

# **Appendix B**

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**Hydrology and Water Quality**





**CIVIL ENGINEERING  
SOLUTIONS, INC.**

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## Technical Memorandum

To: Ascent Environmental, Inc.  
455 Capitol Mall, Suite 300  
Sacramento, CA 95814

Attn: **Melinda M. Rivasplata**

Date: April 10, 2014

Regarding: Placer Vineyards: Drainage Study Impacts from Proposed Development Changes

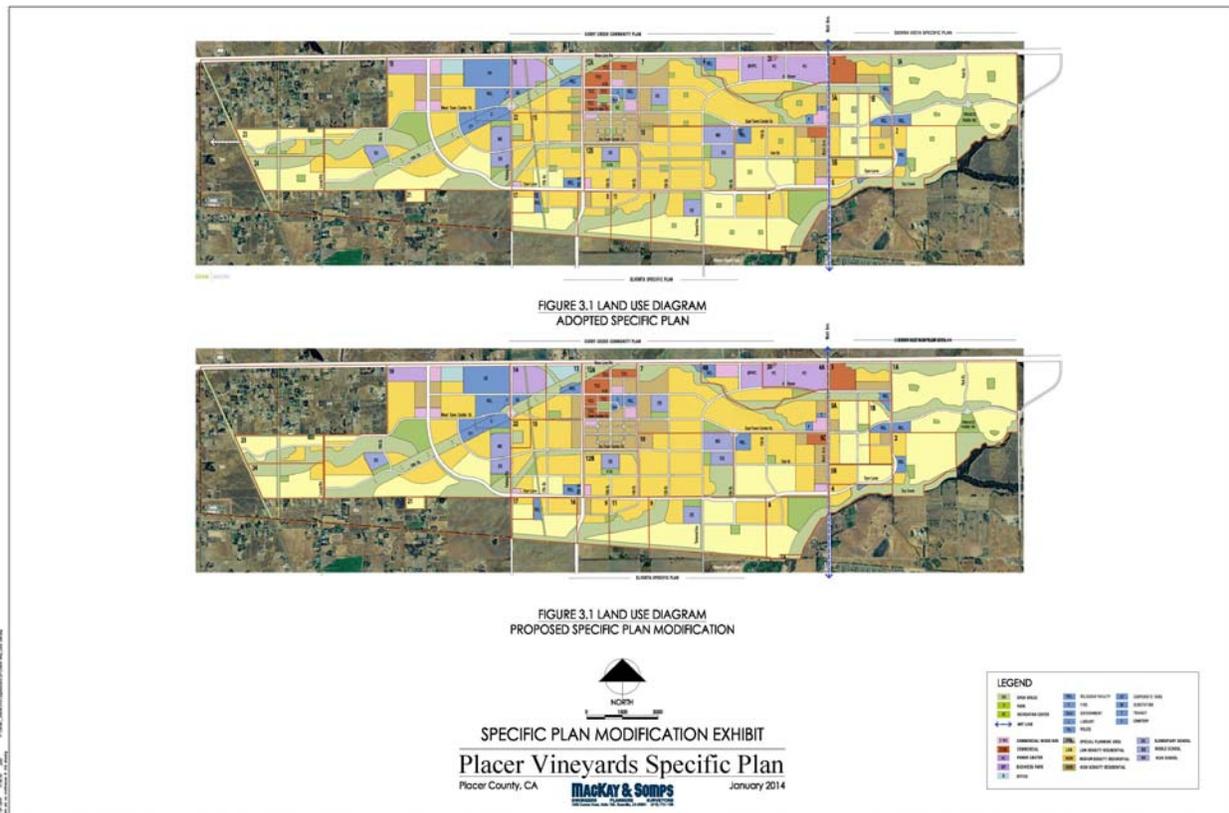
Dear Melinda;

Per your request we have reviewed the proposed land use changes and performed a preliminary assessment of the estimated impacts to the project drainage mitigation measures and quantities by major watershed. The land use changes are summarized in the table below:

<b>Placer Vineyards Specific Plan</b>			
<b>Comparison of Approved Plan with Proposed Modifications</b>			
<b>Characteristic</b>	<b>Approved Plan</b>	<b>Proposed</b>	<b>Change</b>
Total Area (acres)	5230	5230	none
Population (excl. SPA)	31,793	31,793	none
<b>LAND USE</b>	<b>Acres/units</b>		
<b>Residential</b>			
Special Planning Area (SPA)	979/411	979/411	None/none
Low Density (LDR)	1001/3519	1017.5/3519	+16.5 ac./no additional units
Medium Density	1176/6474	1214/6474	+38 ac./no additional units
High Density	205/3092	221.5/3092	+16.5 ac./no additional units
<b>Commercial</b>			
Commercial/mixed use (C/MU)	50.5/636	50.5/636	none
Commercial (COM)	24	24	none
Town Center Commercial (TCC)	42.5	42.5	none
Business Park (BP)	58.5	58.5	none
Power Center (PC)	60.0	60.0	none
Business Park/Power Center (BP/PC)	31.0	31.0	none

Office (O)	32.5	32.5	none
<b>Public/Quasi-Public</b>			
Public Use (CEM, CY, F, Gov, L, PO, S, T)*	50.5	50.5	none
Schools (ES/MS/HS)	167.0	167.0	none
Religious Facilities (REL)	91.0	91.0	none
<b>Parks &amp; Open Space</b>			
Open Space (OS)	709.0	698.0	-11 acres
Parks (P)	210.0	150.0	-60 acres
Arterial and Collector Roads	331.50	331.50	None
*Public Use Acronyms: CEM=cemetery; CY=corporation yard; F=fire; Gov=government; L=library; PO=police; S=substation; T=transit.			

The following exhibit compares the current plan land use to the proposed land use plan:



The assessments for project impacts to drainage mitigation facilities are based on the net change in impervious area. The factor is what drives the need for mitigation of drainage runoff, because added impervious area to the project increases runoff flow rates and volumes.

For this proposal the overall project change in impervious surface is computed as follows:

<b>Land Use Category</b>	<b>Approved Plan Area (ac)</b>	<b>Proposed Plan Area (ac)</b>	<b>Net Change in Impervious Area *</b>
Low Density Residential	1001	1017.5	6.6
Medium Density Res	1176	1214	19
High Density Res	205	221.5	10.72
Open Space	709	698	0
Parks	210	150	-1.2
			35.12

\* Net change is calculated by multiplying the change in area by the imperviousness of each land use type. LDR=0.4, MDR=0.5, HDR=0.65, OS=0, PARK=0.02

The previous plan computed an impervious area of 2403 acres. Thus the proposed project changes represent roughly a 1.5% increase in the impervious area of the proposed project.

#### **Stormwater Quality:**

The changes do not represent a significant enough change to attempt to quantify changes to the stormwater quality features. These features are re-sized during improvement design to account for shed area changes and final land use and development plans. The proposed land use changes will be incorporated into the final design of stormwater quality measures. The areas that change land use will be subject to Low Impact Development measures as detailed in the master drainage study based the final land use selected.

#### **Storm Drain Sizing:**

These changes do not represent a significant enough change to quantify changes to the proposed storm drain and conveyance improvements.

#### **Hydrograph Modification Storage:**

This mitigation is contained as a portion of the added floodplain accounted for within the Detention Peak Flow Attenuation elements. The increase in impervious area will increase the required volumes to mitigate this element proportional to the amounts listed in that section, and are accounted for those increases. Some re-staging and re-sizing of control structures and pipes may be required at the time of design to obtain the desired flow releases.

**Detention Peak Flow Attenuation (100-year 24-hour event)**

<b>Watershed</b>	<b>Approved Plan Volume (AF)</b>	<b>Est. Increase Needed (AF)</b>	<b>Total Est. Needed (AF)</b>
Curry Creek	116	1.69	118
EMA (NEMDC)	335	4.88	340
EMC (NEMDC)	133	1.96	135
EMF (NEMDC)	289	4.21	293

**Volumetric Mitigation:**

Special facilities for volumetric mitigation are only proposed in the Curry Creek Watershed, where 25.03 AF of mitigation are proposed. The proposed project is expected to require an additional 0.36 acre feet of storage. Provisions for this storage should be made at the time of design when it will also be decided if the mitigation will occur within the project or offsite.

For the other watersheds long duration mitigation storage is provided within the other mitigation features and is accounted for in the other calculations provided.

If you have any questions or comments, please contact me at (916) 645-5700.

Sincerely,



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Thomas S. Plummer, P.E., CFM