

City of St. Helena Flood Project

Office of Director of Public Works
January 26, 2012





Presented to



Watershed Information Center & Conservancy
of Napa County

Project Location and Setting

- ❖ The St. Helena **Comprehensive Flood Protection Project** is located in the city of St. Helena, in Napa County, adjacent to the Napa River and Sulphur Creek.
- ❖ Elevations range from 208 to 215 feet mean sea level (msl).
- ❖ The project site spans a reach of the Napa River from the confluence with Sulphur Creek to approximately 2,000 feet upstream.
- ❖ The project also spans a portion of Sulphur Creek from the confluence with the Napa River. The project involves improved conveyance facilities along the Napa River (terraces parallel to the Napa River) and a floodwall/levee adjacent to both Sulphur Creek and the Napa River.





Photo Showing Project Location

Sulphur Creek is a tributary to the much larger Napa River

Flooding on the Napa River



- ❖ Four major floods have occurred along the Napa River and St. Helena



- ❖ Combined property damage cost the community

\$95.6 Million

Measure A – Voter Approved March 1998

Measure A established a ½ cent sales tax to fund the local share of projects in Napa County.

Allowed for creation of:

- ❖ Napa Flood Protection and Watershed Improvement Expenditure Plan
- ❖ Financial Oversight Committee
- ❖ Technical Advisory Panel

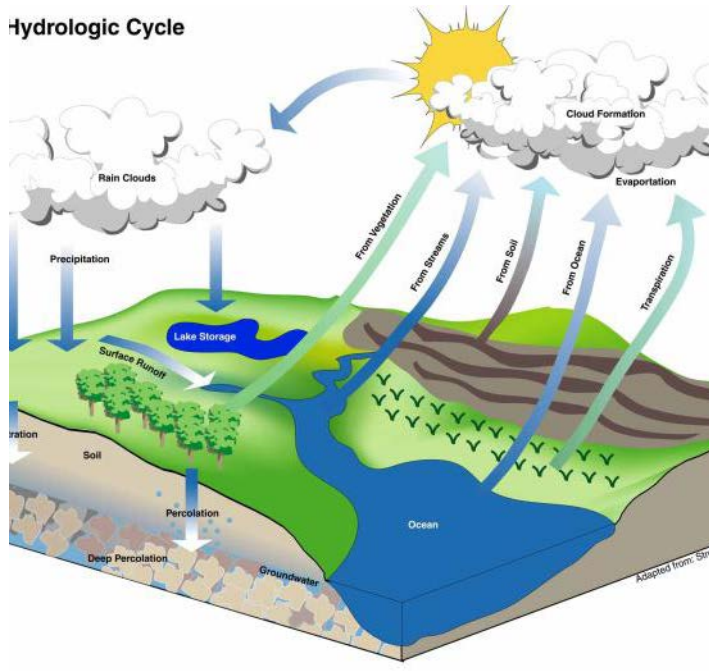
St. Helena Approved Projects:

- ❖ Flood Management Measures
 - Napa River, Sulphur Creek, York Creek, and other tributaries
- ❖ Construct Urban stormwater run-off facilities
 - Fulton lane, McCorrile, Mills Lane, and other areas
- ❖ Stabilization and Enhancements
 - Bell Canyon Reservoir or other existing reservoir



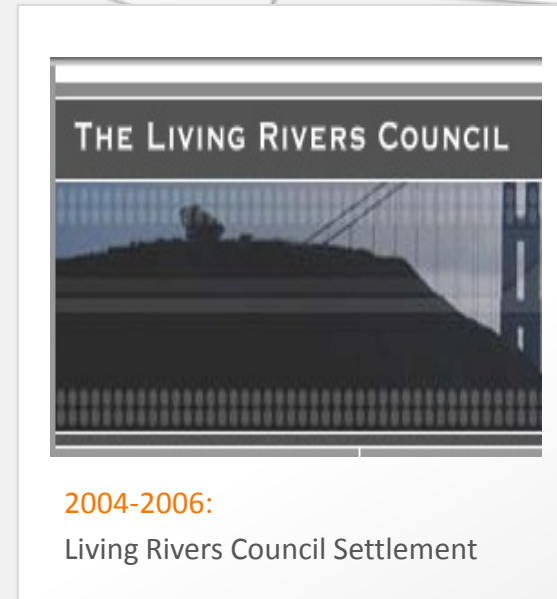
After **Measure A** Passage

Hydrologic Cycle



2000-2002:

Hydrology and Concept Feasibility



St. Helena Flood Protection

Historical Alternatives Considered

2000-2002: Hydrology and Concept Feasibility Phase



- ❖ St Helena's **Initial Review** flood protection involved a Napa River Flood Model Study from Zinfandel Lane to Lodi Lane
- ❖ Joint Study of the City of St. Helena and the Napa Country Flood Control and Water Conservation District
- ❖ Purpose was to study hydrology (**rainfall**) and hydraulics (**flow**) through this reach of Napa River

First Step in determining best use of Measure A Funds investigated flood protection scenarios for six locations:



- Vineyard Valley Mobile Home
- Silverado trail/Pope Street area home
- Hunts Grove Apartments
- City Lands/College & Stonebridge Apartments
- Fulton Land residential neighborhood
- Deer Park Road across Valley floor



Study by Hydmet, Inc. Steering Committee

Hydrology Model

- Current FEMA Maps did not reflect High enough flood flows for 100 year Flood event
 - 1995 Flood was largest flood
 - 1986 Flood second largest

Peak Flows for Historic & 100 Year Flood

- February 17, 1986 20,000 cfs
- March 9, 1995 21,000
- January 1, 1997 16,000
- December 31, 2005 18,000

14 Flood Protection Scenarios were investigated and only three were carried over for Phase II Analysis:

Scenario 1 Narrow Terrace Bypass Channel

- 75' wide narrow terrace bypass on west side of Napa River adjacent to Vineyard Valley at the "point"
- Removal of 17 homes within the Vineyard Valley Mobile Home Park (VVMHP)
- Over 800' of Napa River Shoreline restoration
- ***Determined to have potential for floodplain restoration and Water Surface Elevations (WSE) reduction benefits***

Scenario 2 Wide Terrace Bypass Channel

- 150' wide terrace on west and 100' wide on east side of Napa River adjacent to VVMHP
- Removal of 26-40 homes within the park
- ***Determined to have potential for floodplain restoration and WSE reduction benefits***

Scenario 10 Partial Re-location Plan

- Relocating between 62-139 homes to a Park expansion area on vacant lands north of current Park location
- ***Full location was eliminated from consideration, no adequate site to accommodate relocated homes, the alternative was cost prohibitive, and politically and socially impractical so a partial relocation was carried over to Phase II***

2002-2004: Alternatives Refinement, EIR of Preferred Alternative

- ❖ Phase II - Refinement of project elements
 - Staff, Measure A Steering Committee, & community begin to formulate final Project Alternatives
 - Based on Scenarios not ruled out in Phase I
 - Formulate both structural and non-structural elements into Draft EIR for community consideration
- ❖ Project Alternatives Based on City Council guidance
 - Analyze the 100-year flood hydraulics of the Napa River corridor from Deer Park Road to Zinfandel Lane
 - Look at the Napa River corridor and Sulphur Creek as a system
 - Provide 100-year flood protection to VVMHP, Hunts Grove Apartments and the Wastewater Treatment Plant, and remove them from the FEMA 100-year floodplain
 - Do not raise existing cement wall along the northwest border of VVMHP
 - Do not increase upstream or downstream flooding
 - Use “living river” protection
 - Evaluate alternatives for an all weather access crossing to the St. Helena Hospital
 - Make the project financially and politically feasible

Final Project Alternatives

Minimum Plan	<ul style="list-style-type: none"> • Construct cement wall or levee at location • Excavate narrow flood terrace at Vineyard Valley “point” • Relocate 17 mobile homes • Construct Terrace A • Floodwall varies from 2’ high at Sulphur Creek to 6’ high at Redondo Ct
Maximum Plan	<ul style="list-style-type: none"> • Relocate 62-139 homes • No new floodwalls or levees needed
Enhanced Minimum Plan-A	<ul style="list-style-type: none"> • Relocate 27 homes to north of VVMHP • Construct wide Terrace A and Terrace B • Extend levee and causeway along Adams alignment to connect to Silverado Trail • Floodwall varies from 2’ high at Sulphur Creek to 6’ high at Redondo Ct • Include Water Quality enhancements elements
Enhanced Minimum Plan-B	<ul style="list-style-type: none"> • Relocate 27 homes to north of VVMHP • Construct wide Terrace A and Terrace B • Extend levee and causeway along Adams alignment to connect to Silverado Trail • Same as EMP-A but removal of an eight acre developable remnant
No Project Alternative	<ul style="list-style-type: none"> • Do nothing

2002-2004: Alternatives Refinement, EIR of Preferred Alternative



January
2004

**STAMP OF
APPROVAL**

City Council
Certification

- Final Project Alternatives developed and fully analyzed in Final Environmental Report
 - Minimum Plan
 - Maximum Plan
 - Enhanced Minimum Plan-A
 - Enhanced Minimum Plan-B
 - No Project Alternative

- Enhanced Minimum Plan-A
 - Full EIR was the basis for selection
 - Most environmentally sensitive plan

Minimum Plan

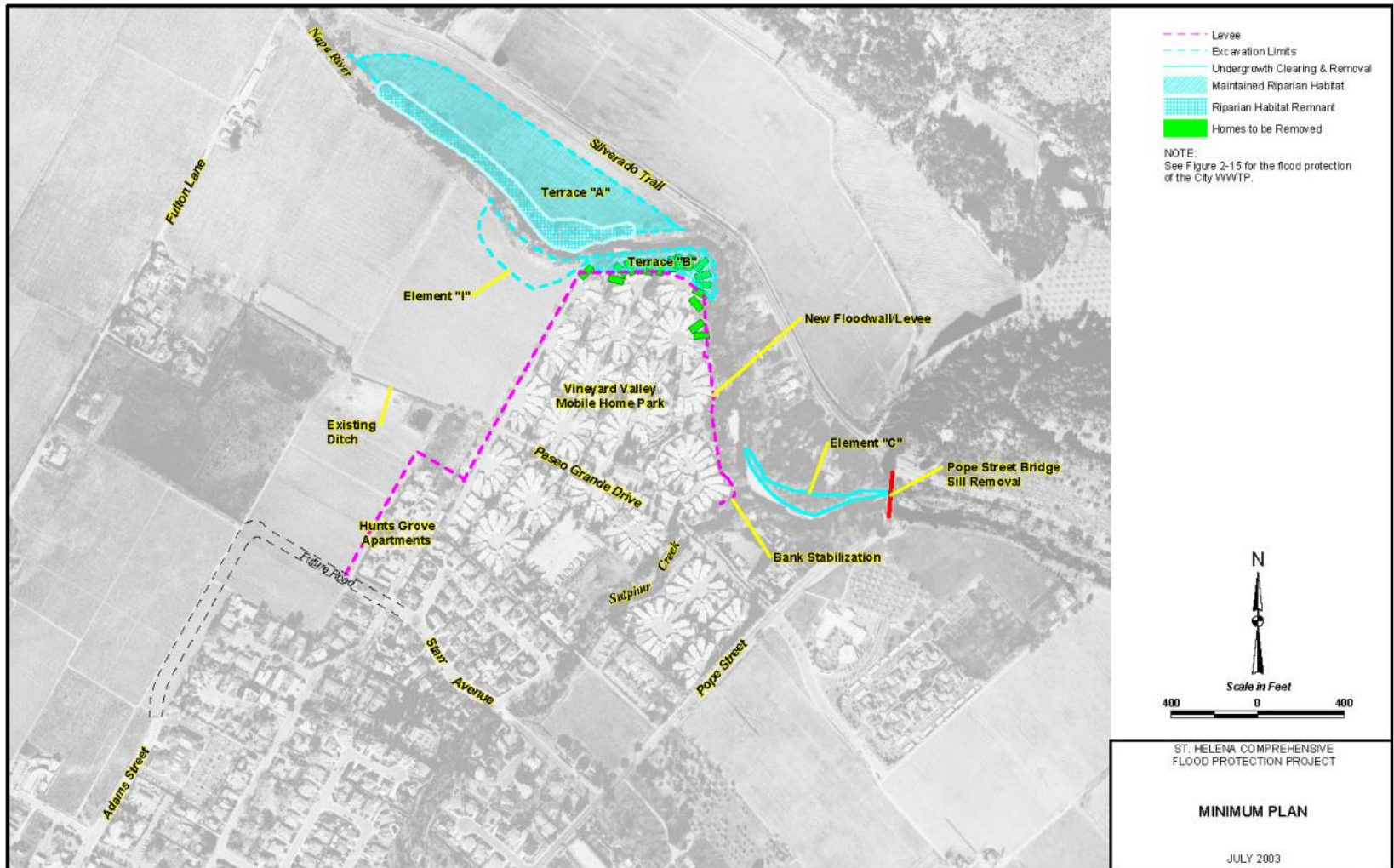


Figure 5-1

Enhanced Minimum Plan-A

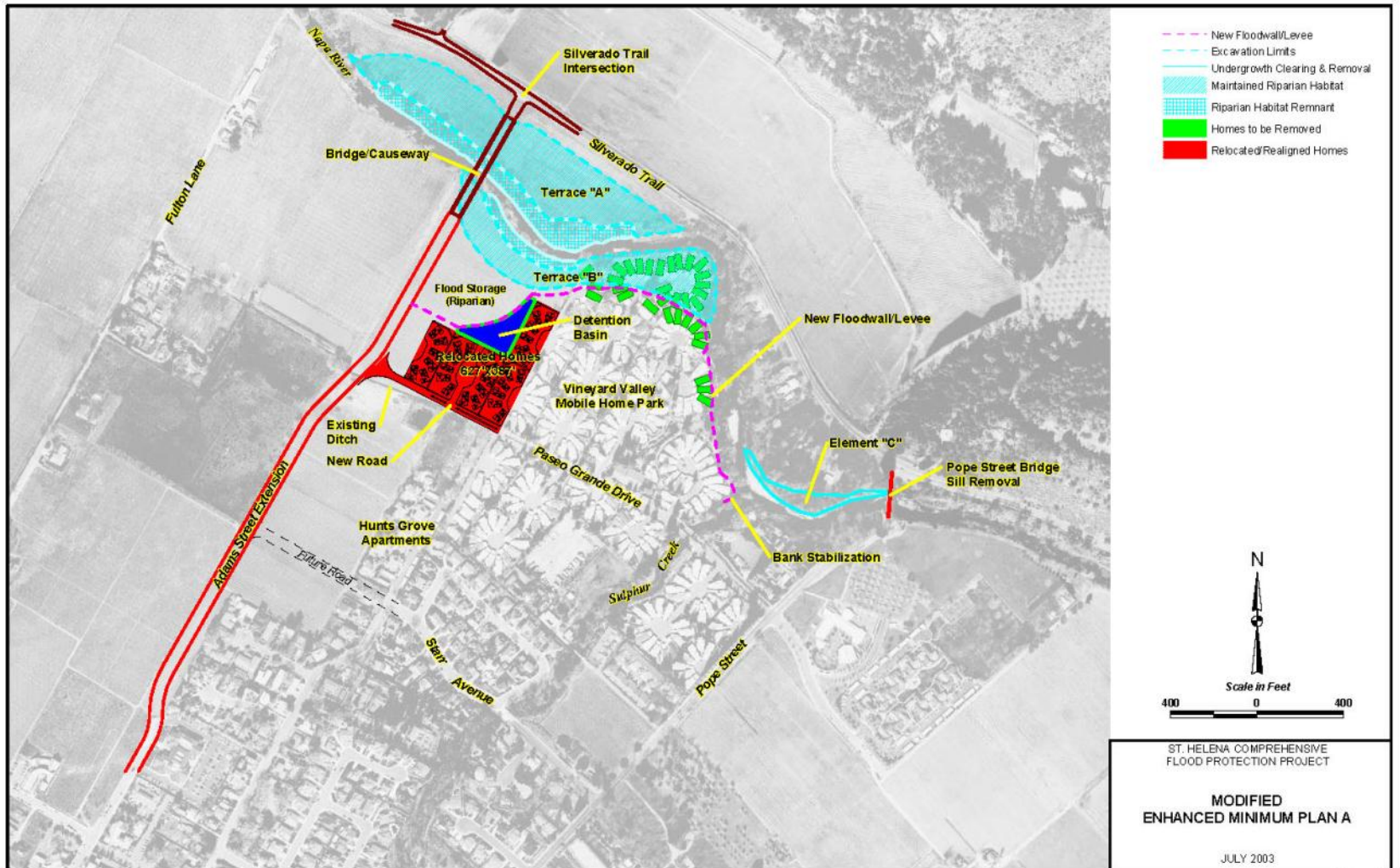


Figure 5-3

Enhanced Minimum Plan B

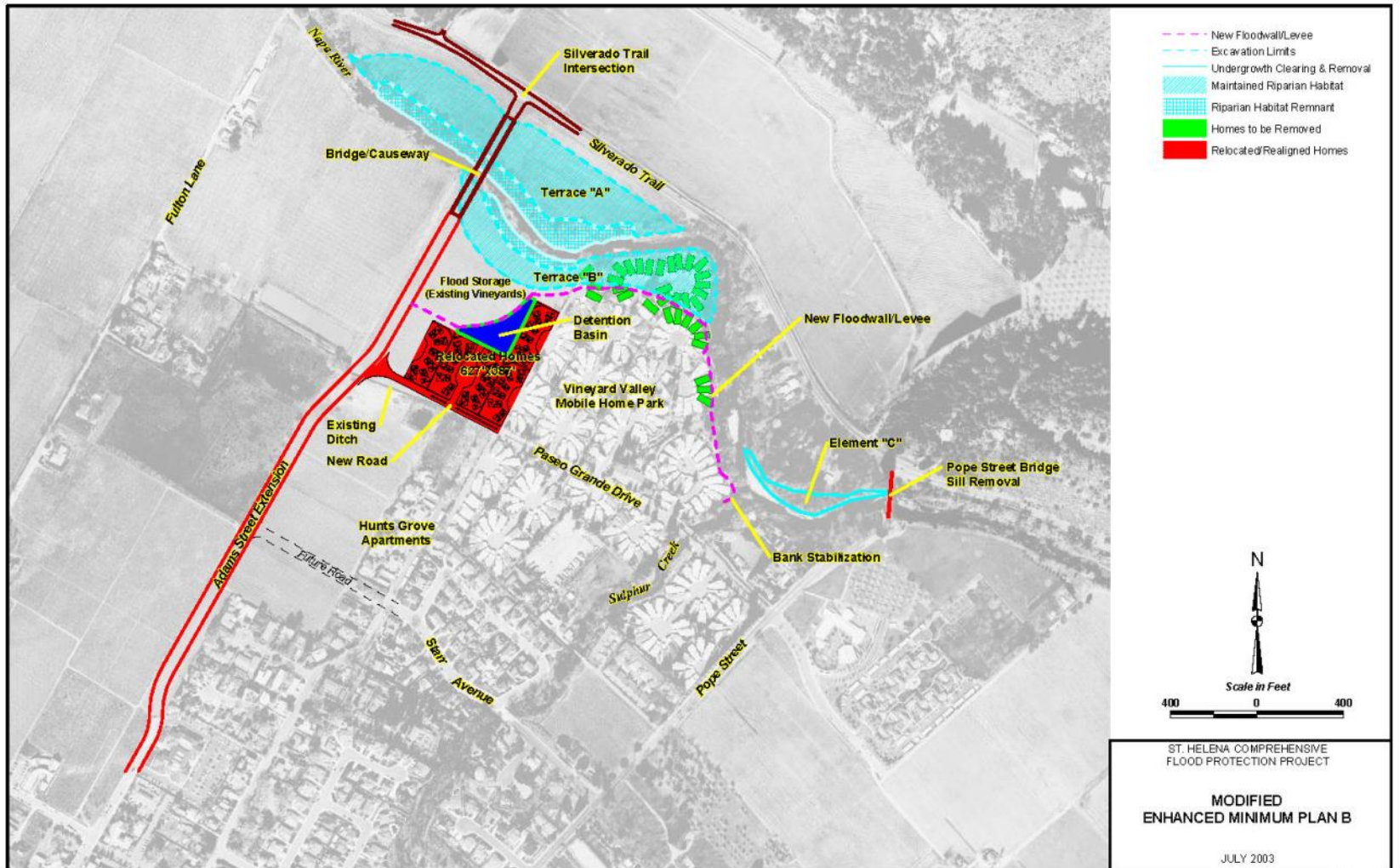


Figure 5-4

Proposed Plan (Enhanced Minimum)

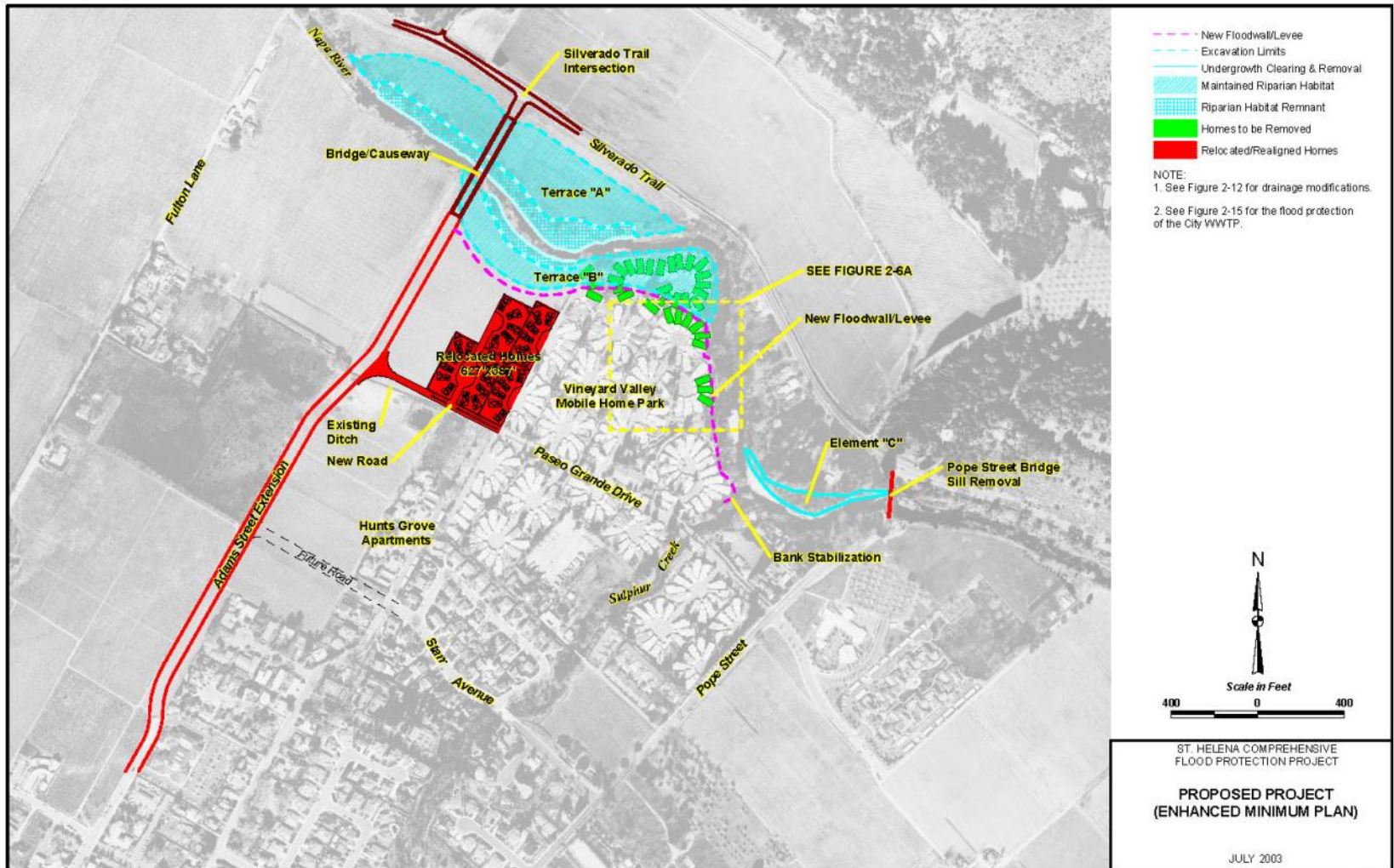


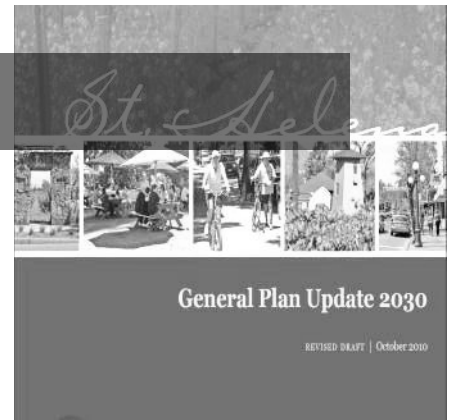
Figure ES-1

City Council Criteria for Determining “Practical”

Total project cost not to exceed approximately \$30 Million



Project to be consistent with the City’s General Plan



Remove no more than 30-35 homes to keep VVMHP as a viable economic and social entity



Relocation/removal of homes to be supported by the ownership and preponderance of the population of VVMHP

No large scale use of condemnation powers is acceptable from a public policy standpoint



Maintain benefit-to-cost ratio in order to obtain grants that supplement City’s Measure A Funds



Living Rivers Council Principles

Critical Guiding Force in Selection of Final Alternatives



Four Overall Goals



Project should preserve or enhance the habitats, water quality and natural geomorphic characteristics of Napa River system



Should provide enhancement of the River system, and not preclude or eliminate future restoration opportunities

Should maintain or improve the geomorphic, water quality and habitat objectives to the fullest extent possible



Project should incorporate the geomorphic, water quality, and habitat objectives so that the intended functions are self-sustaining



Modified Enhanced Minimum Plan A

- ❖ Incorporates large parcels for terracing
 - Better reconnection of the Napa River to the floodplain
- ❖ Restoration of 26 acres of habitat
- ❖ Incorporate eight acres of open space near Terrace B
 - Provide additional riparian habitat and floodplain storage
- ❖ Minimizing loss of the floodplain and associated hydrologic and ecological processes, which is vital to health of Napa River Region
- ❖ Most environmentally superior alternative while still meeting the project objectives of providing flood protection

Living Rivers Council Settlement

- ❖ March 2004, Living Rivers Council filed lawsuit against the City's EIR
- ❖ December 2004 Napa County Superior Court ruled in favor of Living Rivers which the City appealed
- ❖ November 2005 settlement negotiations ended and CEQA addendum was circulated:
 - ❖ Realignment of flood levee east of the Pasco Grande extension
 - Eliminating the connection to Silverado Trail
 - ❖ Terrace B will be wider, eliminating the need for an inlet from the river channel and minimizing the removal of trees in the riparian remnant
 - ❖ Floodwall at the confluence of Sulphur Creek and Napa River, and continuing west approximately 150 feet on Sulphur Creek, will be designed to maintain the banks in their natural condition
 - Floodwall designed to gain FEMA certification for protection in a 100 – year flood event to the greatest degree feasible
 - ❖ Element C vegetation removal will be geared towards protecting critical environmental habitat while enhancing floodwater transport

Financial Realities

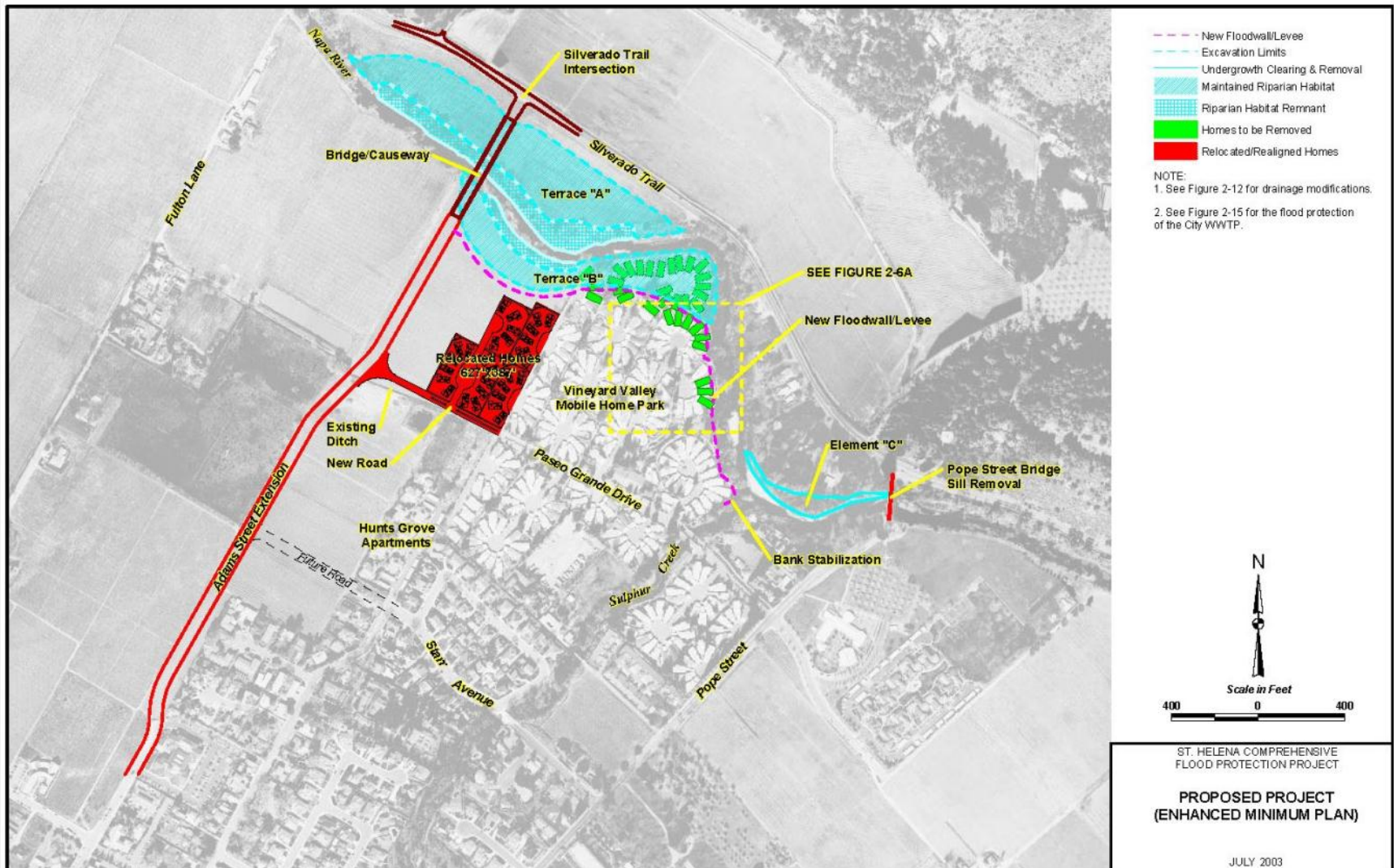
- ❖ 2006, City identified funding shortfall to make full implementation of the Living River's Council lawsuit impossible to implement
- ❖ Loss of \$6 Million in FEMA grants delayed processing of City's request for a State Revolving Loan until 2007
- ❖ Living River's CEQA addendum increased cost estimate exceeding \$36 Million from previous estimate of \$31 Million could not move the project forward with the 2005 design



Project Downsized

- ❖ June 2006 CEQA Addendum adopted with revisions
 - ❖ Terrace A was eliminated
 - ❖ Terrace B became narrower within VVMHP, and wider and higher in the adjacent vineyard eliminating inlet from river channel
 - ❖ Floodwall relocated 115' closer to the Napa River
 - ❖ Removal of homes reduced from 33 to 17 eliminating need for relocation area
 - ❖ Drainage was rerouted from existing storm drain on Starr Ave to a new storm drain routed outside the new levee
 - ❖ Soil disposal on Miller and Hunter parcels to minimize haul of excess
 - ❖ Element C Vegetation removal geared toward protecting critical environment habitat while enhancing floodwater transport
 - ❖ Realignment of levee east of Paseo Grande Drive
 - ❖ Adaptive Management Plan includes language allowing for woody debris to be left in Napa River where feasible
 - ❖ Flood profile changed from 100-year to a 200-year water surface profile which required a ½' increase of levee and floodwall height

Proposed Plan (Enhanced Minimum)



2006 Plan Option 1



LEGEND

- PARCEL LINE
- HOME TO BE RELOCATED WITHIN EXISTING VINEYARD VALLEY MOBILE HOME PARK (17 HOMES)

NOTES:

A. SOIL EXCAVATED FROM TERRACE B TO BE USED FOR LEVEE CONSTRUCTION AND FILL ON MILLER, HUNTER, AND VICINITY.

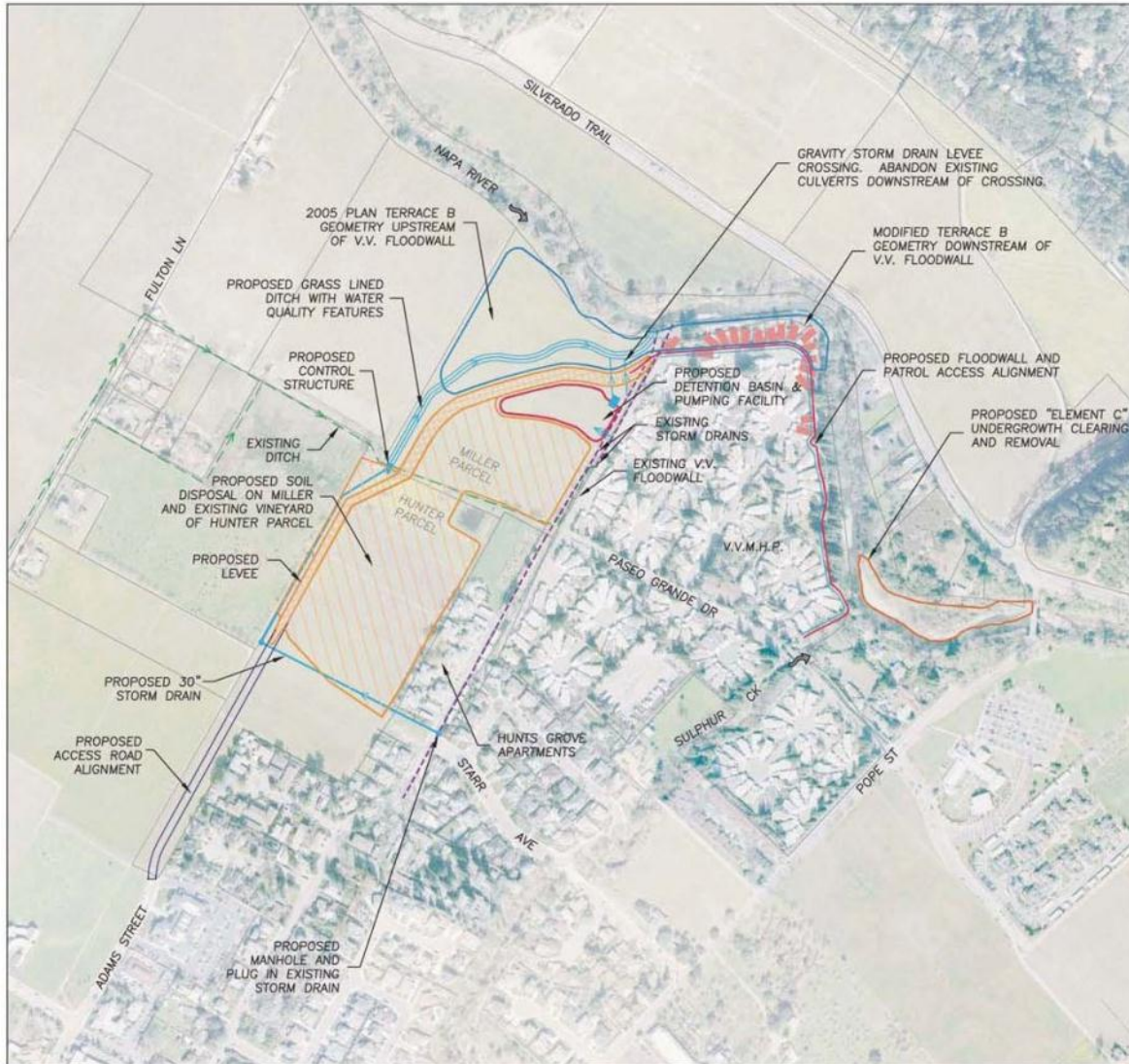


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**Fig 2-2a
2006 Plan Option 1**

PREPARED FOR THE CITY OF ST. HELENA
2006 PROJECT CONCEPTUAL ALTERNATIVE
ST. HELENA COMPREHENSIVE FLOOD PROTECTION PROJECT
DESIGNED BY: C.M.H. DRAWN BY: M.W.F. CHECKED BY: M.W.F. DATE: 03/26/08 JOB NO.: 03-383

2006 Plan Option 2

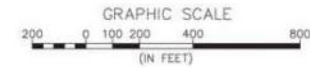


LEGEND

- PARCEL LINE
- HOME TO BE RELOCATED WITHIN EXISTING VINEYARD VALLEY MOBILE HOME PARK (17 HOMES)

NOTES:

A. SOIL EXCAVATED FROM TERRACE B TO BE USED FOR LEVEE CONSTRUCTION AND FILL ON MILLER, HUNTER, AND VICINITY.



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Fig 2-2b
2006 Plan Option 2

SH+G
ENGINEERING
500 SAKAROVIC AVE., SUITE 202
SAN RAFAEL, CA 94903
(415) 477-4288
A Division of Parsons Brinckerhoff + Comer

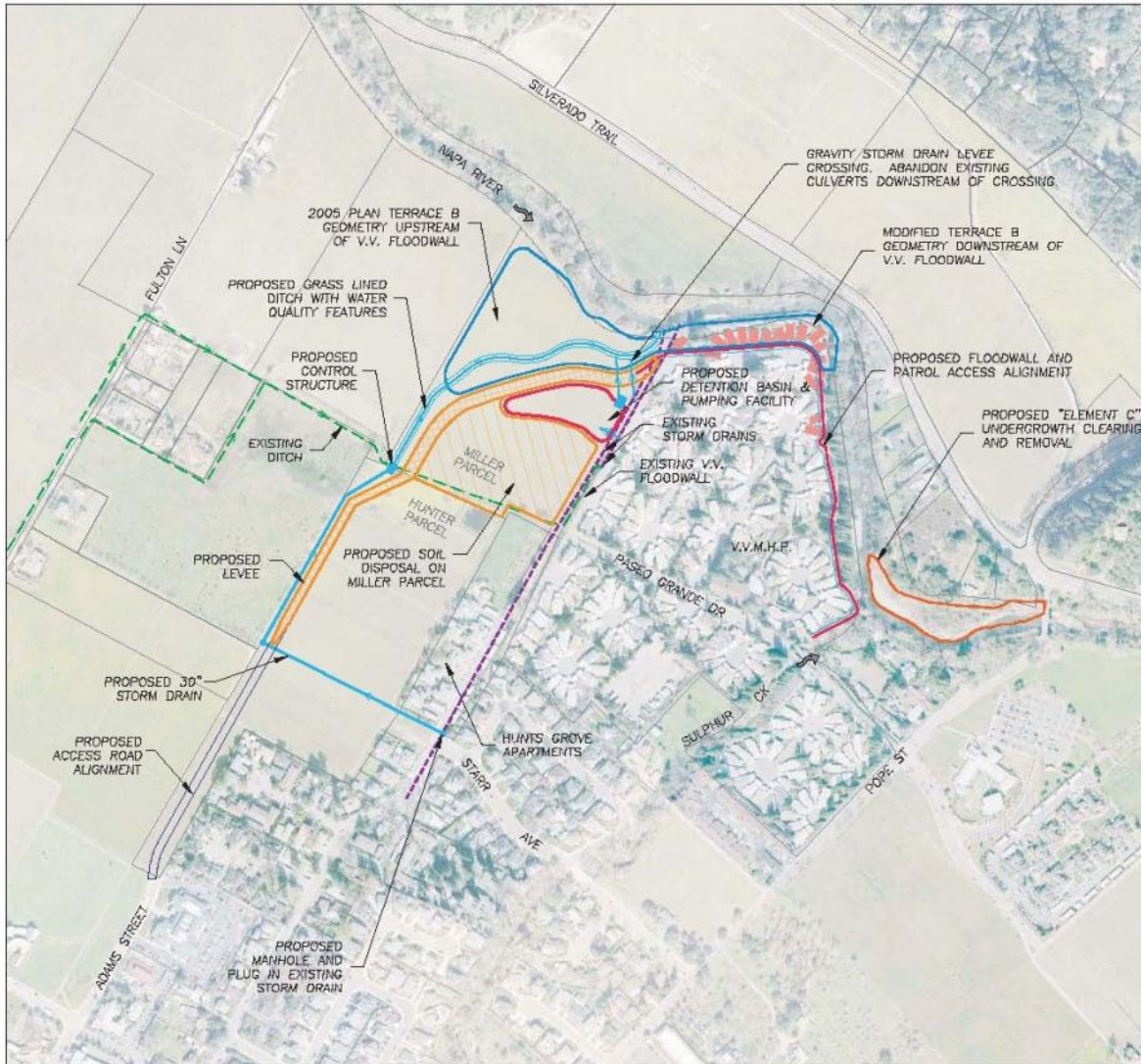
PREPARED FOR
THE CITY OF ST. HELENA

2006 PROJECT
CONCEPTUAL
ALTERNATIVE

ST. HELENA
COMPREHENSIVE FLOOD
PROTECTION PROJECT

DESIGNED BY: C.M.H.
DRAWN BY: M.W.K.
CHECKED BY: M.W.K.
DATE: 05/24/06
JOB NO.: 03-385

2006 Plan Option 3

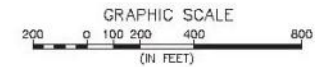


LEGEND

- PARCEL LINE
- HOME TO BE RELOCATED WITHIN EXISTING VINEYARD VALLEY MOBILE HOME PARK (17 HOMES)

NOTES:

A. SOIL EXCAVATED FROM TERRACE B TO BE USED FOR LEVEE CONSTRUCTION AND FILL ON MILLER, HUNTER, AND VICINITY.



DRAFT

Figure 2-2c
2006 Plan Option 3

 SH+G ENGINEERING 2005 SERRANO AVE. SUITE 200 SAN FRANCISCO, CA 94132 (415) 774-0200 A Division of Parsons Brinckerhoff
PREPARED FOR THE CITY OF ST. HELENA
2006 PROJECT CONCEPTUAL ALTERNATIVE
ST. HELENA COMPREHENSIVE FLOOD PROTECTION PROJECT
DESIGNED BY: C.M.F.L. DRAWN BY: H.S.P.L. CHECKED BY: H.S.P.L. DATE: 08/29/08 JOB NO.: 03-045

California State Court of Appeals Ruling

- ❖ The City stated in the 2006 addendum that the 2006 plan would not result in no new significant impact on the environment beyond those already identified in the 2004 plan
- ❖ August 2006 Living Rivers filed motion to enforce LRC settlement agreement onto the City
- ❖ January 2008 California State Court of Appeal ruled in favor of the City and upheld the ruling by Napa Superior Court that the City did not violate the LRC settlement agreement when it scaled back the flood project in response to the funding shortage



Comprehensive Flood Control and Environmental Restoration Project

- ❖ Comprehensive Flood Control And Environmental Restoration Project aka **Flood Project** was authorized in WRDA 2007 for construction and reimbursement of the federal share at a cost of \$30,000,000 (\$19,500,000 federal and \$10,500,000 non-federal).

- ❖ **H. R. 1495—173 SEC. 5054. ST. HELENA, CALIFORNIA**

Addendum dated June 27, 2006, to the report prepared by the city of St. Helena entitled “City of St. Helena Comprehensive Flood Protection Project, Final Environmental Impact Report”, and dated January 2004, if the Secretary determines that the plans and designs for the project are feasible.

(b) COST.—The total cost of the project to be constructed pursuant to subsection (a) shall be \$30,000,000, with an estimated Federal cost of \$19,500,000 and an estimated non-Federal cost of \$10,500,000.

H. R. 1495

One Hundred Tenth Congress
of the
United States of America
AT THE FIRST SESSION

Began and held at the City of Washington on Thursday,
the fourth day of January, two thousand and seven.

An Act

To provide for the conservation and development of water and related resources,
to authorize the Secretary of the Army to construct various projects for improve-
ments to rivers and harbors of the United States, and for other purposes.

Be it enacted by the Senate and House of Representatives of
the United States of America in Congress assembled,

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the “Water
Resources Development Act of 2007”.

(b) TABLE OF CONTENTS.—The table of contents for this Act
is as follows:

Sec. 1. Short title; table of contents.

Sec. 2. Definition of Secretary.

TITLE I.—WATER RESOURCES PROJECTS

Sec. 1001. Project authorizations.
Sec. 1002. Small projects for flood damage reduction.
Sec. 1003. Small projects for emergency streambank protection.
Sec. 1004. Small projects for navigation.
Sec. 1005. Small projects for improvement of the quality of the environment.
Sec. 1006. Small projects for aquatic ecosystem restoration.
Sec. 1007. Small projects for shoreline protection.
Sec. 1008. Small projects for snagging and sediment removal.
Sec. 1009. Small projects to prevent or mitigate damage caused by navigation
projects.
Sec. 1010. Small projects for aquatic plant control.

TITLE II.—GENERAL PROVISIONS

Sec. 2001. Non-Federal contributions.
Sec. 2002. Funding to process permits.
Sec. 2003. Inter-agency agreement for water resources projects.
Sec. 2004. Compliance of laws.
Sec. 2005. Deeded material disposal.
Sec. 2006. Benefits and maintenance burdens.
Sec. 2007. Use of other Federal funds.
Sec. 2008. Revision of project partnership agreement; cost sharing.
Sec. 2009. Expedited review for emergency flood damage reduction.
Sec. 2010. Watershed and river basin assessments.
Sec. 2011. Tribal partnership program.
Sec. 2012. Watershed program.
Sec. 2013. Technical assistance.
Sec. 2014. Loans program.
Sec. 2015. Cooperative agreements.
Sec. 2016. Training funds.
Sec. 2017. Access to water resource data.
Sec. 2018. Share protection projects.
Sec. 2019. Ability to pay.
Sec. 2020. Aquatic ecosystem and estuary restoration.
Sec. 2021. Small flood damage reduction projects.
Sec. 2022. Small river and harbor improvement projects.
Sec. 2023. Protection of highways, bridge approaches, public works, and nonprofit
public services.

Comprehensive Flood Control and Environmental Restoration Project

- ❖ The individual elements of the project include floodplain terracing, shoreline restoration, a new levee, floodwall and bank stabilization, and stormwater management features including a detention basin and pumping



Flood Project Site Plan



Construction Phase

Comprehensive Flood Control and Environmental Restoration Project



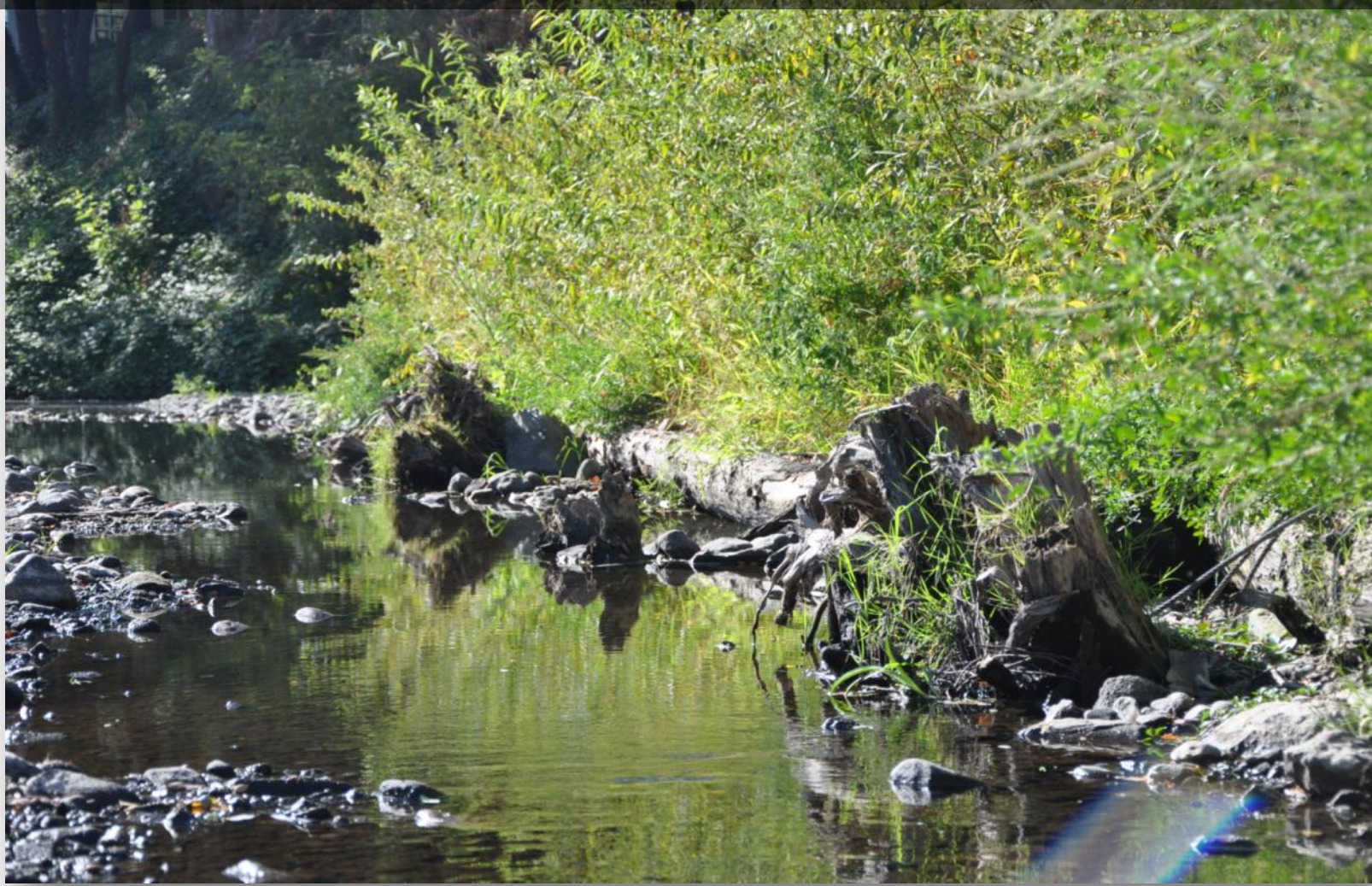
- ❖ The Project was completed in June of 2011
- ❖ Provides 200-year flood protection along with important environmental restoration by restoring the natural floodplain terraces, including riparian and aquatic habitat, and restoring native plant and tree communities through re-vegetation efforts.

Comprehensive Flood Control and Environmental Restoration Project

- ❖ Protects hundreds of homes and projected to save millions of dollars in flood insurance claims.
- ❖ Environmental Component
 - ❖ 700 trees
 - ❖ 44,00 plants



Comprehensive Flood Control and Environmental Restoration Project



Construction Phase

Shrimp habitat: over growth provides shady spots for fish and other species, logs create scouring holes when water is high and running strongly. Root balls attached to trees provide shelter for wildlife.

Comprehensive Flood Control and Environmental Restoration Project



Coir pillows installed at river's edge, provide shelter for native plants including willow fascine.

Comprehensive Flood Control and Environmental Restoration Project



New floodwall during construction

Construction Phase

Comprehensive Flood Control and Environmental Restoration Project



Work during completion of new levee.

- ✓ **Bi-annual (Spring & Fall) levee side mowing**
- ✓ **Levee embankment inspection – pre-flood season, immediately following high water event, and intervals not exceeding three months**
 - no unusual settlement or loss of material is occurring
 - there are no areas of seepage or boils
 - no animal burrows are encroaching upon the levee section
 - toe drainage ditches are flowing properly
 - access roads are properly maintained and are graded to drain

Levee Maintenance

✓ **Inspect floodwall system – pre-flood season, immediately following high water event, and intervals not exceeding three months**

- No unusual settlement is occurring which might affect the stability of the wall
- No areas of seepage or boils
- No trees where roots might extend beneath the wall and provide a seepage path
- No concrete is cracking, chipping, or breaking
- there is no damage to the floodwall control joints
- No encroachments within right-of-way endangering structure or hindering functionality
- toe drainage system not blocked and flowing properly

Floodwall Maintenance

✓ **Inspect storm drain system – pre-flood season, immediately following high water event, and intervals not exceeding three months**

- Maintenance of the Project gates; examined, operated, and lubricated in accordance with the manufacturer's instructions.
- Removal of debris from the detention basin weir and pump station trash racks
- Lubrication of the pump motors in accordance with the manufacturer's instructions
- Exercising of the pumps to verify proper operation prior to the beginning of the flood season or during the first rainfall event

Storm Drain Maintenance

- ✓ **All of our Measure A Funds have been allocated to the Flood Project. The City is working with the Army Corps of Engineers for our WRDA reimbursement.**
- ✓ **Upon receipt of that reimbursement the City will seek to undertake the remainder of the projects on the Measure A list:**
 - ✓ **Sulphur Creek Flood Protection Project**
 - ✓ **York Creek Channel Improvements**
 - ✓ **Urban Stormwater facilities at Fulton Lane, McCorkle Ave and Mills Lane**

Flood Preparation in St. Helena

Contact Information

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Director of Public Works,

City Engineer

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JohnF@ci.st-helena.ca.us

