Matilija Dam Ecosystem Restoration Project
Feasibility Study

Report on
Slurry Fine Disposal / Habitat Restoration Sites

VENTURA COUNTY
WATERSHED PROTECTION DISTRICT

December 2003
1. EXECUTIVE SUMMARY

The Matilija Dam Ecosystem Restoration Project Alternatives Analysis Draft Report (F4) Milestone identified one site for slurry disposal/habitat restoration for the two million cubic yards of fine sediment locked behind Matilija Dam. When stakeholders expressed concern about this site, the Plan Formulation Subcommittee asked for volunteers to form a Slurry Fine Disposal/Habitat Restoration Site Search Committee. The Search Committee was charged with identifying and assessing alternative sites, reaching a consensus, and making a recommendation back to the Plan Formulation Subcommittee. This report summarizes the analysis and assessment of alternative sites in the selection of the recommended site(s).

In the first phase of screening, fourteen potential sites were identified. The Search Committee assessed the viability of each site, taking into consideration potential environmental impacts, constructability, cost, and visual impacts. Based on these assessments, the list of viable sites was narrowed to three (Figure 1 shows the location of each site).

The Selection Committee is presenting these three sites for final consideration by the Matilija Dam Ecosystem Restoration Project Plan Formulation Subcommittee. All three of the sites are viable for potential disposal/habitat restoration, however, the Search Committee recommends Site 1 as the preferred site at this stage because the site is located within the floodplain, is ideal for slurry operation and is cost-effective. The location of Site 1 within the floodplain may offer an added environmental benefit, as the controlled release of the stabilized sediment could potentially aid in beach nourishment.
Figure 1: Site Map showing location of preferred sites
2. SITE EVALUATION METHODOLOGY

2.1. Formulation of Slurry Fine Disposal / Habitat Restoration Site Search Committee
The Search Committee was formed from volunteers from the Matilija Dam Ecosystem Restoration Project Plan Formulation Subcommittee. The following are the members of the Search Committee:

<table>
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<th>Name</th>
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<tr>
<td>Steve Bennett</td>
<td>County of Ventura Board of Supervisors</td>
</tr>
<tr>
<td>Jim Engel</td>
<td>Ojai Valley Land Conservancy</td>
</tr>
<tr>
<td>Sergio Vargas</td>
<td>Ventura County Watershed Protection District</td>
</tr>
<tr>
<td>Pam Lindsey</td>
<td>Ventura County Watershed Protection District</td>
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2.2. Evaluation Criteria

The Search Committee evaluated each of the 14 sites / alternatives identified in the first stage of this screening process (Investigations on Alternative Slurry Fine Disposal Sites, VCWPD, November 2003) based on the following criteria and site reconnaissance:

- Environmental impacts
- Constructability
- Cost of slurry
- Size of the area
- Height of stockpile

An initial decision matrix was developed based on these criteria. Results from this matrix led to the selection of the three sites discussed in this document. Sites 1, 2, and 3 are listed in the order of preference. The Search Committee also contacted owners of some potential sites. A property owner’s willingness to sell was also taken into account when determining the order of preference.

2.2.1 Environmental Criteria

Environmental impacts were divided into three general categories to simplify the evaluation of potential disposal sites. These categories were evaluated for the decision matrix as well as for the three sites discussed in this report.

- Habitat  General habitat values were based on the vegetation communities. Native communities with mature trees or riparian functions were generally higher value than those dominated by non-native vegetation and that had only one or two layers of canopy. A “+” was assigned to sites where little habitat impact would occur due to the fills; likewise, a “-” was assigned to sites where impacts to native habitats would be substantial. It was assumed that some form of stabilization structure, such as rock toe protection, would be needed for fills along the riverbed. This was considered in the overall impacts to natural resources. All sites would require re-vegetation with appropriate native plants.
• **Public Compatibility**  This category includes impacts to both public views and existing recreation value. Sites with high visibility and existing public use would incur more severe impacts from deposition of fines than those areas that are not as prominent and have no or low recreational value. A “+” was given to sites where public views and access would not be impacted and general objections are minimal; a “−” was given to sites where impacts to public issues would be substantial.

• **Construction Impacts**  Sites further from the dam would have higher overall environmental impacts than those closest to the dam. Slurry lines, trucking, and other construction-based activities have impacts to many environmental categories. A “+” was given to sites upstream of the Hwy 150/Baldwin Road Bridge; a “−” was given to sites downstream.

Overall ranking of the sites sequentially was accomplished by evaluating the scores for each of the environmental criteria. For example, although the habitat impacts were low on some sites downstream of Foster Park, impacts associated with the long slurry line resulted in low overall rankings.

### 2.2.2. Other Criteria

Four other criteria used in the evaluation of disposal sites apply to the initial decision matrix, as well as the alternatives in this report.

• **Constructability**  This term is used to describe the logistical practicality of placing slurry fines on a site. Access, safety, and other issues associated with heavy equipment work are considered for this criterion. Factors built into this category include the difficulty of building the slurry pipeline, operational practicality (i.e. working with or against gravity), and the length and height of levee required. Constructability was given one of four grades (10, 20, 30, or 40 – with 10 being the easiest to construct and 40 being the most difficult).

• **Cost of slurry**  The slurry equipment costs are based on initial infrastructure purchase and set-up, as well as operation. Slurry operations to sites further from Matilija Dam cost more than those closer to the dam, based on a cost per linear distance value.

• **Size of the area**  Ideal sites provide enough area to dispose of the fines while maintaining an efficient heavy equipment operation. One large site is generally more favorable than several smaller ones.

• **Height of stockpile**  Taller stockpiles will require more extensive stabilization to control or prevent erosion. However, taller stockpiles can reduce the overall footprint of the stockpile, thereby reducing other impacts.
3. EVALUATION RESULTS

3.1. Site 1 (previously site 1B)

3.1.1. Background Information

- **Location**: Below Robles Diversion, east side of the river.
- **Distance to Matilija Dam**: 2.5 miles
- **Usable Area**: Approximately 90 acres
- **Owner**: Ojai Valley Land Conservancy
- **Current Land use**: Open space
- **Real Estate Value**: $225,000

3.1.2. Environmental Issues

Habitat (-): The site is currently open space that has suffered some disturbance in the past, but re-vegetated with a mix of native shrubs, trees, and non-native grasslands. Cozy Dell Creek will need to be rerouted to allow for sediment disposal. Moderate habitat impacts would occur if this site were to be used as a disposal area.

Public Compatibility (-): The site is visible from the Meiner’s Oaks community and from Rice Road on the east bluff above the river. Substantial view impacts would occur. Further, the site is used extensively by the local residents for hiking, equestrian activities, and general river access. Loss of this access, even temporarily, is not acceptable to the residents of the area.

Construction Impacts (+): Access would be from the river bottom and along Calleguas Municipal Water District existing access roads. The distance from the dam is 2.5 miles, which is a short distance compared to the other sites.

3.1.3. Constructability

This relatively flat site is at the bottom of a 60-foot cliff in the Ventura River floodway. A majority of this site will be flooded during 2-to-5-year flood events. Therefore, the fine sediments are subject to erosion during major storms.

An approximately 5000-foot-long earth levee of about 15 feet high will need to be constructed along the Ventura River. The average depth of stockpile will be 15 feet, ideal for slurry operation and de-watering. All of the 1,240 acre-feet of sediment could be stored in this area.

3.1.4. Cost

The cost to slurry the sediment to this site is estimated to be $11.95 million (as determined by the U.S. Army Corps of Engineers).
3.1.5. Overall assessment

This alternative remains the ideal site for slurry fine disposal. It is the nearest site to Matilija Dam. It is located within the floodway/floodplain, allowing for a controlled sediment release in the future by only using hard bank protection at the toe of the earthen levee.

Cozy Dell Canyon creek will need to be re-routed at the upper left corner of the site westerly to join the Ventura River.

- Advantages:
  - Cost effective
  - Ideal for slurry operation
  - Within floodplain

- Disadvantages:
  - Environmental concerns
  - Public concerns
Figure 2: Layout of Site 1

APN: 011002006
Usable area: 20 acres
Average height: 20 ft
Storage volume: 250 ac-ft

APN: 011002013
Usable area: 20 acres
Average stockpile height: 15 ft
Storage volume: 300 ac-ft

APN: 011003005
Usable area: 60 acres
Average stockpile height: 15 ft
Storage volume: 700 ac-ft
Picture 1: Picture taken at Rice Road on top of Site 1.

Picture 2: Picture taken at Rice Road on bottom of Site 1
3.2. Site 2 (Previously site 2B, 3, and 4)

3.2.1 Background Information

- **Location**: This site composed of four noncontiguous locations:
  1. Sub-site 1 is located right upstream of the Highway 150 Bridge with a usable area of about 50 acres.
  2. Sub-site 2 is located right below the Highway 150 Bridge with an area of about 25 acres.
  3. Sub-site 3 is about half mile below the Highway 150 Bridge with an area of about 11 acres.
  4. Sub-site 4 is about 1,000 feet below Santa Ana Bridge and is the most downstream location.

- **Distance to Matilija Dam**: ranges from 3.6 miles to 6.3 miles
- **Usable Area**: Approximately 118 acres
- **Owner**: Intell Ventura LLC (upstream), Ventura County (downstream), NEWTON WILLIAM F-CHARLOTTE TR & FOREST HOME INC, and DRAPEAU DAVID R TRUSTEE & EPSTEIN COLEMAN H
- **Current Land use**: Floodway / Floodplain
- **Real Estate Value**: $295,000

3.2.2. Environmental Issues

Habitat (-): The four sub-sites are relatively moderate-quality lower floodplain terraces with some newly eroded channels. Non-native grassland with oak trees and some patches of alluvial scrub are present, as well as some alluvial scrub. Some exotics, such as scotch broom and giant cane, are present. Fill would be placed in the lower riverbed channels that have eroded in the past 50 years. Fill would remove the alluvial scrub and some of the trees. The impact would be spread out into smaller habitat parcels, which reduces the overall impacts to wildlife with larger home ranges.

Public Compatibility (+): The residential communities on both sides of the river would view the stockpiles, especially those at high elevations looking down into the river. Because the stockpiles are small, the overall visual effects are reduced for each viewshed area. These areas are not currently used extensively for public recreation.

Construction Impacts (-): Access would be from the river bottom and along the river bottom and existing roads. Multiple sites far apart and far from Matilija Dam increase the overall construction related impacts for this alternative.

3.2.3. Constructability

Sub-site 1 will utilize the existing riverbed on east side of the river (see Picture 3). Dikes would need to be built upstream and downstream of this sub-site to redirect flow away from the stockpiles, at least initially (refer to Figure 2). The toe of dikes would need to be armored (concrete riprap) to withstand about 2- to 5-year return period floods. With
average height of fill of 6 to 10 feet, this sub-site will hold 300 acre-feet of sediment or more.

Sub-site 2 is located immediately downstream of the Highway 150 Bridge in a relatively flat low floodplain terrace (see Picture 4). A dike approximately 2,000 feet long and 15 feet high would need to be built along the river. The dike toe would be armored to withstand 2- to 5-year return period floods. This site will contain about 350 acre-feet of sediment with fill approximately 15 feet high.

Sub-site 3 is within the floodway of Ventura River (see Picture 5). An enclosed dike of about 15 ft high would need to be built. The toe of the dike next to the Ventura River (2,000 feet long) would need to be armored. This site will hold 150 acre-feet of sediment.

Sub-site 4 is the open space between Live Oak Creek and the Ventura River (see Pictures 6 and 7). An enclosed dike of about 15 feet high would need to be built. This site will hold 450 acre-feet of sediment.

3.2.4. Cost

The cost to slurry the sediment to this site is estimated to be $15.18 million. This is a weighted average cost according to the distance to dam of each sub-site and the amount of sediment hold in each sub-site.

3.2.5. Overall assessment

- Advantages:
  - Sediments are distributed at different locations
  - Mostly within floodplain

- Disadvantages:
  - Cost is relatively high
  - Construction challenges
Picture 3: Panoramic view of Sub-site 1 - Upstream of Highway 150 Bridge (View north)

Picture 4: Panoramic view of Sub-site 2 - Immediately downstream of Highway 150 Bridge (View south)
Picture 5: Panoramic view of Sub-site 3 – One-half mile downstream of Highway 150 Bridge (View south)

Picture 6: View South at middle of Sub-site 4

Picture 7: View North at middle of Sub-site 4
3.3. Site 3

3.3.1. Background Information

- **Location**: North of Baldwin Road, off the Ventura River.
- **Distance to Matilija Dam**: 3.6 miles
- **Usable Area**: Approximately 95 acres
- **Owner**: J&G Family Trust
- **Current Land use**: Open Space
- **Real Estate Value**: $1,425,000 ($15,000 per acre)

3.3.2. Environmental Issues

Habitat (-): Most of the land is dry currently farmed, but there are some oak trees and small riparian drainages present that would be impacted by the disposal of sediments. Riparian areas may be avoided with careful grading of the placed spoils. Future agricultural uses may be available.

Public Compatibility (+): The site has low visibility from the Hwy 150 (Baldwin Road) due to the rows of trees along the road. Some neighbors in the estates between the stockpile area and the river would be disturbed by the construction traffic and noise, as well as some view issues.

Construction Impacts (+): Use of this site removes most of the construction impacts away from the Ventura River sensitive resources, with the exception of the slurry line. Access to the site would be from the Hwy 150 or along the Casitas canal.

3.3.3. Constructability

This parcel of more than 200 acres contains two hills. Ninety-five acres of the valleys and surrounding depression areas would be used. This site will hold all of the two million cubic yards of sediment. This might be a favorable location for slurry operation because of its unique terrain.

3.3.4. Cost

The cost to slurry the sediment to this site is estimated to be **$13.45** million.

3.3.5. Overall Assessment

This is a site that will provide flexibility in slurry operations.

- **Advantages**:
  - Favorable size
  - Minimal environmental impacts
  - Cost effective
  - Improve land value

- **Disadvantages**:
  - Non identified
Figure 4: Layout of Potential Disposal / Habitat Restoration Site 3
Picture 8: View from east side of Site 3
4. CONCLUSIONS

After careful consideration and assessment of the original fourteen sites identified as potential disposal/habitat restoration sites for the two million cubic yards of fine sediment behind Matilija Dam, the Selection Committee is presenting three sites for final consideration by the Matilija Dam Ecosystem Restoration Project Plan Formulation Subcommittee. The sites are summarized on the following page in order of preference. All three of the sites are viable for potential disposal/habitat restoration, however, the Search Committee recommends Site 1 as the preferred site at this stage because the site is located within the floodplain, is ideal for slurry operation and is cost-effective. The location of Site 1 within the floodplain offers an added environmental benefit, as the controlled release of the stabilized sediment will aid in beach nourishment.

The Slurry Fine Disposal / Habitat Restoration Site Search Committee will continue to address issues related to each site before a final site decision is made.
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Notes:
- Constructability: "10" means the easiest construction; "40" means the most difficult construction
- Total Cost: Cost of Slurry is estimated using base cost of $11.95 million at Rice Rd. site plus $1.5 million/per mile
- Real estate value is estimated at $2,500 per acre for floodplain; for site 3, it is $15,000 per acre
- Environmental Issues: H = Habitat, PC = Public Compatibility, C = Construction Impacts