


Fish Passage Evaluation Task 2

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The Fish Passage Evaluation Plan

- Objectives
 - Identify potential structural barriers
 - Evaluate passage impairment of potential barriers using common passage criteria
 - Develop a prioritized list of structural barriers
 - Provide alternative designs
- Divided into Tasks
 - Task 1 – First Pass
 - Task 2 – Second Pass
 - Task 3 – Develop alternatives




The Fish Passage Evaluation Plan

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 - Task 1 – First Pass, Draft 2011 ATR in Appendix B, Section 20
 - **Task 2 – Second Pass**
 - Task 3 – Develop alternatives




Task 1 Results

- 69 potential barriers
- 49 were ranked
 - 45 structures were visited
- Initial Ranking
 - 28 Green – not a barrier
 - 13 Gray – need more info
 - 8 Red – definite barrier












Task 2 Plan

- Evaluate gray locations from Task 1 using hydraulic modeling
 - HEC-RAS software (One-Dimensional Model)
- Data Collection
 - Topographic Data
 - Hydraulic Data
- Fish Passage Criteria/Capabilities
 - Adult Chinook salmon
- Recommend structures for modification, Task 3



Task 2 Structures


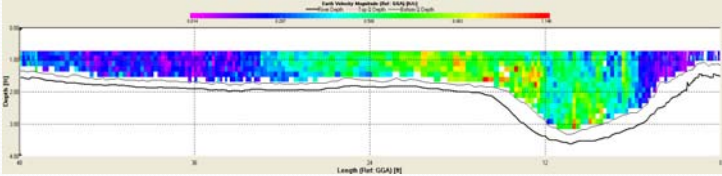
| Identification Number | Reach | Description |
|-----------------------|-------|-----------------------------------|
| 4 | 1A | Lost Lake Rock Weir #1 |
| 5 | 1A | Lost Lake Rock Weir #2 |
| 17 | 1B | Donny Bridge |
| 23 | 2A | San Mateo Avenue |
| 29 | 4B1 | Sand Slough Connector |
| 36 | 4B2 | Beaver Dam #5 |
| 37 | 4B2 | Beaver Dam #4 |
| 38 | 4B2 | Refuge Low Flow Crossing |
| 39 | 4B2 | Beaver Dam #3 |
| 40 | 4B2 | Beaver Dam #2 |
| 41 | 4B2 | Beaver Dam #1 |
| 48 | 4B1 | Eastside Bypass Control Structure |
| 49 | 4B1 | Mariposa Bypass Control Structure |
| 51 | 4A | Dan McNamara Road |
| 69 | 4B2 | Eastside Bypass Rock Weir |
| 70 | 4B1 | Merced Refuge Weir #2 |
| 71 | 4B1 | Merced Refuge Weir #1 |

SAN JOAQUIN RIVER RESTORATION PROGRAM

Task 2 Data Collection

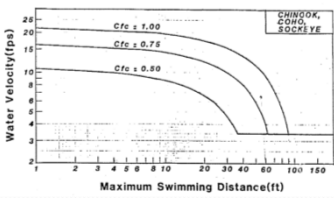
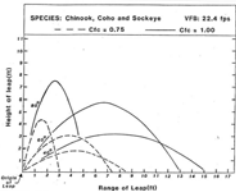
- Topographic Surveys
- Hydraulic Data
 - Discharge – Flow and Velocity
 - Water Surface Elevations
 - Model Calibration





SAN JOAQUIN RIVER RESTORATION PROGRAM

Task 2 Criteria

- 2010 Ca. Salmonid Stream Habitat Restoration Manual
- Adult Chinook Salmon
- Depth = 1.2 feet
- Velocity
 - 22.4 fps, Burst Speed
 - 10.8 fps, Sustained Speed
 - Culvert Tables
- Jump
 - Origin of Leap at 1.5*Jump Height




Task 2 Structure Criteria

| Structure | Maximum Height (ft) ¹ | Minimum Pool Depth (ft) ² | Total Jump (ft) ² | Minimum Depth (ft) | Maximum Velocity (fps) |
|---|----------------------------------|--------------------------------------|------------------------------|--------------------|------------------------|
| Lost Lake Rock Weir #1 | 4.0 | 6.0 | 10.0 | 1.2 | 10.8 |
| Lost Lake Rock Weir #2 | 3.9 | 5.9 | 9.8 | 1.2 | 10.8 |
| Donny Bridge | 0 | 0 | 0 | 1.2 | 6 |
| San Mateo Avenue Culvert | 0 | 0 | 0 | 1.2 | 6 |
| San Mateo Avenue Weir | | | | 1.2 | 3 |
| Sand Slough Connector | 4.5 | 6.7 | 11.2 | 1.2 | 6 |
| Refuge Low Flow Crossing | 0 | 0 | 0 | 1.2 | 8 |
| Eastside Bypass Control Structure (Boards-Out) Outlet | 2.5 | 3.8 | 6.3 | 1.2 | 5 |
| Eastside Bypass Control Structure (Boards-In) Inlet | 3.8 | 5.7 | 9.5 | 1.2 | 5 |
| Mariposa Bypass Control Structure | 7.5 | 9.4 | 16.9 | 1.2 | 6 |
| Dan McNamara Road | 3 | 4.5 | 7.5 | 1.2 | 6 |
| Eastside Bypass Rock Weir | 6.5 | 9.8 | 16.3 | 1.2 | 11 |
| Merced Refuge Weir #1 (Boards-Out) | 1.9 | 2.8 | 4.7 | 1.2 | 10.8 |
| Merced Refuge Weir #1 (Boards-In) | 6 | 9 | 15 | 1.2 | 10.8 |
| Merced Refuge Weir #2 (Boards-Out) | 0 | 0 | 0 | 1.2 | 10.8 |
| Merced Refuge Weir #2 (Boards-In) | 5.5 | 8.2 | 13.7 | 1.2 | 10.8 |
| Typical Beaver Dam | 4 | 6 | 10 | 1.2 | 10.8 |

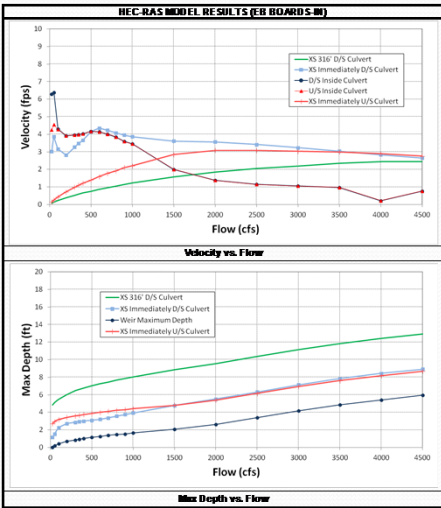
¹The maximum height (H) was calculated by subtracting the channel elevation measured in the field directly downstream the structure outlet to the highest elevation at the outlet.


²The minimum pool depth (1.5 x H) references this to be determine the total jump (H + (1.5 x H)) just downstream.



Task 2 Preliminary Results

Dan McNamara Rd





Task 2 Preliminary Results

| Structure | Unimpeded Passage Flow Range (cfs) ¹ |
|------------------------------------|---|
| Lost Lake Rock Weir #1 | 100 – 4,500 |
| Lost Lake Rock Weir #2 | Undetermined |
| Donny Bridge | 25 – 2,500 |
| San Mateo Avenue | Unimpeded |
| Sand Slough Connector | Unimpeded |
| Refuge Low Flow Crossing | 50 – 4,500 |
| Eastside Bypass Control Structure | 500 – 8,500 ² |
| Mariposa Bypass Control Structure | Barrier |
| Dan McNamara Road | 600 – 4,500 |
| Eastside Bypass Rock Weir | 200 – 8,500 |
| Merced Refuge Weir #1 (Boards-Out) | 100 – 4,500 |
| Merced Refuge Weir #1 (Boards-In) | 3,000 – 8,500 |
| Merced Refuge Weir #2 (Boards-Out) | Unimpeded |
| Merced Refuge Weir #2 (Boards-In) | 700 – 8,500 |
| Typical Beaver Dam | Varies |

Flows are not related to Friant Releases

SJR Flow Range: 25 - 4,500 cfs Bypass Flow Range: 25 – 8,500 cfs

Schedule

| Task | 2009 | | | 2010 | | | | 2011 | | | | 2012 | | | |
|------------------------------|------|----|----|------|----|----|----|------|----|----|----|------|----|--|--|
| | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | |
| Task 1 | | | | | | | | | | | | | | | |
| Identify Passage Impediments | | | | | | | | | | | | | | | |
| Preliminary Passage Report | | | | | | | | | | | | | | | |
| Task 2 | | | | | | | | | | | | | | | |
| Detailed Passage Evaluation | | | | | | | | | | | | | | | |
| Passage Analysis Report | | | | | | | | | | | | | | | |
| Task 3 | | | | | | | | | | | | | | | |
| Barrier Prioritization | | | | | | | | | | | | | | | |
| Action Plan | | | | | | | | | | | | | | | |

Next Steps

- Complete draft Task 2 report
- Get feedback from FMWG
- Present final findings in June ATR
- Begin Task 3

Questions?

