

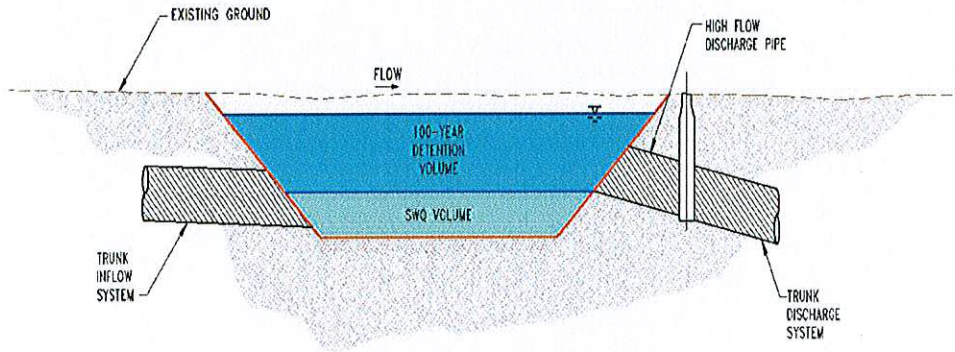
5.0 Water Quality

5.1 METHODOLOGY AND RESULTS

The volume for each of the water quality basins was computed in accordance with the Sato method as described in the drainage manual. Each pipe shed was assigned to a pipe group. Pipe groups were calculated a composite land use percent impervious and the Sato water quality volume was computed for each water quality basin. The required volume for the basins is summarized in the Table 5.1. Calculation of outflow from the detention basins is based on the "March 2007 Draft Stormwater Quality Design Manual". The drawdown curves are shown in Appendix J.

The included water quality treatment measures of the FVGCP do not include treatment capacity for areas which are outside the FVGCP boundary. If/When these areas develop, additional measures may be needed onsite, or supplemental to the FVGCP facilities such that treatment of the runoff from these additional areas can be accomplished. Areas that cannot drain directly into water quality treatment basins as shown on Oversize Sheet SD will need to be provided with local water quality treatment facilities.

Where water quality treatment is to take place within a detention basin a portion of the basin volume was reserved by either adjusting the detention volume starting elevation or the available storage volume to account for the estimated water quality volume. All water quality in the plan is assumed to be sized and configured per the "Dry Extended" BMP alternative. This results in the largest reserve capacity and worst case impacts to the depths of the storm drainage systems. Figure 5.1.1 below shows a typical cross section of this type of facility.



DRY STORMWATER QUALITY AND DETENTION BASIN CONFIGURATION

Figure

5.1.1 – Dry Stormwater Quality Basin Configuration

The regional stormwater quality treatment facilities identified in this section, do not include reductions for possible “Low Impact Development” (LID) measures as may ultimately be required by Sacramento County. Implementing LID measures with these projects effectively reduces the amount of stormwater which would runoff from the project development areas by reducing the effective imperviousness of the project, and promoting infiltration and pre-treatment. For example, LID measures may include features such as disconnected roof drains, planting of trees, and Hollywood driveways at residential areas. At the time of the writing of this document Sacramento County was reviewing implementation standards for LID. Once these are approved, the effect of the LID improvements could be quantified. Therefore, supplemental calculations may be required with individual project submittals to support the amount of treatment volume reductions proposed by LID measures.

The shed areas and impervious cover used to size the water quality detention basins are shown in Table 5.1. Table 5.2 shows the detention basin and buffer area footprint for each of the basins.

FLORIN VINEYARD GAP COMMUNITY PLAN DRAINAGE REPORT

Basin	Group Total Area (acres)	Composite Percent Impervious	Sato WQ Volume Required (ac-ft)	Flow Required for 48 hr. Drawdown (cfs)	Recommended Outflow Pipe Size	Type of Basin
DETF4C	574	54.6%	24.9	6.3	15" at invert 12" at 16" above invert	Water Quality and Flood Control
WQDETSC2	162	64.5%	8.6	1.9	2 - 6" at invert	Water Quality
E28	423	66.7%	23.4	7.2	15" at invert	Water Quality and Flood Control
E31	144	52.6%	6.0	2.9	8" at invert	Water Quality and Flood Control
G43	380	30.3%	10.2	2.9	10" at invert	Water Quality and Flood Control
WQGC	62	54.3%	2.7	0.7	4" at invert 4" at 16" above invert	Water Quality
E21WQ	374	47.1%	14.1	3.6	2 - 8" at invert	Water Quality
WQSCK	67	46.1%	2.5	0.6	3 - 2" at invert 2 - 2" at 6" above invert	Water Quality
WQUH1AN	159	45.3%	5.8	1.4	6" at invert 4" at 11" above invert	Water Quality
UHDET2	175	39.0%	5.6	1.2	6" at invert 8" at 6" above invert	Water Quality
WQHM10	128	47.3%	4.8		4" at invert 4" at 11" above invert 4" at 16" above invert	Water Quality

Table 5.2 FLORIN VINEYARD AND NORTH VINEYARD STATION DETENTION BASINS

DET-BASIN	EXISTING GROUND ELEVATION (FEET)	BASIN INVERT ELEVATION (FEET)	WATER QUALITY VOLUME (AC-FT)	FLOOD CONTROL VOLUME (AC-FT)	TOTAL BASIN VOLUME (AC-FT)	WATER QUALITY POOL ELEVATION (FEET)	MAXIMUM WATER SURFACE ELEVATION (FEET)	MAXIMUM WATER SURFACE ELEVATION (FEET)-10 YR	FREEBOARD (FEET)	DETENTION BASIN AREA AT GROUND SURFACE (ACRES)	DETENTION BASIN AND BUFFER AREA FOOTPRINT (ACRES)	DEVELOPMENT
UNIONHOUSE CREEK												
UHDET2	36	25.0	5.6	32.6	38.2	26.6	35.6	32.4	0.4	4.5	5.6	FGVCP
WQSCK	40	34.0	2.5	0.0	2.5	38.9	38.9	35.4	1.1	1.0	1.4	FGVCP
UHDET1	44	34.8	0.0	30.5	30.5	NO WQ DET	41.6	40.5	2.4	7.2	8.3	FGVCP
WQUH1AN	44	34.8	5.8	0.0	5.8	39.6	39.6	41.1	4.4	1.8	2.4	FGVCP
ELDER CREEK WQ ONLY BASINS												
E21WQ	38	32.0	14.0	0.0	14.0	35.9	35.9	37.5	2.1	4.2	5.1	NVSSP
WQGC	42	36.0	2.7	0.0	2.7	40.7	40.7	39.9	1.3	0.8	1.2	NVSSP
WQMH10	46	36.3	4.8	0.0	4.8	41.4	41.4	42.0	4.6	1.5	2.1	FGVCP
VRWQ	67	63.0	1.1	0.0	1.1	66.0	66.0		1.0	0.5	0.8	FGVCP
ELDER CREEK WITH LAGUNA SPILL												
E24B	48	36.0	2.3	33.3	35.6	39.0	45.6	41.2	2.4	7.2	8.3	NVSSP
E26	52	39.5	17.0	33.6	50.6	42.5	47.4	45.7	4.6	15.8	17.4	NVSSP
E28	52	42.0	23.4	70.2	93.6	45.0	49.7	47.8	2.7	13.7	15.2	FGVCP
E31	52	42.0	6.0	73.0	79.0	45.0	49.8	46.4	2.2	11.5	12.8	FGVCP
FBNE	60	55.0	3.2	9.9	13.1	56.2	60.0	58.8	0.0	3.0	3.7	FGVCP
VRDET	68	65.4	0.0	0.8	0.8	NO WQ DET	66.3	65.4	1.7	1.0	1.4	FGVCP
ELDER CREEK WITHOUT LAGUNA SPILL												
E24B	48	36.0	2.3	33.1	35.4	39.0	45.6	41.2	2.4	7.2	8.3	NVSSP
E26	52	39.5	17.0	33.6	50.6	42.5	47.4	45.7	4.6	15.8	17.4	NVSSP
E28	52	42.0	23.4	70.2	93.6	45.0	49.7	47.8	2.7	13.7	15.2	FGVCP
E31	52	42.0	6.0	72.9	78.9	45.0	49.8	46.4	2.2	11.5	12.8	FGVCP
GERBER CREEK WITH LAGUNA SPILL												
E24A	46	33.5	7.2	60.1	67.3	36.5	44.1	36.5	1.9	10.4	11.7	NVSSP
G41	52	38.5	8.7	39.8	48.5	41.5	48.8	44.9	3.2	8.6	9.8	NVSSP
G46	60	47.5	17.1	59.6	76.7	50.5	57.2	56.4	2.8	13.4	14.8	NVSSP
G45	62	52.5	1.7	9.0	12.4	56.0	56.7	55.8	5.3	9.1	10.3	VSCP
GERBER CREEK WITHOUT LAGUNA SPILL												
E24A	46	33.5	7.2	44.2	51.4	36.5	42.9	39.9	3.1	10.4	11.7	NVSSP
G41	52	38.5	8.7	30.7	39.4	41.5	47.6	45.8	4.4	8.6	9.8	NVSSP
G43	56	45.8	10.2	14.5	24.7	50.8	51.3	50.9	4.7	5.9	6.9	FGVCP
G46	60	47.5	17.1	59.6	76.7	50.5	57.2	56.4	2.9	13.4	14.8	NVSSP
G45	62	52.5	1.7	9.0	12.4	56.0	56.7	55.8	5.3	9.1	10.3	VSCP
FLORIN CREEK												
WQDETSC2	44	33.3	8.6	5.7	14.3	37.8	40.3		3.7	2.9	3.6	FGVCP
SC2R71	48	39.5	0.0	6.0	6.0	NO WQ DET	46.6		1.4	1.2	1.9	FGVCP
DET4C	42	34.5	24.9	17.7	42.6	37.5	39.4		2.6	9.7	10.9	FGVCP
SWATTID	46	36.7	0.0	34.9	34.9	NO WQ DET	44.3		1.7	5.5	6.4	FGVCP
MH6DET	49	39.6	0.0	25.5	25.5	NO WQ DET	47.9		1.1	3.8	4.6	FGVCP

44.4 Stages computed in HEC-RAS and SWMM models

Note Buffer areas were computed to provide 20-foot wide maintenance area around the basin. Basins FBNE and UHDET2 will require a berm or fill for 1-foot of freeboard