Tennessee Valley Authority (TVA) Projects Using PHOENICS

Colbert Fossil Plant Skimmer Wall

Barge Collecting Debris at COF, 2001

Debris Impact on COF

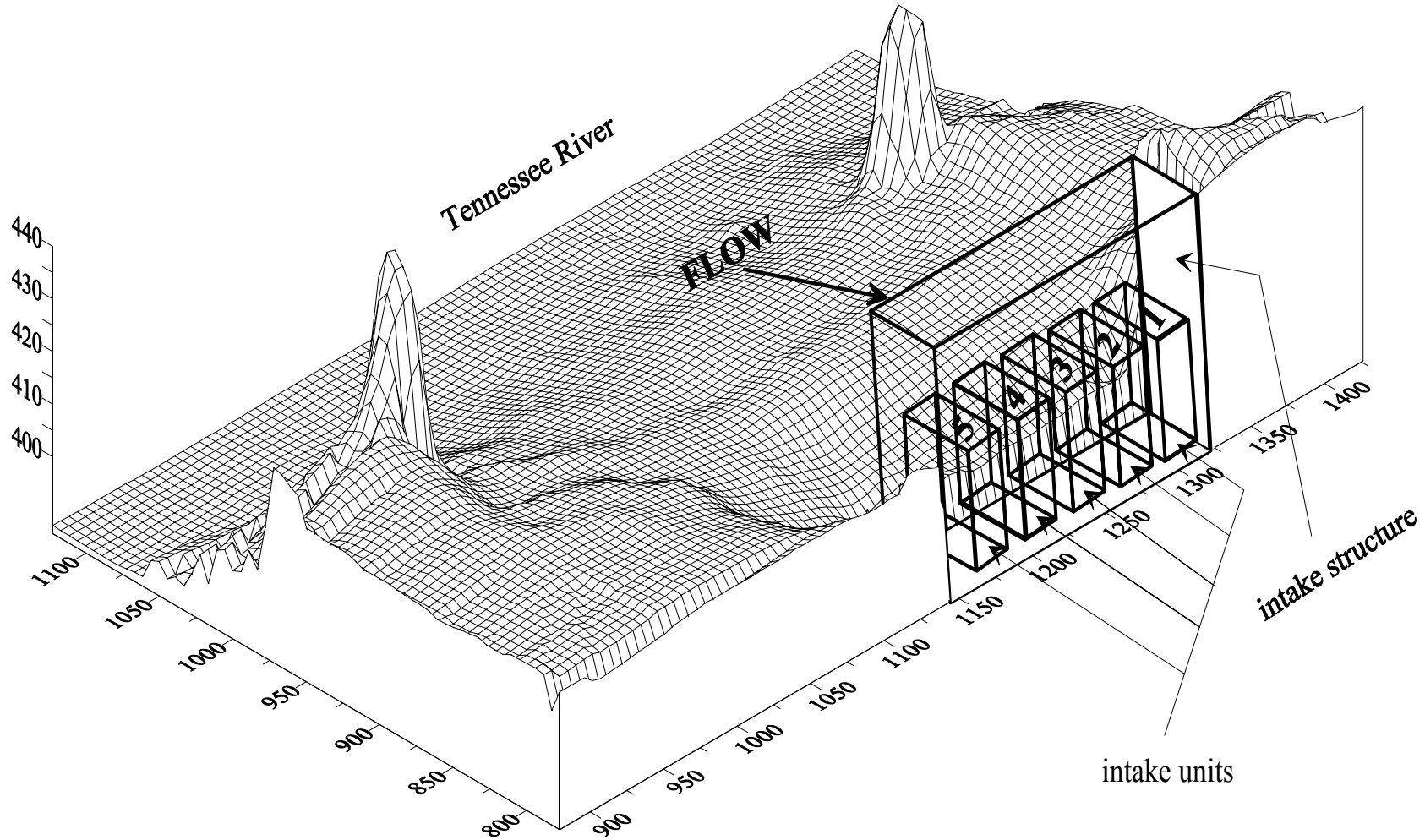
(June 1999)

- TVA lost 16,030 MWh from 1994-2000 due to debris.
- After 2000, trash boom deteriorated at COF.
- TVA lost 80,000 MWh due to debris buildup at COF in 2001.

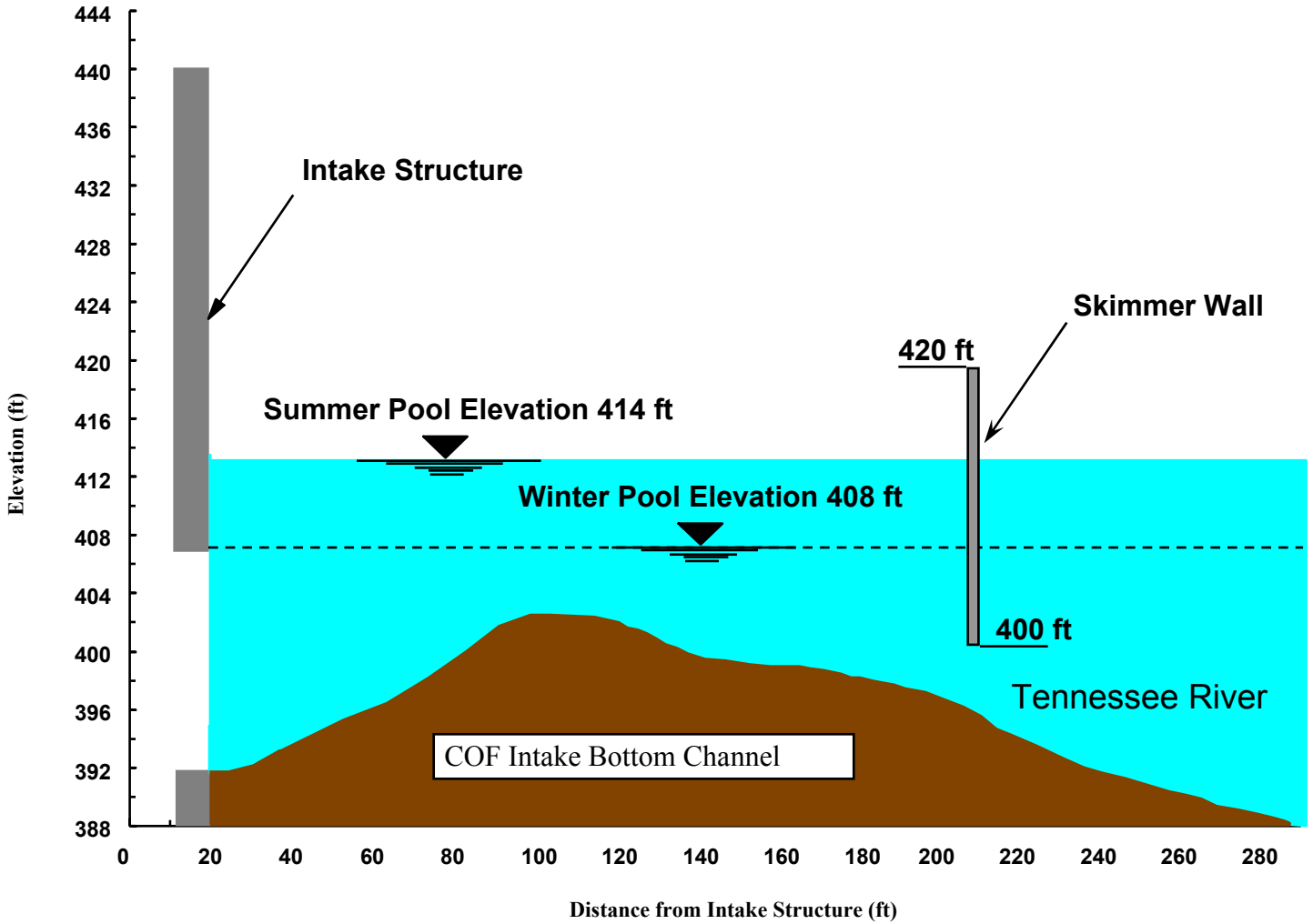
COF Skimmer Wall Objectives

- Reduce intake temperatures
- Minimize debris at pumping station
- Minimize Fish impingement
- Improve plant efficiency

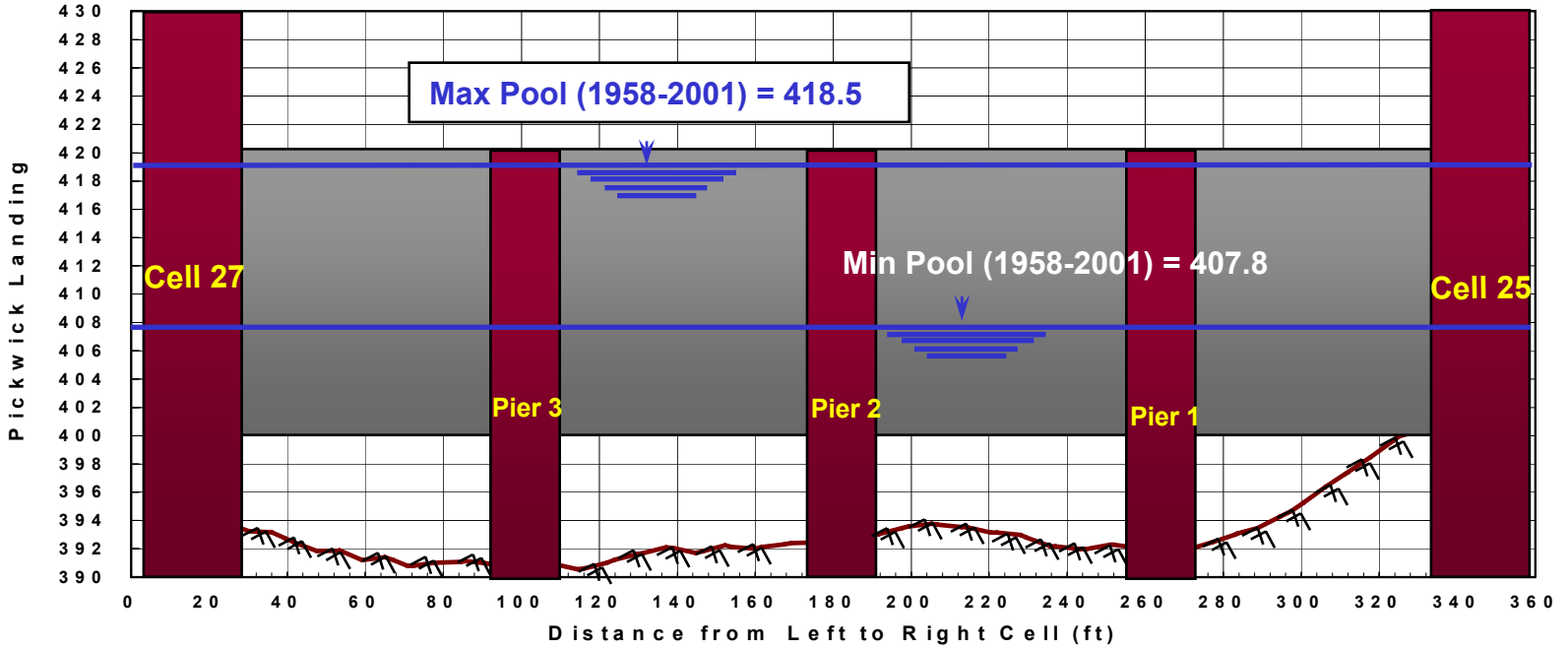
Colbert Intake Channel Bottom Surveyed September, 1996

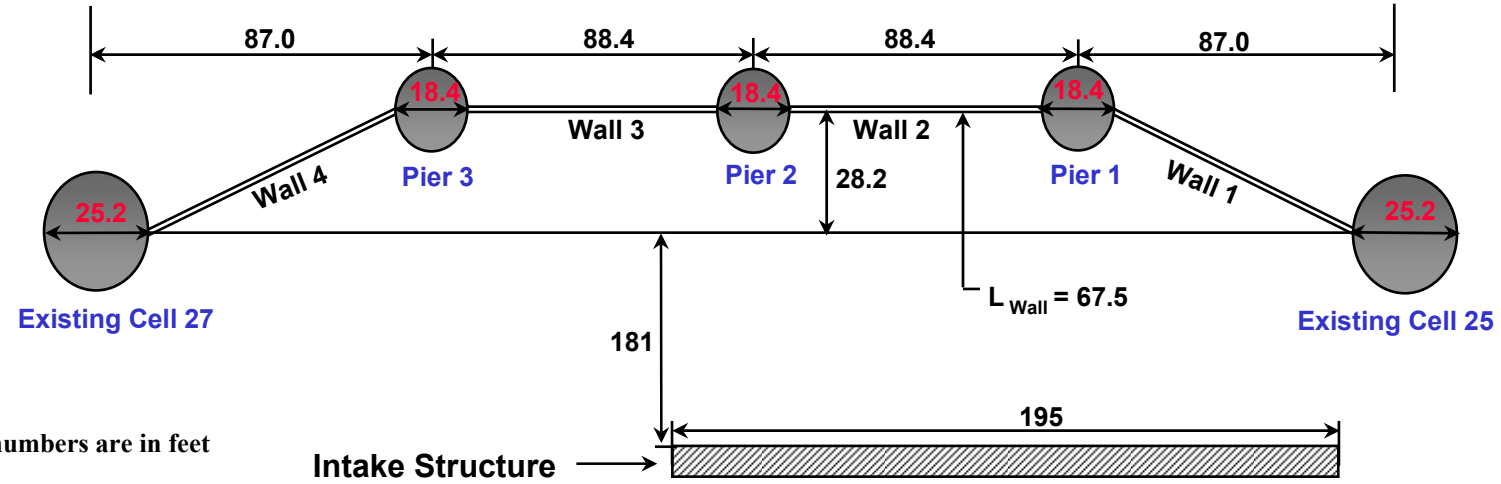


New skimmer wall brings cool water to plant, keeps warm water and Debris in the reservoir.



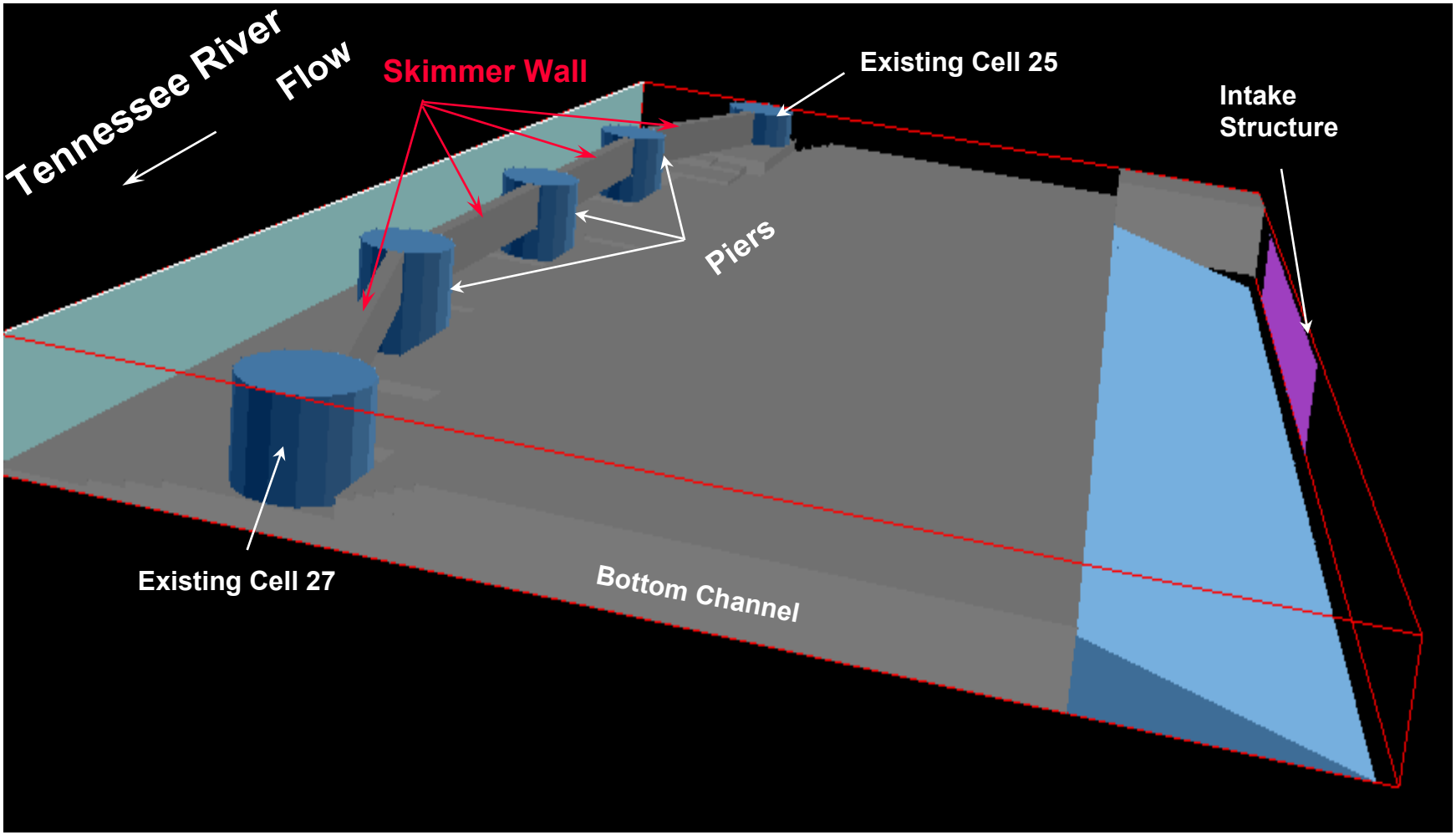
Schematic Potential Layout of COF Skimmer Wall, Option 2 (Preferred Design)
Cost = $1,313,000



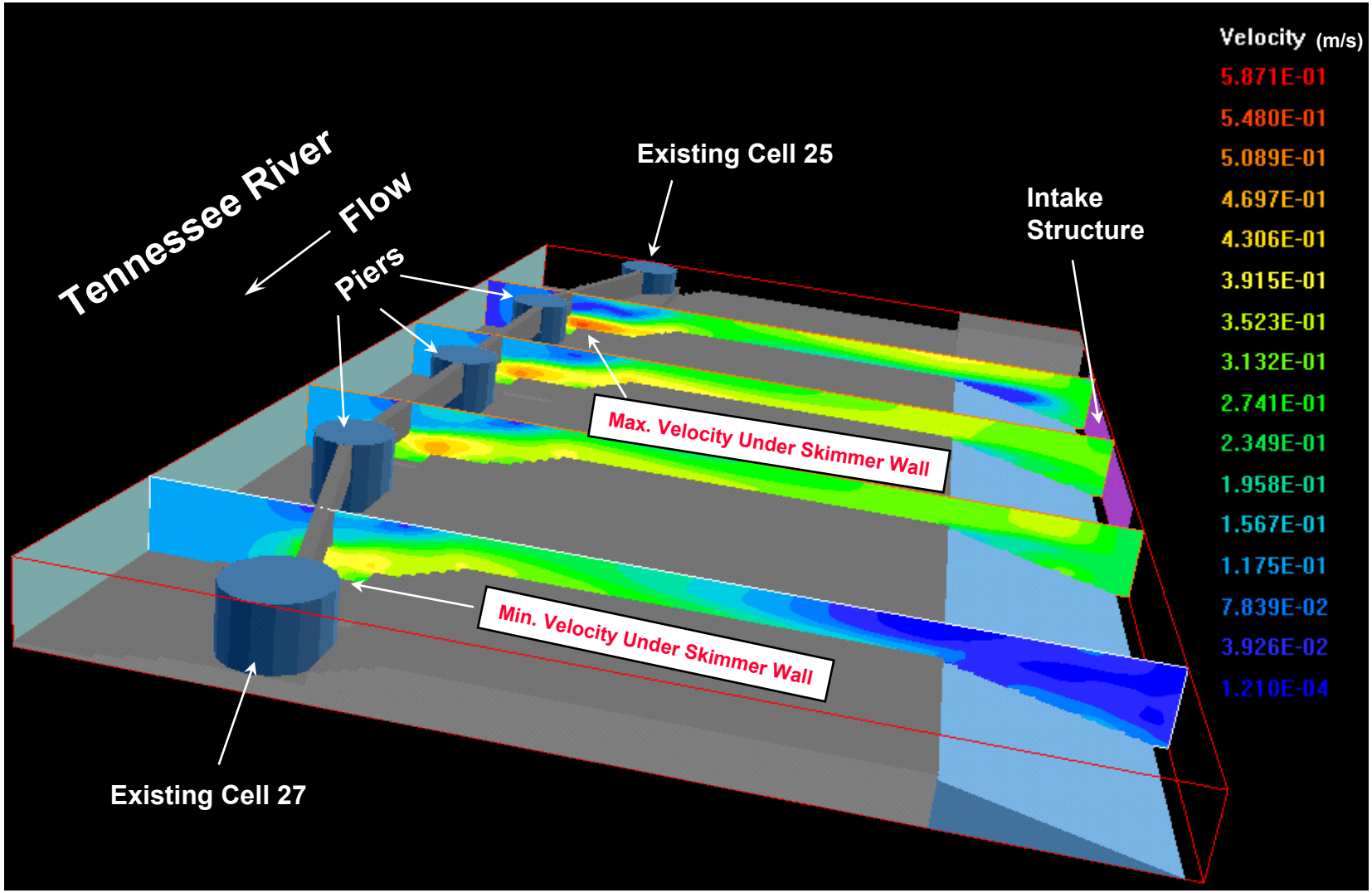


*All numbers are in feet

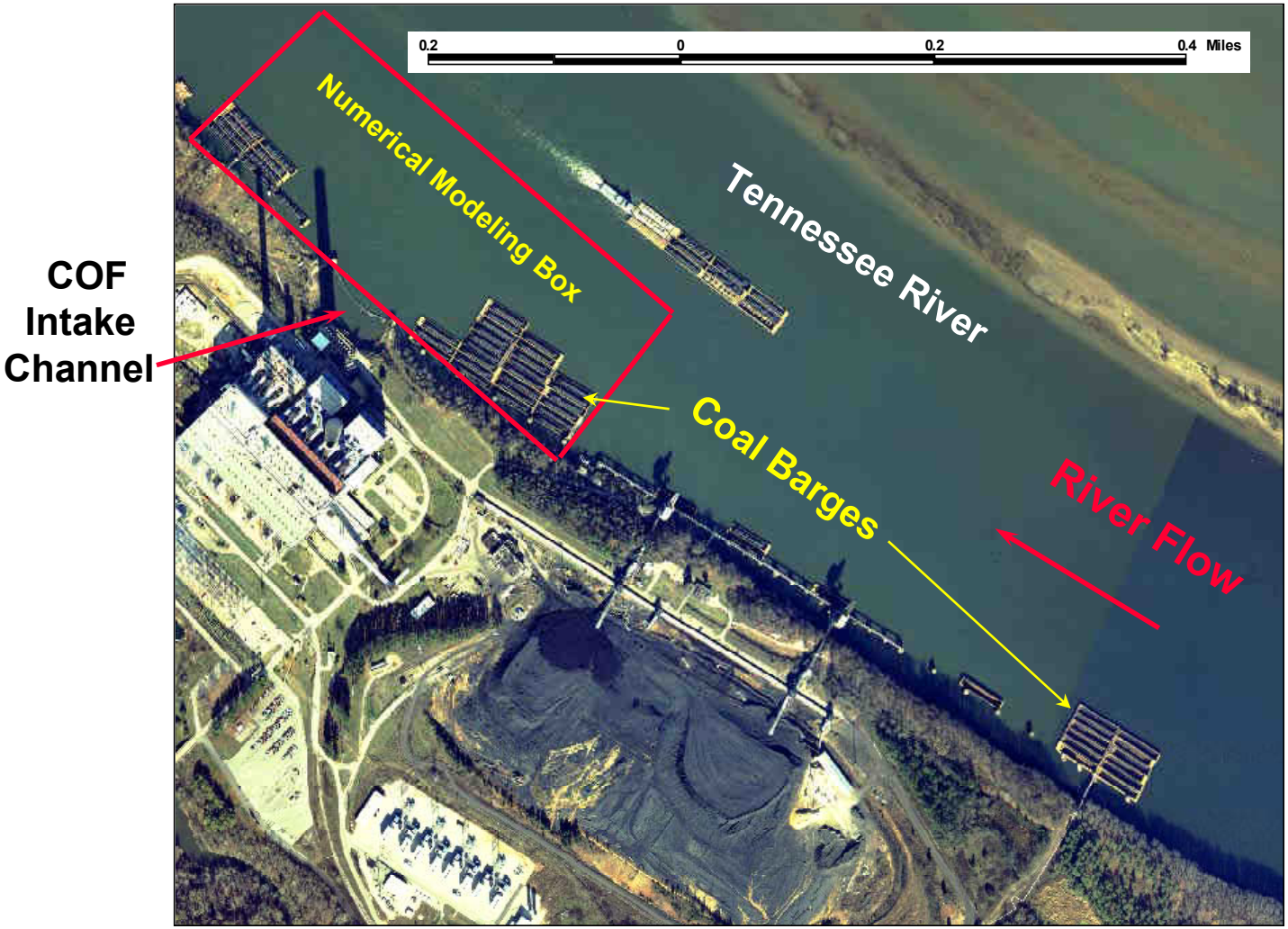
Intake Channel Numerical Representation in CFD



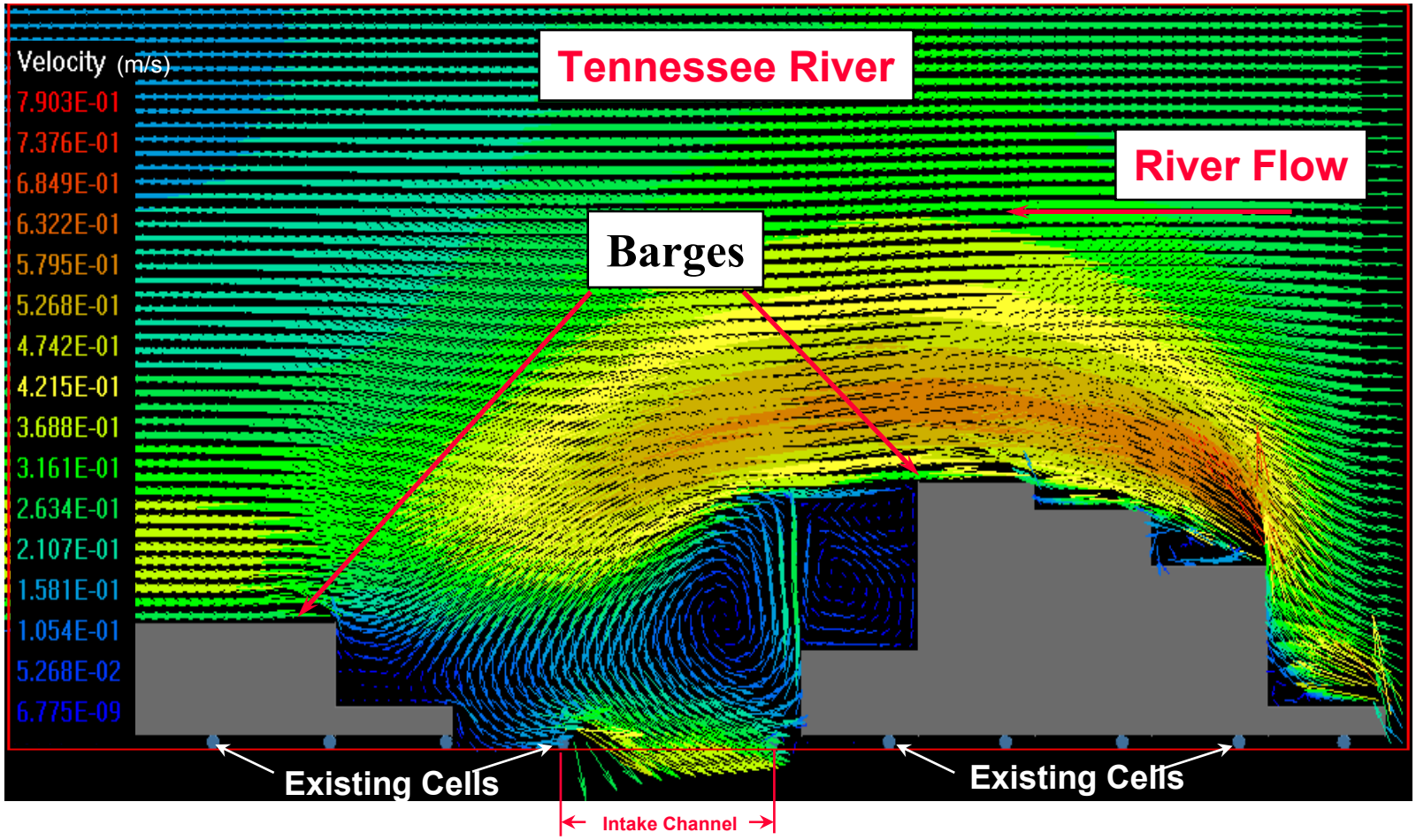
Computed Velocity Profile Contours at Several Locations of the Skimmer Wall



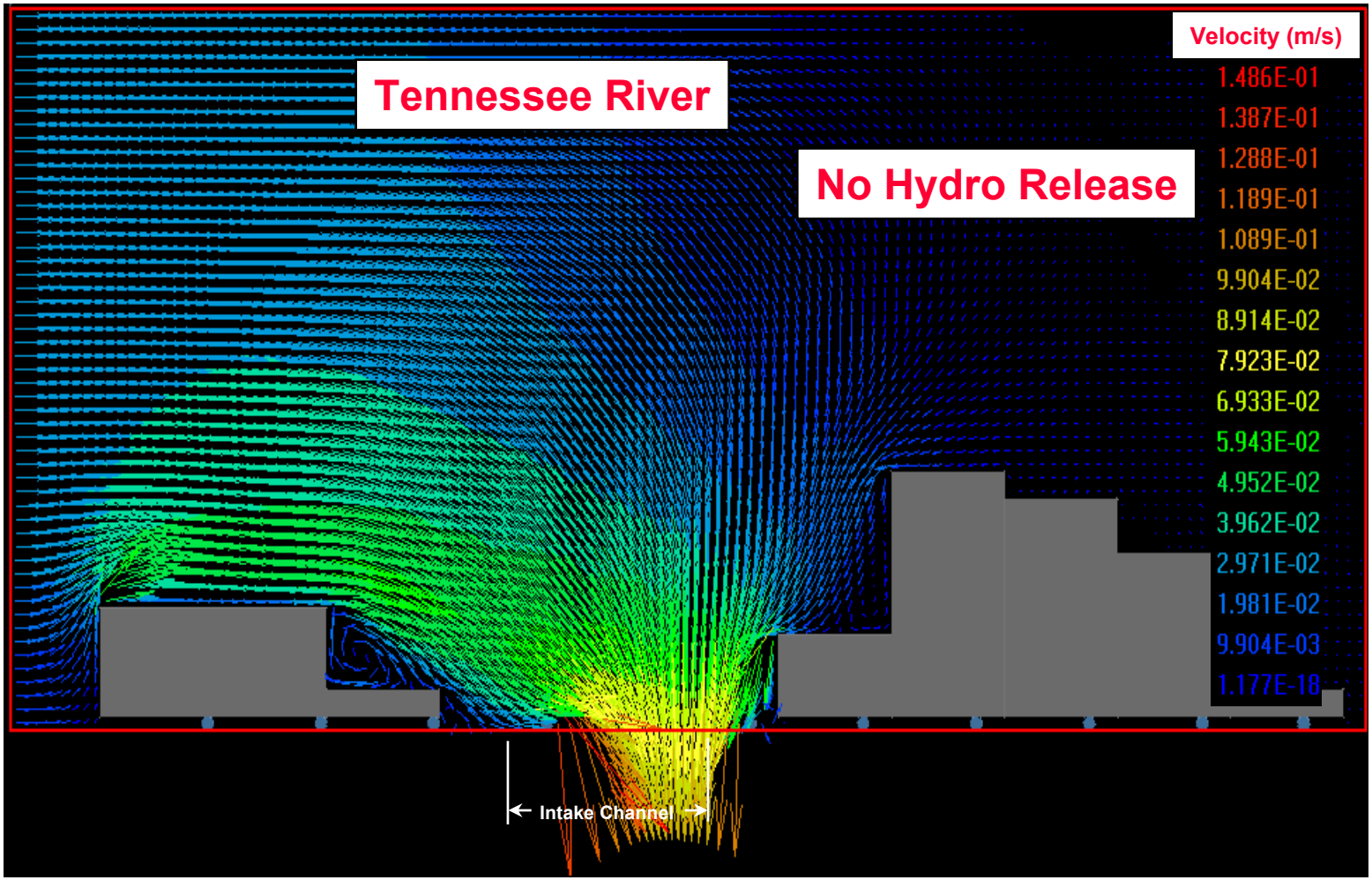
Aerial View of COF and Tennessee River



Computed Flow Field at COF Intake Channel Vicinity with Hydro Release, (Existing Conditions)



Computed Flow Field at COF Intake Channel Vicinity with No Hydro Release, Existing Conditions



COF Skimmer Wall During and After Construction

During Skimmer Wall Construction
04-2002

Potential Saving about $20 Millions for the next 25 years

Wall Construction Finished
07-2002
Cost = $1.4 Millions

Results

- No debris cleaning since the construction of the wall.
- TVA lost 0 MWh due to debris buildup at COF since construction.
- An average improvement of about 0.25 °F in intake water temperature.
- Lower Base line 316(b) ruling