Los Padres Fish Passage Evaluation

A Study Out of a Suitcase

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Los Padres Dam

RM 24.8 of the Carmel River

Carmel Valley, California

Project Background and Need

Shallow spillway flow

Provide passage during low flow periods

Downstream Passage Facilities

Study Components

- Inspection of the bypass pipe using in-line video testing
- Hatchery origin fish to evaluate passage conditions through the FWC and bypass pipe
- Assessment of each fish and identification of any external physical injury
- Monitoring of control and test fish for 24- and 48-hour mortality rates to identify potential non-visual internal injuries

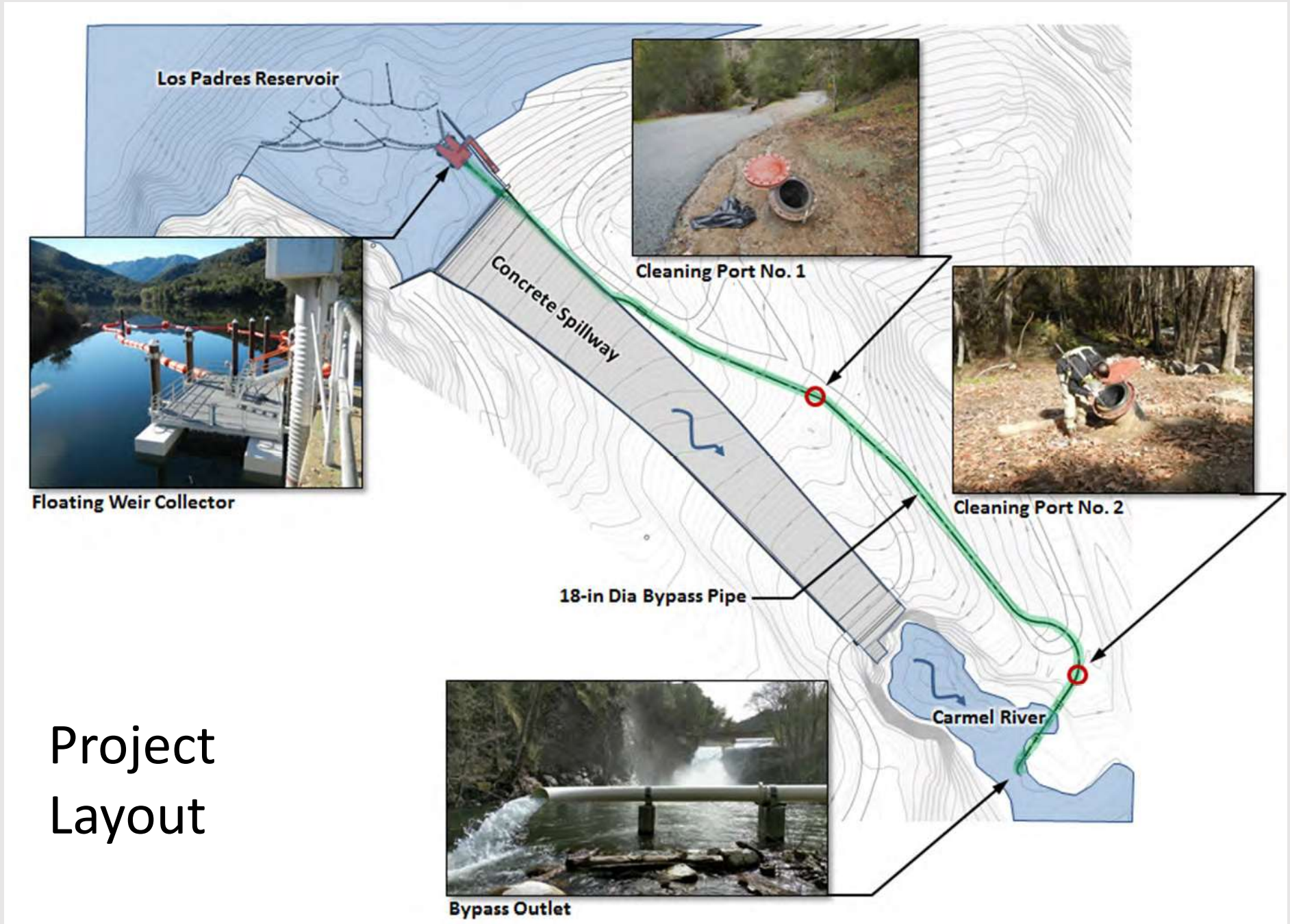
Video Evaluation

- Video within the bypass
- 3 flows: 3cfs, 5cfs, 9 cfs
- Assess potential mechanical or hydraulic issues within the bypass

Live Fish Study Plan

- 3 test flows: High (9cfs), medium (5cfs), low (3cfs)
- 3 test runs of treatment and control fish groups.
- The head, eyes, skin, and all fins were examined for injury and trauma. Descaling as a percentage of total body area was also visually assessed and estimated to the nearest 5%.
- Monitoring at 24 and 48 hours for any delayed mortality.

Project Layout



Site conditions at capture location


IF THE WOMEN DON'T FIND YOU HANDSOME
THEY SHOULD AT LEAST FIND YOU HANDY
quickmeme.com

Net flume configuration

Rigging to secure net at outfall

Netting allowed for dewatering much of the outflow while maintaining some flow to carry fish to capture area

For low flow tests a piece of tarp was added to the netting to carry water to capture point

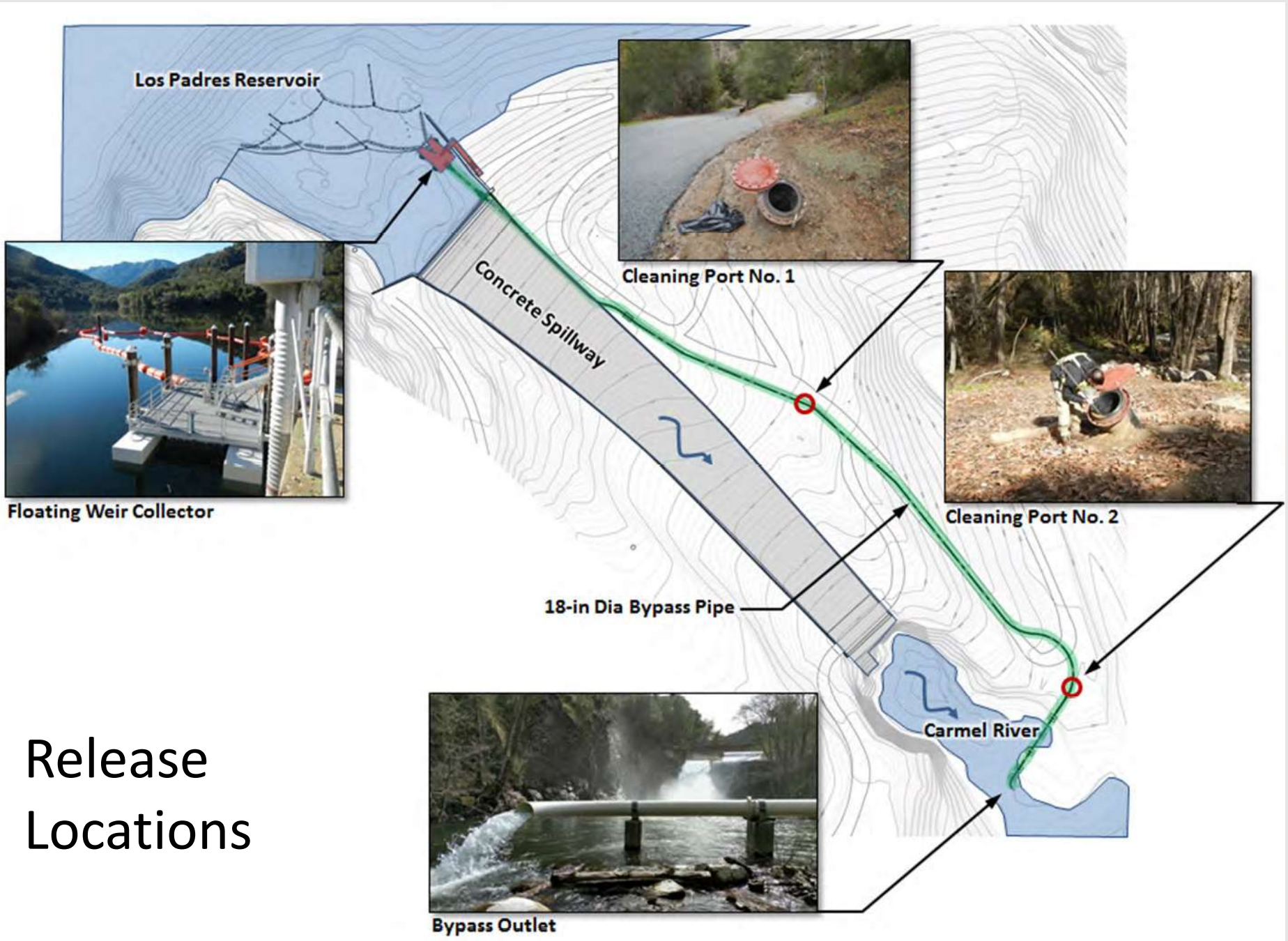
During High flow tests netting dewatered outflow but had enough remain to carry fish to capture area

Net pens constructed using prefabricated cube shaped nets with 3/8” knotless mesh and zippered tops to facilitate fish transfer.

Test Fish

- All test fish PIT tagged and held in net pens for 24 hours prior to testing
- 357 juvenile sized fish (108 to 298 mm)
- 19 adult sized fish (381 to 470 mm)
- 1 adult sized fish rejected from testing due to existing caudal injury

Release Locations



Fish were collected from capture net and immediately placed in live-well container with river flow for holding until examination

Study Results

- No laceration type injuries were observed in any of the groups.
- No shear type injuries observed that would be the result from hydraulic issues within the bypass pipe.
- A small number of both treatment and control fish (<10% overall) experienced some minor descaling or abrasive type injuries.
- No significant difference between treatment and control fish.
- Only 3 fish had minor impact injuries.

One fish from 9cfs, FWC release had narrow vertical bruise on left side of body

One fish from 5cfs, FWC release, had torn opercula

One Adult sized fish from the 5 cfs test had a tear in opercula and minor descaling

Test fish kept in floating net pens for 48 hours after testing

Delayed Mortality

- No mortalities were observed in any of the three flow level test groups for juvenile sized fish at 24 and 48 hours following bypass testing.
- The net pen containing the test fish from the initial low flow test was monitored again at 72 hours post-test. This extra observation found no mortalities.
- No mortalities were observed in adult sized test fish 24 hours following bypass testing.
- Survival of all test fish indicated there were no occurrences of internal trauma or injury that was not observable during the external examinations that would potentially cause delayed mortality in bypassed fish.

Results from this testing allowed NMFS to approve the bypass for operations

FishBio has installed a video detection system in FWC

NMFS is conducting ongoing monitoring using PIT tagged in-river fish