Tally Ho Creek Enhancement Planning
Preliminary Results

City of Arroyo Grande
Coastal San Luis RCD
Central Coast Salmon Enhancement
Waterways Consulting

October 8, 2009
Meeting Overview

• Present the Study Approach
• Describe the work completed to date
• Summarize our preliminary findings
• Provide an overview of potential opportunities and constraints
• Solicit feedback from the community and other stakeholders
Study Approach

**Overall Objective:** Identify potential Opportunities and Constraints and provide Enhancement Recommendations

**Study Plan:**
- Compile hydrology
- Evaluate flood frequencies
- Reconnaissance survey of channel conditions
- Define existing biological conditions
- Outline potential opportunities & constraints
- Define desired future condition
- Provide recommendations that match the desired future condition
Project Area

- Tally Ho (Corbett) Creek
- Branch Street to Clark Property (above 227)
- Appx. 1 mile of channel
- Within city limits of Arroyo Grande
- 3rd largest tributary to lower Arroyo Grande Creek
- On urban fringe
- Highly erodible sandy soils
# Hydrology

<table>
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<th>Reach</th>
<th>Return Period</th>
<th>2-yr</th>
<th>5-yr</th>
<th>10-yr</th>
<th>20-yr</th>
<th>50-yr</th>
<th>100-yr</th>
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<td>978</td>
<td>1504</td>
<td>1997</td>
<td>2472</td>
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<td>580</td>
<td>-</td>
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<td>2600</td>
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<td>694</td>
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<td>500</td>
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<tr>
<td></td>
<td>50-yr</td>
<td>297</td>
<td>-</td>
<td>580</td>
<td>-</td>
<td>1800</td>
<td>2600</td>
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<td></td>
<td>100-yr</td>
<td>217</td>
<td>487</td>
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<tr>
<th>Modeling Method</th>
<th>HEC-HMS</th>
<th>FEMA</th>
<th>USGS Regression</th>
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<td>(cfs)</td>
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<td>176</td>
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<td>1997</td>
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<tr>
<td>100-yr</td>
<td>2472</td>
<td>2600</td>
<td>1368</td>
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</tbody>
</table>

1 Method used for assessment
Flood Frequencies

Objective: Evaluate extent and frequency of flooding (where and how often)

Approach:
- Collect topographic data for model (cross-sections)
- Build a hydraulic model (HEC-RAS)
- Evaluate a range of discharge events (2, 5, 10, 20, 50, 100 year)
- Identify an event, by reach, where flood elevations impact adjacent infrastructure

Limitations: Resolution of data; Hydrology; Infrastructure
Reach Approach

- Reaches defined based on channel geometry and roughness
- Total of 5 reaches defined in project area (2 through 6)
- Opportunities, constraints, and recommendations will be defined based on reach
Hydraulic Model

- Model developed using HEC-RAS; 1-dimensional steady state model
- A total of 42 cross-sections were input in the model; Higher detail where geometry of channel changes
- Two bridges included in model
- Other structures such as houses and fences were accounted for with adjustments to floodplain roughness (this is a limitation)
- The 2-year, 5-year, 10-year, 20-year, 50-year, and 100-year floods were run based on the US Army Corps HEC-HMS model
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Model Results - FEMA WSE Profile

[Graph showing elevation vs. stream distance for different flow scenarios]
Model Results - Reach 2

Cross-section at RS 10+35

Reach 2

20-year flood elevation (1112 cfs)

10-yr (978 cfs)

5-yr (684 cfs)

2-yr (297 cfs)
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Model Results - Reach 3

Cross-section at RS 14+06
Reach 3

5-year flood elevation (684 cfs)

2-year flood elevation (297 cfs)
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Model Results - Reach 4

Cross-section at RS 23+65
Reach 4

5-year flood elevation (487 cfs)

2-yr flood (217 cfs)
Model Results - Reach 5

Cross-section at RS 36+11

Reach 5

100-year flood elevation (1873 cfs)

2:1 vertical exaggeration

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Riparian Resources

• Emergent marsh
• Willow riparian
• Oak woodland
• Non-native grassland
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**Wildlife Resources**

- Good cover and structure in several locations
- Limited by encroachment of development / narrow corridor, invasive species
- Predominately passerine birds, some use by raptors (hawks), wading (herons) and waterbirds (ducks)
- Amphibians and reptiles likely include red-legged frog, tree frog, bull frog, native snakes and lizards.
- Mammals include black-tailed deer, racoon, rodents.
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Special Status Species

- **Plants:**
  - Several CNPS may occur; No State or Federally listed species likely to occur in project area.

- **Animals:**
  - California red-legged frog (federally threatened) known to occur
  - State species of concern may occur: southwestern pond turtle, coast range newt.
Opportunities & Constraints
Reaches 2 & 3

• **C:** Culvert constriction at Branch Street

• **C:** General confinement of channel by existing infrastructure

• **O:** Remove non-native vegetation
Opportunities & Constraints
Reaches 4 & 5

- **C:** Existing sediment plug
- **C:** RLF breeding habitat
- **C:** Existing infrastructure
- **O:** Relatively undeveloped along left bank
- **O:** Protect rt bank @ 227
- **O:** Remove non-native vegetation
- **O:** Revegetation of portions of Reach 5 where flooding is less of a concern
Opportunities & Constraints
Reaches 6

- **C**: Constriction at bridge
- **O**: Potential to retain sediment
- **O**: Potential to detain high flows
- **O**: Potential to create RLF breeding and rearing habitat
- **O**: Potential to expand riparian area
Thank You for Attending!

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