

**Santa Clara Valley Water District
Matadero/Barron Creeks Long-Term Remediation Project**

Results of Investigation of Midtown Residents Association's List of Possible Alternatives
Presented at the March 26, 2002 Meeting

Alternative	Pro	Con	Cost	Action
Off-Stream Storage Basin (at Foothill and Page Mill Road)	<ul style="list-style-type: none"> • Reduces the required height of floodwalls and headwalls at upstream side of Greer Bridge from 6.6 to 5.5 ft, and downstream from 5.7 to 5.0 ft. Reduces the wall height at upstream side of Louis Bridge from 4.8 to 3.2 ft, and downstream from 3.9 to 2.8 ft. 	<ul style="list-style-type: none"> • Potential impact to endangered species habitat 	Estimated at approximately \$40 million	<p>Staff initiated contact to Chris Christofferson, Leonie Batkin (on vacation till 4/22), and Glenis Koehne.</p> <p>Director Zlotnick contacted Larry Horton.</p> <p>Per Christofferson Stanford not interested in plan.</p>
Underground Bypass via Loma Verde Avenue	<ul style="list-style-type: none"> • No channel modifications required to either Matadero or Barron Creeks. • The biological/wildlife environmental impacts would be minimal and could be mitigated. 	<ul style="list-style-type: none"> • 36 months of construction impacts (traffic circulation, limited street access by residents, noise and dust). • Relocation of numerous utilities (water, sewer, storm, gas). Some may not be possible due to right of way limitations. Maintaining connectivity with utilities on cross streets and need for gravity flow or pumping for storm drain and sewer lines will increase cost. • Ongoing maintenance of this box culvert would require removal of sediment on a regular basis to maintain the hydraulic capacity. Difficult and expensive to perform. • A siphon will be constructed at Hwy 101. Will not drain by gravity. Need a pump station. Has safety and reliability concerns. 	Construction cost estimated at \$75 million.	
Remove Louis Road Bridge	<ul style="list-style-type: none"> • Inexpensive to construct. • Will not need grading and modification to the existing street and driveways to accommodate a new bridge. 	<ul style="list-style-type: none"> • Required headwall heights at Greer Road Bridge (5.7 feet at downstream face and 6.7 feet at upstream face) <u>do not change</u>. • City of Palo Alto (CPA) noted: Louis Road carries 5000 vehicles per day. Closing will double traffic volumes on Ross and Greer, will affect bus routes, may inconvenience pedestrians and bikers, and may compromise emergency response. • Potential aesthetic impact by constructing a floodwall across the approaches of the bridge. 	<p>Projected bridge removal cost is \$30,000.</p> <p>Building a pedestrian bridge will cost \$300,000.</p>	

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Remove Greer Road Bridge (but still replace <u>and</u> raise Louis Road Bridge)	<ul style="list-style-type: none"> • Required headwall heights at Louis Road are decreased (from 3.9 feet to 3.3 feet on the downstream face of bridge; and from 4.8 feet to 4.1 feet at the upstream face of bridge). • Inexpensive from a monetary perspective. 	<ul style="list-style-type: none"> • City of Palo Alto noted: Greer carries 2000 vehicles per day. Closing will shift traffic to W. Bayshore and Louis and inconvenience residents, pedestrians and bicyclists on those streets and compromise emergency response. • Potential aesthetic impact by constructing a floodwall across the approaches of the bridge. 	<p>Bridge removal cost at Greer Road is \$30,000.</p> <p>Building a pedestrian bridge will cost \$300,000.</p>	
Full U-frame Channel	<ul style="list-style-type: none"> • No headwall or floodwall modifications needed upstream of Ross Road. • The upstream headwall at Louis Road can be decreased from 4.8 feet to 4.1 feet and the downstream headwall can be decreased from 3.9 feet to 3.2 feet 	<ul style="list-style-type: none"> • Required headwall heights at Greer Road (5.7 feet at downstream face and 6.6 feet at upstream face) <u>do not change</u>. • A far greater number of creekside residents (from Greer Road to Alma Street) will be exposed to construction impacts due to shoring, pile driving, temporary groundwater dewatering, construction vehicle access, and for longer periods of time. • Conducting channel modifications within a few feet of the 60KV transmission line buried in the northern bank is very risky. 	<p>Construction costs rises to \$30 million due to extensive and risky shoring, pile driving, and dewatering.</p>	
Raise Louis Road Bridge	<ul style="list-style-type: none"> • Improves flow conveyance capacity of creek below the bridge. • Required headwall heights on bridge crossing are reduced. The upstream headwall on Louis Road Bridge can be reduced from 8.3 feet to 4.8 feet and the downstream headwall can be reduced from 4.4 feet to 3.9 feet. 	<ul style="list-style-type: none"> • Short-term construction impacts to Louis Road residents and traffic circulation. 	<p>Projected bridge replacement cost at Louis Road is \$925,000.</p>	

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Continue Emergency Operating Plan	<ul style="list-style-type: none"> • No modification to headwalls or floodwalls along Matadero Creek. • Eliminates short-term construction impacts due to creek remediation. 	<ul style="list-style-type: none"> • SCVWD must rely on physical presence of staff to monitor and equalize flood protection during significant storm events. Not acceptable for long term operation. • City of Palo Alto Municipal Services Center is susceptible to creek overflows. East and West Bayshore and Highway 101 are susceptible to flooding. • Matadero Creek does not have sufficient freeboard during one-percent event. • Doesn't remove properties from the FEMA flood plain. Residents continue to pay flood insurance, and be subject to special floodplain management building restrictions. 	O&M costs of minimum \$50,000 per year. Potentially significant liability exposure.	
Removable Barriers	<ul style="list-style-type: none"> • When the barriers are not in use, the creek view corridor can be maintained. • The barriers are relatively easy to install and remove. • The barriers can vary in length. The barriers are typically 20 foot in length and 90 pounds each. • The barriers are interchangeable units. 	<ul style="list-style-type: none"> • Requires Maintenance Staff to install and remove the barriers. • Requires storage area or warehouse when the barriers are not in use. • Barriers will be single source materials. Replacement barriers/materials must be obtained from the original manufacturer. • Additional permanent access to the floodwalls will be required where there is no maintenance road for installation of the barriers. • The barriers are painted but typically, artwork is not applied to the barriers. • FEMA may not accept design and remove properties from floodplain. • Scissors lifts/boom trucks may be needed to place the barriers on top of the walls. 	<p>For Matadero Creek, the use of the barriers will run \$300-\$400/linear foot.</p> <p>Projected cost of removable bridge headwalls at: Greer \$42,000 Louis \$32,000.</p>	<p>Initial response from FEMA not promising. Will investigate and follow up with FEMA to verify acceptability.</p> <p>Contacted the users (East Grand Forks, MN, Cedar Falls, IA, Fargo, ND, and Sacramento) & manufacturer (Flood Control America) of the removable panels. Confirmed costs and application. Cedar Falls and Corps of Engineers confirmed FEMA acceptance, contrary to feedback from FEMA.</p> <p>Will finalize District position following further clarification with FEMA and COE.</p>

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Drawbridge at Louis and Greer Roads	<ul style="list-style-type: none"> • Will reduce the WSEL at Louis and Greer Roads. 	<ul style="list-style-type: none"> • Requires monthly bridge maintenance and bridge exercising. • Operation of a drawbridge is noisy. • Utilities will require relocation off the existing bridge. • A traffic plan must be in place prior to raising the bridge. • VTA, Emergency Services and the Schools must be notified for changes to their routes. • Louis and Greer Roads may be needed to evacuate the area during heavy storms. • A control panel/room will be necessary to operate the bridges. May create a negative visual/aesthetic impact on the adjacent neighborhood. 	Projected cost for a drawbridge at: Greer \$1.8 Million Louis \$1.4 Million	Coordinate with CPA

Concerns on earthquake damage to floodwalls:

The floodwalls will be designed to withstand the maximum earthquake force as specified by the 1997 Uniform Building Code, earth pressure, and water pressure from a full brim flow (significantly higher than a 1% flood condition). This design will be more conservative than an office building in the City of Palo Alto under the same geographical and soil conditions.