CALIFORNIA WATER FIX
RELIABLE. CLEAN. WATER.

DWR-1360

DELTA FISH EFFECTS REBUTTAL TESTIMONY

OVERVIEW OF TESTIMONY

- **NORTH DELTA DIVERSIONS (NDD)**
- **LONGFIN SMELT (NOBRIGA & ROSENFIELD 2016)**
- **SOUTH DELTA ENTRAINMENT**
- **FOOD WEB PRODUCTIVITY**
- **BAY-DELTA ECOSYSTEM**
- **MOKELUMNE RIVER SALMONIDS**

NORTH DELTA DIVERSIONS

- **Flow and velocity**
  - North Delta reverse flows and NDD sweeping velocity
  - NDD bypass flows and downstream flows
- **Entrainment**
- **Biological modeling**
- **Screen design**
- **Monitoring**
- **Mitigation**
- **Protection of unlisted fish**

LONGFIN SMELT (NOBRIGA & ROSENFIELD 2016)

- **Qualitatively considered in ITP Application**
- **Little difference between NAA and CWF H3+**

Predicted Mean Fall Midwater Trawl Index from Nobriga and Rosenfield:

Water Year Type	Existing	NAA	CWF H3+	CWF H3+ vs. Existing	CWF H3+ vs. NAA
Wet	1,832	2,038	1,974	141 (8%)	-64 (-3%)
Above Normal	1,786	1,960	1,939	153 (9%)	-21 (-1%)
Below Normal	829	843	840	11 (1%)	-3 (0%)
Dry	466	473	458	-8 (-2%)	-15 (-3%)
Critical	187	188	184	-4 (-2%)	-5 (-3%)

SOUTH DELTA ENTRAINMENT

- **Longfin Smelt/HOR gate effect**
- **Longfin Smelt PTM methods**
- **Effect of south Delta + NDD**

FOOD WEB PRODUCTIVITY

- **Zooplankton X2-abundance relationships**
- **Plankton entrainment at NDD & south Delta**

QWEST flow from DSM2-HYDRO modeling:

Water Year Type	NAA	CWF H3+	CWF H3+ minus NAA
Wet	-2,628	3,212	5,840 (222%)
Above Normal	-2,898	1,969	4,867 (168%)
Below Normal	-3,599	272	3,871 (108%)
Dry	-2,001	-238	1,763 (88%)
Critical	-399	-23	376 (94%)

BAY-DELTA ECOSYSTEM

- **Turbidity/sediment**
- ***Microcystis***
- **Outflow effects**
- **Selenium**
- **Yolo Bypass inundation**

MOKELUMNE RIVER SALMONIDS

- **Juvenile salmonids**
- **Adult salmonids**