THE RANCH PLAN PLANNED COMMUNITY

PLANNING AREAS 3 AND 4 RUNOFF MANAGEMENT PLAN

Michael Baker INTERNATIONAL

TECHNICAL APPENDIX A

Ranch Plan ROMP Table 19-1

1. REGIONAL HYDROLOGY / MITIGATION		
☑	1.1	Identify the required regional detention facilities that must be in-place with each phased implementation portion of the Planning Area development. ***See Chapter 2, Section 2.4.2. The basins located within the PA-3&4 planning areas provide regional detention for the two planning areas. Basins required for each phase section of PA-3 will be determined in final design plans.***
☑	1.2	Provide corresponding revised ultimate complex regional hydrology model with the modified land use to reflect proposed development to that point in the project and the corresponding ultimate regional detention basin for all six return periods. ***See Chapter 2, Section 2.4.8. A revised ultimate complex hydrology analysis is provided.***
☑	1.3	Demonstrate that adequate regional hydrology mitigation provided through phased implementation of portions of the regional detention basins for current phased construction of development through an "interim" condition complex hydrology model with the portions of the implemented ultimate land use and those portions of the regional detention basins. Complex models should demonstrate that regional hydrology mitigation provided for all six return periods at locations along the mainstem creeks to La Novia Bridge. ***See Chapter 2, Section 2.4.7. A phased hydrology has been provided.***
☑	1.4	Detention basin outlet discharges to one of the approved outlets to the creeks ***See Chapter 2, Section 2.2.3. Figures 2-3 and 2-4 show the outlet locations.***
☑	1.5	Demonstrate that the regional detention facilities meets or exceeds the peak flow mitigation results previously established in the ROMP with build-out of the entire regional stormwater management system. ***See Chapter 2, Section 2.4.7 and 2.4.8. The PA-3&4 ROMP meets peak flow mitigation requirements.***
☑	1.6	Compare estimate footprint area size identified in the ROMP reserved for the regional detention facility and compare to the updated size to ensure adequate area provided in land plan. ***See Chapter 2, Section 2.4.5. Regional basin footprint comparisons have been provided.***
☑	1.7	Provide updated regional hydrology model for proposed total development to be constructed and provide analysis of both peak flow and volumetric changes in regional creek systems, and within San Juan Creek downstream to La Novia Bridge. ***See Chapter 2 Section 2.4.8 and Chapter 5, Section 5.3.5. Both regional peak flow and volumetric changes have been documented.***
☑	1.8	Calculate the quantity of volumetric mitigation hydrology provided from the four different types of stormwater management facilities implemented for all six storm return periods with proposed phase of development and calculate the change of volume associated with the development. ***See Chapter 5, Section 5.3.5 for regional volumetric mitigation.***
☑	1.9	Compare proposed regional hydrologic mitigation facilities to the proposed sizes identified in the ROMP and provide justification for size changes as well as outlet structure. ***See Chapter 2 Section 2.4.8 and Chapter 3, Section 3.1.1. The proposed sizes for the backbone facilities are included in this study.***
☑	1.10	Compare land use for the proposed planning area watershed to the proposed land use assumptions utilized within the ROMP regional hydrology model. Quantify the numeric changes in the watershed parameters such as imperviousness and averaged Curve Number (CN). Prepare revised regional complex hydrology model for all six return periods with adjusted hydrologic parameters following the ROMP criteria and analyses guidelines if changes in land use indicate a potential increased hydrologic impact from those identified within this ROMP. ***See Chapter 2 Section 2.2.1, Table 2-1 and 2-2 and Section 2.4.8, Table 2-15.***
☑	1.11	Field geotechnical investigation of infiltration rates at proposed regional detention facilities and compare to original assumptions for runoff volumetric mitigation. If infiltration less than original assumption demonstrate how mitigation to be satisfied.

		See Appendix N for geotechnical investigation and Chapter 5, Section 5.3.5 for volumetric mitigation.
☑	1.12	Update final dead storage requirements allowance for required total volume storage in regional detention basin. ***See Chapter 2, Section 2.4.2***
☑	1.13	If regional detention facility relocated or split into multiple basins then provide a revised mitigated complex regional hydrology model to demonstrate that the mitigation of the flows for all six return periods meets then same or lower target values than in the ROMP. ***See Chapter 2, Section 2.4.8.***
☐	1.14	Provide a more detailed *Operations and Maintenance Plan* for the proposed regional detention facilities as well as an estimate of the annualized maintenance costs. ***To be provided in a separate document with design plans.***
☑	1.15	Locations where regional detention facilities are also providing the local flood control hydrology mitigation then revised analyses will be performed to determine if the regional or local watershed mitigation requirements control the sizing of the detention facility. Provide revised hydrology analysis for all six return period for local and regional to demonstrate the sizing meets the controlling condition. ***See Chapter 2 Section 2.2.4 and Section 2.4.8 for local and regional hydrology.***
☑	1.16	Provide multi-day analysis of the regional detention basin for the 100-year storm to demonstrate adequate sizing. ***See Appendix B.9 for local multiday analysis.***
☑	1.17	Demonstrate and provide the supporting analyses showing that the regional detention facility meets the minimum County requirements for detention facilities based on the *Draft Design Criteria for Retarding Basin (Phil Jones, June 2001).* ***See Chapter 2, Section 2.4.2. Basin design conforms with the County Design Criteria and Division of Safety of Dams (DSOD) requirements.***
☑	1.18	Provide separate High Confidence (HC) hydrology analysis for the appropriate storm return period for spillway sizing of detention facilities. ***See Appendix B.1.***
☑	1.19	Provide hydraulic sizing of the spillway and stabilized overflow path to the tributary creek system. ***To be provided in a separate document with design plans.***
☑	1.20	Perform permeability testing at stormwater management basin site to verify infiltration values for assessment of regional volumetric mitigation. ***See Appendix N- for geotechnical investigation and Chapter 5, Section 5.3.5 for volumetric mitigation.***
2. FLOODPLAIN HYDRAULICS		
☑	2.1	Demonstrate that the proposed grading from the development does not encroach within the 100-year floodplain limits or demonstrate through engineering analysis that appropriate mitigation has been provided. ***See Chapter 3, Section 3.2.1, Figures 3-4 and 3-5.***
☐	2.2	Provide the appropriate engineering analysis and FEMA CLOMR submittal package if there is any encroachment within the 100-year floodplain. ***See Chapter 3, Section 3.2.1, Figures 3-2a to 3-2b and 3-3a to 3-3c. CLOMRs will be obtained in final design if needed.***
☑	2.3	Prepare revised hydraulics impacts analysis for changes to the floodplain and identify/justify utilization or not using appropriate mitigation measures. ***See Chapter 3, Section 3.2.1.***
☑	2.4	Provide updated floodplain hydraulic model of the baseline existing condition if there has been significant storm events since the original floodplain hydraulic models and update cross section geometry to reflect changes in the stream geometry. ***See Chapter 3, Section 3.2.1. Updated baseline hydraulics is provided due to changes in the baseline hydrology.***

☑	2.5	Provide appropriate hydraulic analysis for any structures to be constructed within the floodplain. ***See Chapter 3, Section 3.1.2.***
3. STREAM STABILITY		
☑	3.1	For development areas adjacent major tributary creeks provide appropriate justification and analysis to demonstrate grading sufficient distance from potential long-term lateral erosion of streambank or provide appropriate mitigation. Analysis should include both quantitative fluvial analysis and geomorphic analysis similar to the PA1 *Lateral Stream Bank Erosion Analysis.* ***See Chapter 4, Section 4.1, 4.2, and 4.3.***
☑	3.2	Update *Stream Erosion Monitoring Program* to extend the proposed monitoring limits to include new development. ***See Appendix L.***
☑	3.3	Provide updated sediment continuity analysis similar to analysis in ROMP or more detailed fluvial analysis for portions of the natural major creeks adjacent to development. Updated analysis should reflect hydrology and sediment inputs based on the current land use and grading for development. ***See Chapter 4, Section 4.1, 4.2, and 4.3.***
☐	3.4	Provide the appropriate scour analysis for storm drain outfall structures and protection of the structure based on the analysis. ***Specific scour analysis will be provided in a separate document with final design.***
☐	3.5	Provide appropriate scour analysis for any structure, such as bridges, constructed within the floodplain. ***To be provided in a separate document with design plans.***
4. LOCAL PLANNING AREA HYDROLOGY/MITIGATION		
☑	4.1	Provide a mapping comparison (overlay) of the Planning Area local hydrology sub-basin delineation to the different storm drain outlets compared to the original hydrology mapping delineation used in the ROMP local planning area delineation. ***See Chapter 2, Section 2.2.3, Figures 2-3 and 2-4.***
☑	4.2	Provide analysis to compare changes in the hydrologic characteristics for the refined development area compared to the original hydrologic characteristics determined in the ROMP. ***See Chapter 2, Section 2.2.1, Tables 2-1 and 2-2.***
☑	4.3	Provide an updated and detailed Planning Area hydrology study for the PA ROMP and PA MPD that addresses all the minimum requirements in the outlined in the Regional ROMP. ***See Chapter 2, Section 2.2.4. The revised hydrology and storm drain hydraulics should be used for the backbone drain design. Detailed catch basin hydrology will be prepared in conjunction with the storm drain improvement plans.***
☑	4.4	Prepare an updated rational method hydrology analysis for the proposed development area for all six return periods. ***See Chapter 2, Section 2.2.4, Table 2-3.***
☑	4.5	Prepare updated hydrographs for the tributary development watershed area to the proposed hydrologic mitigation facilities for all six return periods. ***See Appendix B.7, B.8, and B.9.***
☑	4.6	Perform revised hydrologic routing analysis to refine the sizing of the local planning area hydrologic mitigation detention basin facility and demonstrate that the mitigation objective is achieved for all six return periods. ***See Chapter 2, Section 2.2.4.***
☑	4.7	Provide the sizing of the additional elements of the local planning area hydrologic mitigation facility including justification of the total storage volume with allowances for debris storage and the secondary outlet with emergency spillway as well as the secondary stabilized flow path to the downstream channel. ***To be provided in a separate document with design plans.***
☑	4.8	Provide analysis to demonstrate that the mitigation for the runoff volume provided by the local detention facilities required in the Regional ROMP analyses is still provided.

		See Appendix B.8.
☑	4.9	Provide field investigation of the geotechnical characteristics at the proposed local detention facility including the magnitude of the infiltration and compare to value used for the volume mitigation requirements, provide appropriate adjustment if additional mitigation required. ***See Appendix N for geotechnical investigation and Chapter 5, Section 5.3.5 for volumetric mitigation.***
5. LOCAL PLANNING AREA DRAINAGE FACITLIES		
☑	5.1	Proposed planning area storm drain all discharge into both water quality and flood control mitigation facilities prior to discharging to the creek, or demonstrate alternative compliance with the ROMP/EIR. ***See Chapter 2.4.2 and Chapter 5, Section 5.3.***
☑	5.2	Planning area drainage facilities must outlet at one of the "approved" locations that were permitted as part of the previous environmental regulatory process, or demonstrate that permits will be revised to facilitate new proposed outfall locations. ***See Chapter 2, Section 2.2.3. Figures 2-3 and 2-4 show the outlet locations.***
☑	5.3	Provide mapping comparison (overlay) of the original proposed stormwater management/drainage facilities between the ROMP recommendations and the current development planning. ***See Chapter 2, Section 2.2.3. Figures 2-3 and 2-4 show the outlet locations.***
☑	5.4	Provide analyses to demonstrate that stabilized channel is provided between the storm drain outlet to the "active" natural channel of the floodplain. ***See Exhibits 1 and 2.***
☑	5.5	Proposed refined sizing of the backbone drainage facilities which would include hydraulic water surface profile model to define the approximate layout of the facilities vertically or slopes and sizing of the facilities. ***See Chapter 3, Section 3.1.1, Exhibits 10 and 11.***
☑	5.6	Prepare an analysis to demonstrate that within the interior of the development area that drainage conveyance can be provided for the minimum design frequency as well as the larger 100-year event with the excess runoff following surface flow path. ***See Chapter 3, Section 3.1.1.***
☐	5.7	During facility design, particularly hydrologic mitigation facilities, provide operation and maintenance manual for the facility. ***To be provided in a separate document with design plans.***
☑	5.8	Demonstrate how debris and sediment is mitigated for locations where planning area storm drains intercept upstream offsite natural watershed areas. ***See Chapter 2, Section 2.4.2.***
6. WATER QUALTY/HYDROLMODIFICATION		
☑	6.1	Describe how site design, source control, water quality, and hydromodification control BMPs will be implemented at the Master Area Plan level. ***See Chapter 5, Section 5.3, Figure 5-2.***
☑	6.2	Identify the Combined Control System components that will be implemented for water quality and hydromodification control. ***See Chapter 5, Section 5.3.***
☑	6.3	Identify water quality and hydromodification control facility sizing and the location within the subject Master Area Plan area. ***See Chapter 5, Section 5.3.***
☑	6.4	Provide analyses that show that proposed regional treatment and hydromodification control BMPs will not result in a net impact from pollutant loadings over and above the impact caused by capture and retention of the design storm with on-site LID BMPs. ***See Chapter 5, Section 5.3.***
☑	6.5	Identify the outfall locations that are subject to hydromodification control and those that are exempt. Section 15.2.3 of the ROMP identifies the outfall locations that are subject to

		hydromodification control at the date of ROMP approval. Verify the currently applicable hydromodification requirements at the time of planning area WQMP preparation. ***See Chapter 5, Section 5.3.***
☑	6.6	Identify the low flow threshold for the flow range of interest for flow duration control for receiving waters subject to hydromodification control using a channel specific investigation. ***See Chapter 5, Section 5.3.***
☑	6.7	Assess the proposed flow duration control facilities for monthly water balance at the tributary scale (i.e., Chiquita Canyon, Gobernadora Canyon, Verdugo, and XXX Canyon). The water balance is a monthly accounting of how precipitation and irrigation water becomes distributed among (a) surface runoff, (b) groundwater infiltration that contributes to base flows in streams or deep groundwater recharge, and (c) evapotranspiration. ***See Chapter 5, Section 5.3.4.***
☐	6.8	Include a Planning Area specific *BMP Monitoring Plan.* ***To be provided in final design.***
☑	6.9	Include a Planning Area specific *Stream Monitoring Program* (see checklist item 3.2) ***See Appendix L.***