Matilija Dam Ecosystem Restoration Project

Robles Diversion Phase 1 Independent Technical Review
Northwest Hydraulic Consultants (NHC)
Background

- Resource Legacy Fund (RLF) is working in partnership with Ventura County Public Works Agency-Watershed Protection (VCPWA-WP) to advance a host of planning, design and implementation efforts that will culminate in the removal of the obsolete Matilija Dam.

- An Essential Project Component is the Robles Diversion Facility.

- AECOM has prepared a Phase 1 Summary Report that considers potential short- and long-term effects of Matilija Dam removal on operation of the diversion and identifies alternatives to enhance sediment performance under expected increases in fine and coarse sediment loads.
Project Overview

NHC was selected to perform an ITR of the existing summary report.

Independent Technical Review (ITR) will:

• confirm that all feasible alternatives have been considered and if possible, narrow the range of alternatives proposed for future assessment, and

• sets the stage for development and use of a physical model to test the most promising preliminary design alternatives over the next 2-3 years
Summary of Tasks

• Review Phase 1 Report and Other Background Materials
• Meet with Robles Working Group and Stakeholders for Initial Kick-Off and Throughout Project
• Review Case Studies and Alternatives
• Identify Additional Case Studies and Develop New Alternatives
• Evaluate and Refine Alternatives
• Prepare Draft and Final Documentation
Project Approach Overview

• Learn from stakeholders
• Focused review group with access to additional expertise, including key personnel from case studies
• Better define operational and design criteria to size (cost) and evaluate alternatives
• Use simple quantitative metrics to compare alternatives
  • Unit flows
  • Hydraulic gradients
  • Rating curves
  • Sediment transport capacity
  • Regime methods
Project Approach Overview

• Expect to refine alternatives
  • Design Elements
  • Configuration
  • Sizing

• Maximize sediment performance in fish migration window without turnouts

• Consider more detailed information from case studies
  • Sediment management methods
  • Fish passage design issues
Project Understanding

- Develop or modify new alternatives if appropriate
- Level of analysis commensurate with budget and schedule
- Recommendations for Phase 2 work plan
- Work collaboratively with the Robles Working Group (RWG) to narrow and refine the alternatives
Case Studies

NHC will review the existing Identified Case Studies and review news studies that are applicable.

Case Studies (NHC Work/Involvement)
- Vern Freeman Diversion; Harvey Diversion; Glendale Water Supply; Nelson Dam; Middle Fork Nooksack

Additional Case Studies (NHC)
- Forest Kerr
- Calgary Weir
Case Studies

• Applicable Elements
  • Sediment Flushing Channel (Vern Freeman Diversion)
  • Extreme Sediment Loads (Harvey, Calgary Weir, Forest Kerr)
  • Hardened Ramp (Vern Freeman)
  • Infiltration Gallery (Vern Freeman and Harvey)
  • Rock Ramp (Vern Freeman, Harvey, Glendale, Nelson Dam, Other NHC projects)
  • Steelhead and Native Fish Passage (All, Experience with Local Agency Personnel)
Additional Case Study: Forrest Kerr, Iskut River, BC

- Very high sediment load
- Facility is equipped with two 30-ft wide by 15-ft high Obermeyer gates.
- Review of its operation will be relevant for assessing Alternative 5, which proposes an Obermeyer gate on the left bank.
- Potential alternative to radial gates for use in Alternative 3
Additional Case Study: Calgary Weir, Bow River, AB

- Series of riprap pools built downstream of the dam
- An extreme flood event in 2013 partially destroyed and completely infilled the downstream pools with coarse sediment.
- The 2008 Robles Diversion physical model also showed partial infilling of pools downstream of the spillway.
- Could inform about the possible behavior of the Rock Ramp or the pools downstream of spillway after Matilija Dam removal
Evaluate Alternatives

• Review of Phase 1 alternatives based on background information, review of case studies, preliminary hydraulic analyses, design criteria objectives (with input from stakeholders)
• New alternatives may be proposed and evaluated
• NHC will perform screening analysis using simple hydraulic calculations of rating curves and flow velocities for assumed dimensions (width and sill elevation) of the proposed alternatives where applicable
• Current alternatives may be refined or modified, and the number recommended for advancement to Phase 2 modeling may be reduced
Current Work Status

• Gaining Understanding of the System and History
• Reviewed Robles Diversion Phase 1 Summary Report and Agency Comments
• Development of Specific Questions from Phase 1 Report
• Starting Review of Additional Background Documents
• Kick-Off Meeting and Site Visit Complete
Site Visit
Next Steps

• Detailed Questions/Discussions with RWG members
• Further review of background material
• Document observations on existing system and alternatives from Phase #1
• Outline other feasible alternatives
Questions