TIMING

- **Corrective Action will commence in May 2022.**
- **This gives us time to do 2 things:**
 - **Secure funding**
 - **Develop design, costs, plans/specifications**
- **This schedule will not adversely affect the CA schedule.**

Once in a lifetime opportunity to solve 2 major environmental issues in the Wild and Scenic Rio Chama.

