

3.0 Hydrology

3.1 METHODOLOGY

The current standard application in Sacramento County for creating U.S Army Corps of Engineers (USACE) HEC-1 (Hydrologic Engineering Center) hydrologic models is the SACALC preprocessor program software. The Letter of Map Revision (LOMR) prepared by CESI for the Elder/Gerber stream group hydrology was based on this software. The previous models for both Florin Creek and Unionhouse Creek were both based on the superseded SacPre preprocessor software. It was therefore necessary to update the pre-project condition models for Florin Creek and Unionhouse Creek to the current SACCALC software before proceeding with the analysis.

As the hydrologic model for each stream/stream group was converted various checks were made to ensure consistency of the results from the existing models to the new base models. This data is available upon request for review.

For each watershed, the amount of each land use type in each hydrologic soil type was determined and input into the SACCALC pre-processor software to generate the HEC-1 hydrologic models. This data was developed using GIS based land use mapping generated from the existing General Plan data and newly created land use mapping for the project area. Soils maps were obtained from the United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS, previously the Soils Conservation Service or SCS).

Hydrographs representing the flows generated by each watershed are transferred to the hydraulic un-steady state modeling which now performs the tasks of combining and routing the hydrographs through the various systems. HEC-RAS is used for the unsteady state modeling of creeks and open channels, and XP-SWMM is used for the unsteady state modeling of systems with extensive pipe networks.

3.2 WATERSHEDS

During the course of CESI's preparation of the recent Elder-Gerber LOMR submittal to FEMA, a number of adjustments were made to the sub-shed area delineations for Florin, Elder, Gerber and Unionhouse Creeks. The adjustments resulted from new information which was obtained during the preparation of those models which included the County's LIDAR topography, field investigations of existing systems, and field surveys of roadway culverts, photo documentation of vegetation within the creeks and channels, and the revised delineation of the adjoining Laguna Creek watershed provided by MSA-DWR.

FLORIN VINEYARD GAP COMMUNITY PLAN DRAINAGE REPORT

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A number of these adjustments as well as apparent inaccuracies in the area calculations performed in the previous models resulted in a number of differences in the data used in the current work versus the older models. As with the conversion from older pre-project models to the new SacCalc methodology, a number of checks were conducted as new and pre-project shed boundaries were delineated or revised to ensure the accuracy of this information. This data is available upon request for review.

A number of pre-project sheds were further subdivided to provide results at desired locations for comparison with the post-project models.

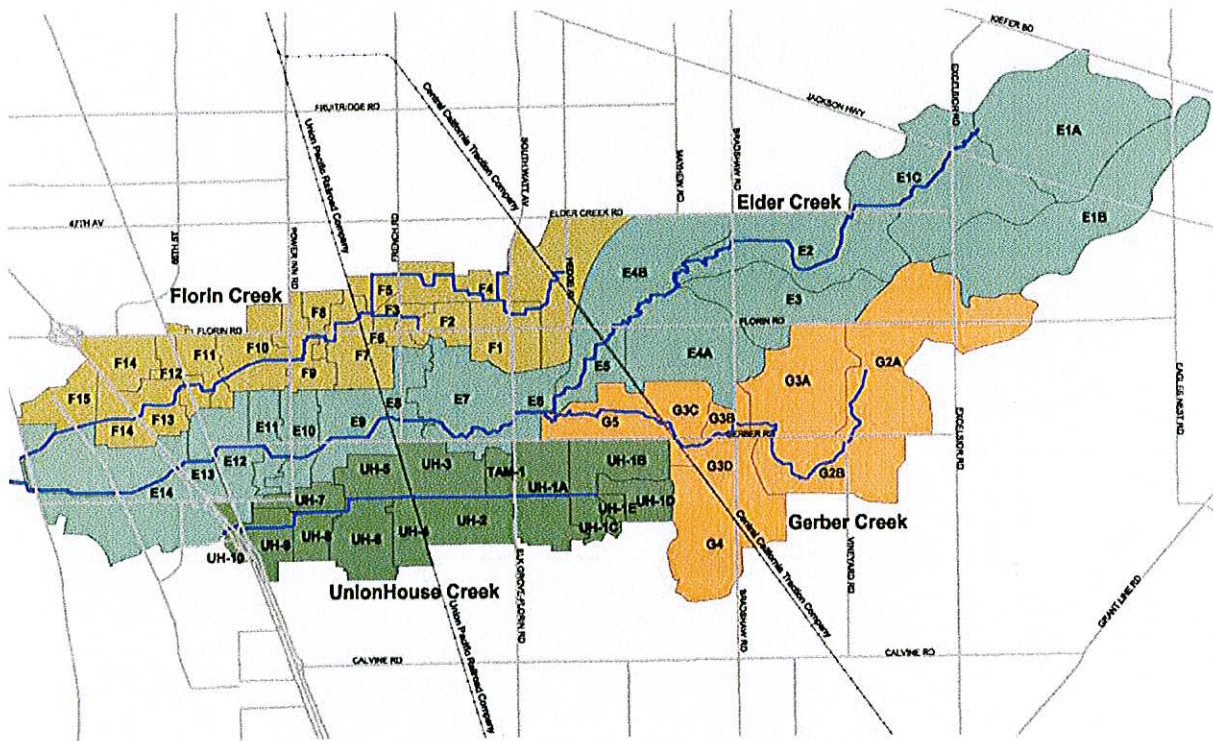


Figure 3.2 Major FVGCP Affected Stream Groups

3.3 LAND USE CLASSIFICATIONS

Sacramento County Hydrology Standards specify the use and/or computation of various hydrologic parameters based on a set of 18 land use classifications. The mapping for the land use in Geographic Information System (GIS) was coded with a numeric designation for each land use based on these 18 classifications. In many cases the planning land uses specified had no direct correlation to the hydrologic land use. Where this occurred the planning land use was mapped to the closest corresponding hydrologic land use. The table on page 13-12 of the Hydrology

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Standards, which describes each index, is reproduced here in Table 3.3. These land use index numbers are used in all further references to land use.

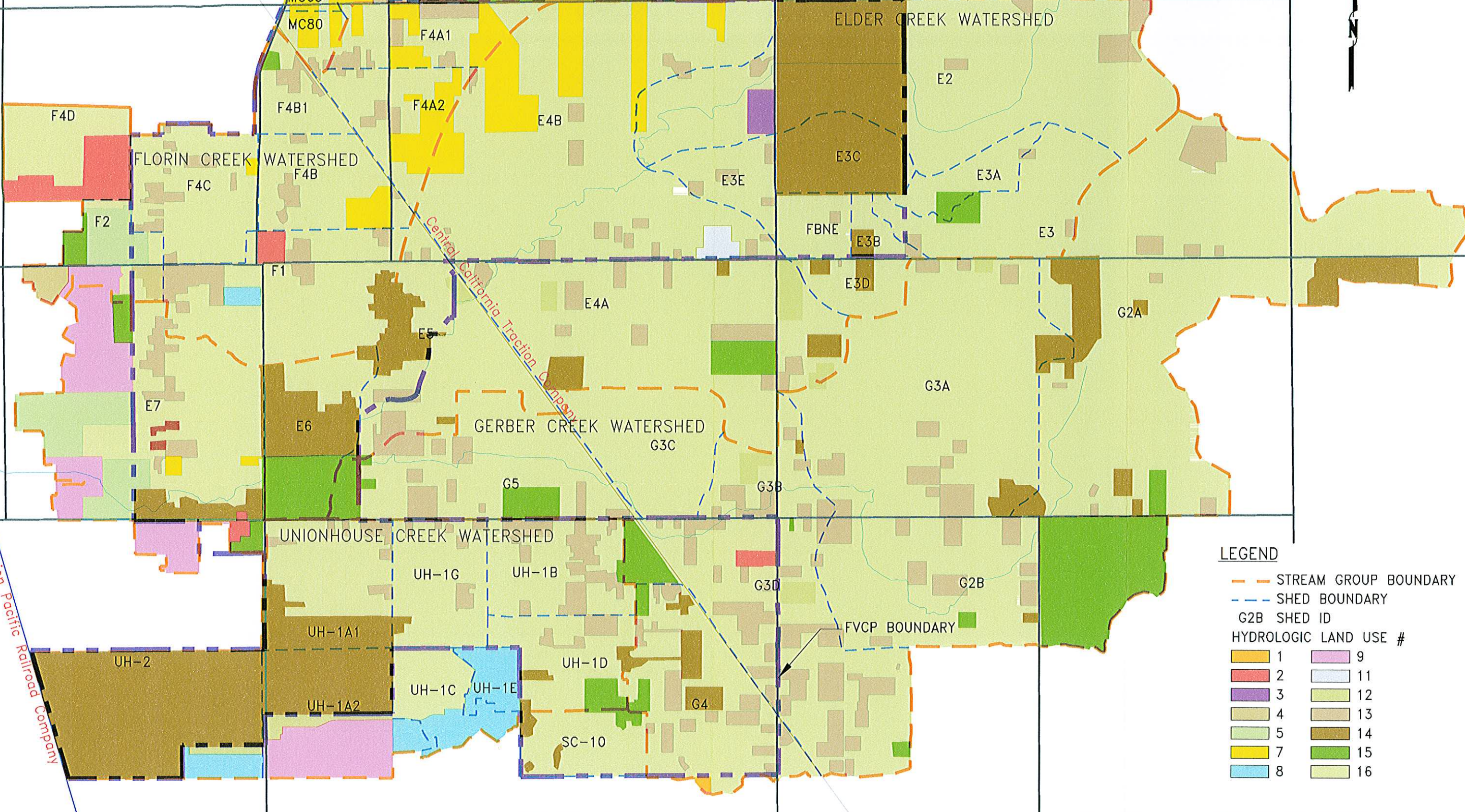
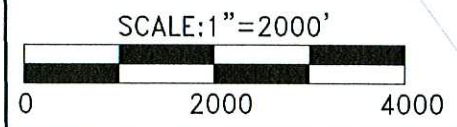
Table 3.3
Sacramento County Hydrologic Land Use Index Numbers

Impervious Area/Infiltration Land Use	Index
Highways, Parking	1
Commercial, Offices	2
Intensive Industrial	3
Apartments, High Density Res.	4
Mobil Home Park	5
Condominiums, Medium Density Res.	6
Residential: 8-10 du/ac (20-25 du/ha), Ext. Indust.	7
Residential: 6-8 du/ac (15-20 du/ha), Low Dens. Res., School	8
Residential: 4-6 du/ac (10-15 du/ha)	9
Residential: 3-4 du/ac (7.5-10 du/ha)	10
Residential: 2-3 du/ac (5-7.5 du/ha)	11
Residential: 1-2 du/ac (2.5-5 du/ha)	12
Residential: 0.5-1 du/ac (1-2.5 du/ha)	13
Residential: 0.2-0.5 du/ac (0.5-1 du/ha), Ag Res	14
Residential: 0.2 du/ac (0.5 du/ha), Recreation	15
Open Space, Grassland, Ag	16
Open Space, Woodland, Natural	17
Dense Oak, Shrubs, Vines	18

3.4 PRE-PROJECT LAND USE

Land use for the pre-project Elder and Gerber Creeks sheds are the same as those in the LOMR. New pre-project condition land use mapping was created for the areas of Florin and Unionhouse Creeks affected by the proposed FVGCP development.

Elder and Gerber Creek land use mapping received from MSA-DWR included areas downstream and therefore unaffected by the FVGCP. This information was left essentially as received in those land use maps. Sheds not affected by the FVGCP had no changes made to the pre-project model's land use data. Florin Creek and Unionhouse Creek pre-project land use mapping developed by CESI for the FVGCP was not extended downstream on these creeks any further than necessary to provide data for all sheds affected by the FVGCP. Figure 3.4 shows the pre-project land use mapping. Table 3.4 summarizes the pre-project land use acreage for each of the sheds affected by the FVGCP. As previously stated, sheds not affected by the FVGCP had no changes made to the pre-project model's land use data.



LEGEND

- STREAM GROUP BOUNDARY
- - - SHED BOUNDARY
- G2B SHED ID
- HYDROLOGIC LAND USE #

	1		9
	2		11
	3		12
	4		13
	5		14
	7		15
	8		16

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Fig. 3.4

**FLORIN VINEYARD GAP COMMUNITY PLAN
 PRE-PROJECT SHEDS & LAND USE**

SACRAMENTO COUNTY

CALIFORNIA



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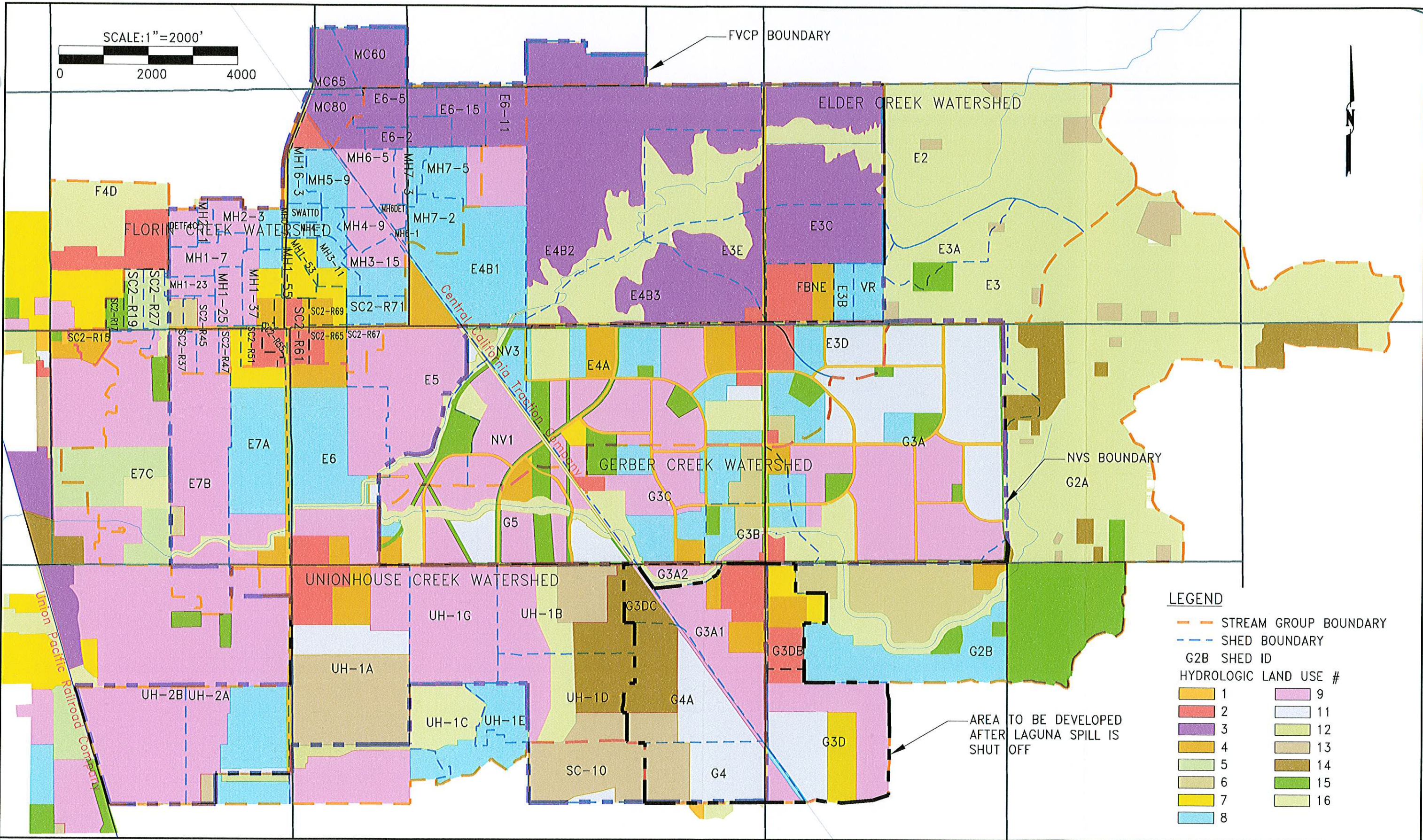
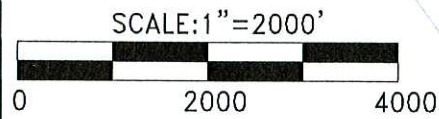
Table 3.4 - Florin Vineyard Community Plan
Pre Project Land Use for Affected Watersheds
In Florin, Elder, Gerber and Unionhouse Creeks

Shed	Sacramento County Land Use Index Number																		Total Land Use Area
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
E2			11.6				3.9						23.7	153.8	0.0	430.5			623.5
E3												1.0	14.7	103.7	13.0	350.7			483.0
E4A										0.0	21.5	36.3	19.8	21.1	348.9			447.6	
E4B							92.9			11.3			25.1		0.9	497.7			628.0
E5											4.2	15.3	24.3	0.9	158.4			203.2	
E6							0.0						64.2	44.7	34.4			143.3	
E7		4.5			78.6		4.6		107.7				23.0	31.3	14.1	186.2			449.9
E8		1.9	28.1	0.1	13.2				77.6	0.4			13.1	22.6	0.0			156.9	
F1		8.3						6.5					31.5	13.4		192.0			251.7
F2	0.0	0.2		20.0	29.8		0.0		12.1				0.1		9.8	15.8			87.9
F3	0.2	0.1		0.0	0.0		60.8		15.0		0.4				5.8	0.0			82.4
F4A1							32.2						20.4		0.0	54.5			107.1
F4A2							31.0						8.7			70.5			110.2
F4B							14.9						7.9			99.0			121.8
F4B1													6.5		2.7	51.3			60.5
F4C		0.2			0.4		2.0						17.1		131.4				151.1
F4D		44.6					0.0								72.4				116.9
F5							67.0		0.5						0.0				67.5
F6	13.6	0.2		4.9			19.5		4.9	1.9	9.5				1.9				56.4
G2A													29.1	78.8	7.2	709.9			825.0
G2B													39.2	1.4	135.7	226.7			403.0
G3A												3.7	38.8	19.2	447.4			509.1	
G3B												7.6	19.7	0.9	58.0			86.2	
G3C													0.0	0.0	151.6			151.6	
G3D		5.8									7.5	89.8			22.6	242.2			367.9
G4	2.0												33.5	23.4	8.6	158.8			226.2
G5													34.0		35.1	183.4			252.5
LC42A													0.1		0.9	11.6			12.5
MC60							26.8						6.0		35.2	31.0			99.0
MC65							22.7									4.7			27.4
MC80							12.0									14.8			28.4
SC10								0.0					1.6			14.8			14.8
TAM1									68.8					5.0	3.5	58.9			67.4
UH1A								10.6	66.0					0.0	0.0	0.0			68.8
UH1B												14.2	13.2	131.6	0.1	99.5			335.1
UH1C								27.6					36.6		1.5	93.0			131.2
UH1D								0.0				0.0		0.3		47.6			75.5
UH1E								31.1					9.8	5.2	11.0	84.2			110.2
UH1G													8.9	2.4		106.4			117.6
UH2								19.0	0.1					157.7		81.5			263.7
UH3			26.9		0.0		6.0		164.3			5.4		0.0	9.5	9.6			216.4
UH4					26.6		2.0	15.8	50.7				1.1	0.0	16.3	0.1			112.6
UH5							89.1		15.3							37.7			142.0

3.5 POST-PROJECT LAND USE

Proposed land use mapping for the FVGCP area consistent with the "Planning Options Plan" land use scenario was provided by MacKay & Soms (Oversize Exhibit LU-1) and subsequently modified by CESI to be suitable for hydrologic analysis purposes. Post project land use for additional areas included in the post-project analysis, including Vineyard Springs and North Vineyard Station, were also mapped. This proposed land use mapping for the FVGCP was then incorporated into the pre-project land use maps for developed conditions determinations. Figure 3.5 shows the post-project without spill land use mapping used. A note on the map indicates that the FVGCP and VSCP areas in the path of the Laguna spill will not be able develop until the spill is shut off.

Currently planned and approved development areas such as the "North Vineyard Station" development were input per their ultimate developed condition with mitigation into the post-project FVGCP. Models were provided to CESI for the North Vineyard Station project; however, there was insufficient documentation of these models for CESI to feel confident in simply plugging their results into the FVGCP modeling efforts. CESI prepared new models for the North Vineyard Station project area land use and the proposed mitigation which was integrated into the FVGCP master plan.



LEGEND

- STREAM GROUP BOUNDARY
- SHED BOUNDARY

G2B SHED ID

HYDROLOGIC LAND USE #

	1		9
	2		11
	3		12
	4		13
	5		14
	6		15
	7		16
	8		

AREA TO BE DEVELOPED AFTER LAGUNA SPILL IS SHUT OFF

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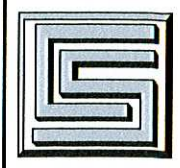
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Fig. 3.5

**FLORIN VINEYARD GAP COMMUNITY PLAN
 POST PROJECT SHEDS & LAND USE**

SACRAMENTO COUNTY

CALIFORNIA



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Table 3.5 - Florin Vineyard Community Plan
 Post Project Land Use for Affected Watersheds
 In Florin, Elder, Gerber and Unionhouse Creeks

SHED	Sacramento County Land Use Index Number																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total Land Use Area
E2	5.8	0.0	158.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.3	3.0	0.0	483.1	0.0	0.0	0.0	650.4
E3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	7.0	0.0	129.1	0.0	0.0	0.0	141.6
E3A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	0.0	46.1	0.0	0.0	0.0	52.7
E3B	0.2	0.0	0.1	12.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1
E3C	0.6	0.0	77.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.5
E3D	4.6	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.5
E3E	4.3	0.1	40.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.8	0.1	0.0	0.3	1.6	3.5	0.0	0.0	66.6
E4	31.9	31.6	31.3	31.3	6.8	5.3	78.6	116.8	0.0	0.0	9.6	0.2	0.0	0.0	38.8	47.0	0.0	0.0	397.9
E4B1	1.4	0.0	0.5	0.0	0.0	0.0	107.5	30.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	142.1
E4B2	0.2	0.0	265.0	0.0	0.0	0.0	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.2	0.0	0.0	315.5
E4B3	4.3	2.6	78.7	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.7	0.0	0.0	139.4
E5	6.0	0.0	0.0	18.9	0.0	0.0	4.2	128.5	0.0	0.0	2.1	0.1	0.0	0.0	16.3	15.4	0.0	0.0	191.5
E6	6.6	12.3	0.0	21.8	0.0	0.0	81.8	74.8	0.0	0.0	2.2	0.0	0.0	0.0	0.3	10.1	0.0	0.0	209.9
E6-11	0.0	0.0	27.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	27.8
E6-15	0.0	0.0	27.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	28.2
E6-2	0.0	0.0	24.9	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	25.3
E6-5	0.0	0.0	31.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	32.1
E7A	9.0	0.1	0.0	6.2	0.0	0.0	12.9	79.7	29.9	0.0	0.0	0.0	0.0	0.0	0.1	5.5	0.0	0.0	143.3
E7B	0.0	0.0	0.0	0.0	0.1	4.6	0.0	0.2	147.2	0.0	0.0	0.0	0.0	0.0	0.1	5.1	0.0	0.0	157.3
E7C	0.0	0.0	0.0	0.1	73.6	0.0	0.0	82.3	0.0	0.0	0.0	0.0	0.0	0.0	8.6	16.7	0.0	0.0	181.3
VR	0.4	0.0	0.0	0.0	0.0	0.0	19.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	19.7
FBNE	1.0	29.5	0.5	14.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.1
NV1	4.3	0.0	0.0	3.4	0.0	0.0	0.2	0.1	54.0	0.0	0.0	0.0	0.0	0.0	7.5	15.2	0.0	0.0	84.7
NV3	1.2	0.0	0.0	0.0	0.0	4.4	16.9	0.0	0.0	0.0	0.0	0.1	0.1	0.0	5.4	0.0	0.0	0.0	30.5
G2A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0	7.7	70.9	0.0	0.0	825.0
G2B	0.0	0.0	0.0	20.3	0.0	65.4	80.4	64.1	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	250.0
G3A	29.8	0.0	0.0	2.9	0.0	0.9	21.7	180.9	0.0	0.0	198.2	0.1	0.0	0.0	142.0	41.3	0.0	0.0	413.4
G3A1	5.4	25.6	0.0	17.8	0.0	0.0	0.0	68.9	0.0	0.0	0.3	0.2	0.3	0.0	23.4	41.6	0.0	0.0	508.9
G3A2	1.5	0.0	0.0	0.1	0.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	120.9
G3B	6.8	5.0	0.0	4.3	0.0	7.6	23.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0	6.7	17.1	0.0	0.0	17.4
G3C	11.9	4.7	0.0	7.4	0.0	10.3	69.4	51.8	0.0	0.0	0.0	0.0	0.0	0.0	11.6	14.8	0.0	0.0	181.9
G3D	0.0	5.8	0.0	0.0	0.0	0.0	0.6	71.9	29.1	48.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	156.0
G3D6	0.0	16.8	0.0	13.5	0.0	0.0	16.8	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.8	0.0	0.0	48.0
G3D3C	0.3	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0	0.0	22.1
G4	1.1	0.0	0.0	0.0	0.0	0.0	2.7	9.7	0.0	0.0	51.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	97.0
G4A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	53.0	0.0	17.2	46.8	0.0	0.0	0.0	0.0	123.0
G5	9.1	0.0	0.0	13.3	0.0	0.0	2.9	71.4	0.0	35.3	0.0	0.4	0.0	0.0	27.9	50.5	0.0	0.0	210.8
DETF4C	0.0	0.0	0.0	0.1	0.0	0.0	0.0	12.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	12.5
MH0-7	5.2	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	7.4
MH1-23	0.0	0.0	0.0	0.0	0.9	0.0	0.0	10.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2
MH1-25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.4
MH1-37	0.0	0.0	0.0	5.1	0.0	8.3	4.9	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.4
MH1-53	0.5	0.0	0.0	0.0	0.0	0.0	8.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3
MH1-55	2.3	0.0	0.0	0.0	0.0	12.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.4
MH16-3	0.1	7.5	1.1	0.0	0.0	0.0	13.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	22.5
MH1-7	0.0	0.0	0.1	0.0	0.1	0.0	27.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	27.7

Table 3.5 - Florin Vineyard Community Plan
 Post Project Land Use for Affected Watersheds
 In Florin, Elder, Gerber and Unionhouse Creeks

SHED	Sacramento County Land Use Index Number																		Total Land Use Area
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
MH2-1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.3
MH2-3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.8
MH3-11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.3
MH3-15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.1
MH4-7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.6
MH4-9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.4
MH5-9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.8
MH6-1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
MH6-5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.0
MH6-7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7
MH7-2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.2
MH7-3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.1
MH7-5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.4
SC2R15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3
SC2R17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8
SC2R19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.8
SC2R27	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.5
SC2R37	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.3
SC2R45	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.0
SC2R47	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6
SC2R51	0.9	7.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.7
SC2R55	1.8	6.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.6
SC2R61	3.5	12.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.2
SC2R65	1.8	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.5
SC2R67	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.3
SCR69	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.3
SCR71	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.8
SSWATT	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4
UH-1A	4.4	30.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.8	13.5	120.2	1.5	0.0	0.4	0.0	0.0	335.3
UH-1B	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4
UH-1C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	307
UH-1D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.1
UH-1E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.2
UH-1G	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.9
UH-2A	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
UH-2B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
SC-10	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	118.1
																			0.0
																			93.0
																			170.8
																			69.5

Note:

Highlighted shed used only in post-project without Laguna Spill scenario.
 Sheds were replaced with pre-project sheds for with Laguna Spill scenario

3.6 SOILS

Soils information was obtained from the NRCS. Hydrologic soils groups were mapped using GIS and used together with the land use mapping to develop the shed characteristics for the hydrologic models. Table 3.6.1 summarizes the acres of each soil type for the pre-project sheds. Figure 3.6.1 shows the soils distribution for the pre-project sheds. Table 3.6.2 summarizes the acres of each soil type for the post-project sheds. Figure 3.6.2 shows the soils distribution for the post-project sheds.

Table 3.6.1 Florin Vineyard Community Plan Pre-Project Soil Type for Affected Watersheds				
Shed	Hydrologic Soil Type Acres			Total Soils Area
	B	C	D	
E2		136.4	487.1	623.5
E3		46.6	101.8	148.4
E3A		25.2	29.3	54.5
E3B		16.7	8.5	25.1
E3C		7.7	83.0	90.7
E3D		32.7	20.7	53.4
E3E			64.5	64.5
E4A		9.9	437.7	447.6
E4B		7.7	620.2	628.0
E5			203.2	203.2
E6			143.3	143.3
E7			449.9	449.9
F1			251.7	251.7
F2			87.9	87.9
F4A1			107.1	107.1
F4A2			110.2	110.2
F4B			121.8	121.8
F4B1			60.5	60.5
F4D			116.9	116.9
G2A		129.9	695.2	825.0
F4C			151.1	151.1
G2B		216.2	186.9	403.0
G3A		206.5	302.7	509.1
G3B		2.6	83.5	86.2
G3C			151.6	151.6
G3D		2.7	365.2	367.9
G4			226.2	226.2
G5			252.5	252.5
UH1A1			162.04	162.04
UH1A2			173.1	173.1

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UH1B			131.2	131.2
UH1D	0.9		109.2	110.2
UH1G			117.6	117.6
UH2A			93.0	93.0
UH2B			170.8	170.8

Table 3.6.2
Florin Vineyard Community Plan

**Post-Project Soil Type
for Affected Watersheds**

Shed	Hydrologic Soil Type Acres			Total Soils Area
	B	C	D	
UH-1B	0.0	0.0	131.6	131.6
G3DC	0.0	0.0	22.1	22.1
E7B	0.0	0.0	157.2	157.2
E3D	0.0	33.6	21.9	55.5
E7A	0.0	0.0	143.4	143.4
MH6DET	0.0	0.0	5.7	5.7
G4	0.0	0.0	97.0	97.0
E4B2	0.0	0.0	315.4	315.4
UH-1C	2.1	0.0	73.4	75.4
E4B1	0.0	0.0	142.2	142.2
UH-1E	0.1	0.0	32.2	32.3
UH-1D	0.9	0.0	109.1	110.1
UH-1G	0.0	0.0	118.1	118.1
E7C	0.0	0.0	181.3	181.3
G3B	0.0	2.6	76.2	78.8
G2A	0.0	129.8	695.2	825.0
UH-1A	0.0	0.0	334.7	334.7
NV1	0.0	0.0	84.8	84.8
G3A1	0.0	0.0	120.9	120.9
E3E	0.0	0.0	66.5	66.5
E3C	0.0	60.0	95.7	155.7
G3C	0.0	0.0	181.7	181.7
E6	0.0	0.0	209.9	209.9
DETF4C	0.0	0.0	12.4	12.4
E4B3	0.0	7.3	132.1	139.4
MH2-3	0.0	0.0	29.8	29.8
MH7-2	0.0	0.0	33.2	33.2
SC2-R45	0.0	0.0	24.0	24.0
SC2-R15	0.0	0.0	12.3	12.3
F4D	0.0	0.0	117.6	117.6
SC2-R71	0.0	0.0	18.8	18.8
UH2A			93.0	93.0
UH2B			170.8	170.8

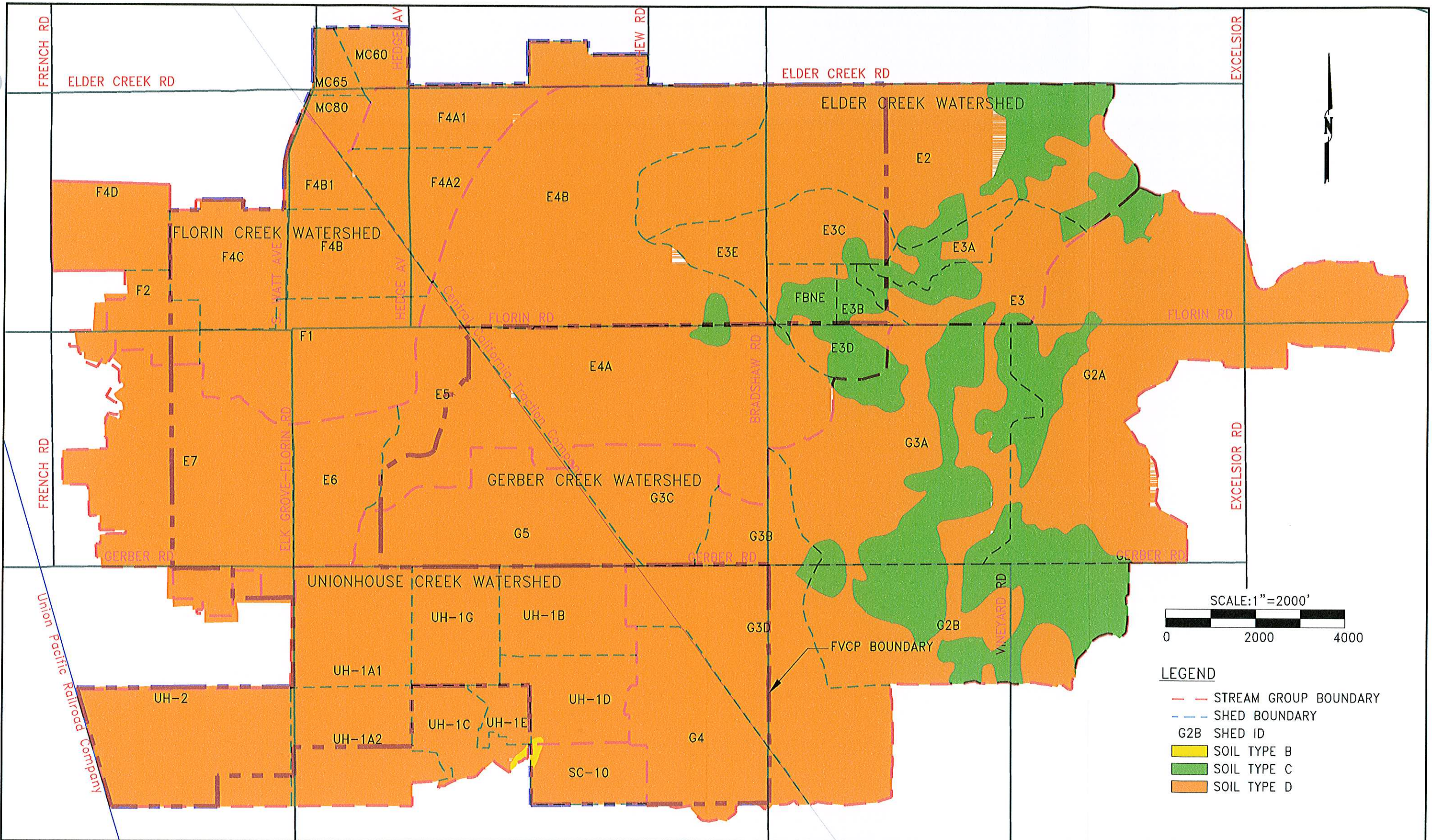
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 HYDROLOGY

Table 3.6.2 Florin Vineyard Community Plan				
Post-Project Soil Type for Affected Watersheds				
Shed	Hydrologic Soil Type Acres			Total Soils Area
	B	C	D	
SC2-R17	0.0	0.0	6.8	6.8
SC2-R15	0.0	0.0	12.3	12.3
MH6-1	0.0	0.0	1.0	1.0
E6-5	0.0	0.0	32.1	32.1
SC2-R19	0.0	0.0	19.9	19.9
SC2-R27	0.0	0.0	22.4	22.4
SC2-R37	0.0	0.0	19.2	19.2
MH3-11	0.0	0.0	18.3	18.3
E6-2	0.0	0.0	25.4	25.4
E6-15	0.0	0.0	28.1	28.1
E6-11	0.0	0.0	27.8	27.8
MH3-15	0.0	0.0	31.1	31.1
MH5-9	0.0	0.0	28.8	28.8
MH16-3	0.0	0.0	22.4	22.4
MH1-23	0.0	0.0	11.2	11.2
MH1-37	0.0	0.0	31.3	31.3
MH2-1	0.0	0.0	8.3	8.3
SC2-R67	0.0	0.0	15.4	15.4
SC2-R65	0.0	0.0	16.4	16.4
SC2-R61	0.0	0.0	21.2	21.2
SC2-R69	0.0	0.0	15.3	15.3
SC2-R55	0.0	0.0	8.6	8.6
SC2-R47	0.0	0.0	10.6	10.6
MH1-7	0.0	0.0	27.7	27.7
MH4-9	0.0	0.0	20.4	20.4
MH7-5	0.0	0.0	35.3	35.3
MH1-55	0.0	0.0	14.4	14.4
MH1-53	0.0	0.0	9.3	9.3
G2A	0.0	129.8	695.2	825.0
G3A	0.0	206.5	302.7	509.1
E3		46.6	101.8	148.4
E3A		25.2	29.3	54.5
E3B		16.7	8.5	25.1
E3C		7.7	83.0	90.7
E3D		32.7	20.7	53.4
E3E			64.5	64.5
E2	0.0	136.4	514.0	650.3

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Table 3.6.2 Florin Vineyard Community Plan				
Post-Project Soil Type for Affected Watersheds				
Shed	Hydrologic Soil Type Acres			Total Soils Area
	B	C	D	
E8	0.0	0.0	156.9	156.9
F6	0.0	0.0	56.4	56.4
F3	0.0	0.0	82.4	82.4
F5	0.0	0.0	67.5	67.5
UH-3	0.0	0.0	216.5	216.5
UH-4	0.0	0.0	112.6	112.6
UH-5	0.0	0.0	142.0	142.0
TAM-1	0.0	0.0	68.8	68.8
NV3	0.0	0.0	30.4	30.4
E4A	0.0	10.3	387.6	397.9
G5	0.0	0.0	210.9	210.9
E5	0.0	0.0	191.5	191.5
NV1	0.0	0.0	84.8	84.8
G3DC	0.0	0.0	22.1	22.1
UH-1B	0.0	0.0	131.6	131.6
G4A	0.0	0.0	123.0	123.0
G3DB	0.0	0.1	48.0	48.1
G2B	0.0	195.4	218.03	413.4
G3D	0.0	0.0	156.1	156.1
MH0-7	0.0	0.0	7.4	7.4
SWATTD	0.0	0.0	7.4	7.4
MH4-7	0.0	0.0	13.7	13.7
MH7-3	0.0	0.0	17.0	17.0
MH6DET	0.0	0.0	5.7	5.7
MH7-2	0.0	0.0	33.2	33.2
E4B1	0.0	0.0	142.2	142.2
SC2-R45	0.0	0.0	24.0	24.0
DETF4C	0.0	0.0	12.4	12.4
F4D	0.0	0.0	117.6	117.6
MH2-3	0.0	0.0	29.8	29.8
E6	0.0	0.0	209.9	209.9
VR		16.4	4.0	20.4
FBNE		26.2	21.2	47.5

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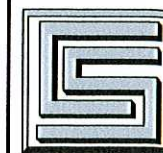
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Fig. 3.6.1

**FLORIN VINEYARD GAP COMMUNITY PLAN
 HYDROLOGIC SOILS GROUPS
 PRE PROJECT SHEDS**

SACRAMENTO COUNTY

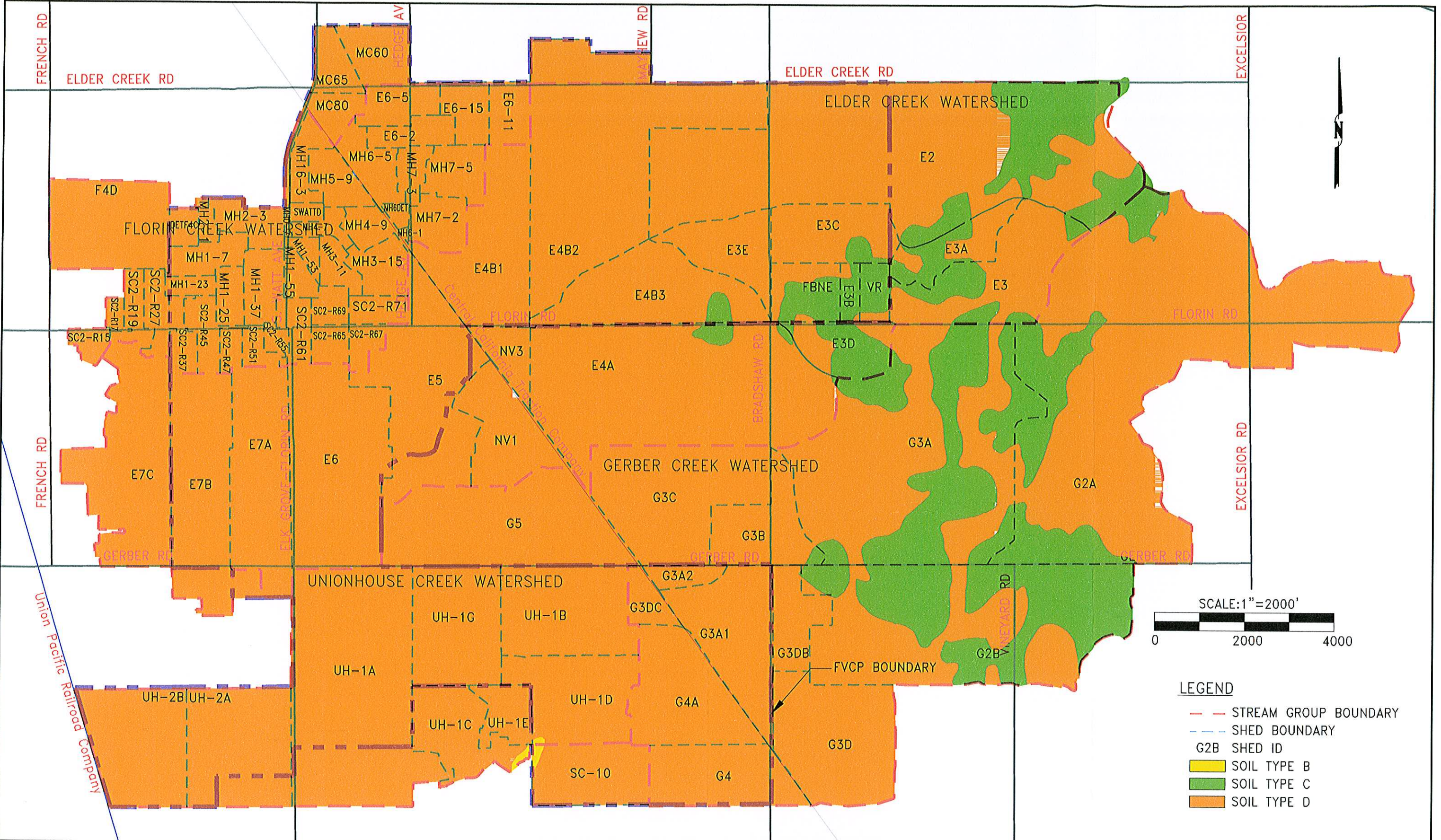
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**CIVIL ENGINEERING
 SOLUTIONS, INC.**

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 CHECKED BY: B.A.T. DATE: 10/2007
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Fig. 3.6.2
FLORIN VINEYARD GAP COMMUNITY PLAN
HYDROLOGIC SOILS GROUPS
POST-PROJECT SHEDS
 SACRAMENTO COUNTY CALIFORNIA

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3.7 RESULTS

The hydrologic modeling provides runoff hydrographs for the various watersheds in the FVGCP study area. The hydrographs are used as input in the unsteady state (dynamic) hydraulic modeling using HEC-RAS and XPSWMM.