



PAJARO RIVER WATERSHED
FLOOD PREVENTION AUTHORITY
Phase 3: Conceptual Design of Soap Lake Preservation Project
Phase 4a: Design Level Mapping Technical Support



Raines, Melton & Carella, Inc.

Technical Memorandum No. 3.7

Task: **Cost Estimating**
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Introduction

This technical memorandum (TM) describes the results of work completed as part of Task 3.7: Cost Estimating for the Soap Lake Floodplain Preservation Project as part of the Pajaro River Watershed Study. RMC was tasked with providing a conceptual level cost estimate for the CEQA project. This TM identifies approximate land costs per acre for both fee title purchase and easement. The cost to purchase the land or a flood and conservation easement within each level of floodplain (2-, 10-, 25-, 50-, and 100-year) is calculated based on the unit costs.

Background

Phase 3 of the Pajaro River Watershed Study (Study) is a continuation of the Pajaro River Watershed Flood Prevention Authority's (Authority) efforts to provide flood protection to areas below the confluence of the Pajaro and San Benito rivers. Phase 1 of the Study consisted of hydrologic, hydraulic, and sediment modeling of the entire watershed. Model results of the 2-, 10-, 25-, 50-, and 100-year flows at four representative locations on the Pajaro River were developed. Phase 2 of the Study consisted of developing flood protection alternatives and project packages to manage the modeled 100-year flows.

Soap Lake Floodplain

One of the most significant conclusions coming out of both Phase 1 and Phase 2 was the importance of the Soap Lake floodplain to the Pajaro Valley flood protection solution. The Soap Lake floodplain currently detains storm water flows from the Upper Pajaro River watershed upstream of the Pajaro River confluence with the San Benito River. Loss of this natural detention would increase the magnitude of flooding downstream of the confluence. Figure 1 shows the entire watershed highlighting the Upper Pajaro and San Benito subwatersheds as well as the location of the Soap Lake floodplain.

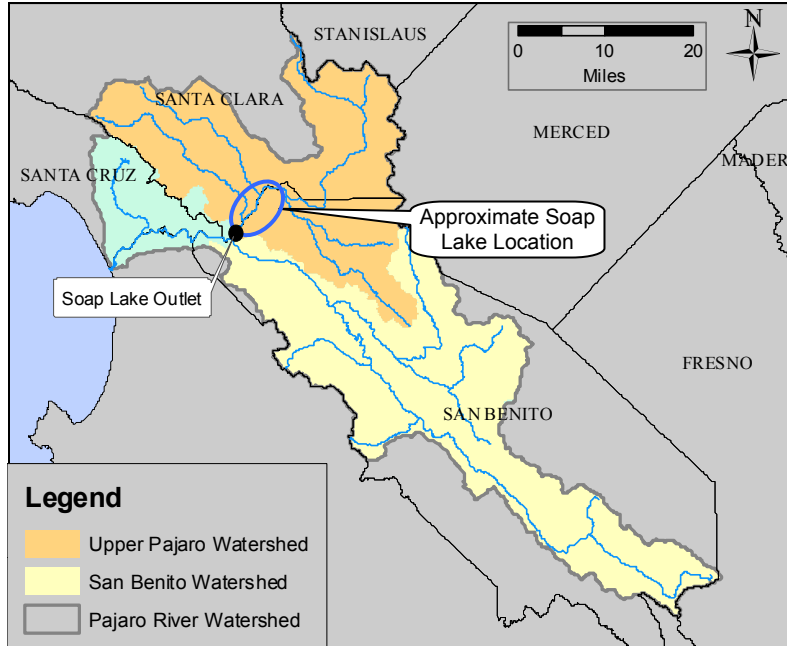


Figure 1: Pajaro River Watershed. The major upper subwatersheds are highlighted.

The Soap Lake floodplain is a natural detention basin, storing water and reducing peak flows that would otherwise increase flooding in the lower Pajaro River. Upper Soap Lake is also known as San Felipe Lake and is a permanent body of water. The Soap Lake floodplain lies along the Pajaro River within San Benito and Santa Clara Counties between upstream of San Felipe Lake and upstream of the Highway 101 crossing (Figure 2). The main land use is agriculture, including row crops and pasture land. During significant rain events, the low-lying areas of the Soap Lake area become flooded and there is flow backup on the Pajaro River upstream of the San Benito River.

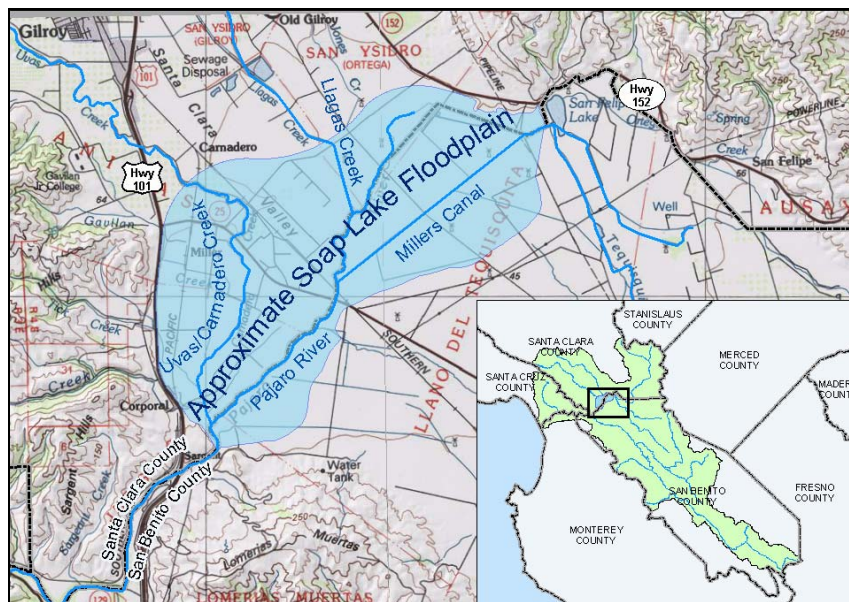


Figure 2: Soap Lake study area.

Work completed earlier in Phase 3, described in TM 3.3-4, models and maps the 2-, 10-, 25-, 50-, and 100-year Soap Lake floodplains. These floodplains are the basis of the cost estimate for the Soap Lake Floodplain Preservation Project.

Unit Costs for Soap Lake Floodplain Acquisition

Unit costs, in this case the cost of an acre of land, are an efficient way to perform conceptual level cost estimates. Since the two primary acquisition methods for the Soap Lake Preservation Project are fee title purchases and flood and conservation easements, unit costs were obtained for each of these.

The following table summarizes the unit costs obtained for the fee titles and easements. It also shows the recommended unit costs for the Soap Lake Preservation Project.

Table 1: Unit costs for fee title purchase and flood and conservation easement purchase.

Source	Unit Cost/acre	
	Fee title	Easement
The Nature Conservancy *	\$12-14k	\$4-7k
Santa Clara County Land Trust **	\$8-15k	\$5k
Recommended Unit Cost ⁺	\$12,000	\$5,000

* Estimate obtained from Lloyd Wagstaff of TNC based on 2004 land acquisitions.

** Estimate obtained from Nancy Richardson of Santa Clara County Land Trust based on multiple recent land acquisitions.

⁺ Average of referenced unit costs. Accounts for high value properties (irrigated agriculture) and low value properties (open rangeland).

In general, easements cost from approximately 30% to 60% of fee title purchase. The recommended unit cost of \$5,000/acre for easements and \$12,000/acre for fee title acquisitions will be applied to the floodplain acreages in the next section to yield total costs.

Fee Title and Easement Costs for Soap Lake Floodplain Acquisition

The total cost of land purchase is the product of the unit cost and the area of interest. The following tables show the fee title purchase and easement purchase costs of the 2-, 10-, 25-, 50-, and 100-year floodplains within Soap Lake.

Table 2: Estimated fee title purchase costs for a range of event frequency floodplains of Soap Lake.

Floodplain	Area (Acres)*	Unit Cost/Acre	Extended Cost (millions)
2-Year	740	\$12,000	\$8.9
10-Year	5,480	\$12,000	\$65.8
25-Year	7,320	\$12,000	\$87.8
50-Year	8,450	\$12,000	\$101.4
100-Year	9,110	\$12,000	\$109.3

* Pajaro River Watershed Study TM 3.6.

Table 3: Estimated flood and conservation easement purchase costs for a range of event frequency floodplains of Soap Lake.

Floodplain	Area (Acres)*	Unit Cost/Acre	Extended Cost (millions)
2-Year	740	\$5,000	\$3.7
10-Year	5,480	\$5,000	\$27.4
25-Year	7,320	\$5,000	\$36.6
50-Year	8,450	\$5,000	\$42.3
100-Year	9,110	\$5,000	\$45.6

* Pajaro River Watershed Study TM 3.6.

As discussed in TM 3.6, the floodplain boundaries do not exactly correspond to the local parcel boundaries. Therefore there are pieces of parcels within the floodplain while the rest of the parcel is not impacted by the flood waters. It should be noted that the acreages used in Tables 2 and 3 are the floodplain acreages and not the parcel acreages. These costs are applicable assuming the parcels can be split into parts or easements can be purchased for only part of the property. The costs for the entire parcels are summarized in the tables below.

Table 4: Estimated fee title purchase costs for whole parcels within the floodplain levels of Soap Lake.

Floodplain	Area (Acres)*	Unit Cost/Acre	Extended Cost (millions)
2-Year	6,590	\$12,000	\$79.1
10-Year	9,710	\$12,000	\$116.5
25-Year	11,800	\$12,000	\$141.6
50-Year	13,640	\$12,000	\$163.7
100-Year	14,550	\$12,000	\$174.6

* Pajaro River Watershed Study TM 3.6.

Table 5: Estimated flood and conservation easement purchase costs for whole parcels within the floodplain levels of Soap Lake.

Floodplain	Area (Acres)*	Unit Cost/Acre	Extended Cost (millions)
2-Year	6,590	\$5,000	\$33
10-Year	9,710	\$5,000	\$48.6
25-Year	11,800	\$5,000	\$59
50-Year	13,640	\$5,000	\$68.2
100-Year	14,550	\$5,000	\$72.8

* Pajaro River Watershed Study TM 3.6.

Conclusions and Recommendations

The goal of this technical memorandum is to estimate the costs of the Soap Lake Preservation Project. To do this, unit costs for fee title and easement purchases were determined and applied to the areas of the 2-, 10-, 25-, 50-, and 100-year floodplains. Table 7 summarizes the cost to preserve the floodplain characteristics of the 100-year floodplain.

Table 7: Purchase costs of 100-year floodplain.

100-Year Floodplain	Fee Title Purchase	Easement Purchase
Limited to flooding extent	\$109.3 million	\$45.6 million
Whole parcel	\$174.6 million	\$72.8 million

It is anticipated that the actual cost of the floodplain will be between the whole parcel fee title purchase cost (\$174.6 million) and the easement purchases limited to the extent of the flooding (\$45.6 million). These two values are extremes and both are considered to be unlikely. It is expected that the actual purchase pattern of the floodplain will include both easements and fee title purchases. It is also likely that some of the parcels at the fringe of the floodplain will be purchased in entirety while others will be divided. It should also be noted that there are oftentimes “bulk discounts” when land is purchased in large tracts. These discounts could also lower the total price.

The total costs represented in this TM are sensitive to the unit costs used in the analysis. While effort was made to use a representative unit cost, it is likely that some parcels would actually be underpriced and some would be overpriced based on the unit cost used. This, and any overall shift in the cost of land, could affect the total cost of the Soap Lake Floodplain Preservation Project.