November 25, 2008

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Re: Response to Comments Regarding the Existing Miramar Hotel Site - Floodplain and Hydraulic Review from PACE - # 9242E

Dear Ms. Palmer,

Pacific Advanced Civil Engineering, Inc. (PACE) is pleased to provide the following responses regarding the existing Miramar Hotel Site Floodplain and Hydraulic Review. The responses from PACE are as follows:

General Comments

1. *"The Pace review was based on the assumption that the Project potentially receives flow from Oak Creek, San Ysidro Creek and Romero Creek watersheds. Since only Oak Creek and San Ysidro Creek are potentially tributary to the Miramar Project, the initial assumption in the review is without any support and many of the following findings in the Pace report are consequently incorrect."*

PACE Response:
This statement is inaccurate. The PACE study is actually based upon the evaluation of the conveyance capacity of Oak Creek, without regard to the source of stormwater runoff. These are two separate issues. In the existing condition, Oak Creek has insufficient capacity to convey the design storm event and/or the 100-yr storm runoff. This existing deficiency in the creek conveyance capacity results in overtopping of the creek bank(s) and depression storage within the existing Miramar Hotel site.

Regardless of the source of storm runoff, the existing Oak Creek channel has limited conveyance capacity that results in flooding of the Miramar Hotel site and other areas that would be worsened by the proposed improvements. The proposed improvements will eliminate the peak attenuating affects that depression storage provides to the watershed(s) runoff hydrograph. If that attenuation is eliminated by removing the existing natural temporary depression/basin storage that is provided in the sump of the Miramar Hotel site, then the peak will be translated downstream of the existing channel constriction which will result in a relative increase in the design storm HGL (water surface profile) and cause a backwater condition to propagate upstream since the system operates in the subcritical flow regime. This backwater condition will result in increased flooding depths upstream and possibly farther spreading than historical flooding.

2. *"The Pace report indicates that an off-line detention/retention basin should be modeled as part of the Project analysis. An on-line basin was modeled in the March 7, 2008 report. The storage configuration is not appropriate for off-line storage because the ponding is of an on-line condition, not off-line."*

PACE Response:
The existing condition Miramar hotel site functions as an offline basin receiving storm runoff from Oak Creek only when flow in the creek exceeds the creek conveyance capacity. This is by definition an offline

basin. If, it were an "online" or "inline" basin then, Oak Creek would flow through the existing Miramar Hotel site depression and all flows (storm and non-storm) regardless of flowrate would be directly tributary to that basin/depression. This clearly is not the case. Low-flows in Oak Creek bypass the Miramar site and are conveyed downstream to the creek outlet. Again, this condition is indicative of the definition of an "offline" basin system. In an offline system, the basin is separated from the channel. In an inline system, the channel/creek flows through or directly into the basin.

3. *"The Pace report repeatedly suggests that the Caltrans culverts should have been modeled. The capacity of the Caltrans culverts were not modeled because even at very high flows, changes in water surface elevation due to the Project do not extend to or affect the Caltrans culverts. Therefore, the analysis of any of the Caltrans culverts is irrelevant."*

PACE Response:
A failure to model the actual existing condition demonstrates a failure to recognize the importance of correctly determining how much water can actually be conveyed within the banks of Oak Creek. The reason this is important is that the culverts act as a hydraulic control in the Oak Creek watershed system. Every watershed and storm conveyance system has a series of hydraulic controls. The hydraulic controls establish the performance limits of the system as a whole. The hydraulic control acts like a flow regulator or valve in the system. If the hydraulic control restricts the flows to, for example 600 cfs then, even if the channel capacity both upstream and downstream of that control are greater than 600 cfs, the system as a whole can only convey 600 cfs. This is analogous to the saying that, "a chain is only as strong as its weakest link." With this understanding, it is then clear how the Caltrans culverts become very important to establishing or determining the actual existing condition operation of the Oak Creek conveyance system. Since the Caltrans culvert is a hydraulic control or constriction in the system and it limits the conveyance capacity of Oak Creek then, all storm flows conveyed to that point in the creek that are in excess of the conveyance capacity of the control (the culverts) must be conveyed elsewhere. They do not just disappear. As described in the response to comment #1, the result of the constriction is a backwater condition that propagates upstream in a subcritical system. The Caltrans culverts are a constriction to flows conveyed beneath the 101 Freeway. This constriction or hydraulic control limits the amount or rate of storm runoff that can be conveyed safely beneath the freeway. Any and all flows in excess of the maximum conveyance capacity in the culvert will be conveyed elsewhere. This is directly related to floodwaters overtopping the 101 Freeway in this location. Conveyance of stormwater runoff over the surface of the 101 Freeway, as opposed to beneath the surface via culverts, is a direct result of insufficient conveyance capacity in the channel system of Oak Creek, and possibly others. Since the general relief of the land is from northerly to southerly, from the coastal hills and mountains to the ocean, the storm runoff that overtops the northerly side of the freeway is conveyed southerly across the freeway toward the existing Miramar Hotel site. The existing topographical sump area provided within the Miramar Hotel site provides depression storage as described in the response to comment #2 above. If the proposed site plan were to remove this depression storage, then the result would be the elimination of temporary storage area in the depression or basin, which would increase flooding elsewhere.

The actual baseline existing condition must be established correctly in order to provide a true evaluation of the impact that the proposed project would have on the watershed drainage/conveyance deficiencies and resultant flooding.

4. *"The Pace report indicates that an ultimate condition with Caltrans culverts improved should be modeled. The worst case condition was modeled in the March 7, 2008 Flood Analysis, assuming that all Oak Creek Flow and all right overbank flow from San Ysidro Creek were received into Oak Creek. Improvements to Caltrans culverts will only decrease the amount of flow to Oak Creek, not increase it."*

PACE Response:
The supposition that "*Improvements to Caltrans culverts will only decrease the amount of flow to Oak Creek, not increase it,"* cannot be supported without 2-dimensional hydraulic modeling to accurately and

definitively determine the amount (volume and rate) of cross watershed spillage between each creek system. Without a hydraulic model and analysis to support it, this is only a guess as to how water is split between the three (3)-creek system with multiple deficiencies. No modeling has been provided therefore, there is no way to say that this theory is either correct or incorrect. A 2-dimensional hydraulic model is the current state of the art in watershed hydraulic modeling and is the only way to accurately measure the affect that each hydraulic control in each creek has on the spillage rate between each creek. Without this information or model, this is merely a guess.

The ultimate condition should be modeled with the Caltrans culvert improved since there is a plan to fund the improvements of said culverts and they will have a definite affect on the watershed. As described in the response to comment #3 the culvert(s) are a hydraulic control in the Oak Creek system. By definition, they control the hydraulic performance of the creek system as a whole. If the control is changed or modified then the hydraulic performance of the creek system will respond to that change. Therefore, failure to model the true ultimate condition could have disastrous results and again demonstrates a failure to understand the relationship of the individual elements of the watershed system as a whole.

5. *"The Pace report suggests that the hydraulic analysis should include a detailed calculation of the constriction of the concrete channel downstream of the Union Pacific Railroad and its impacts upstream of the railroad. The Penfield & Smith analysis of March 7, 2008 includes a very detailed hydraulic analysis of the downstream constriction, overflow and losses through the Union Pacific Railroad bridge. It also includes a detailed analysis of the impacts of those water surface elevations on the detention basin routed (ponding) water surface elevations upstream of the Union Pacific Railroad bridge."*

PACE Response:
The modeling procedure was incorrect. A modeling of the actual existing conditions and the actual proposed conditions should be provided. The creek cross-sections do not reflect the existing condition. The Manning's n-value does not reflect the actual vegetation growth or the existing improvements in Oak Creek. The model does not accurately reflect the existing Caltrans culvert cross-sections. The model does not include or allow for flow in the overbank areas. The model does not include or model flow splitting that would occur at a certain water surface elevation in the creek. The model does not provide cross-sections at all the critical hydraulic elements in the creek. For these reasons, the provided models are considered to be deficient.

6. *"The Pace report suggests that more points should be included in the cross sections. The cross sections are based on the best available topographic mapping and detailed hand field topographic mapping. The cross sections are representative of the various cross sections, and are more than sufficient for purposes of this analysis."*

PACE Response:
One of the major elements in determining the hydraulic losses between cross-sections and the Manning's n-value at each cross-section for a conveyance facility is cross-section irregularity. If the irregularity of the cross-section is not accurately reflected (within reason) then the results could be somewhat skewed and not representative of the actual conditions. In addition, if the cross-sections of the stream are modeled as being uniform and lacking in irregularities between adjacent cross-sections then the hydraulic model would tend to reflect a more efficient conveyance section with the ability to convey a larger volume of water per unit time than is realistic for that creek system. It is imperative with a creek/stream system with marginal performance to create accurate stream cross-sections.

7. *"The Pace report suggests that a Manning's roughness value of 0.035 should be applied to the overbanks within the Miramar Project. A Manning's roughness value of 0.035 was used in the Penfield & Smith March 7, 2008 report to represent the overbanks within the Miramar Project."*

PACE Response:
Comment duly noted.

8. *"The Pace report suggests that a detailed model of the US 101 freeway be prepared in order to determine the contribution of each creek. The contribution of each creek is irrelevant because backwater impacts on Caltrans facilities are non-existent to negligible for even very high flow rates. Additionally, such a detailed analysis would be theoretical only, typically making gross assumptions as to storm intensity, duration and coverage. The major concern for this project and adjacent neighbors is how much water is in Oak Creek between the Pacific Ocean and South Jameson Lane, not how it gets there. The overflow of the US101 is a regional problem not impacted by the Miramar Project."*

PACE Response:
Again, this comment reflects a misunderstanding of the watershed hydraulic controls and the related stream response to the control. Please review the response to comment #3. Contrary to the commenter's understanding, there is a way to determine the interaction or comingling of overflow from each creek between each system. A 2-dimesional hydraulic model as discussed in the response to comment #4 would provide the most reliable results. A 1-dimensional hydraulic model, such as HEC-RAS could be used to provide a reasonable degree of accuracy by redefining the model parameters and the cross-section orientation. Neither of these calculated results could be characterized as theoretical since they would be based upon the use of equations developed from an empirical study. There would be no need for gross assumptions for parameters that can be measured in the field, on maps, and on as-built plans. There is also no need for gross assumptions of hydrologic parameters that can be calculated for each watershed by developing a hydrograph for each watershed. A 2–dimensional model as well as HEC-RAS could be used to model unsteady flow conditions (a hydrograph) rather than assuming a single constant peak flowrate. No gross assumptions are necessary if the correct models are employed in the manner they were intended to be used.

The commenter states that, "*The major concern for this project and adjacent neighbors is how much water is in Oak Creek between the Pacific Ocean and South Jameson Lane, not how it gets there. The overflow of the US101 is a regional problem not impacted by the Miramar Project*." The major concern for this project, from the perspective of those already living nearby the site is that their homes and lives could be placed in even greater peril and they can experience an even greater likelihood of flooding by the proposed elimination of the depression storage that is provided by the existing site. It is imperative that the project engineer understand the gravity of ignoring or overlooking the operation of the existing overall system. This leads to an erroneous conclusion that the proposed condition would not affect the nearby homes.

If you have any questions regarding the above responses, please feel free to give us a call at PACE.

Sincerely,
PACIFIC ADVANCED CIVIL ENGINEERING, INC.

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Project Manager

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PACE