

FISH PASSAGE SCENARIO UPDATE

PREPARED FOR 4.17.2019 AD HOC MEETING

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Fish Passage Objectives

- Population viability of upper Eel River anadromous fishes
- Access to abundant high quality habitat
- Functional fish passage

Fish Passage Scenarios Summary Table

	1 Fishway at Existing Scott Dam Options	2 Trap & Haul	3 Partial Scott Dam Removal	4 Remove Scott Dam and Modify Cape Horn Dam
Options	1.1 Semi-Natural, Low-Gradient Bypass Channel 1.2 Original Mead & Hunt (M&H) Fish Ladder 1.3 Modified M&H Fish Ladder	2.1 Trap & Haul, Van Arsdale to Scott Dam 2.2 Trap & Haul, at Scott Dam	3.1 Lower Scott Dam to 80' – Meet PVID demand and environmental flows 3.2 Lower Scott Dam to 50' – Retain accumulated sediment	4.1 Remove Scott Dam and Modify Cape Horn Dam 4.2 Remove both Scott Dam and Cape Horn Dam 1) With Diversion (provides another baseline for flows and fish) 2) No Diversion

BRIEF DESCRIPTION OF FISH PASSAGE OPTIONS

Scenario 1: **Fishway** at Existing Scott Dam

For all three options:

- Volitional passage (no handling).
- No management actions in the reservoir except for guide nets for juveniles (guide nets can be used for adults if needed).

Option 1.1 Semi-natural, low gradient **Bypass Channel**

- Exclusion weir in the river to guide upstream passage into the bypass channel entrance (with attraction flows).
- Long, engineered channel using natural materials as much as possible for upstream passage on north side (longer, gentler) or south side (shorter, steeper) to top of dam.
- False weir for upstream passage into the reservoir (routes flow through an internal portion of a weir to come out the top crest of the weir to provide a false appearance to fish to leap over the weir and then slide down into the reservoir). Continuous pumping is required to operate the false weir and thus the fishway.
- No hole in the dam to support up/downstream passage.
- Guide nets for downstream passage (Feb-June); ability to lower nets during storms.
- For downstream passage, modified dam gate allows water to spill into smooth ramp and bypass pipeline. If low water levels in reservoir, use a pump or Archimedes screw to assist downstream passage.

Option 1.2 Original **Mead & Hunt Fish Ladder**

PG&E commissioned the Mead and Hunt Fish Ladder study.

- Upstream migrating fish enter ladder at southside base of Scott Dam (with attraction flows) with tunnel/hole through dam at elevation 1866' to exit gallery of gates (for a reservoir range of 32 feet up to reservoir water surface elevation 1901').
- Guide nets to fish ladder for downstream passage. Two potential locations: 1) shorter nets extending full depth close to the dam, or 2) longer nets extending from the dam to the Eel River main stem arm.
- Downstream migrating fish enter a plunge pool and continue down the ladder (for reservoir elevation 1900-1910' inside exit gallery) or go through a normal gate for the ladder (for reservoir elevation 1869-1901'). Fish can use spillway at higher reservoir elevations (for reservoir elevation 1900'+ when spillway gates are not in), but study of survival is needed and improvements are likely needed.

Option 1.3 **Modified Mead & Hunt Fish Ladder**

Same as M&H fish ladder except:

- Exit gallery extended up 10 additional feet to 1910' (allows upstream passage at full pool).
- Downstream migrating fish use extended fish ladder/exit gallery instead of fish ladder plunge pool between 1900-1010', Otherwise, same as above for downstream passage.

Scenario 2: Trap and Haul

For both options:

- Upstream migrating fish released to a selected tributary mouth (Option 2.1) or in Lake Pillsbury (Option 2.2).
- Downstream passage methods are the same for both options: reservoir-length guide nets to Floating Surface Collector (FSC) at Scott Dam. Collected fish are transported by truck and released riverside after acclimation.

Option 2.1: Trap & Haul at Van Arsdale Fisheries Station (VAFS) to Lake Pillsbury

- Upstream migrating fish are trapped in modified VAFS fish ladder and trap, sorted, and then loaded onto a truck for transport to barge located at Lake Pillsbury. Barge transport across reservoir to the mouth(s) of a selected tributary(s) mouth.

Option 2.2: Trap & Haul at Scott Dam

- Volitional passage at Cape Horn Dam.
- Upstream migrating fish are trapped at base of Scott Dam, sorted, and then loaded onto a truck for transport to barge located at Lake Pillsbury. Barge transport to middle of reservoir, or fish go into a hopper on a truck then barge loaded truck to middle of reservoir. Fish then choose tributary. WHOOSHH could be considered for transfer from trap below dam to release in Lake Pillsbury near the dam.

Scenario 3: Partial Scott Dam Removal

For both options:

- Volitional passage (no handling).

Option 3.1: Lower Scott Dam to 80' (Water)

- Upstream passage is the same as the M&H Fish Ladder concept (Option 1.2), except at 20' lower elevation.
- Downstream passage is the same as the original M&H Fish Ladder concept, except passive FSC fixed in place at dam with smooth ramp for fish to spill over to river below.

Option 3.2: Lower Scott Dam to 50' (Sediment)

- Upstream passage is similar to the M&H Fish Ladder concept (Option 1.2), except elevation is 50' lower, and minimal reservoir exists.
- No hole in the dam for passage.
- Downstream passage facilitated with spillway and ladder entrance.

Scenario 4: Scott Dam Removal and Cape Horn Dam Modification/Removal

For both options:

- No Scott Dam and no reservoir.
- All management actions are the same for both options (i.e., fully volitional).

Proposed Template for Ad Hoc Proceedings Document on Fish Passage

Note: Once the fish passage scoring process is complete, the Fish Passage Work Group aims to write up a summary for each fish passage option given serious consideration. The following would be the template for this purpose.

Technology NAME

Brief Description

Primary Benefits

How does it address Fish Passage Objectives?

What is needed to advance to next stage of consideration?

Assumptions [facilities, equipment, flows, etc.]

Pros

Cons / Risks

Uncertainties / Water Supply or other Major Considerations

Scoring Results and Insights