

Analysis of Project Alternatives for DWR Grant

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DATE: April 14, 2016

Background and Purpose

The Marin County Flood Control and Water Conservation District (District) has retained the services of CH2M to perform supplemental services to those recently completed for the *Ross Valley Flow Reduction Study Report* (Study), which was prepared by CH2M in June 2015. The Study recommended Memorial Park as a detention basin site; it was one of the highest ranked detention basin sites listed in the Study that also met flow reduction goals. However, based on November 2015 election results, a voter-sponsored initiative (Measure D) now prohibits the District and the Town of San Anselmo (Town) from pursuing the creation of a detention basin in Memorial Park. Because the Memorial Park Detention Basin Project received grant funding from the California Department of Water Resources (DWR), there is now a need to identify alternatives that would be eligible to receive the DWR funds originally intended for the Memorial Park Project. The funding for the Memorial Park Project was \$17,633,683, with \$8,720,500 coming from the State of California. To meet a DWR grant requirement, the District must show that the replacement alternative can be constructed no later than 2020 and to meet the District's funding requirements, the replacement alternative must cost no more than \$17.6 million.

This technical memorandum evaluates alternatives that both meet the long-term goals of the District's Ross Valley Flood Protection and Watershed Program (Program), and serve as suitable alternatives to the Memorial Park Project. To be eligible as a replacement project for the DWR grant, the replacement project must provide flood damage relief and environmental and recreational benefits in accordance with DWR requirements. It is understood that the exact benefits may differ from those of the original Memorial Park Project.

Development of Replacement Alternatives

CH2M completed Study recommendations in June 2015. Based on the multi-attribute decision making analysis documented in the Study, 10 detention basin sites were recommended for further analysis to meet District Program goals. The District has recently initiated a Programmatic Environmental Impact Report (PEIR) process to further study and evaluate recommended detention basin sites. However, the Memorial Park detention basin site was removed from more detailed investigations based on November 2015 election results. As a result, nine detention sites will be evaluated during the PEIR process. These sites are described below and are shown in Figure 1.



Ross Valley Flood Protection and Watershed Program Alternative Flood Reduction Elements

- A Building Bridge 2 removal and creek restoration through at Creek Park
- L Camp Bothin
- M Nursery near Baywood Canyon Drive and Sir Francis Drake Boulevard
- O Hidden Valley Elementary School
- P Brookside Elementary School
- R Deer Park

Figure 1
Location Map

Analysis of Project Alternatives for DWR Grant

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Fairfax Creek Watershed

- Lefty Gomez (school site)
- Former Nursery (privately held)
- Girl Scout Camp near Bothin Reserve (privately held)
- Loma Alta (public open space)

San Anselmo Creek Watershed above Sycamore Bridge

- Deer Park (school site)
- Red Hill Park (public site)

Sleepy Hollow Creek Watershed

- Hidden Valley Elementary (school site)
- Brookside Elementary (school site)

Ross Creek Watershed

- Phoenix Lake (public site)

The District and Town would like to move forward with more detailed investigations of alternative projects scenarios that will reduce flood risk and provide recreational and environmental benefits for a total project cost of less than or equal to the original Memorial Park Project (\$17.6 million).

Based on the rankings and findings in the Study, discussions with the District and the Town, election results, and an understanding of DWR's grant requirements, four potential alternatives were identified for this supplemental analysis. The alternatives are:

- Sleepy Hollow Creek Watershed Alternative
- Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site
- Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site
- No Detention Basin Alternative

Analysis of the four alternatives will determine which alternative meets DWR's grant requirement goals. Three alternatives include detention basins and one alternative has no detention basin. The alternatives that were developed were based on the following criteria:

- When there are multi-use detention basins included, they are primarily below grade instead of above ground dam structures whenever possible
- Reduce flooding within Ross Valley similar to Memorial Park
- Minimize environmental impacts to facilitate environmental document approvals and permit approvals
- Total project cost does not exceed \$17.6 million (i.e., the amount of the original Memorial Park Project estimate in 2011 dollars)
- Able to implement the new project by 2020 to meet DWR grant requirements

Table 1 summarizes the components of each alternative, including the location of proposed detention basin, the location of proposed creek capacity improvements and bridge replacements. These components are also described below.

Table 1. Alternative Descriptions

Project Components	Sleepy Hollow Creek Watershed Alternative	Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery	Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field	No Detention Basin Alternative
Detention Basin Location(s)	Brookside Elementary	Former Sunnyside Nursery Site	Lefty Gomez Field School Site	NA
Creek Improvements	Sleepy Hollow Creek improvements	San Anselmo Creek improvements	Sleepy Hollow Creek improvements	San Anselmo Creek improvements
Bridge Replacements/Removals	Morningside Drive Bridge Replacement	Modify Building Bridge 1 and Building Bridge 2	No Bridge improvements	Sir Francis Drake Blvd. (downstream)

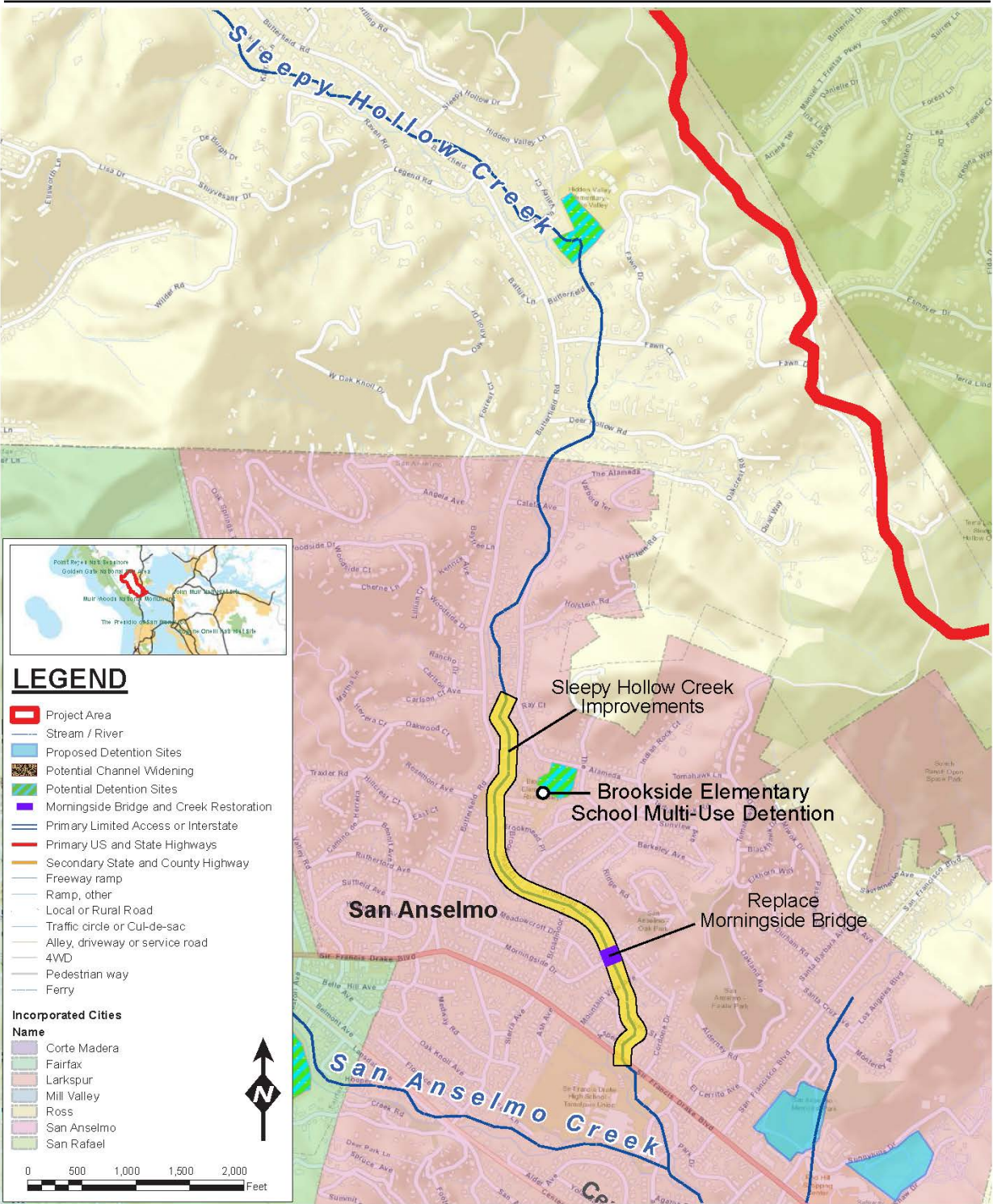
Description of Replacement Alternatives

The District has developed four alternatives that are estimated to cost below \$17.6 million (2018 dollars), which have the best likelihood of receiving the DWR grant funds which were secured for the original Memorial Park Detention Basin Project:

- Sleepy Hollow Creek Watershed Alternative
- Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site
- Fairfax Creek Watershed alternative 2 – Including Lefty Gomez Field School Site
- No Detention Basin Alternative

Sleepy Hollow Creek Watershed Alternative

The Sleepy Hollow Creek Watershed Alternative includes upstream detention at Brookside Elementary School (4 acre-feet), replacing the Morningside Drive Bridge, and implementing all the proposed channel improvements and creek restoration components beginning at the confluence with San Anselmo Creek and continuing upstream towards Brookside Elementary School recommended in the in the Capital Improvement Plan (CIP) completed by Stetson May 2011, and See Figure 2. Specific proposed channel improvements and the proposed detention basin are shown in Attachment A1 Sleepy Hollow Creek Watershed Alternative.



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During development of the Study, residents along Sleepy Hollow Creek expressed interest in accelerating flood risk reduction measures in their area to reduce flooding. There are two potential detention basin sites in the Sleepy Hollow Creek Watershed that are being studied during the PEIR process: one at Hidden Valley Elementary School and one at Brookside Elementary School. However, the total project cost of the Hidden Valley School site exceeds \$17.6 million limit for the DWR grant. Therefore, only the Brookside Elementary school site will be considered for this alternative. Construction of a temporary multi-purpose detention basin facility at this location would require re-constructing sport field facilities below grade and upgrading recreational enhancement facilities at the school.

The total volume of potential storm water detention at this detention basin site is approximately 4 acre-feet based on a preliminary draft drawing prepared by CH2M in August 2015 (Attachment A1). Construction of the multi-purpose detention basin at Brookside Elementary School site has a small flow reduction benefit. Due to the size and location, approximately 4 acre-feet of storage could be provided as compared to the 80 acre-feet that could have been provided by the original Memorial Park Project. Attachment A1 is for reference only, and does not represent any final configuration or proposed design of this detention basin facility.

As a part of the original CIP prepared by Stetson Engineers in May 2011, several channel improvements along Sleepy Hollow Creek were recommended, including replacement or removal of the Morningside Drive Bridge, and slope stabilization, restoration and habitat enhancements along Sleepy Hollow Creek between the confluence point at San Anselmo Creek and the area upstream of Arroyo Avenue as shown in Attachment A1.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site

Fairfax Creek Watershed Alternative 1 includes upstream detention at the former Sunnyside Nursery site (approximately 65 acre-feet of storage), removing/replacing the Building Bridge 1 and Building Bridge 2, and implementing the proposed creek restoration improvements recommended in the CIP between Building Bridge 1 and Building Bridge 2 (Attachment A2 Fairfax Creek Watershed Alternative 1 – Including the Former Sunnyside Nursery Site items 35 to 45), and. See Figure 3.

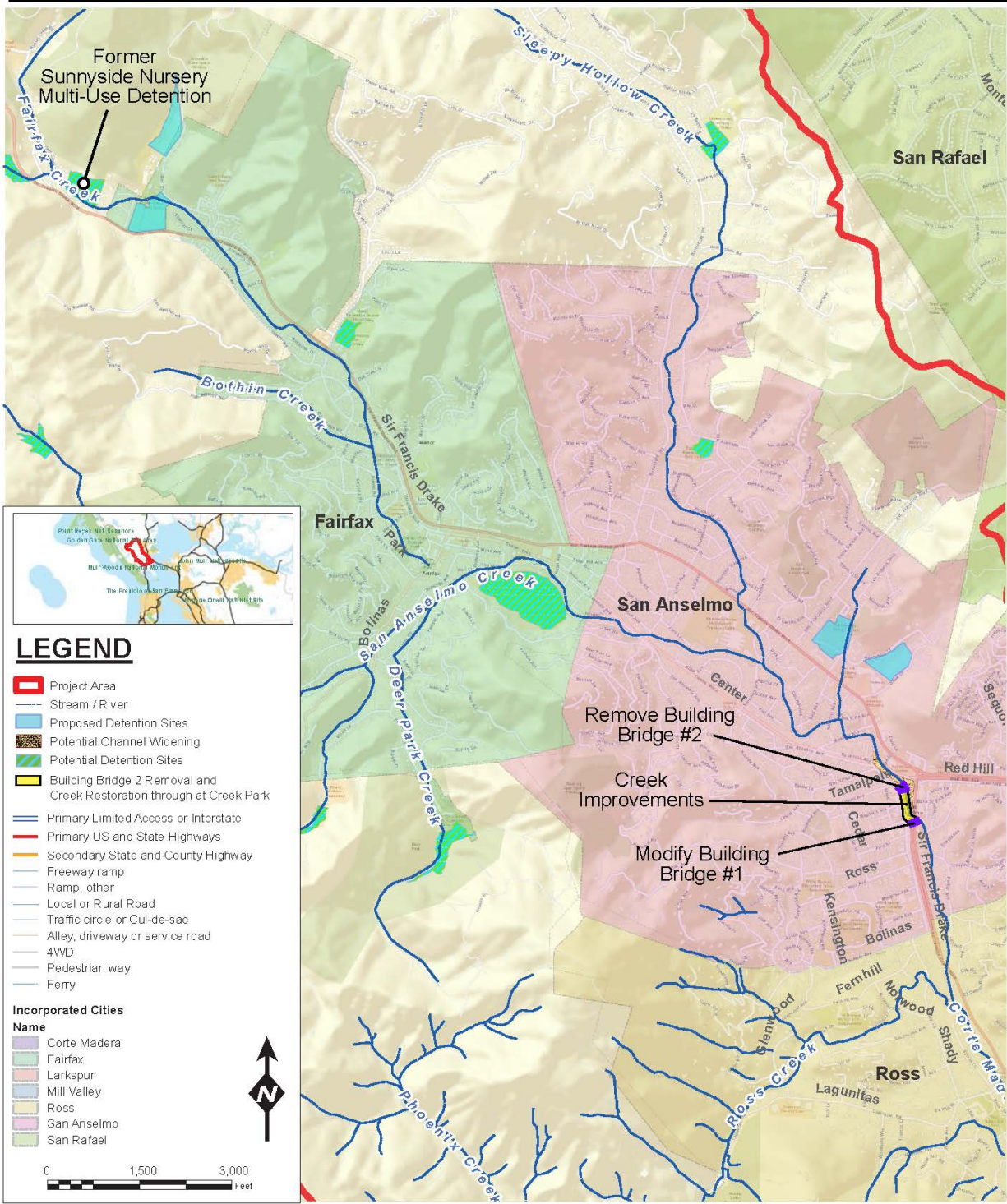


Figure 3
Fairfax Creek Watershed Alternative 1 –
Including Former Sunnyside Nursery
Analysis of Project Alternatives for DWR Grant

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The Study, completed by CH2M in June 2015, included evaluation of several privately held detention basin sites in addition to the five public detention basin sites identified in the CIP. One of the privately held detention basin sites that ranked the highest in the scoring is the former Sunnyside Nursery detention basin site. This site ranked highest because there was potential to store a moderately large amount of storm water runoff from Fairfax Creek that significantly reduced flows downstream. This alternative also has opportunities to incorporate environmental enhancements at this location, and the proposed detention basin site did not require relocation or removal of any structures or active businesses. This potential detention basin site is located in the Fairfax Creek Watershed immediately adjacent to Fairfax Creek, Sir Francis Drake Boulevard and Baywood Canyon Drive. Based on preliminary analysis results, this site has the potential to temporarily detain approximately 65 acre-feet of storm water runoff (see Attachment A2). However, if the height of the downstream embankment is limited to 6 feet to facilitate Division of Safety of Dams (DSOD) approvals, potential storage volume may be reduced to 40 acre-feet or less.

There is the potential to develop an off stream mitigation site or natural park within the footprint of the proposed multi-purpose detention basin, restore the parcel with native plantings, and improve the habitat area. This detention basin could function as a new park area and/or be used as a mitigation site to offset other proposed Program impacts. This newly created park space could include walking paths or a dog park that would benefit the surrounding community. At this site, there is also the potential to include slope stabilization, creek restoration and habitat enhancements in Fairfax Creek adjacent to the proposed multi-use detention basin site.

This alternative also includes modifying Building Bridge 1 and removing the Building Bridge 2 obstruction, or diverting flows around the Building Bridge #2 obstruction in San Anselmo Creek, which is located in the Town from 634 to 636 San Anselmo Avenue. This alternative would include creek restoration improvements in San Anselmo Creek between Building Bridge 1 and Building Bridge 2 as shown in Attachment A2 Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site. Slope stabilization, creek restoration and habitat enhancements along San Anselmo Creek could reduce localized flooding while providing top-of-bank recreational opportunities, and could improve public access along San Anselmo Creek through the downtown area.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site

The Fairfax Creek Watershed Alternative 2 includes upstream detention at the Lefty Gomez Field adjacent to White Hill Middle School (approximately 90 acre-feet of storage), and relatively minor creek restoration improvements in the immediate vicinity of Morningside Bridge along Sleepy Hollow Creek as described in the CIP's Sleepy Hollow Creek improvements (Attachment A3 Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site items 214 through 219). See Figure 4.

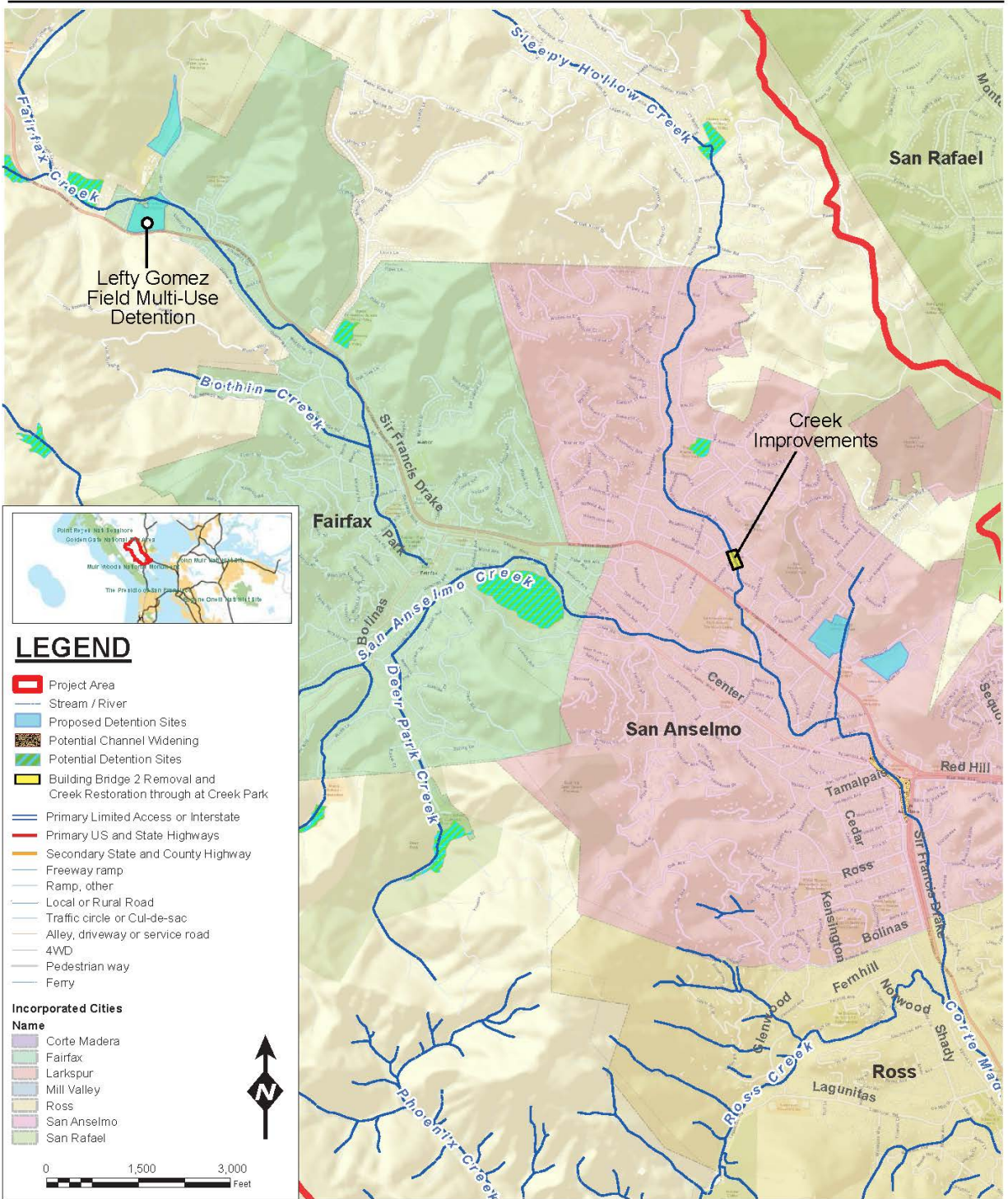


Figure 4
Fairfax Creek Watershed Alternative 2 –
Including Lefty Gomez Field
Analysis of Project Alternatives for DWR Grant

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The Study included evaluation of five public or quasi-public detention basin sites. One of the public/quasi-public detention basin sites that ranked the highest in the scoring is the Lefty Gomez Field site. This site ranked highest because there was potential to store a large amount of storm water runoff from Fairfax Creek that significantly reduced flows downstream. There are opportunities to incorporate recreational enhancements to Lefty Gomez Field, and the proposed detention basin site did not require purchase of any private property. This potential detention basin site is located in the Fairfax Creek Watershed between Fairfax Creek and Sir Francis Drake Boulevard, immediately adjacent to White Hill Middle School. Based on preliminary analysis results, the site has the potential to temporarily detain approximately 90 acre-feet of storm water runoff.

In addition to construction of the detention basin, this alternative would include replacing and reconstructing sports facilities and recreational enhancements on school property.

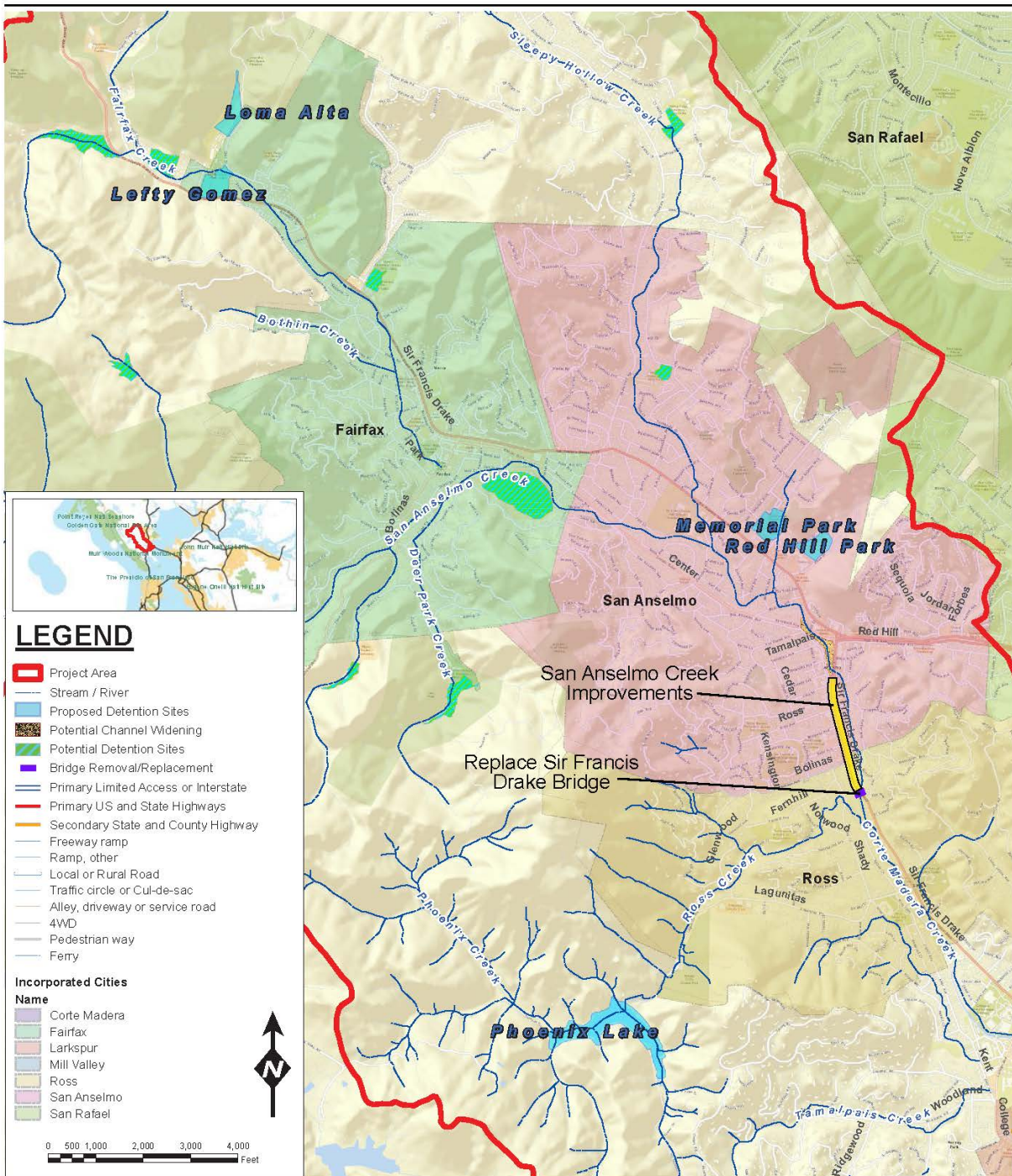
This alternative also includes minor creek restoration improvements upstream and downstream of the Morningside Drive Bridge. Due to cost limitations, the Morningside Drive Bridge would remain in place until a future project removes or replaces it.

No Detention Basin Alternative

The No Detention Basin alternative recognizes the difficulty in obtaining approval from the local residents for construction of a multi-use detention basin, and instead focuses on channel improvements and bridge replacements along San Anselmo Creek. Therefore, this project begins with replacing the Sir Francis Drake Boulevard Bridge crossing (downstream) in the Town of Ross upstream of the United States Army Corps of Engineers (USACE) Unit 4 Project, and continues with upstream channel and bridge replacement improvements (Attachment A4 items 001 through 025, except for 017) recommended in the CIP totaling less than the grant amount of \$17.6 million. See Figure 5.

This alternative includes all the recommended channel and bridge improvements between Unit 4 including the Sir Francis Drake Boulevard Bridge (downstream) shown in Attachment A4 item 001, and installing the curved retaining wall near Tunstead Avenue (Attachment A4 item 025) with the exception of the following:

- Winship Avenue Bridge, which is being designed and constructed with a separate grant (item 005),
- Sir Francis Drake Boulevard Bridge crossing (upstream) (item 021) which is considered low priority, and
- Lower Channel Bed improvements (item 17).



Ross Valley Flood Protection and Watershed Program Alternative Flood Reduction Elements

- A Building Bridge 2 removal and creek restoration through at Creek Park
- L Camp Bothin
- M Nursery near Baywood Canyon Drive and Sir Francis Drake Boulevard
- O Hidden Valley Elementary School
- P Brookside Elementary School
- R Deer Park

Figure 5
"No Detention Basin" Alternative
Analysis of Project Alternatives for DWR Grant

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This alternative does include a significant amount of creek restoration improvements in San Anselmo Creek upstream of USACE's Unit 4 project, but does not include any recreational elements.

Alternatives Evaluation

Evaluation of the alternatives was based on qualitative analysis and a comparison to the original grant application developed for the original Memorial Park Project. This evaluation does not include any hydraulic modeling, or detailed investigations or development of new conceptual plans. The information used for qualitative analysis was based on readily-available information from the Study prepared by CH2M in June 2015, the CIP prepared by Stetson Engineers in May 2011, and completion of recent task orders for the District that included developing conceptual plans and reviewing previously prepared cost opinions for updated Program planning and budgeting.

The project team performed preliminary screening for all the alternatives by evaluating each option in a manner that was similar to that described in the original Memorial Park grant application. The alternatives were then modified to reduce project components and limit total estimated project cost to less than \$17.6 million (2018 dollars). Alternative evaluation and cost opinions are based on the preliminary drawings shown in Attachment A1 through A4. The evaluation process included filling out the Benefit Checklist for each alternative (Attachment B) to determine if the alternative's benefits are equivalent to the original Memorial Park Project. Findings for each alternative are described below.

Sleepy Hollow Creek Watershed Alternative

This alternative provides a minor amount of upstream detention along Sleepy Hollow Creek and slightly reduces flows downstream in San Anselmo Creek. Removing the Morningside Bridge removes an obstruction that may result in less frequency of localized flooding upstream of the bridge. Recreational benefits will be achieved by re-constructing the sports fields at Brookside Elementary School, and environmental enhancement benefits will be achieved by restoring Sleepy Hollow Creek as recommended in the CIP.

The proposed alternative includes a multi-purpose detention basin at Brookside School that diverts storm runoff from the street into the detention basin. This project does not reduce storm flows in Sleepy Hollow Creek. After hydraulic modeling is completed, the District may find there is not a sufficient amount of storm water storage provided at the Brookside detention basin site to warrant the cost of the multi-use detention basin. The cost benefit analysis may indicate that it is better to eliminate the Brookside School detention site and instead complete all channel and bridge improvements along Sleepy Hollow Creek that are recommended in the CIP for a lower project cost. Implementing all Sleepy Hollow Creek improvements recommended in the CIP would provide immediate flood relief to residents along Sleepy Hollow Creek. However, hydraulic modeling results would have to confirm that these improvements would not induce flooding downstream in San Anselmo Creek and make existing flooding conditions worse. Implementation of all Sleepy Hollow Creek improvements would require substantial coordination and cooperation from all residents along the creek, and the acquisition of approximately 38 temporary and/or permanent easements to install channel improvements.

The drawings in Attachment A1 are for reference only to estimate the size of the footprint of impacts and potential storage volume at each site. Each detention basin site is subject to change based on input received from the community. These changes may include reconfiguring the orientation of the basin, shape, aesthetics, grading and terracing, size, depth and height of embankments to meet the needs of the community. Implementation of a detention basin will require public outreach and coordination with the school district, parents of students, residents near the schools, and the community.

Fairfax Creek Watershed Alternative 1—Including Former Sunnyside Nursery

This alternative provides upstream detention along Fairfax Creek and significantly reduces flows downstream in San Anselmo Creek. There are significant potential environmental benefits at this site, including the possibility of setting this site aside as an off-stream mitigation site for future Program impacts. There are also significant opportunities to restore San Anselmo Creek between Building Bridge #1 and Building Bridge #2 in downtown San Anselmo. Recreational benefits may be achieved by re-configuring walking trails along the top of bank between these buildings.

The proposed detention basin site is currently privately held. If the District decides to approach the owner to determine if the property is available for sale, a significant amount of time will be required to complete negotiations and acquisition of this parcel. The configuration and size of this detention facility will likely be modified from the current proposal shown in the attached drawings (Attachment A2).

The drawing in Attachment A2, prepared by Stetson Engineers is for reference only, and estimates the size of the footprint of impacts and potential storage volume at the site; this drawing is subject to change based on feedback from the community.

If the site was developed into a multi-use detention facility that acts as a detention basin as well as a natural park with native plantings adjacent to the creek, it could be considered a creek restoration site or mitigation site. If the site is considered a mitigation site by regulatory agencies for future Program impacts, it would facilitate acquisition of permit approvals for future District projects. Additional coordination with regulatory agencies would be required, which may result in a modified grading plan with more natural and flatter contours and/or terracing. Changes to the configuration, orientation, size, depth, height of the embankment and proposed grading plan would likely reduce the amount of available storm water storage.

Modifications to Building Bridge #1 and #2 and the proposed creek improvements have the potential to reduce localized flooding. This will be confirmed by further hydraulic modeling. Acquisition of permanent easements will be necessary for approximately 8 parcels along San Anselmo Creek.

Fairfax Creek Watershed Alternative 2—Including Lefty Gomez Field

This alternative provides upstream detention along Fairfax Creek and significantly reduces flows downstream in San Anselmo Creek. Due to cost constraints, there are only minor opportunities to restore Sleepy Hollow Creek in the vicinity of Morningside Bridge. Recreational benefits will be achieved by re-constructing the sports fields at Lefty Gomez Field.

Construction of the proposed Lefty Gomez Field detention basin site adjacent to White Hill Middle School would require close coordination with the school district and public outreach with the parents of students, residents near the school, and the community. Acquisition of temporary or permanent easements will be necessary for approximately 10 parcels along Sleepy Hollow Creek.

The attached detention basin drawing (Attachment A3, prepared by URS) is for reference only to estimate the size of the footprint of impacts and potential storage volume at the site. The detention basin site is subject to change based on input received from the community. These changes may include reconfiguring the orientation of the basin to accommodate the sports facilities, shape, aesthetics, grading and terracing, size, depth and height of embankments to meet the needs of the community.

No Detention Basin Alternative

This alternative does not provide any detention, however constructing the channel improvements along San Anselmo Creek recommended in the CIP and shown in Attachment A4 (001 through 0025, except 005, 017 and 021) have the potential to reduce localized flooding. If these channel improvements are installed before upstream detention is provided, there may only be a marginal reduction in flood risk for larger storms. If the District is unable to ultimately provide the total amount of recommended temporary storage of storm flows identified in the CIP, these channel improvements will likely be considered inadequate in larger storms, and the District may have to construct floodwalls and reconstruct channel improvements in this reach of San Anselmo Creek to convey higher flood flows. This may require removal of recently installed components or reconstruct channel improvements in this reach if the District could not meet the CIP flow reduction goals upstream (480 acre-feet of detention).

Construction of channel improvements identified in the CIP would require a significant amount of coordination with property owners and businesses located along San Anselmo Creek in the towns of Ross and San Anselmo. Acquisition of temporary or permanent easements will be necessary for approximately 46 parcels along San Anselmo Creek.

The bridge at Sir Francis Drake Boulevard would likely be constructed in stages and require development of traffic staging plans to maintain traffic through this area during construction.

The attached drawings in Attachment A4, prepared by Stetson Engineers, are for reference only to estimate the extent of proposed channel improvements, and are subject to change based on feedback from the community.

Implementation Schedule and Project Costs

The proposed implementation schedule and project costs for each alternative are discussed below.

Implementation Schedule

The District and Town have developed four alternatives that have the potential to reduce the frequency or severity of flooding and are estimated to cost less than the \$17.6 million DWR grant amount. Below is a schedule that meets the completion goal of 2020.

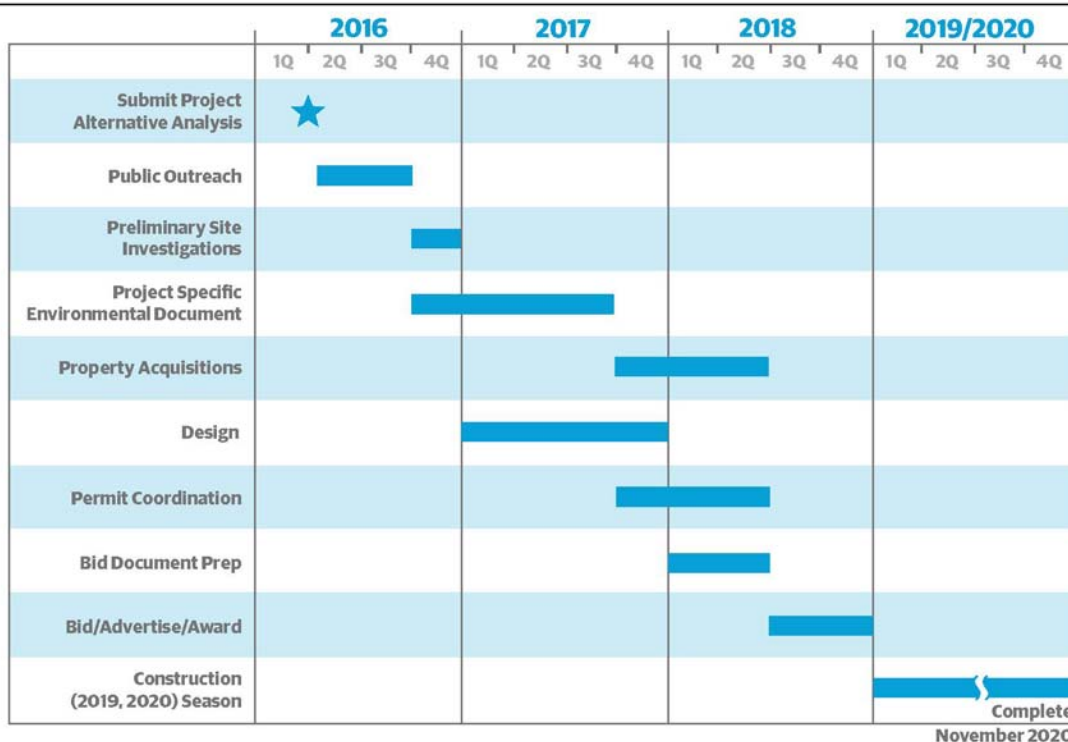


Figure 6
Sample Replacement Project
Implementation Schedule
Analysis of Project Alternatives for DWR Grant

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Project Costs

Project costs include planning-level construction cost opinions, and anticipated right-of-way acquisition costs as currently available to construct a replacement project. Replacement project cost opinions also include a large contingency to reflect unknowns at this conceptual level. Typically, as a project progresses and design is completed with more detailed information, the applied contingency factor is reduced. Replacement project costs would also include soft project costs to obtain environmental clearance, permits from regulatory agencies, engineering and administrative activities. At a planning level, these soft costs are typically prepared as a percentage of the total construction costs. However, actual soft costs will depend on the complexity a project to permit and design, and is therefore subject to change as a project is developed.

Construction cost opinions for each alternative are based on readily available information prepared by a variety of sources. The construction cost opinions for the detention basins were developed and/or updated during the year 2015, and are in 2015 dollars. In some cases, a range of anticipated costs have been provided to reflect unknown factors and a conceptual level of design at the time cost opinions were prepared. Costs for in-stream channel improvements and bridge replacement/removals are primarily extracted from the CIP and are shown in 2011 dollars unless otherwise noted. The most recent estimated costs for each alternative are shown in Tables 2 through 5.

Table 2. Approximate Project Costs for Sleepy Hollow Creek Alternative

	Sleepy Hollow Creek Watershed Alternative	Range of Cost	Current Available Cost
Detention Basin Location(s)	Brookside Elementary	\$6.6 to \$12.4 million (2015 dollars)	\$8.3 million (2015 dollars)
Creek Improvements	Sleepy Hollow Creek improvements	NA	\$4.5 million (2011 dollars)
Bridge Replacements/Removals	Morningside Drive Bridge Replacement	NA	\$1,027,000 (2011 dollars)

General: These costs are to be used for planning purposes only. Costs will vary based on actual market conditions at the time of construction, and will be subject to change based on proposed size, configuration and height of each detention basin site.

Detention basin cost opinions are from a CH2M memorandum prepared September 2015.

Creek improvements and bridge replacement costs are from the CIP prepared by Stetson Engineers May 2011.

Costs for 2011 and 2015 were escalated to 2018 costs, and are shown in Table 6.

The estimated project cost assumes there are no acquisition costs for the Brookside School detention site.

Approximately 38 parcels would be impacted by construction activities for creek improvements (additional \$110,000).

The estimated project cost includes removal and replacement of Morningside Bridge. If the bridge is removed and replaced with a pedestrian structure, the costs would be lower.

The project assumes no mitigation costs will be required because of creek restoration efforts.

Table 3. Approximate Project Cost for Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery

	Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery	Range of Cost	Current available cost
Detention Basin Location(s)	Former Sunnyside Nursery Site	NA	\$9.8 million (2015 dollars)
Creek Improvements	San Anselmo Creek improvements	NA	\$2.2 million (2011 dollars)
Bridge Replacements/Removals	Remove Building Bridge 2	NA	\$2.9 million (2011 dollars)

General: These costs are to be used for planning purposes only. Costs will vary based on actual market conditions at the time of construction, and will be subject to change based on proposed size, configuration and height of each detention basin site.

Estimated detention basin cost is based on an early estimate from the Study and has not been confirmed.

Creek improvements and bridge replacement costs are from the CIP prepared by Stetson Engineers May 2011.

Building Bridge 1 modification and Building Bridge 2 removal costs are from the CIP prepared by Stetson Engineers May 2011.

Estimated costs for 2011 and 2015 were escalated to 2018 costs as shown in Table 6.

Construction cost includes an approximate cost for land acquisition, and is not based on any actual appraisal information.

Approximately 10 parcels would be impacted by construction activities for creek improvements. (Additional \$30,000)

The estimated project cost includes removal of Building Bridge 2. If flows can be diverted around the existing structure, costs would be lower.

The estimated project cost assumes no mitigation costs are necessary because of creek restoration measures.

Table 4. Approximate Project Cost for Fairfax Creek Watershed Alternative 2– Including Lefty Gomez Field

	Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field	Range of Costs	Current available cost
Detention Basin Location(s)	Lefty Gomez Field School Site	\$11.2 to \$21.8 million (2015 dollars)	\$14.6 million (2015 dollars)
Creek Improvements	San Anselmo Creek improvements	NA	\$960,000 (2011 dollars)
Bridge Replacements/Removals	None	NA	\$0

General: These costs are to be used for planning purposes only. Costs will vary based on actual market conditions at the time of construction, and will be subject to change based on proposed size, configuration and height of each detention basin site.

Detention basin cost is based on a review of URS Corporation bid items, updated by CH2M in September 2015. Three options for off-haul were explored. Estimated project cost is based on all excess earthwork material being hauled off site instead of being used at the Loma Alta site.

Creek improvements and bridge replacement costs are from the CIP prepared by Stetson Engineers May 2011.

Estimated costs for 2011 and 2015 were escalated to 2018 costs as shown in Table 6.

The estimated construction cost assumes there will be no acquisition costs for the Lefty Gomez Field detention site.

Approximately 8 parcels would be impacted by construction activities for creek improvements. (Additional \$20,000)

The estimated project cost assumes no mitigation costs due to creek restoration measures.

Table 5. Approximate Project Cost for No Detention Basin Alternative

	No Detention Basin Alternative	Range of Costs	Current Available Cost
Detention Basin Location(s)	NA	\$0	\$0
Creek Improvements	San Anselmo Creek	NA	\$8.9 million (2011 dollars)
Bridge Replacements/Removals	Sir Francis Drake Blvd. (downstream)	NA	\$6.1 million (2011 dollars)

General: These costs are to be used for planning purposes only. Costs will vary based on actual market conditions at the time of construction, and will be subject to change based on actual site conditions.

Creek improvements and bridge replacement costs are from the CIP prepared by Stetson Engineers May 2011.

Costs for 2011 and 2015 were escalated to 2018 costs and shown in the summary Table 6.

Approximately 46 parcels would be impacted by construction activities for creek improvements. (Additional \$150,000)

The estimated project cost assumes no mitigation costs due to creek restoration measures.

Table 6 summarizes the most current available projected costs from Tables 2 through 5 (escalated to reflect 2018 pricing conditions) for each alternative.

Table 6. Summary of Approximate Project Costs in 2018 Dollars

	Sleepy Hollow Creek Watershed Alternative	Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery	Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field	No Detention Basin Alternative
Detention Basin Location(s)	\$9.1 million	\$10.7 million	\$15.8 million	\$0
Creek Improvements	\$5.3 million	\$2.6 million	\$1.1 million	\$10.3 million
Bridge Replacements/Removals	\$1.2 million	\$3.9 million	\$0	\$7.1 million
TOTAL COST	\$15.6 million	\$17.2 million	\$16.9 million	\$17.4 million

General: These costs are to be used for planning purposes only. Costs will vary based on actual market conditions at the time of construction, and will be subject to change based on proposed size, configuration and height of each detention basin site.

Total project cost under the original DWR grant for the original Memorial Park Project was \$17.6 million (2011 dollars).

2011 dollars were escalated by 15.4 percent to reflect 2018 dollars based on UCLA CPI for California.

2015 dollars were escalated by 7.9 percent to reflect 2018 dollars based on UCLA CPI for California.

Acquisition costs to obtain permanent construction easements varies by alternative and severity of impact. For purposes of this estimate it is assumed at least 10 feet width of property easement is required per parcel and the costs is \$5/square foot of easement required to build the project. Total acquisition costs for easements vary between \$20,000 and \$150,000 per alternative. The cost for obtaining easements would be added to costs shown above.

If the Brookside School site was eliminated from the Sleepy Hollow Creek Watershed Alternative, and all the channel and bridge improvements in the CIP were implemented for Sleepy Hollow Creek, the total estimated project cost in 2018 dollars would be approximately \$10.4 million.

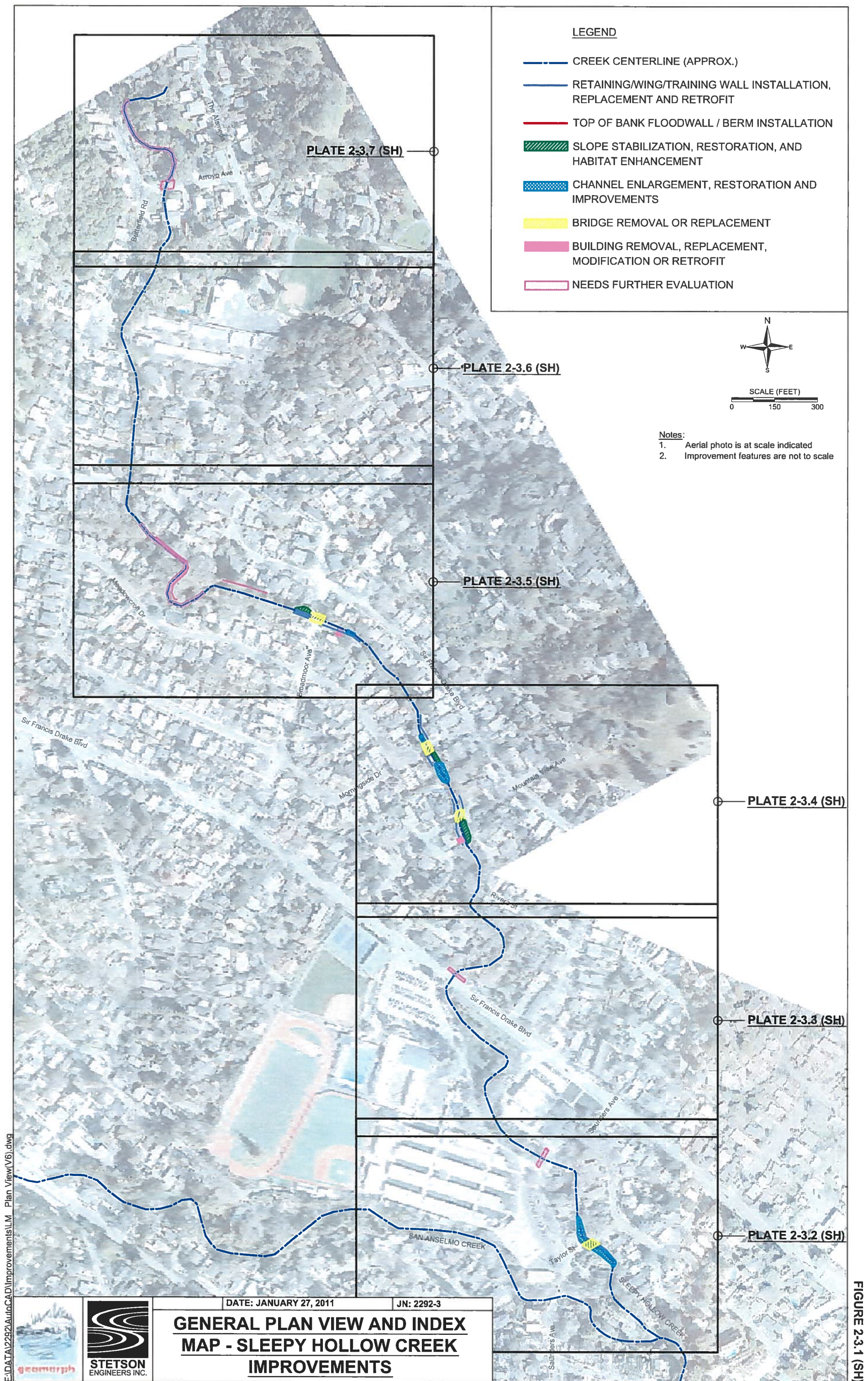
Summary and Recommendations

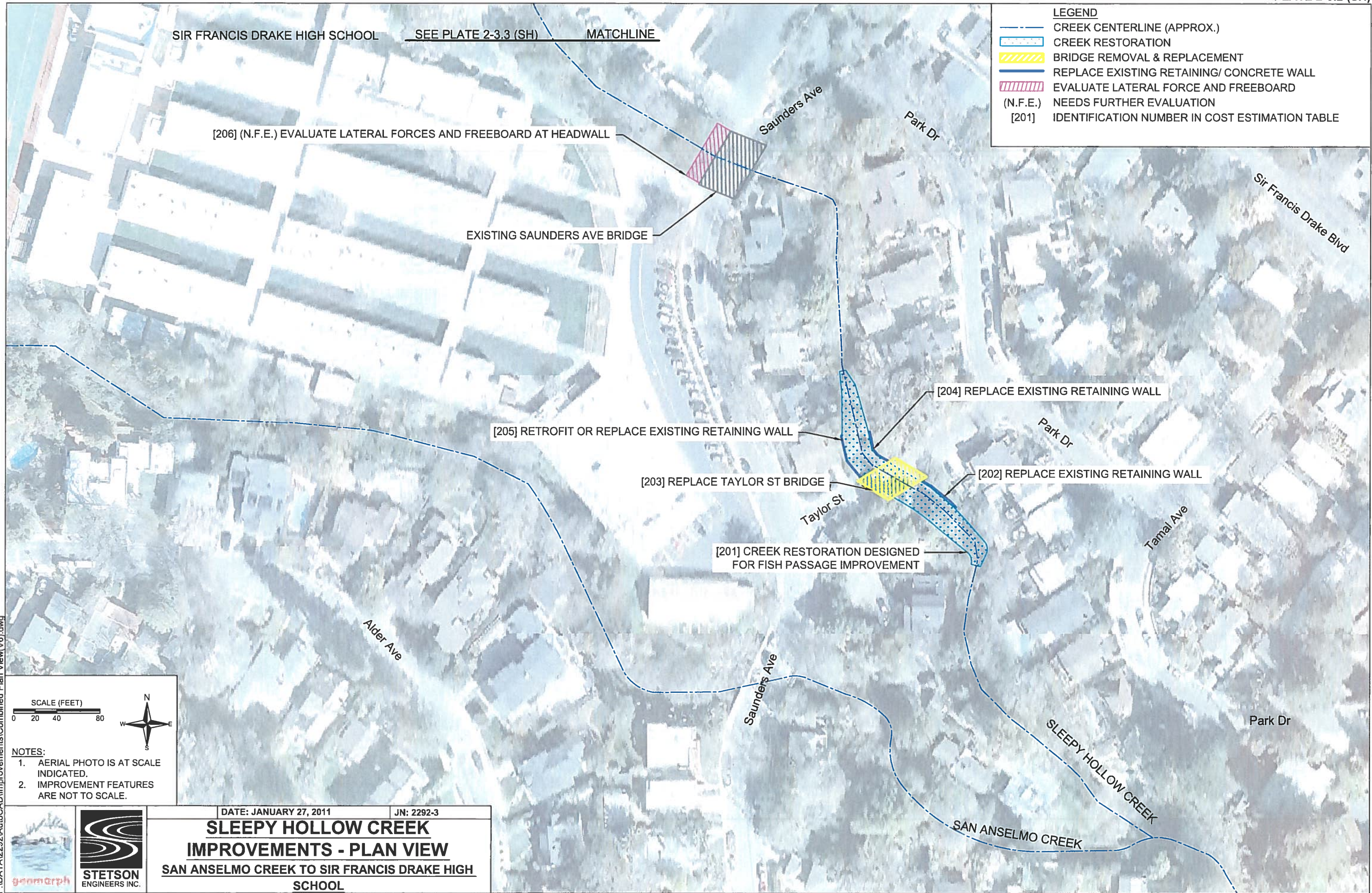
This supplemental analysis is preliminary; grant requirement descriptions are qualitative and are based on readily available information, some of which has been prepared by others. Based on this preliminary evaluation of each alternative, all of the above projects are consistent with the long-term goals of the Program, meet DWR grant requirements, are within the original Memorial Park Project budget of \$17.6 million, and can be constructed by the end of 2020. Further evaluation of each alternative is required before a preferred replacement alternative can be selected.

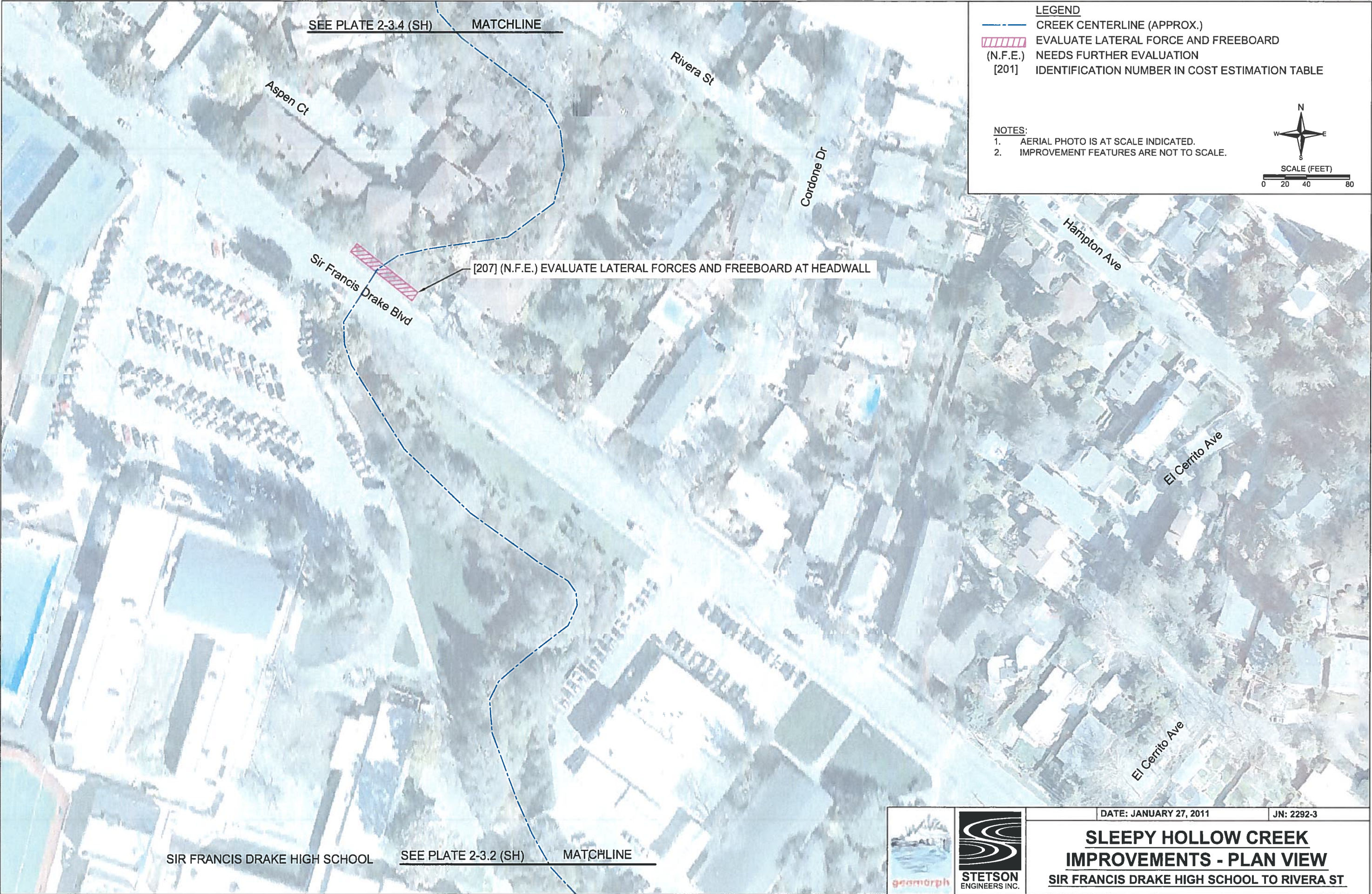
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Attachment A1

Sleepy Hollow Creek
Watershed Alternative



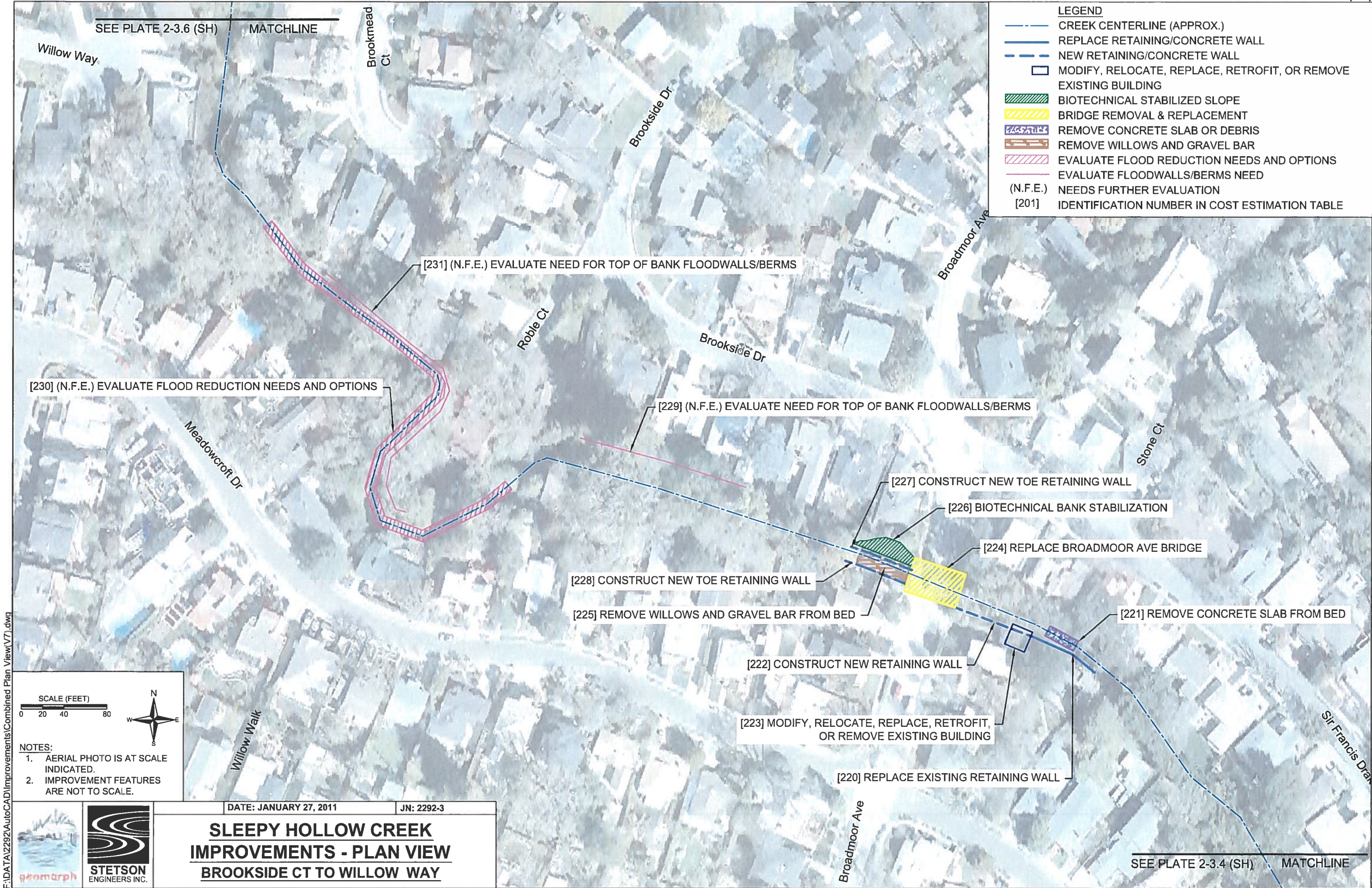




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LEGEND
CREEK CENTERLINE (APPROX.)

SCALE (FEET)
0 20 40 80

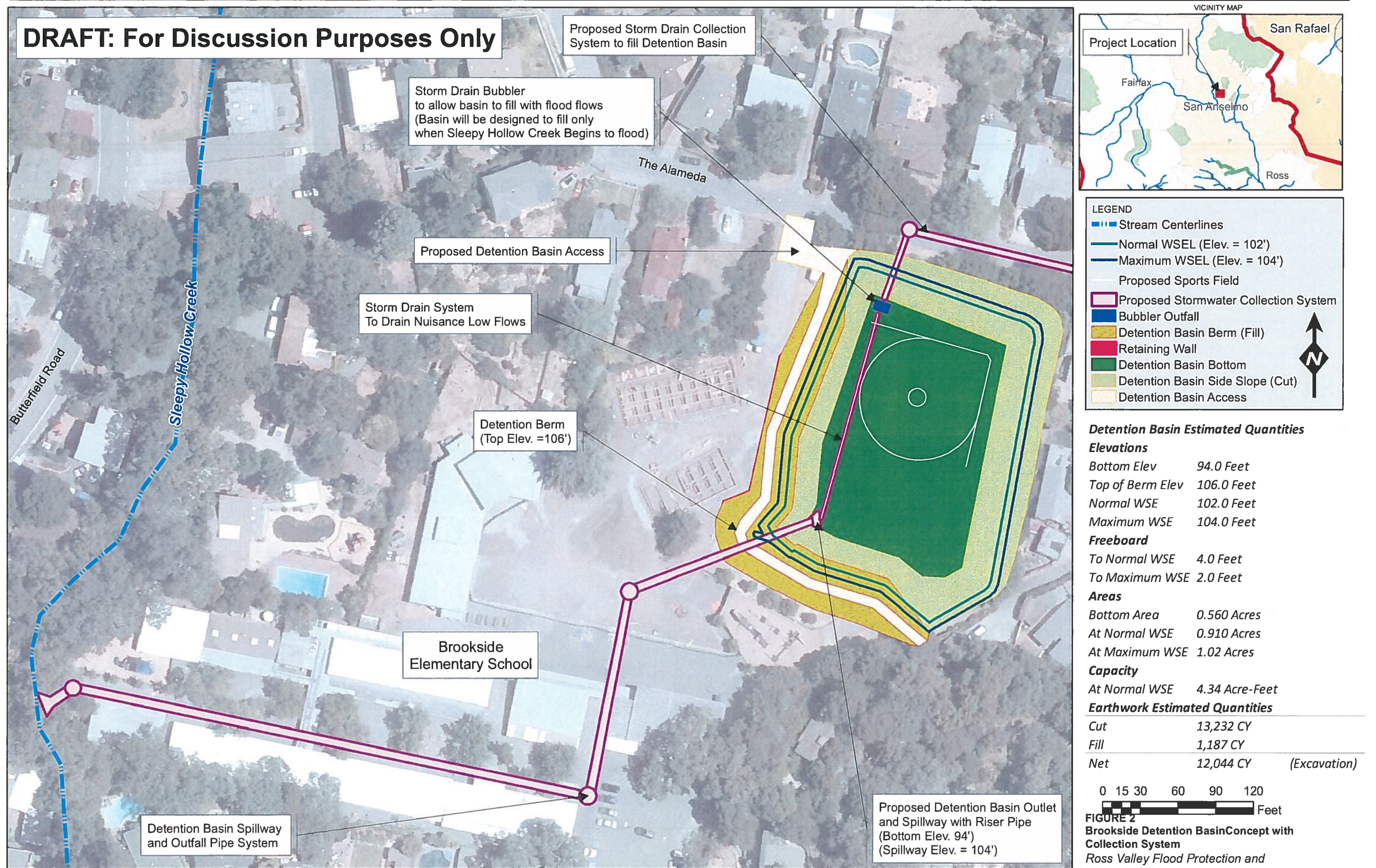
NOTES:
1. AERIAL PHOTO IS AT SCALE INDICATED.
2. IMPROVEMENT FEATURES ARE NOT TO SCALE.
3. NO MEASURES ARE IDENTIFIED IN THIS SHEET.

F:\DATA\2292\AutoCAD\Improvements\Combined Plan View(V6).dwg

		DATE: JANUARY 27, 2011	JN: 2292-3
		SLEEPY HOLLOW CREEK	
		IMPROVEMENTS - PLAN VIEW	
WILLOW WAY TO BROOKSIDE LOWER CAMPUS			



F:\DATA\2292\AutoCAD\Improvements\Combined Plan View(V6).dwg

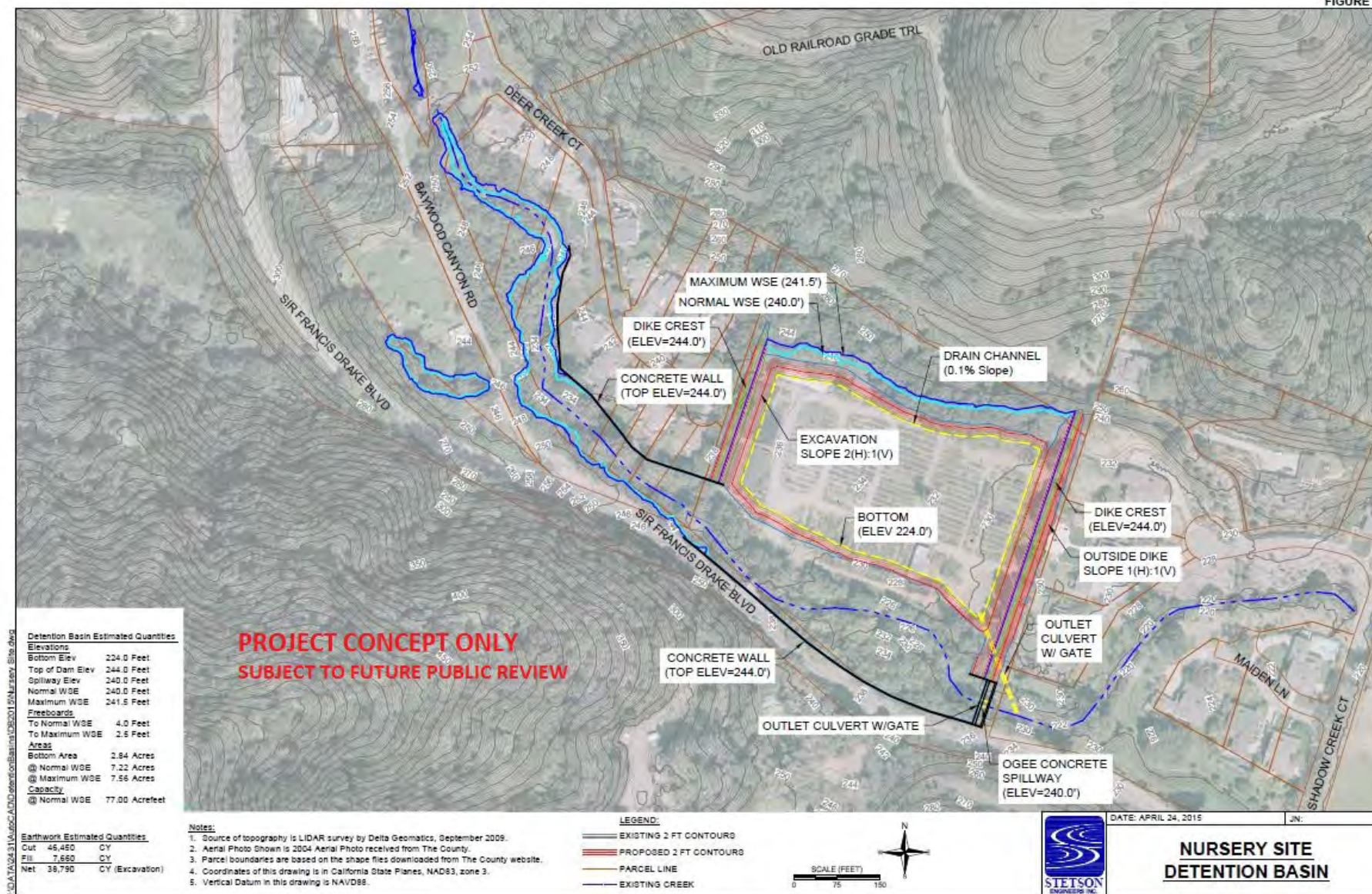


DRAFT

Attachment A2

Fairfax Creek Watershed
Alternative 1 – Including Former
Sunnyside Nursery Site

FIGURE





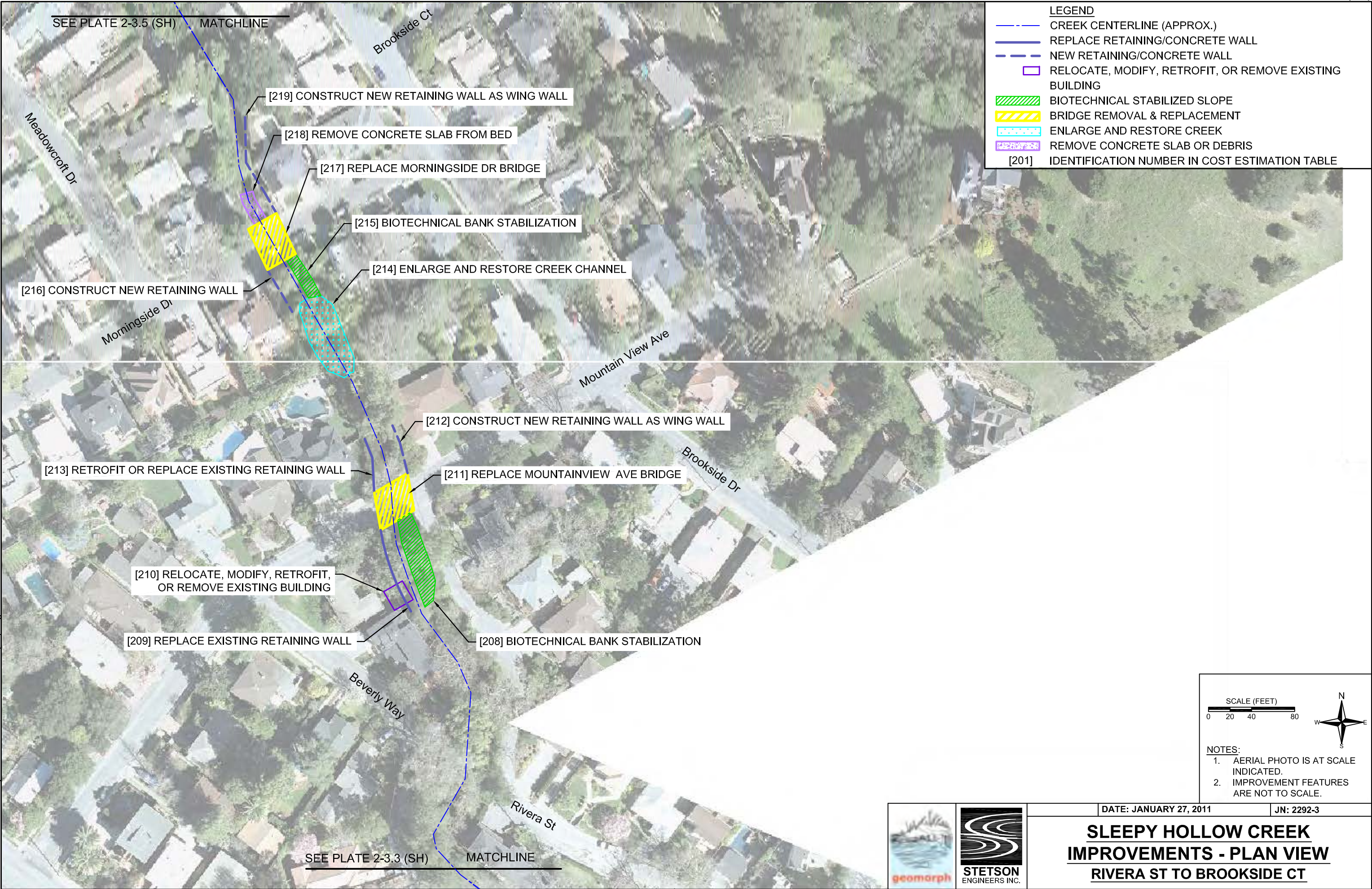
SAN ANSELMO CREEK
IMPROVEMENTS - PLAN VIEW
BANK ST TO CENTER BLVD

DRAFT

Attachment A3

Fairfax Creek Watershed
Alternative 2 – Including
Lefty Gomez Field School Site





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DRAFT
Attachment A4
No Detention
Basin Alternative

- Notes:
- 1. Aerial photo is at scale indicated
 - 2. Improvement features are not to scale

SCALE (FEET)

0 150 300



PLATE 2-4.8 (SA)

PLATE 2-4.7 (SA)

PLATE 2-4.6 (SA)

PLATE 2-4.5 (SA)

PLATE 2-4.4 (SA)

PLATE 2-4.3 (SA)

PLATE 2-4.2 (SA)

PLATE 2-4.1 (SA)

LEGEND

- CREEK CENTERLINE (APPROX.)
- CITY BOUNDARY
- RETAINING/WING/TRAINING WALL INSTALLATION, REPLACEMENT AND RETROFIT
- TOP OF BANK FLOODWALL / BERM INSTALLATION
- FLOODPLAIN CREATION AND ENHANCEMENT
- CHANNEL ENLARGEMENT, RESTORATION AND IMPROVEMENTS
- SLOPE STABILIZATION, RESTORATION, AND HABITAT ENHANCEMENT
- BRIDGE REMOVAL OR REPLACEMENT
- BUILDING REMOVAL, REPLACEMENT, MODIFICATION OR RETROFIT
- ROADWAY REPLACEMENT AND IMPROVEMENTS
- NEEDS FURTHER EVALUATION

(LOW PRIORITY) ACQUIRE EASEMENT TO SET BACK REPLACEMENT RIGHT BANK RETAINING WALL

REMOVE SYCAMORE AVE BRIDGE

CONSTRUCT NEW CENTER BLVD BRIDGE

Center Blvd
Madrone Ave
Sycamore Ave
San Anselmo Ave

St Francis Drake Blvd

San Rafael Ave

Tamalpais Ave

Center Blvd

Red Hill Ave

Miracle Mile

Greenfield Ave

St Francis Drake Blvd

Bank St

Magnolia Ave

San Anselmo Ave

Tunstead Ave

Lincoln Ct

Pine St

Woodland Ave

Barber Ave

Ross Ave

San Anselmo Ave

Mariposa Ave

Belle Ave

Bolinas Ave

Winship Ave

SAN ANSELMO
ROSS

Winship Ave



DATE: JANUARY 27, 2011

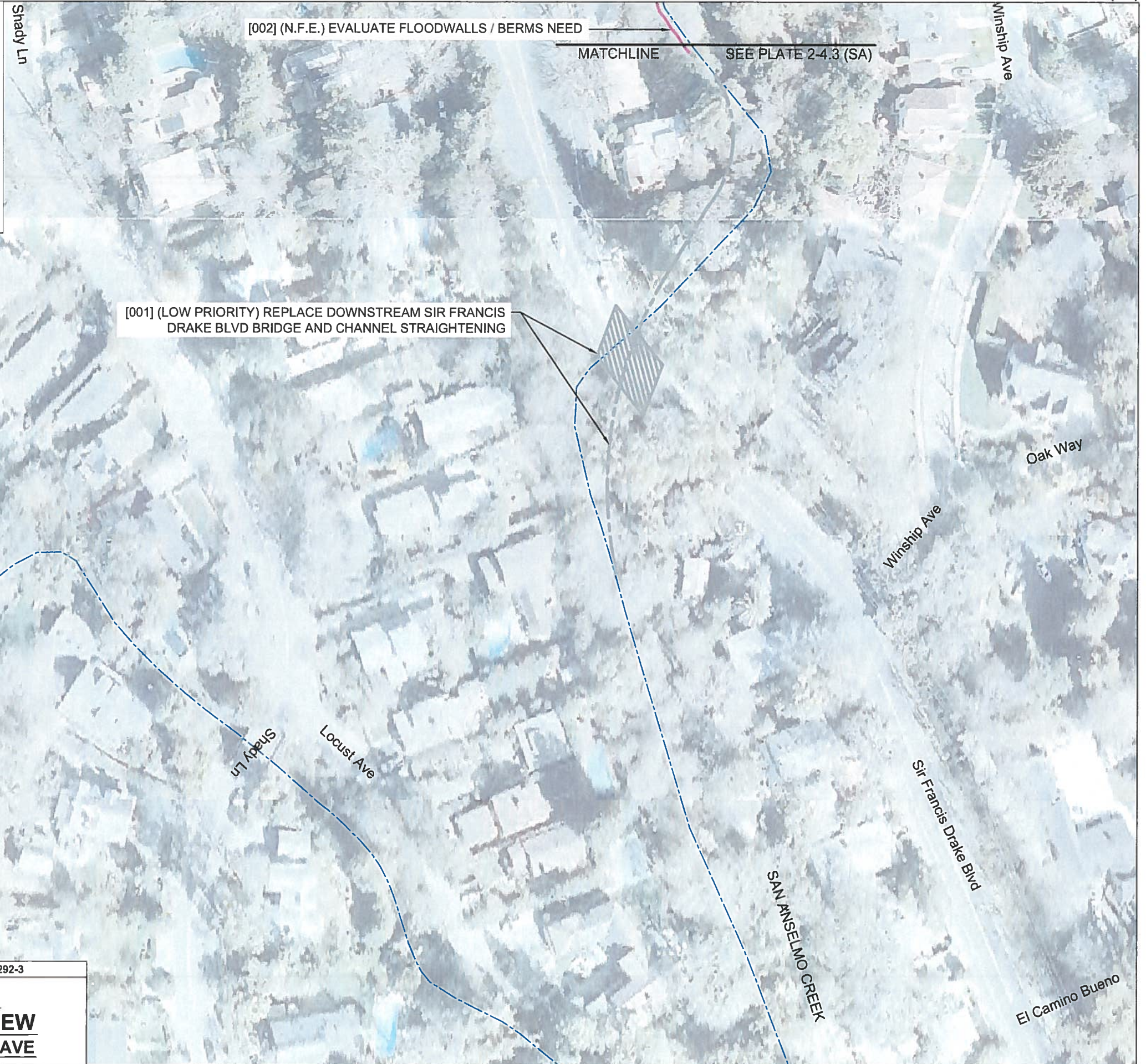
JN: 2292-3

GENERAL PLAN VIEW AND INDEX
MAP - SAN ANSELMO CREEK
IMPROVEMENTS

- LEGEND**
- CREEK CENTERLINE (APPROX.)
 - - - (LOW PRIORITY) STRAIGHTENED CREEK CENTERLINE
 - EVALUATE FLOODWALL/BERM NEED
 - ▨ (LOW PRIORITY) BRIDGE REMOVAL AND REPLACEMENT NEEDS FURTHER EVALUATION
 - (N.F.E.)
 - [001] IDENTIFICATION NUMBER IN COST ESTIMATION TABLE

SCALE (FEET)
0 20 40 80

- NOTES:**
1. AERIAL PHOTO IS AT SCALE INDICATED.
 2. IMPROVEMENT FEATURES ARE NOT TO SCALE.

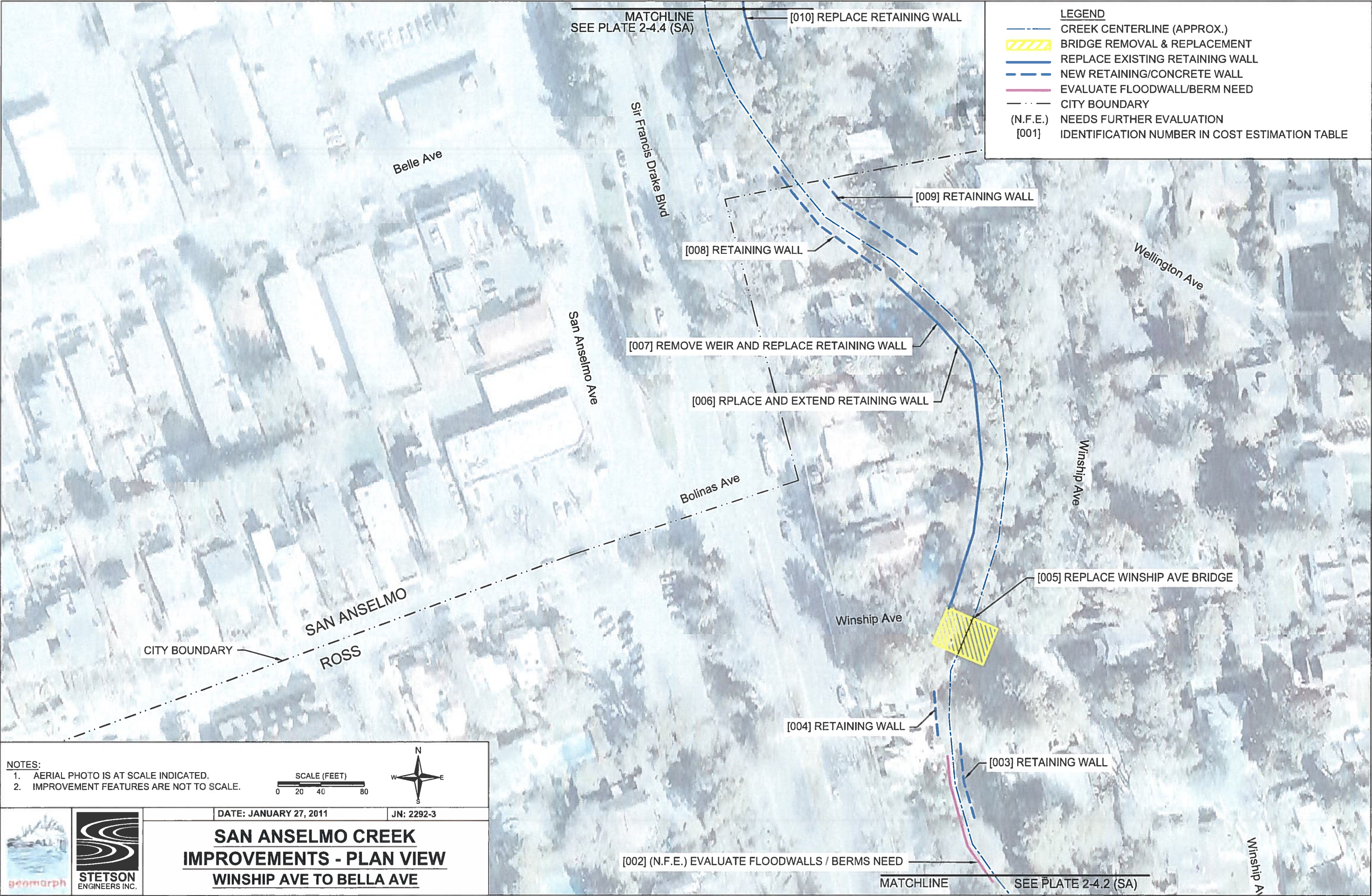


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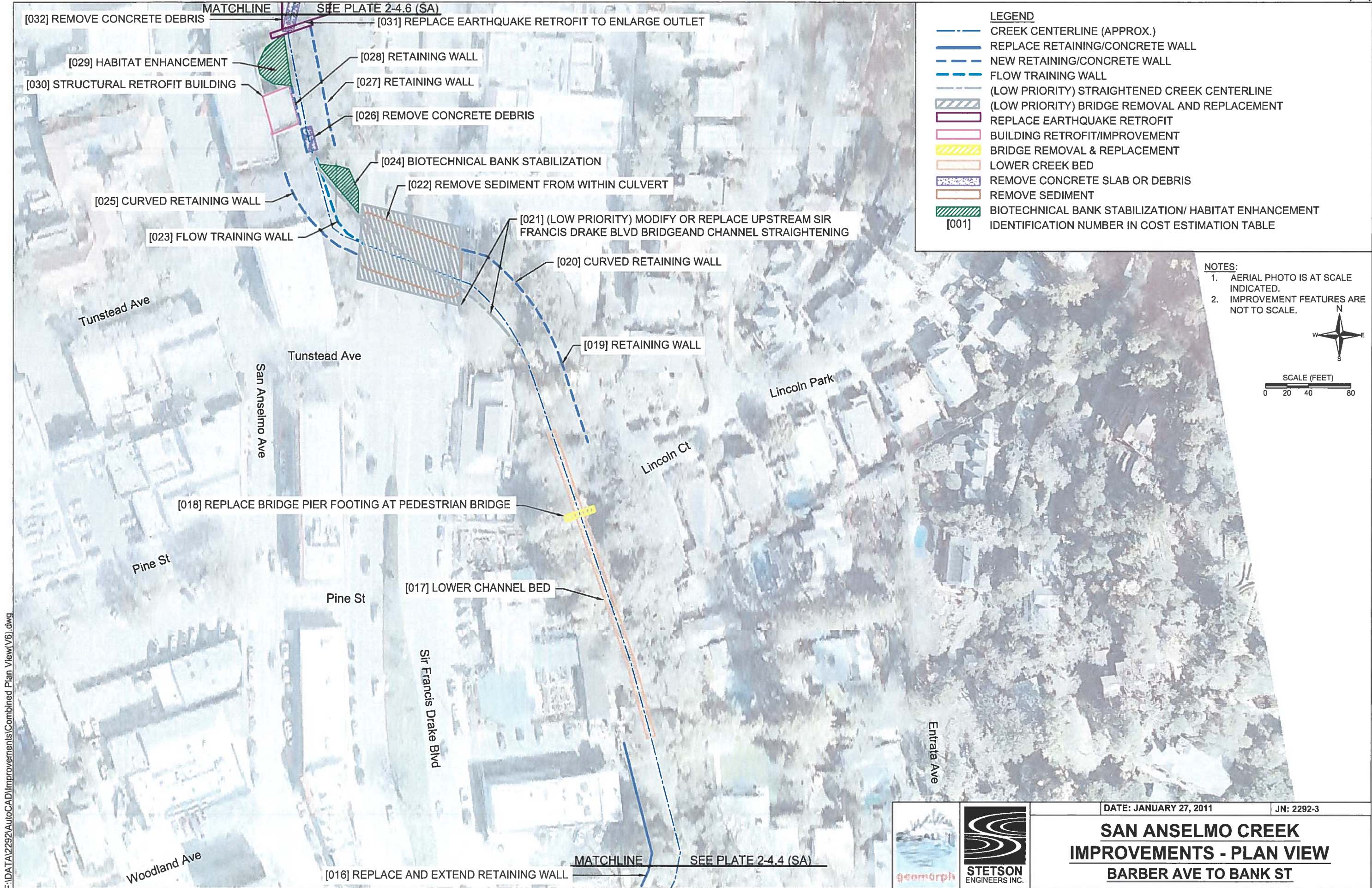


DATE: JANUARY 27, 2011 JN: 2292-3

**SAN ANSELMO CREEK
IMPROVEMENTS - PLAN VIEW
EL CAMINO BUENO TO WINSHIP AVE**







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Draft Attachment B: Grant Requirements Checklist

DWR Grant Requirements Checklist (Exhibit B in Grant Documentation)

No.	Question	Original Memorial Park Project	Sleepy Hollow Creek Watershed Alternative	Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site	Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site	No Detention Basin Alternative
		Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"
Will the project:						
COMMUNITY/SOCIAL BENEFITS						
1	Provide education or technology benefits?	Yes	Yes	Yes	Yes	Yes
	Examples are not limited to, but may include:					
	- Include educational features that should result in water supply, water quality, or flood damage reduction benefits?					
	- Develop, test or document a new technology for water supply, water quality, or flood damage reduction management?					
	-Provide some other education or technological benefit?					
2	Provide social recreation or access benefits?	Yes	Yes	Yes	Yes	Neg
	Examples are not limited to, but may include:					
	- Provide new or improved outdoor recreation opportunities?					
	- Provide more access to open space?					
	- Provide some other recreation or public access benefit?					
3	Help avoid, reduce or resolve various public water resources conflicts?	Yes	Yes	Yes	Yes	Yes
	Examples are not limited to, but may include:					
	- Provide more opportunities for public involvement in water management?					
	- Help avoid or resolve an existing conflict as evidenced by recurring fines or litigation?					
	- Help meet an existing state mandate (e.g., water quality, water conservation, flood control)?					
4	Promote social health and safety?	Yes	Yes	Yes	Yes	Yes
	Examples are not limited to, but may include:					
	- Increase urban water supply reliability for fire-fighting and critical services following seismic events?					
	- Reduce risk to life from dam failure or flooding?					
	- Reduce exposure to water-related hazards?					
5	Have other social benefits?	Yes	No	Yes	No	No

DWR Grant Requirements Checklist (Exhibit B in Grant Documentation)

No.	Question	Original Memorial Park Project	Sleepy Hollow Creek Watershed Alternative	Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site	Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site	No Detention Basin Alternative
		Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"
	Examples are not limited to, but may include:					
	- Redress or increase inequitable distribution of environmental burdens?					
	'- Have disproportionate beneficial or adverse effects on disadvantaged communities, Native Americans, or other distinct cultural groups?					
ENVIRONMENTAL STEWARDSHIP BENEFITS:						
Will the proposal						
6	Benefit wildlife or habitat in ways that were not quantified in Attachment 7?	Yes	Yes	Yes	Yes	Yes
	Examples are not limited to, but may include:					
	- Cause an increase in the amount or quality of terrestrial, aquatic, riparian or wetland habitat?					
	- Contribute to an existing biological opinion or recovery plan for a listed special status species?					
	- Preserve or restore designated critical habitat of a listed species?					
	- Enhance wildlife protection or habitat?					
7	Improve water quality in ways that were not quantified in Attachment 7?	Yes	Yes	Yes	Yes	Neg
	Examples are not limited to, but may include:					
	- Cause an improvement in water quality in an impaired water body or sensitive habitat?					
	- Prevent water quality degradation?					
	- Cause some other improvement in water quality?					
8	Reduce net emissions in ways that were not quantified in Attachment 7?	Yes	Neg	Neg	Neg	Neg
	Examples are not limited to, but may include:					
	- Reduce net production of greenhouse gasses?					
	- Reduce net emissions of other harmful chemicals into the air or water?					
9	Provide other environmental stewardship benefits, other than those claimed in Sections D1, D3 or D4?	Yes	Yes	Yes	Neg	Neg

SUSTAINABILITY BENEFITS:

DWR Grant Requirements Checklist (Exhibit B in Grant Documentation)

No.	Question	Original Memorial Park Project	Sleepy Hollow Creek Watershed Alternative	Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site	Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site	No Detention Basin Alternative
		Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"
Will the proposal						
10	Improve the overall, long-term management of California groundwater resources?	Yes	No	Neg	No	No
	Examples are not limited to, but may include:					
	-Reduce extraction of non-renewable groundwater?					
	- Promote aquifer storage or recharge?					
11	Reduce demand for net diversions for the regions from the Delta?	Yes	No	No	No	No
12	Provide a long-term solution in place of a short-term one?	Yes	Yes	Yes	Yes	Yes
	Examples are not limited to, but may include:					
	- Replace a temporary water supply with a more permanent supply?					
	- Replace a temporary water quality solution with a more permanent solution?					
	Replace temporary flood control management with a more permanent solution?					
	- Replace temporary habitat with a more permanent solution?					
13	Reduce water consumption on a permanent basis?	Yes	Neg	Yes	Neg	No
14	Promote energy savings or replace fossil fuel based energy sources with renewable energy and resources?	Yes	No	Neg	No	No
	Examples are not limited to, but may include:					
	- Reduce net energy use on a permanent basis?					
	- Increase renewable energy production?					
	- Include new buildings or modify buildings to include certified LEED features?					
	- Provide a net increase in recycling or reuse of materials?					
	- Replace unsustainable land or water management practices with recognized sustainable practices?					
15	Improve water supply reliability in ways not quantified in Attachment 7?	Yes	No	No	No	No
	Examples are not limited to, but may include:					
	- Provide a more flexible mix of water sources?					
	- Reduce likelihood of catastrophic supply outages?					
	- Reduce supply uncertainty?					
	- Reduce supply variability?					

DWR Grant Requirements Checklist (Exhibit B in Grant Documentation)

No.	Question	Original Memorial Park Project	Sleepy Hollow Creek Watershed Alternative	Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site	Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site	No Detention Basin Alternative
		Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"	Enter "Yes," "No," or "Neg"
16	Other (If the above listed categories do not apply, provide non-monetized benefit description)?	Yes	Yes	Yes	Yes	Neg
COMPARISON METRICS						
17	Acres of habitat created or reconstructed.	0.2	0.2	2.0	0.2	Neg
18	General comments	Site removed from PROGRAM by voter initiative.	Requires coordination with school district and nearly 40 property owners	Requires purchase of private parcel	Requires coordination with school district	Requires coordination with over 40 property owners

Detailed Discussion

This information further explains responses provided above in the checklist. Each question in the checklist is listed below with a response for each of the alternatives under consideration.

Will the Project...

1. Provide education or technology benefits?

Sleepy Hollow Creek Watershed Alternative: There are opportunities to educate the public about flood risk, water quality and protection of the riparian environment in Ross Valley through an extensive public outreach effort.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: There are opportunities to educate the public about flood risk, water quality and protection of the riparian environment in Ross Valley through an extensive public outreach effort. Interpretive signage will be included the proposed multi-use mitigation/detention basin park site to educate the public about flood risk.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: There are opportunities to educate the public about flood risk, water quality and protection of the riparian environment in Ross Valley through an extensive public outreach effort. Interpretive signage will be included the proposed multi-use mitigation/detention basin school site to educate the public about flood risk.

No Detention Basin Alternative: There are opportunities to educate the public about flood risk, water quality and protection of the riparian environment in Ross Valley through an extensive public outreach effort.

2. Provide social recreation or access benefits?

Sleepy Hollow Creek Watershed Alternative: The sports field at Brookside School will be re-constructed below grade. The new facility will be upgraded and made more accessible to the public for use.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: A new natural park space will be created with walking paths and public access to the Fairfax Creek at the proposed detention basin site. A top-of-bank trails and public access will be improved in downtown San Anselmo.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: The sports field at White Hill School referred to as Lefty Gomez will be re-constructed below grade. The fields will be upgraded and made more accessible to the public for use.

No Detention Basin Alternative: There are no specific recreational benefits provided for this alternative. However, reducing flooding upstream of the Sir Francis Drake Boulevard Bridge would improve vehicle access during a large storm event.

3. Help, reduce or resolve various public water resources conflicts?

Sleepy Hollow Creek Watershed Alternative: The same potential as Memorial Park for capture of groundwater exists at Brookside School. However, the quantity of accessible groundwater and cost of storage have not been studied. There is also the potential to reduce water supply needs if an artificial turf or a drought tolerant field is installed.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: The former land use for the Sunnyside Nursery had a significant water demand. If the parcel is re-developed as residential units or other water intensive use, additional water supply will be needed. However, if the parcel is re-developed as an open space with native plantings and used as a mitigation site for future Program project impacts then the water supply requirements will be significantly reduced.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: The same potential as Memorial Park for capture of groundwater exists at Lefty Gomez Field. However, the quantity of accessible groundwater and cost of storage have not been studied. There is also the potential to reduce water supply needs if an artificial turf or a drought tolerant field was installed.

No Detention Basin Alternative: There are no opportunities to capture groundwater with this alternative. There are no changes to public water sources or supply with this alternative.

4. Promote social health and safety?

Sleepy Hollow Creek Watershed Alternative: This project is part of the Program to reduce the flood risk in San Anselmo and elsewhere in Ross Valley. However, this project may have some immediate benefits to properties located within the flood zone along Sleepy Hollow Creek. Future analysis will determine how many homes can be removed from the flood plain with this project.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: This project is part of an overall Program to reduce the flood risk in San Anselmo and elsewhere in Ross Valley. This project has the additional benefit of creating new park area adjacent to Fairfax Creek with walking paths or even dog parks that can be used by the surrounding community. This option also improves access and function of trails along the top-of-bank along San Anselmo Creek in the Town of San Anselmo.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: This project is part of an overall Program to reduce the flood risk in San Anselmo and elsewhere in Ross Valley.

No Detention Basin Alternative: This project is part of the overall Program to reduce flood risk in San Anselmo and elsewhere in Ross Valley.

5. Have other social benefits?

Sleepy Hollow Creek Watershed Alternative: There may be other social benefits that the community considers important, but they are likely unknown at this time.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: During construction there will be increased noise and truck traffic. However, when the new multi-purpose detention basin/open space is completed there will be fewer truck trips and traffic than if the parcel was redeveloped into a new business or new residential units.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: There may be other social benefits that the community considers important, but they are likely unknown at this time.

No Detention Basin Alternative: There may be other social benefits that the community considers important, but they are likely unknown at this time.

6. Benefit wildlife or habitat in ways that were not quantified in Attachment 7?

Sleepy Hollow Creek Watershed Alternative: This project has the potential to restore creek habitat within Sleepy Hollow Creek. Planting shade trees along the bank will result in better habitat and cooling temperatures in the water of the creek, which is more hospitable to aquatic habitat.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: This project includes removal or modification of Building Bridge 2 and modifications to Building Bridge #1 and creek improvements along San Anselmo Creek between the two bridges. Removal of concrete and hardscape within the creek provides opportunities to restore the creek, plant native vegetation and improve the habitat value along the creek.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: This project includes creek restoration improvements along Sleepy Hollow Creek. Removal of concrete and hardscape within the creek provides opportunities to restore the creek, plant native vegetation and improve the habitat value along the creek.

No Detention Basin Alternative: This project has the potential to restore creek habitat along Sleepy Hollow Creek. Planting shade trees along the bank will result in better habitat and cooling temperatures in the water of the creek, which is more hospitable to aquatic habitat.

7. Improve water quality in ways that were not quantified in Attachment 7?

Sleepy Hollow Creek Watershed Alternative: The detention basin will capture some of the sediment and debris that travels down the creek during a storm event. The project will include a maintenance and restoration plan to remove the sediment and debris from the basin after a major storm event so the sediment will not re-enter the creek. Water quality is measured by the amount of sediment in the water that can choke aquatic life so the project will improve water quality. Improving habitat along Sleepy Hollow Creek including planting trees and vegetation that can capture sediments and providing trees that provide canopy and shading over the creek will improve water quality.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: The detention basin will capture some of the sediment and debris that travels down the creek during a storm event. The project will include a maintenance and restoration plan to remove the sediment and debris from the park area after a major storm event so the sediment will not re-enter the creek. Water quality is measured by the amount of sediment in the water that can choke aquatic life so the project will improve water quality. Improving habitat along San Anselmo Creek including planting trees and vegetation that can capture sediments and providing trees that provide canopy and shading over the creek will improve water quality.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: The detention basin will capture some of the sediment and debris that travels down the creek during a storm event. The project will include a maintenance and restoration plan to remove the sediment and debris from the sports field after a major storm event so the sediment will not re-enter the creek. Water quality is measured by the amount of sediment in the water that can choke aquatic life so the project will improve water quality. Improving habitat along San Anselmo Creek including planting trees and vegetation that can capture sediments and providing trees that provide canopy and shading over the creek will improve water quality.

No Detention Basin Alternative: There is no detention basin provided for this alternative to capture sediment. However, improving habitat along San Anselmo Creek by planting trees that provide canopy and shading over the creek will improve water quality temperatures.

8. Reduce net emissions that were not quantified in Attachment 7?

Sleepy Hollow Creek Watershed Alternative: In the long term, increasing the amount of vegetation, trees and habitat on the project that take in carbon dioxide will improve the environment.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: In the long term, increasing the amount of vegetation, trees and habitat on the project that take in carbon dioxide will improve the environment. If a dog park is installed then local residents could use it instead of driving to the nearest dog park facility.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: In the long term, increasing the amount of vegetation, trees and habitat on the project that take in carbon dioxide will improve the environment.

No Detention Basin Alternative: In the long term, increasing the amount of vegetation, trees and habitat on the project that take in carbon dioxide will improve the environment.

9. Provide other environmental stewardship benefits?

Sleepy Hollow Creek Watershed Alternative: The County will work with the schools and educate the students about environmental stewardship during development of the project.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: The plan to achieve public stewardship is to place environmental interpretive signage in downtown San Anselmo and within the newly developed park area to inform the public about the restored creek ecosystem and foster stewardship for preserving and protecting the health of the creek.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: The plan to achieve public stewardship is to work with the school and educate the students about environmental stewardship during development of the project.

No Detention Basin Alternative: The County will work with the community to educate the residents and businesses about environmental stewardship during development of the project.

10. Improve the overall long-term management of California groundwater resources?

Sleepy Hollow Creek Watershed Alternative: Improvements to groundwater systems require percolation ponds and sufficient time to allow water to recharge the groundwater system. It is not the intent of this project to store surface water for long periods of time to allow recharge. Once the storm has passed the sport field needs to be restored to functioning condition as soon as possible.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site:

Improvements to groundwater systems require percolation ponds and sufficient time to allow water to recharge the groundwater system. It is not the intent of this project to store surface water for long periods of time to allow recharge. If there is a desire to create low depressions and ponds in the natural park to allow for groundwater recharge then some of the surface water may remain after the storm event. However, mosquito abatement and debris removal may still be required for standing water. The geology of the proposed detention basin site would have to be studied further to determine if this area would be an effective recharge site.

Fairfax Creek Watershed Alternative 2 – Lefty Gomez Field School Site: Improvements to groundwater systems require percolation ponds and sufficient time to allow water to recharge the groundwater system. It is not the intent of this project to store surface water for long periods of time to allow recharge. Once the storm has passed the sport field needs to be restored to functioning condition as soon as possible.

No Detention Basin Alternative: There is no detention basins proposed for this alternative so there are no opportunities to recharge ground water except in areas of the creek that are restored by removal of concrete channel bottoms.

11. Reduce demand for net diversions for the regions from the Delta?

Sleepy Hollow Creek Watershed Alternative: To our knowledge there are no known water diversions from the Delta to Ross Valley.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: To our knowledge there are no known water diversions from the Delta to Ross Valley.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: To our knowledge there are no known water diversions from the Delta to Ross Valley.

No Detention Basin Alternative: To our knowledge there are no known water diversions from the Delta to Ross Valley.

12. Provide a long-term solution in place of a short-term one?

Sleepy Hollow Creek Watershed Alternative: Currently, property owners and businesses must place temporary measures such as sandbags and flood gates in front of their properties to protect them from flood damage. Once the full program is implemented, the need for temporary measures to protect from flooding will no longer exist. The long term plan is to reduce flooding risk by implementing all of the program elements including construction of detention basins and channel improvements that will increase the creek capacity and contain the 100-year storm

event within the creek boundaries. This project is important for meeting the long term Program goals.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: Currently, property owners and businesses must place temporary measures such as sandbags and flood gates in front of their properties to protect them from flood damage. Once the full program is implemented, the need for temporary measures to protect from flooding will no longer exist. The long term plan is to reduce flooding risk by implementing all of the program elements including construction of detention basins and channel improvements that will increase the creek capacity and contain the 100-year storm event within the creek boundaries. This project is important for meeting the long term Program goals.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: Currently, property owners and businesses must place temporary measures such as sandbags and flood gates in front of their properties to protect them from flood damage. Once the full program is implemented, the need for temporary measures to protect from flooding will no longer exist. The long term plan is to reduce flooding risk by implementing all of the program elements including construction of detention basins and channel improvements that will increase the creek capacity and contain the 100-year storm event within the creek boundaries. This project is important for meeting the long term Program goals.

No Detention Basin Alternative: Currently, property owners and businesses must place temporary measures such as sandbags and flood gates in front of their properties to protect them from flood damage. Once the full program is implemented, the need for temporary measures to protect from flooding will no longer exist. The long term plan is to reduce flooding risk by implementing all of the program elements including construction of detention basins and channel improvements that will increase the creek capacity and contain the 100-year storm event within the creek boundaries. This project is important for meeting the long term Program goals.

13. Reduce water consumption on a permanent basis?

Sleepy Hollow Creek Watershed Alternative: If artificial turf or drought tolerant turf replaces the existing grass fields then water consumption for irrigation purposes will be somewhat reduced.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: The proposed multi-use detention basin/open space will be a change in land use that will reduce water consumption needs. If this parcel is re-developed into residential units or another business it is likely the water consumption will be greater than if the parcel is developed into a natural park.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: If artificial turf or drought tolerant turf replaces the existing grass field then water consumption for irrigation purposes will be somewhat reduced.

No Detention Basin Alternative: This project is unlikely to change the water consumption on a permanent basis.

14. Promote energy savings or replace fossil fuel based energy resources with renewable energy resources?

Sleepy Hollow Creek Watershed Alternative: Temporarily, additional energy will be required to complete construction activities. There will be no change from fossil-based fuel sources to

renewable sources. Additional energy sources will be required for pumping and operation of flood risk reduction systems during a major storm event.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: Temporarily, additional energy will be required to complete construction activities. There will be no change from fossil-based fuel sources to renewable sources. Additional energy sources will be required for pumping and operation of flood risk reduction systems during a major storm event. However, if the site is redeveloped into a park instead of a commercial enterprise, the overall energy usage at the site may be reduced.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: Temporarily, additional energy will be required to complete construction activities. There will be no change from fossil-based fuel sources to renewable sources. Additional energy sources will be required for pumping and operation of flood risk reduction systems during a major storm event.

No Detention Basin Alternative: Temporarily, additional energy will be required to complete construction activities. There will be no change from fossil-based fuel sources to renewable sources for this alternative.

15. Improve water supply reliability in ways not quantified in Attachment 7?

Sleepy Hollow Creek Watershed Alternative: This project does not provide water supply reliability to Ross Valley.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: This project does not provide water supply reliability to Ross Valley.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: This project does not provide water supply reliability to Ross Valley.

No Detention Basin Alternative: This project does not provide water supply reliability to Ross Valley.

16. Other (if the above listed categories do not apply, provide non-monetized benefit description)?

Sleepy Hollow Creek Watershed Alternative: This option is part of a larger flood risk reduction project that will not only reduce costs from flood damage, but the project will also improve economic activity for businesses in San Anselmo during and after a large storm event. Economic losses and collection of tax revenue is reduced when businesses are impacted by flooding.

This project includes many new improvements to the function and aesthetics of a sports field at Brookside Schools. The project includes many upgrades to the sport facility. Upgrade of this facility would provide more usage of the fields, improved property values and increase property tax revenues.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: This option is part of a larger flood risk reduction project that will not only reduce costs from flood damage, but the project will also improve economic activity for businesses in San Anselmo during and after a large storm event. Economic losses and collection of tax revenue is reduced when businesses are impacted by flooding.

This project includes development of a natural park that can be used as a mitigation site to mitigate for other environmental impacts of the Program. This off stream site will reduce the mitigation costs of the overall program.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: This option is part of a larger flood risk reduction project that will not only reduce costs from flood damage, but the project will also improve economic activity for businesses in San Anselmo during and after a large storm event. Economic losses and collection of tax revenue is reduced when businesses are impacted by flooding.

This project includes many new improvements to the function and aesthetics of a sports field at White Hill Middle School. The project includes many upgrades to the sport facility. Upgrade of this facility would provide more usage of the field, improved property values and increase property tax revenues.

No Detention Basin Alternative: This option is part of a larger flood risk reduction project that will not only reduce costs from flood damage, but the project will also improve economic activity for businesses in San Anselmo during and after a large storm event. Economic losses and collection of tax revenue is reduced when businesses are impacted by flooding.

17. How many acres of habitat can be created or reconstructed?

Sleepy Hollow Creek Watershed Alternative: Portions of Sleepy Hollow Creek can be restored and new native plantings installed in Sleepy Hollow Creek between the confluence with San Anselmo Creek and the upstream end of the improvements identified in the CIP. The total length of creek restoration activities along Sleepy Hollow Creek is approximately 450 feet.

Fairfax Creek Watershed Alternative 1 – Including Former Sunnyside Nursery Site: Portions of San Anselmo Creek can be restored and new native plantings installed in downtown San Anselmo between Building Bridge #1 and Building Bridge 2 removal.

The proposed multi-use detention basin/natural park is a large area (over 2 acres) that can be revegetated with native plants so new habitat can be created.

Fairfax Creek Watershed Alternative 2 – Including Lefty Gomez Field School Site: Portions of San Sleepy Hollow Creek can be restored and new native plantings installed in the area immediately adjacent to Morningside Bridge removal. Unfortunately due to proximity to the bridge these creek restoration efforts may be disturbed at the time the Morningside Avenue Bridge is removed in the future.

No Detention Basin Alternative: Portions of San Anselmo Creek can be restored and new native plantings installed in downtown San Anselmo between Sir Francis Drake Boulevard Bridge (downstream) and the proposed improvements upstream of Sir Francis Drake Boulevard Bridge (upstream). The total length of creek restoration activities along San Anselmo Creek is approximately 390 feet.