

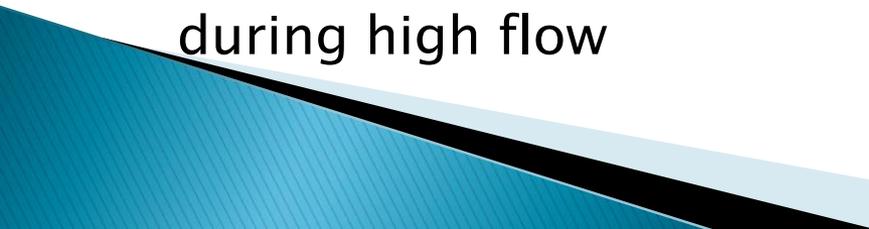
# Sleepy Hollow Steelhead Rearing Facility Raw Water Intake and Water Supply System Upgrade



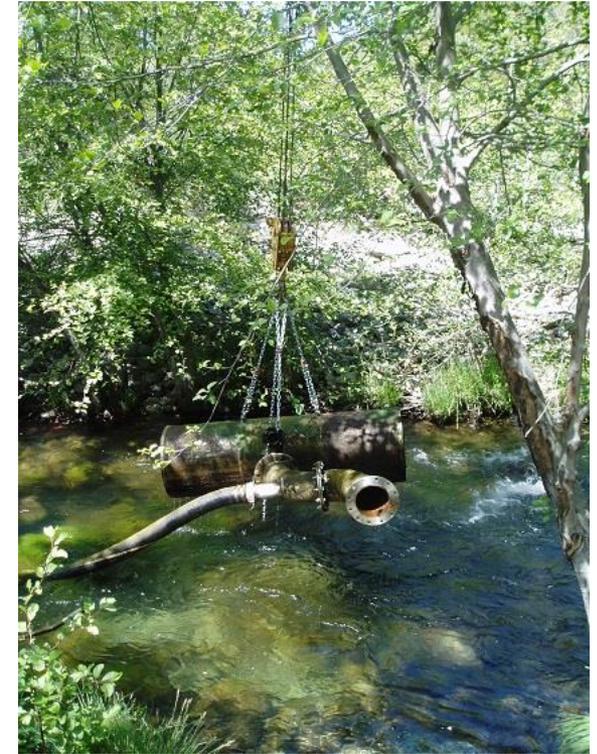
## Cooperating Entities



# Intake Upgrade

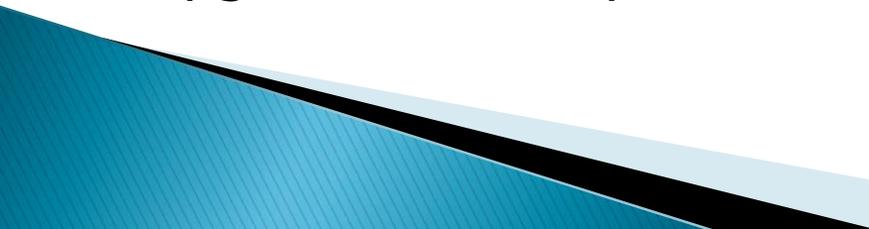
- ▶ San Clemente Dam removal in 2015 now allows sand, silt, and debris to flow in the Carmel River and affects the operation of the facility
  - ▶ Facility currently can't operate at either very low flow during droughts or during high winter flow
  - ▶ Solution is to modify the facility with a new intake, plumbing, and water recirculation system
  - ▶ New system to be capable of pumping 1,350 gallons per minute (increase from 900 gpm)
  - ▶ Move pumps up and away from channel to allow maintenance during high flow
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# Goal No. 1: Simple Maintenance



Existing pumps are located next to the river deep inside a concrete caisson (above and left) that is inaccessible at high flows. The existing drum screen (at right) is subject to clogging from silt, sand, and debris.

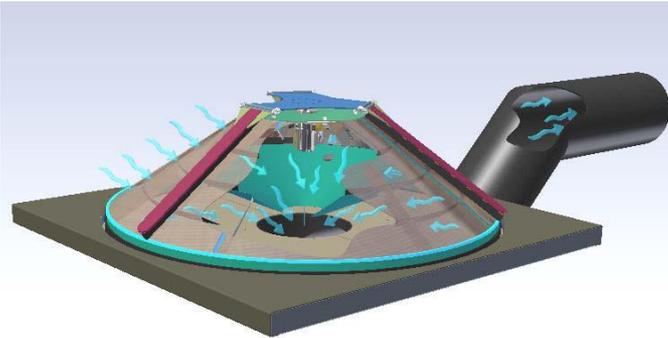
# Plumbing and Recirculation

- ▶ Install sediment and debris basin for filtering river water
  - ▶ Raise the cooling tower to save on pump energy
  - ▶ Add pumps and pipes for a recirculating aquaculture system (RAS) to use up to 50% of rearing channel discharge in low flow periods (e.g., drought) or high flow periods with debris and/or sand
  - ▶ Add filters to the RAS to control water quality and pathogens (UV, solids filtration, ammonia removal, etc.)
  - ▶ Expand and upgrade the alarm system; connect alarms and cameras to the internet for remote observation
  - ▶ Upgrade to PG&E power to run new systems
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# More reliable source of water

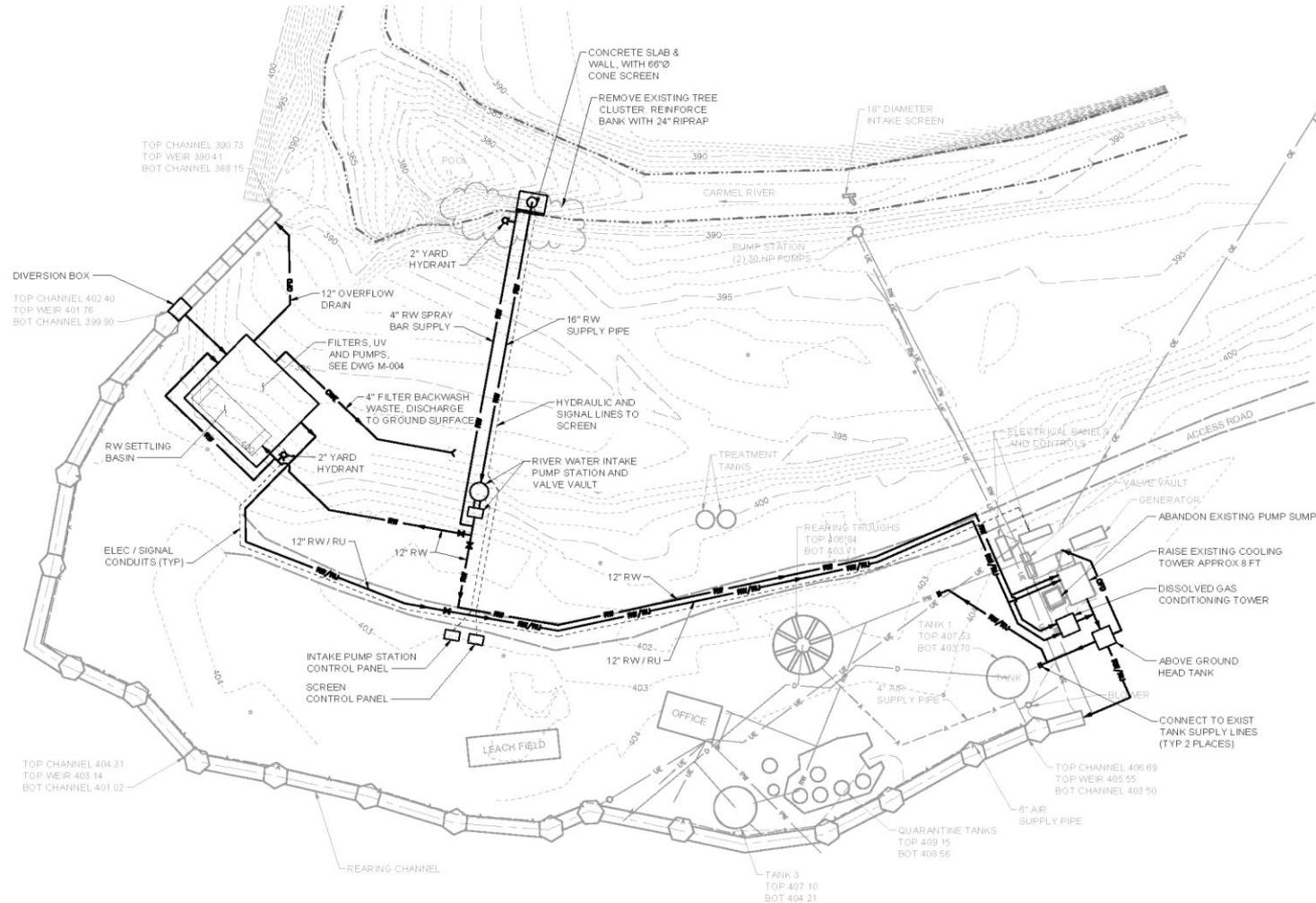


At the deepest part of the river (left), a new cone screen (below left) will be installed and water will be pumped to the cooling tower (above right) before flowing to the rearing channel (right).



# Recirculated Aquaculture System

An advanced recirculation system will take up to 50% of the rearing channel discharge and pass it through a series of treatments before returning the flow to the rearing channel.



# Schedule and Costs

- ▶ CEQA determination is scheduled for November 2016
  - ▶ Construction work is expected to start in the summer of 2017 and be complete in 2018
  - ▶ Improvements are estimated to cost between \$1.4 to \$1.8 million
  - ▶ Completion of this work will allow the facility, which was built as an interim facility in the early 1990s, to raise Carmel River steelhead successfully for many more years to come
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