Cachuma Project Water Rights Hearing

October 2003

Panel V

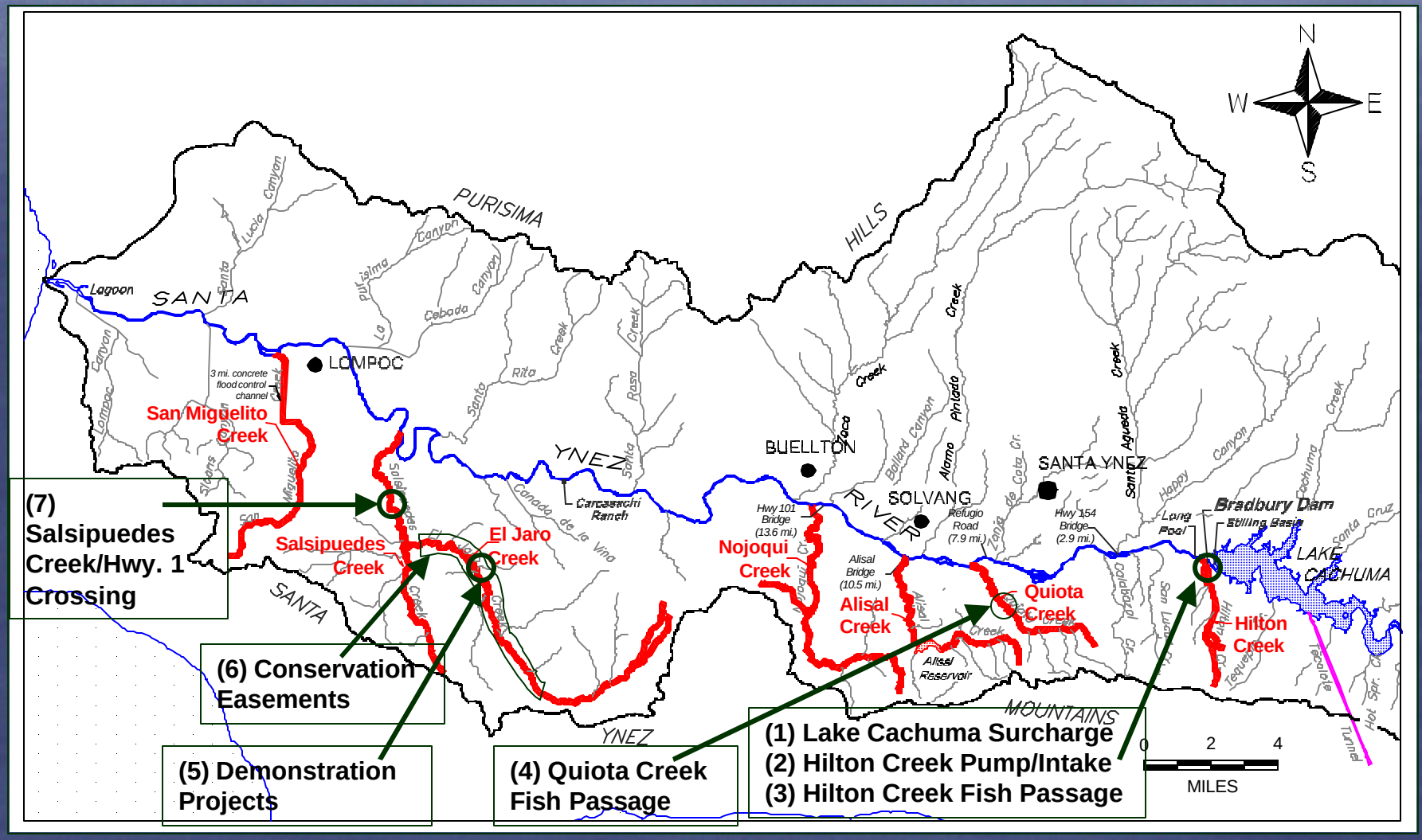
Presenter:

Scott B. Engblom

Project/Fisheries Biologist

Cachuma Conservation Release Board

Basin Map


N
W
E
S
PURISIMA
HILLS
SANTA
YNEZ
MOUNTAINS
LOMPOC
BUELLTON
SOLVANG
SANTA YNEZ
RIVER
LAKE CACHUMA
Bradbury Dam
Stilling Basin
Long Pool
Lagoon
3 mi. concrete flood control channel
Hwy 101 Bridge (13.6 mi.)
Refugio Road (7.9 mi.)
Hwy 154 Bridge (2.9 mi.)
Alisal Bridge (10.5 mi.)
Alisal Reservoir
San Miguelito Creek
Salsipuedes Creek
El Jaro Creek
Nojoqui Creek
Alisal Creek
Quiota Creek
Hilton Creek
(7) Salsipuedes Creek/Hwy. 1 Crossing
(6) Conservation Easements
(5) Demonstration Projects
(4) Quiota Creek Fish Passage
(1) Lake Cachuma Surcharge
(2) Hilton Creek Pump/Intake
(3) Hilton Creek Fish Passage
0
2
4
MILES

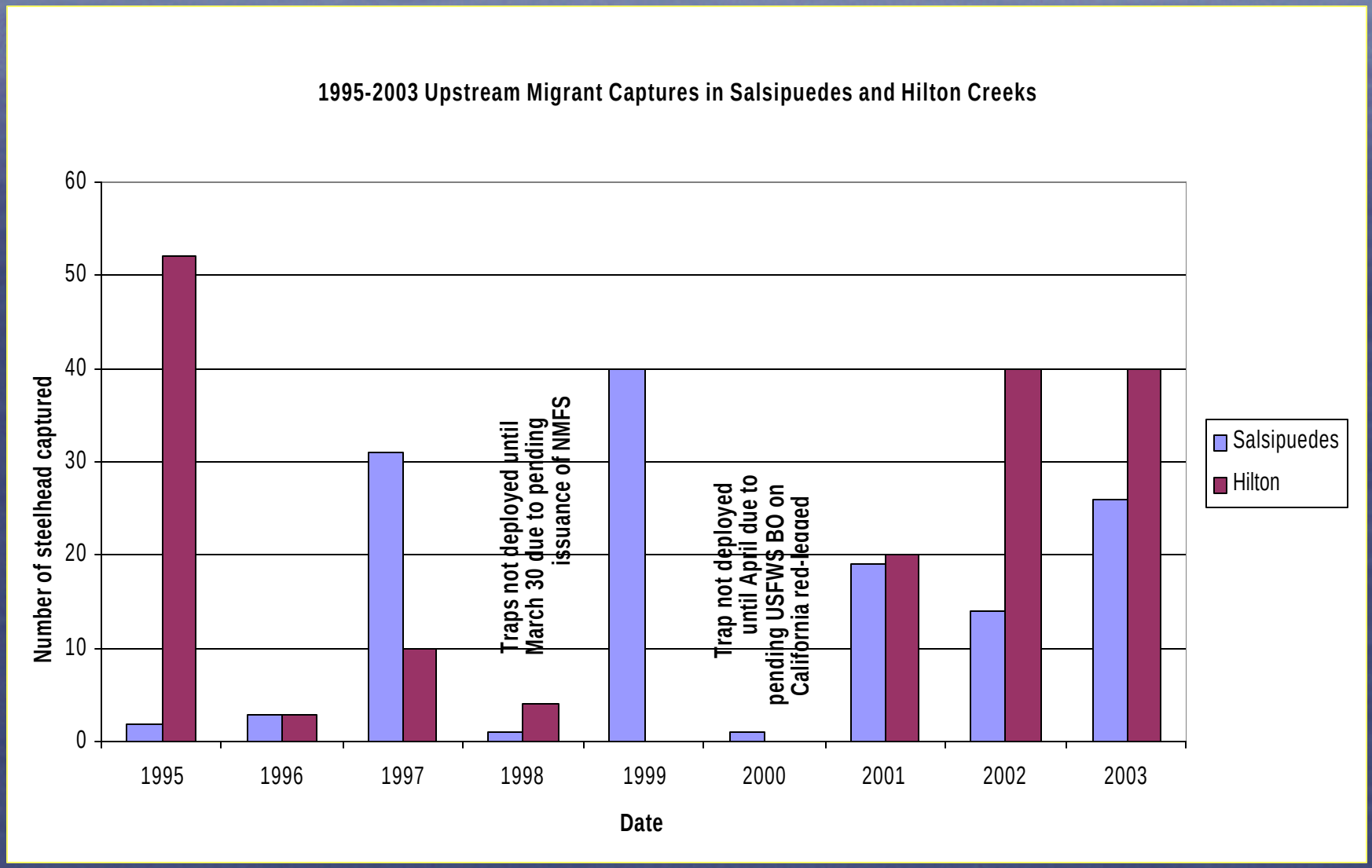
Biological Opinion Monitoring

- **Determine migration timing (migrant trapping efforts)**
- **Determine spawning locations (bi-weekly redd surveys)**
- **Evaluate instream habitat for steelhead in Hilton Creek in relation to supplemental water releases**
- **Evaluate aquatic habitats quantity and quality over time**
- **Evaluate and monitor refuge pools for evidence of cool water upwelling**
- **Monitor seasonal patterns and diel variation in water temperature (thermograph network)**

Biological Opinion Monitoring

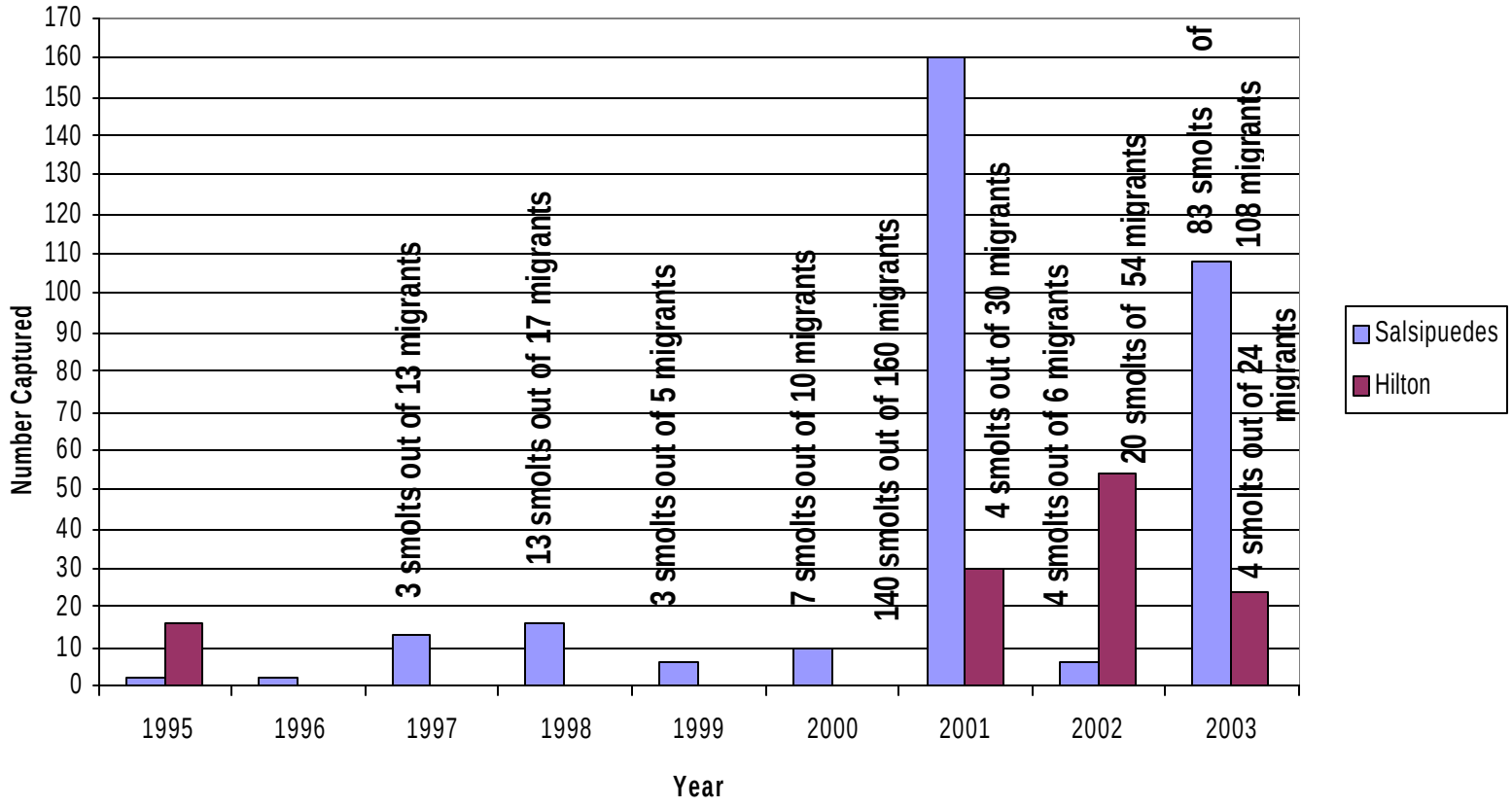
- Monitor water quality suitability
- Measure water quality profiles in Lake Cachuma quarterly
- Monitor lagoon physical processes
  - Timing of breaches
  - Closing of lagoon
  - Quarterly water quality measurements
- Target flow compliance in the mainstem and Hilton Creek
- Evaluation of specific tributary enhancement projects

Salsipuedes Creek Migrant Trap 2001


1995-2003 Upstream Migrant Captures in Salsipuedes and Hilton Creeks
Number of steelhead captured
60
50
40
30
20
10
0
1995
1996
1997
1998
1999
2000
2001
2002
2003
Date
Traps not deployed until March 30 due to pending issuance of NMFS
Trap not deployed until April due to pending USFWS BO on California red-legged
Salsipuedes
Hilton

22 Inch Female Steelhead
Pre-Spawn – 2001

25 Inch Female Steelhead
Post Spawn – 2001


1995-2003 Downstream Migrant Captures in Salsipuedes and Hilton Creeks
Number Captured
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
3 smolts out of 13 migrants
13 smolts out of 17 migrants
3 smolts out of 5 migrants
7 smolts out of 10 migrants
140 smolts out of 160 migrants
4 smolts out of 30 migrants
4 smolts out of 6 migrants
20 smolts of 54 migrants
83 smolts of 108 migrants
4 smolts out of 24 migrants
1995
1996
1997
1998
1999
2000
2001
2002
2003
Year
Salsipuedes
Hilton

5 Inch Resident Rainbow Trout

7 Inch Steelhead Smolt

Redd Surveys

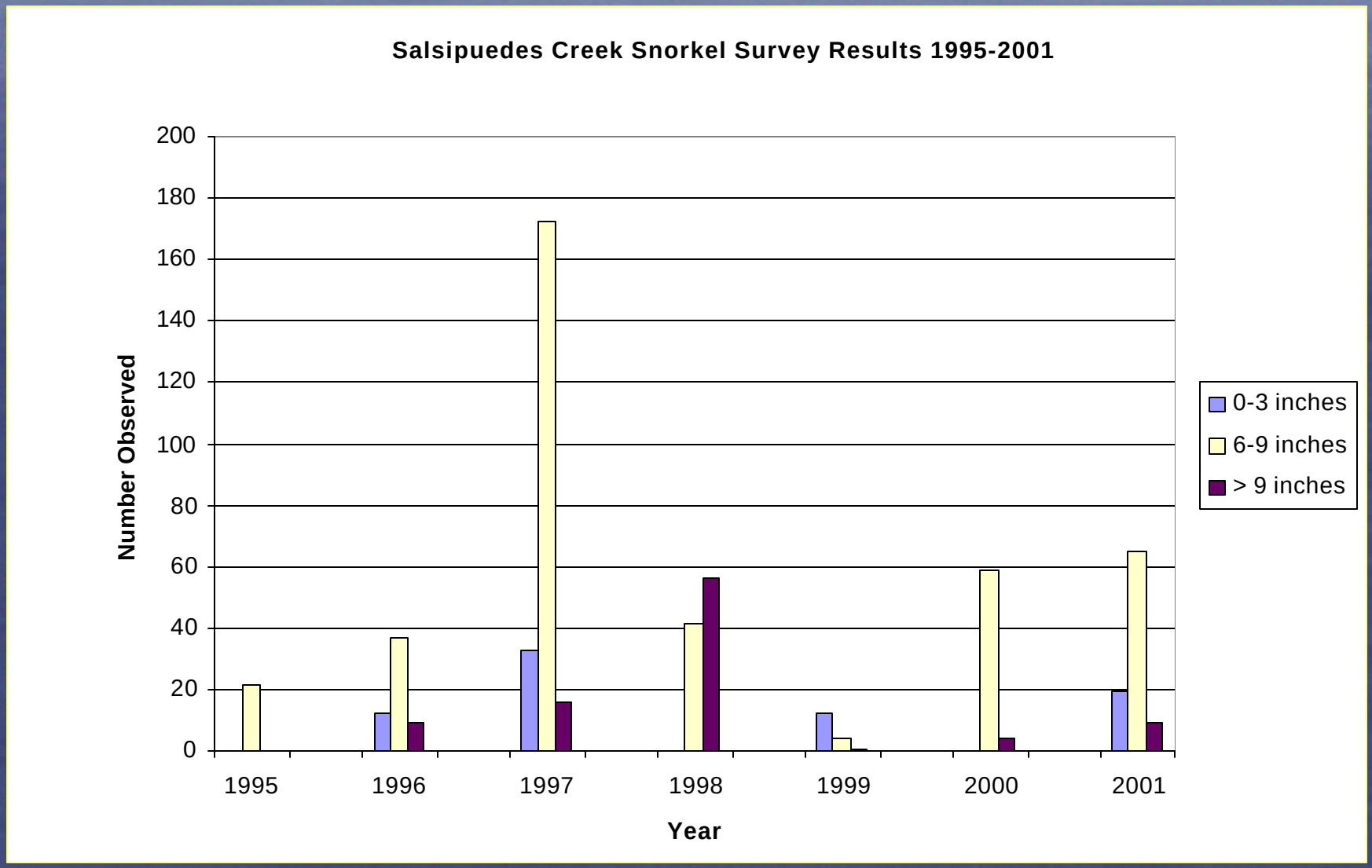
- Conducted in the mainstem and tributaries (Hilton, Quiota, Nojoqui, Salsipuedes, and El Jaro Creeks)
- Data used to determine preferred steelhead spawning areas
- Sites are later evaluated during snorkel surveys to determine baseline numbers prior to the critical summer period

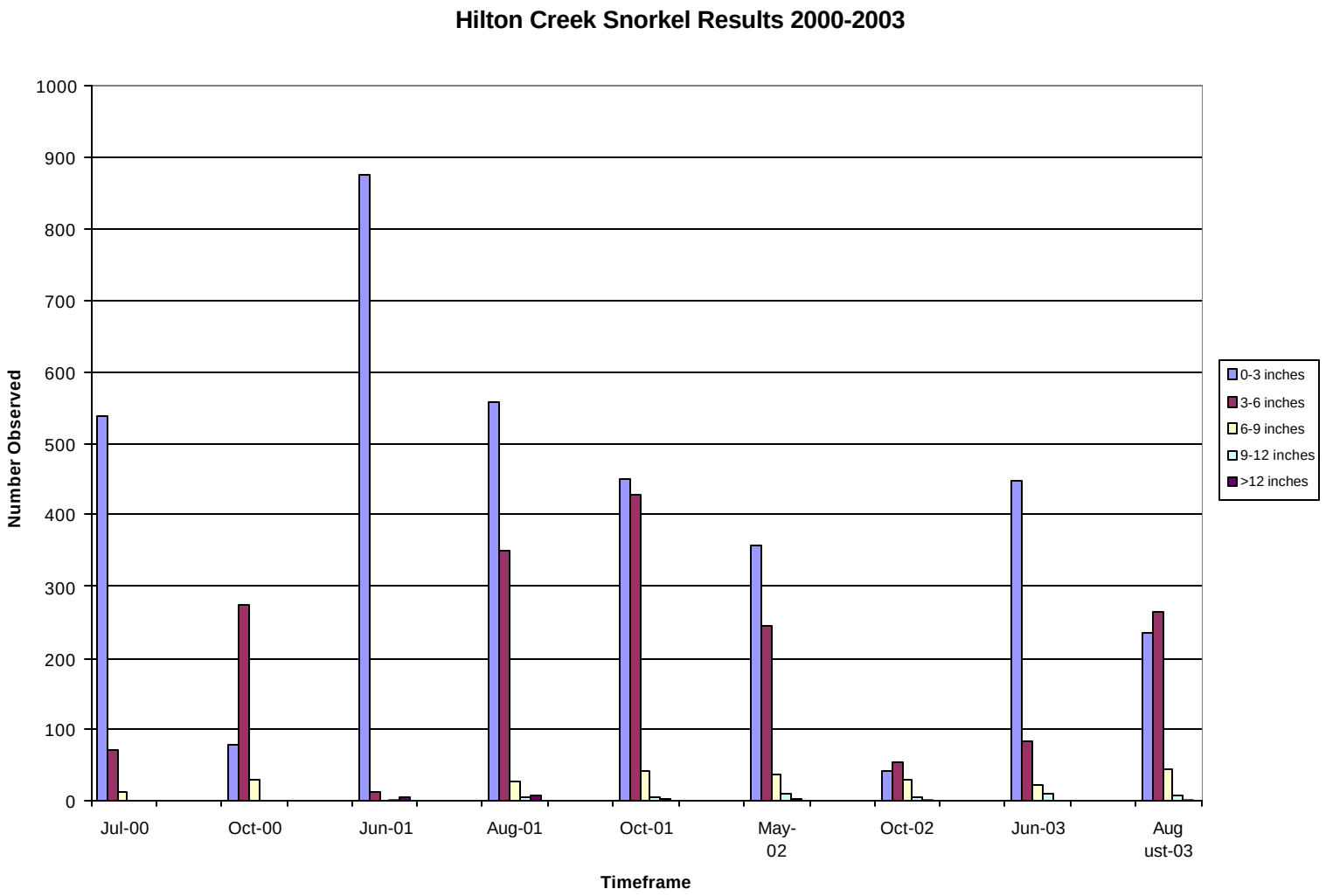
Redd Survey Results 1995-2002

	1995	1996	1997	1998	1999	2000	2001	2002
Mainstem	N/S	N/S	0	Present	N/A	Present	0	Present
Hilton Ck.	Present	0	0	Present	0	0	Present	0
Quiota Ck.	Present	No Access	No Access	No Access	No Access	Present	No Access	No Access
Upper Salsipuedes Ck.	N/S	Present	Many	Present	Many	Many	Many	No Access
Lower Salsipuedes Ck.	N/S	Present	Many	N/A	Many	Present	No Access	No Access
El Jaro Ck.	N/S	Present	Many	N/A	0	0	0	Present
San Miguelito Ck.	N/S	N/S	Many	Present	Many	N/S	N/S	N/S

Snorkel Surveys

- June - evaluate success of winter spawning effort
- August - evaluate rearing conditions during critical summer period
- October - evaluate rearing success after critical summer period


Salsipuedes Creek Snorkel Survey Results 1995-2001
Number Observed
200
180
160
140
120
100
80
60
40
20
0
1995
1996
1997
1998
1999
2000
2001
Year
0-3 inches
6-9 inches
> 9 inches


Hilton Creek Snorkel Results 2000-2003
Number Observed
1000
900
800
700
600
500
400
300
200
100
0
Jul-00
Oct-00
Jun-01
Aug-01
Oct-01
May-02
Oct-02
Jun-03
August-03
Timeframe
0-3 inches
3-6 inches
6-9 inches
9-12 inches
>12 inches

Salsipuedes Creek Fish Passage Project

Completed January 2002

Pre-Project Photo Showing Passage Impediment

Side View Showing Passage Impediment

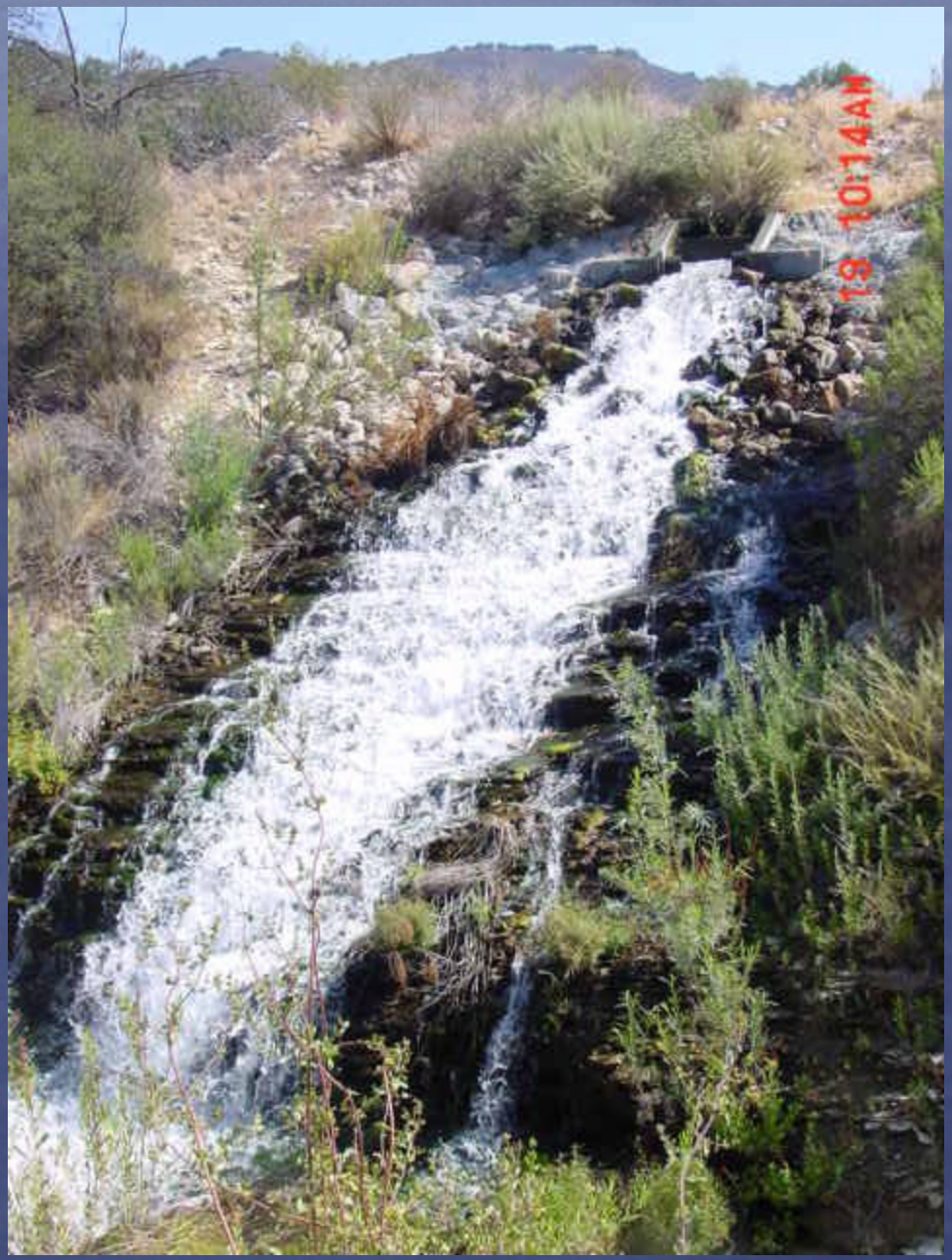
Installation of Wood Frame for Concrete Pour of Diversion Element

Side View of Reconfigured Low Flow Pathway Through Step-pool

2002-2003 Salsipuedes Creek Migration Results

- Project completed in early January 2002
- In 2002, 14 upstream migrants captured (size range: 5.4” – 15.1”)
- In 2003, 26 upstream migrants captured (size range: 4.0” – 27.1”)
- All migration occurred at creek flows of 3 cfs
- Few steelhead would have migrated past the impediment without the passage improvements

Hilton Creek Watering System Completed in the Fall of 1999



Project Goals

- Provide excellent summer rearing habitat for steelhead by releasing cool water from Lake Cachuma into Hilton Creek
- Provide water for passage of steelhead to migrate and spawn in Hilton Creek during the winter and spring
- Provide additional spawning habitat during the spring
- Enhance habitat within the existing channel

Pipeline Trench for the Upper Release Point – December 1998

Pipeline Trench to Stilling Basin – January

Photo Taken in February 1998

Photo Taken in September 2000

Photo Taken December 2002

Successes of the Hilton Creek Supplemental Watering System

- Successful spawning and rearing documented in 2000-2003
- Approximately 500 - 1000 young steelhead counted rearing in the creek during each year (except 2002)
- Constant supply of water has increased beneficial stream side vegetation
  - Increases available food supply for rearing steelhead
  - Decreased water temperatures

Future Projects

Quiota Creek Fish Passage Project

Salsipuedes Creek at Jalama Bridge Fish Passage Project

El Jaro Creek Sediment Control Projects/Landowner Demonstration Projects

Hilton Creek Fish Passage Enhancement Projects

- Cascade/Chute project
- Highway 154 culvert project

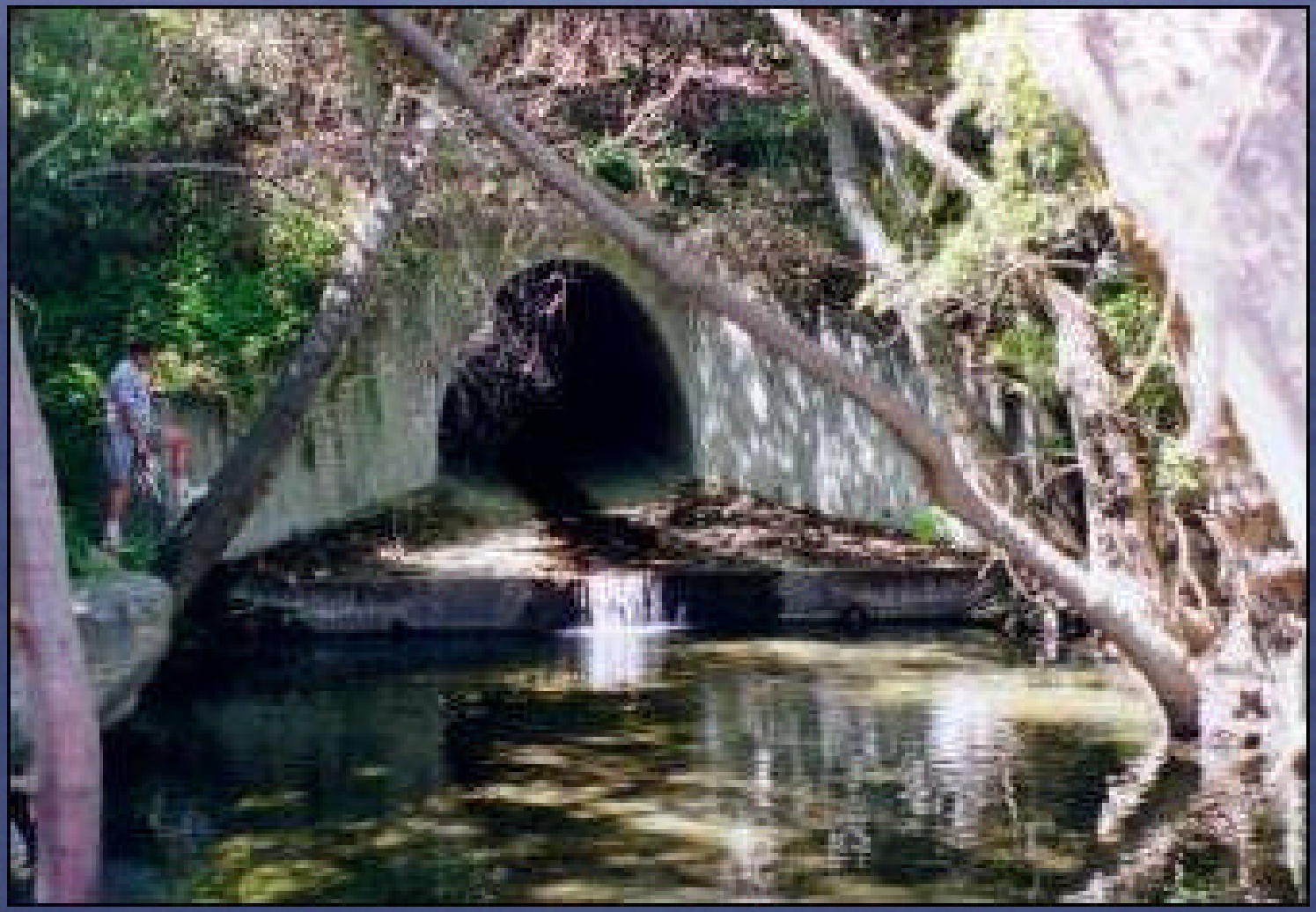
Quiota Creek Crossing # 2 of 8

Salsipuedes Creek at Jalama Bridge

El Jaro Creek Flood Plain Enhancement

Hilton Creek Cascade/Chute Project

Hilton Creek at Highway 154

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