Minimum Habitat Methodology

Restoration Goal Technical Feedback Meeting
July 19, 2012

- **ESHE**
  - Minimum bookend amount (area) of suitable habitat for juvenile Chinook

- **SRH-2D**
  - Estimate the amount of suitable habitat available currently

- **Overall**
  - Estimate the differences between 1 and 2 to identify a deficit or surplus of available suitable habitat.
How do we define habitat?

- Quantity
- Quality
- For each life stage and population (time and space)
- Fish accessibility

Habitat Terms

**Total Inundated Area:** Amount of land water covers

**Suitable Habitat:** Inundated land that meets fish criteria (i.e. depth, velocity, cover, etc.)

**Available Suitable Habitat:** Inundated land that meets fish criteria currently existing in the SJRRP area
Simplified ESHE Process

- Calculate Number of Fish in Reach 1
- Determine fish timing in each downstream reach
- Use survivals to determine fish populations in downstream reaches
- Use a growth function to determine fish size in each reach
- Combine fish size with the number of fish and a territory size relationship to determine required suitable habitat

Inputs

- Juvenile population numbers
- Survivals
- Juvenile timing, migration speed, and entry date
- Relationships between juvenile size, time, habitat amount and habitat quality
- Depth Criteria
- Velocity Criteria
- Cover Delineation
- Flow scenarios
Available Habitat and Integration Process

- 2D hydraulic modeling to determine currently available suitable habitat given criteria
- Combine available suitable habitat by water year type
- Subtract available suitable habitat from needed suitable habitat to determine habitat deficit

Today’s Results

<table>
<thead>
<tr>
<th># of Scenarios</th>
<th>Results for today will be ranges of suitable habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>ESHE scenarios</td>
</tr>
<tr>
<td>6</td>
<td>Hydraulic modeling</td>
</tr>
<tr>
<td>Ranges</td>
<td>Habitat deficit results</td>
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</tbody>
</table>
Your Input

• Additional input data to use
  – Fisheries Biology
  – Available habitat criteria
  – Cover data

• Assumptions and Limitations