Review of the Hydrology Section of the Streetscape 101 Final Environmental Impact Report (EIR)

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1 Executive Summary

This is a review of *Section 3.2 Hydrology of the Volume 1: Final Environmental Impact Report* [6] of the *North Highway 101 Leucadia Streetscape Improvements Project Phase:* ***Project Design*** [5]. This review was conducted and submitted by a private citizen, and project-area resident, for the purpose of reporting the inadequacy of the hydrological evaluation of the proposed project area. The EIR is not credible with respect to the hydrologic analysis it uses to conclude that there will be no significant, adverse impacts on this low-lying area within 0.25 miles (0.33 kilometers) of the Pacific Ocean. While it is called a design, it is little more than a concept. **A summary of the findings is provided here.**

(I) The long-standing flooding problems, including those subject of a grand jury investigation in the project area, are completely ignored (Figure 1).

(II) The EIR flatly concludes that all additional sources of wet- and dry- season runoff, and associated mass loading, introduced by the project, will be mitigated by bioremediation and adherence to existing BMPs.

(III) The method of analysis used in evaluating the stormwater runoff is inadequate due to both the complexity and size of the project area. Conclusions based on this analysis are specious.

RECOMMENDATIONS

The 2011/2012 San Diego County Grand Jury recommends the City Council of Encinitas take the following actions:

12-42:	**Develop an immediate plan of action or Council resolution to solve Leucadia's storm water flooding.**
12-43:	**Include storm water flow through the bluff at Leucadia Roadside Park as part of an overall storm drain fix.**
12-44:	**Explore storm drain, capital improvement tax funding for Leucadia via formation of a Special Assessment District.**

Figure 1: Grand jury recommendations for Leucadia stormwater management [7][9]

Figure 2: Highway 101 setting surrounding Encinitas using NAIP imagery and county parcel maps. The project area is along the road, Highway 101, just east of the Pacific Ocean. It is an already highly-developed, densely populated, and heavily trafficked area. Traffic often uses it as an alternate route when the Interstate 5 Freeway, the other major roadway just to the east, backs up north- or southbound.

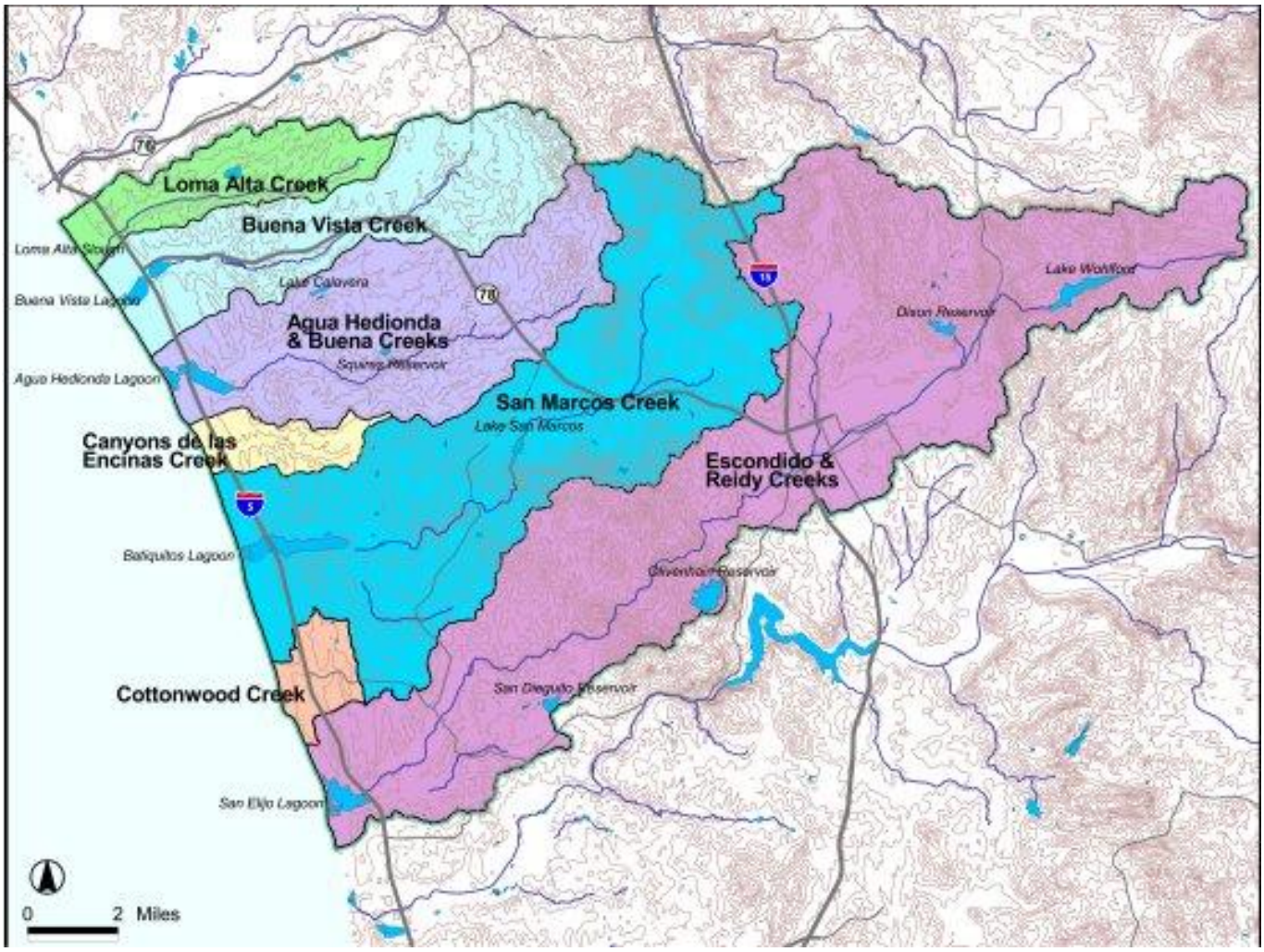

Figure 3: Carlsbad hydrologic unit is the geophysical setting in which the project area is located within a sub-basin terminus between Batiquitos Lagoon and Cottonwood Creek, west of the Interstate 5 freeway adjacent to the Pacitic Ocean [1].

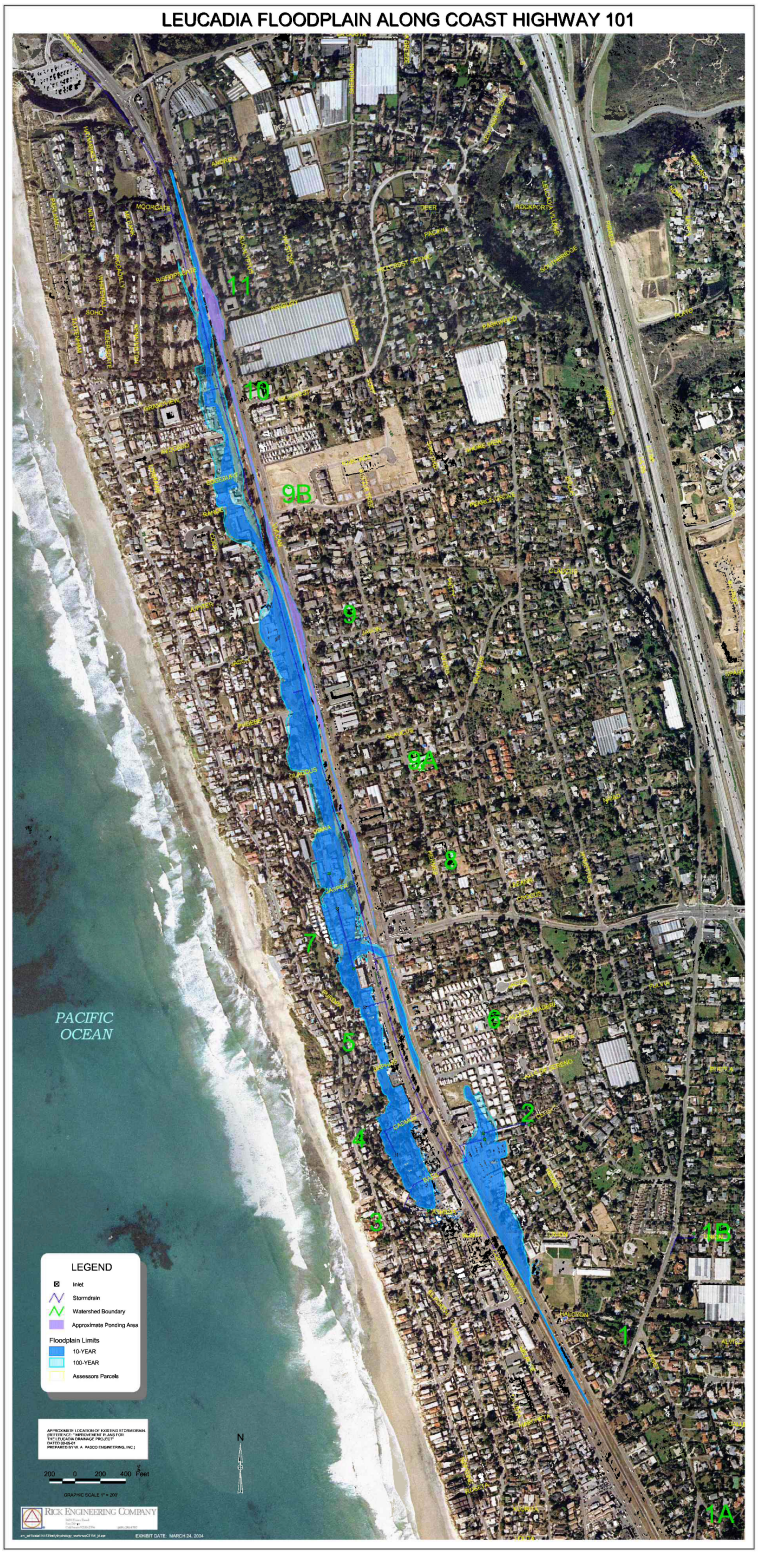

Figure 4: Leucadia floodplain map from Rick Engineering study. Image depicts results of a 10-year and 100-year flood based on data that is almost 20 years old. Nonetheless it shows the homogeneous tendency of the project area to flood. Recent results indicate that the frequency and severity of such events is increasing due to climate change [2][11][10],[8]

2 Comments on the EIR Hydrology Section 3.2

As stated in *Section 3.2 HYDROLOGY AND WATER QUALITY* of the EIR Volume 1: *...This section of the EIR discusses the proposed Project relative to the existing regional and local drainage/ hydrological and water quality conditions of the Project corridor and its surroundings; potential Project impacts to these resources; and mitigation measures to reduce significant impacts.*

(1) **Prior Relevant Analyses by Grand Jury**: The EIR analysis completely ignores the findings and recommendations (Figure 1) of a Grand Jury investigation of the City of Encinitas with respect to the adequacy of existing storm drain capacity and capability in Leucadia. The proposed project will exacerbate the existing, documented, umitigated problems there. Additional hard-surfaces will add to existing contaminant loading being pumped to the ocean from this project as well as adding to high-speed runoff that is already overloading an inadequate stormwater system.

(2) **General Comment on Map Figures:** The maps presented in this section of the EIR are illegible at the level of the labelling referenced in the text. This makes it impossible to vet the spatial accuracy of the labelling and the mapping.

(3) **p.3-2.1: Local Setting:** The use of the Batiquitos Subunit (HAS 904.51) area as the denominator in Table 3.2-1 calculations of percentages gives a spurious impression that the area being discussed has little impact on the overall hydrologic output of the project area. This deceptive use of spatial extent significantly understates the extensive nature of the spatial changes in hard surface area within the project domain and the consequent impacts of those changes on coastal stormwater discharges and uncontrolled runoff during flooding events. A fair comparison should limit the calculations to the terminal extent of the drainage basins where the project is proposed and the surface water runoff has its greatest impacts. This is in violation of the *Significance Guidelines* [4, 5, 6] specified in the EIR (p. 3-2.8) yet has been ignored in the *Analysis* in the EIR (p. 3.2-9). Reference: USGS San Diego Hydrogeology.

(4) **p. 3-2.3 Flooding**: **The method for stormwater runoff estimation is incorrect (cf. Section 5).** Furthermore, the study references an out-of-date study, *Rick Engineering. Hydrologic and Hydraulic Study for Leucadia Drainage Improvement Alternative. Adopted June 14, 2004*. While acknowledging the impacts of the project on 10-year flood areas identified by that study, the EIR ignores the more recent 2011/2012 findings and recommendations of the Grand Jury (Figure 1). Nonetheless, the acknowledged impacts on the *Rick Engineering* 10-year flooding analysis are in violation of *Significance Guidelines* [4, 5, 6] specified in the EIR (p. 3-2.8) but have been ignored in the *Analysis* in the EIR (p. 3.2-9).

(5) **Groundwater**: The EIR states *...The Project corridor is approximately 72% impervious in the existing condition (Figures 3. 2 -2a through 3. 2 -2e), but does not occur within the Batiquitos Lagoon Valley or San Elijo Valley groundwater basins'*. However, the non-point source runoff into these groundwater basins is suspect based on the inadequacy of the stormwater-runoff analysis methodology (cf. Section 5).

(6) **Surface Water Quality** The EIR acknowledges wet- and dry-weather pollution sources, but does not address existing and projected increases in contaminant loading due to increased traffic congestion (longer dwell-times for vehicles along the 101 corridor), parking (leaking fluids) and increased hard-surface for sub-aerial deposition and vehicular contaminants. To wit, *p. 3.2-3...In general, storm water can potentially contain a host of pollutants such as trash and debris, bacteria and viruses, oil and grease, sediments, nutrients, metals and toxic chemicals. These contaminants can adversely affect receiving and coastal waters, flora and fauna, and public health. Water quality issues are especially prevalent during rainy periods; however, with non -storm water urban runoff (i.e., irrigation or car washing) also entering the storm drain system, storm water pollution can be a year -round problem. Combinations of urban runoff, agricultural runoff, sewage spills, livestock and domestic animals affect water quality within the Batiquitos Subunit (HSA 904.51).*

(1) **Section 401, Water Quality Certification**

(2) **Section 402, National Pollutant Discharge Elimination System (NPDES)**: Disturbance of one or more acres triggers NPDES coverage under the General Construction Permit which requires Filing of a Notice of Intent (NOI) with SWRCB; Implementation of a Storm Water Pollution Prevention Plan (SWPPP) that specifies Best Management Practices (BMPs) to prevent grading /construction-related pollutants (including sediment from erosion) from contacting storm water and moving off-site into receiving waters, as well as elimination /reduction of non -storm water discharges; and Inspections of all BMPs. **The General Construction Permit also contains requirements for post-construction storm water management in the form of long-term BMPs, particularly for impervious surface runoff.** *Where are the long-term BMPs specified?*

(3) **Section 404, Discharge of Dredged or Fill Materials**: Not applicable.

(4) **Section 303d, Water Quality Standards and Implementation Plans**: The impaired water bodies into which runoff flows from the Project corridor are listed in Table 3.2-2, 303(d) List of Impaired Water Quality Segments for the Project Area. This is identified as San Marcos Creek with pollutants DDE, Phosporus, and Selenium. Howver, San Marcos Creek, which feeds Batiquitos Lagoon, is not identified anywhere else as a sink for stormwater runoff. This, again, emphasizes the inadequacy of the hydrological analysis of stormwater runoff.

(5) **National Flood Insurance Program (NFIP)**: The EIR states, but does not address the need for floodplain reduction in the light of the proposed project. *...The NFIP enables participating communities to purchase flood insurance. Flood insurance rates are set according to flood-prone status of property as indicated by a FIRM developed by FEMA) FIRMS identify the estimated limits of the 100-year floodplain for mapped watercourses, among other flood hazards.* ***As a condition of participation in the NFIP, communities must adopt regulations for floodplain development intended to reduce flood damage for new development through such measures as flood proofing, elevation on fill, or floodplain avoidance. The City participates in the NFIP***.

(7) **Coastal Zone Act Reauthorization Amendments** While stormwater and urban runoff are regulated by the NPDES program, virtually all other nonpoint source are subject to the Coastal Nonpoint Pollution Control Program(CNPCP) under Coastal Zone Act Reauthorization Amendments (CZARA). The EIR does not address this other than to mention it.

(8) **Porter-Cologne Water Quality Control Act** According to the Basin Plan, present and future beneficial uses associated with Cottonwood Creek and the reach of the Pacific Ocean parallel to the Project corridor (which receives runoff from the lands within and in the vicinity of the corridor) include municipal and domestic supply MUN), agricultural supply (AGR), industrial service supply (IND), water contact recreation (REC -1), non - contact water recreation (REC -2), warm freshwater habitat (WARM), cold freshwater habitat (COLD), and wildlife habitat (WILD). Section 13260 of the Porter -Cologne Water Quality Act requires that any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the State, other than into a community sewer system, must submit a report of waste discharge to the applicable RWQCB. Waste" is defined in the Basin Plan to include any waste or deleterious material including, but not limited to, waste earthen materials (such as soil, silt, clay, rock, or other organic or mineral material) and any other waste as defined in Section 13050(d) of the Porter-Cologne Water Quality Act.

(9) **San Diego Municipal Storm Water Permit** The City's local BMP Design Manual, adapted from the Countywide Model BMP Design Manual, and adopted in February 2016, provides guidance on specific design measures to reduce development impacts with regard to treating storm water runoff and maintaining water quality. This is stated but not addressed in any way relevant to this project.

(10) **City General Plan**: Addresses multiple water quality and watershed protection principles and proactive policies that pertain to water pollution and land use decisions. The policies place limits on disturbances to drainage systems and strive to avoid development in areas susceptible to erosion and sediment loss. The ***General Plan also discourages the use of large impervious surfaces, minimizing the trans-***

port of urban runoff and pollutants. The relevant hydrology /water quality goal and policies are listed in Section 2. 3 of this EIR and are from the Resource Management Element (Goals 1- 2 and Policies 1. 1, 2. 1 and 2. 3); Circulation Element (Policy 1. 19); and Public Safety Element (Policies 1. 4 and 1. 15). The City implements these relevant General Plan policies via the City' s Municipal Code, BMP Design Manual, and other various land use plans and permits. The EIR does not address how this project complies with the City's General Plan requirements.

(11) **North 101 Corridor Specific Plan (N101SP) [4]** The NI 01 SP addresses the unique aspects, problems, and opportunities of the North Highway 101 Corridor within the Leucadia community in order to maintain its identity, community character and scale, while fostering commercial revitalization of the corridor. Goals of N101SP Section 2.2.4 (Infrastructure and Public Safety) that are applicable to drainage issues are as follows: A. Eliminatefloodingandimprovedrainage. B. Underground utilities and provide more lighting

(12) **City Municipal Code [3]**: These conditions apply only to the construction phase and do not address long-term hydrological concerns. ...*Chapter 20. 08 of the City Municipal Code (Watercourse Protection, Storm Water Management and Discharge Control Ordinance) regulates discharges into the storm water conveyance system and downstream receiving waters to preserve and enhance water quality for beneficial uses and protect the health, safety and welfare of the public by: Prohibiting non -storm water discharges to the storm water conveyance system; Eliminating pollutants in storm water to the maximum extent practicable, including pollutants from both point and non -point sources; Prohibiting activities which cause, or contribute to, exceedance of State and federal Receiving Water quality objectives; and Protecting watercourses from disturbance and pollution. Chapter 20.08 establishes the City' s legal authority to enforce a wide spectrum of storm water and water quality related requirements, and defines minimum BMP standards for various community sectors including residential, commercial, construction, municipal and development activities.*

3 Critique of the Analysis of Significant Impacts

Issue: 1 The EIR states that ...*A SWQMP has been prepared for the Project (Appendix F) which identifies pollutants of concern due to grading /construction activities and urban runoff.* The methodology on which this is based is identified as deficient (cf. Section 5).

Issue: 2 No apparent issues with groundwater depletion or recharge.

Issue: 3 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or offsite.

Issue: 4 **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or offsite.**

Issue: 5 **Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.**

Issue: 6 Otherwise substantially degrade water quality.

Issue: 7 **Place housing within a 100 -year flood hazard area as mapped on a federal Flood Hazard Boundary or FIRM or other flood hazard delineation map.** Not Applicable.

Issue: 8 **Place within a 100 -year flood hazard area structures which would impede or redirect flood flows.** This issue is not applicable to the proposed Project.

Issue: 9 **Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.** This issue is not applicable to the proposed Project.

Issue: 10 Inundation by seiche, tsunami, or mudflow. There is no risk of inundation of the Project corridor by seiche or mudflow. According to the Tsunami Inundation Mapfor Emergency Planning - Encinitas Quadrangle', the Project corridor is not located within an area at risk of inundation by a tsunami.

Issue: 11 **Result in hydrology and water quality impacts that are individually limited, but cumulatively considerable**: The EIR states *...**It is assumed that** appropriate storm water BMPs and drainage improvements would be implemented and conditions of approval required for these cumulative projects in accordance with applicable local, State and federal regulations. **Therefore**, the baseline cumulative impacts associated with hydrology and water quality in the cumulative impact area would be less than significant.* **Aside from being grammatically incomplete, this statement has no credible engineering basis. It simply says: *trust me*.** Furthermore, the EIR states *...In the post -development condition, BMPs are proposed in the form of bioretention areas.* These adequacy of these BMPs with respect to the project area were not evaluated and addressed. Their effectiveness related to this project are unquantified in the face of the proposed non-specific concepts. These are not design evaluations and lack sufficient and necessary engineering detail to support the conclusion of non-significant, cumulative impacts. There is no discussion addressing the exacerbation of long-standing drainage and flooding problems referred to above.

4 Excerpted *Guidelines for the Determination of Significance* (EIR Vol. I; p. 3-2.8)

These are guidelines specified in the EIR although no reference to their authority is provided. It is unclear what relevance these could or should have to any regulatory decisions. Nonetheless, it is claimed here that: *...A project would be considered to have a significant impact if it would:*

1. Violate any water quality standards or waste discharge requirements;
2. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e. g., the production rate of pre - existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or offsite;
4. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off -site;
5. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff,
6. Otherwise substantially degrade water quality;
7. Place housing within a 100 -year flood hazard area as mapped on a federal Flood Hazard Boundary or FIRM or other flood hazard delineation map;
8. Place within a 100 -year flood hazard area structures which would impede or redirect flood flows
9. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam
10. Inundation by seiche, tsunami, or mudflow
11. Result on cumulatively considerable impacts on hydrology and water quality.

5 Review of EIR Appendix F: Preliminary Drainage Report and Storm Water Quality Management Plan (SWQMP)

(1) The analytical method used for the DRAFT SWQMP is incorrect due to the size and complexity of the watershed in which the proposed project is situated as defined in TABLE 3.2 -1. PROJECT WATERSHED (i.e., 22,120 acres = 34.5 square miles). As per the San Diego County Hydrology Manual, referenced in Appendix F as justification for using the Rational Method for stormwater analysis,

- *3.1 THE RATIONAL METHOD The Rational Method (RM) is a mathematical formula used to determine the maximum runoff rate from a given rainfall. It has particular application in urban storm drainage, where it is used to estimate peak runoff rates from small urban and rural watersheds for the design of storm drains and small drainage structures. The RM is recommended for analyzing the runoff response from drainage areas up to approximately 1 square mile in size.* ***It should not be used in instances where there is a junction of independent drainage systems or for drainage areas greater than approximately 1 square mile in size.*** *In these instances, the Modified Rational Method (MRM) should be used for junctions of independent drainage systems in watersheds up to approximately 1 square mile in size (see Section 3.4); or the NRCS Hydrologic Method should be used for watersheds greater than approximately 1 square mile in size (see Section 4).*

References

[1] Carlsbad Watershed Network, *Carlsbad Hydrologic Unit* http://carlsbadwatershednetwork-net.san-diego-tango-lessons.com/chu.php.

[2] B. Chadwick, P.F. P.F. Wang, M. Brand, R. Flick, A. Young, W. O'Reilly, P. Bromirski, W. Crampton, R. Guza, J. Helly, T. Nishikawa, S. Boyce, M. Landon, M. Martinez, I. Canner, and B. Leslie, *A Methodology for Assessing the Impact of Sea Level Rise on Representative Military Installations in the Southwestern United States* https://pubs.er.usgs.gov/publication/70178493, Technical Report RC-1703, SPAWAR Systems Center Pacific, 2014.

[3] City of Encinitas, *Encinitas Municipal Code* http://www.qcode.us/codes/encinitas/.

[4] _____, *Encinitas North 101 Corridor Specific Plan* http://www.qcode.us/codes/encinitas-north-101/.

[5] _____, *N. Highway 101 Leucadia Streetscape Improvements Project Phase: Project Design* https://www.encinitasca.gov/Government/Departments/Development-Services/Engineering-Division/Capital-Improvement/N-Highway-101-Leucadia-Streetscape-Improvements-Project.

[6] Michael Baker International, *Volume 1: Final Environmental Impact Report* http://archive.encinitasca.gov/weblink8/0/doc/789562/Page1.aspx *9755 Clairemont Mesa Boulevard, Suite 100, San Diego, California, 92124.*

[7] SAN DIEGO COUNTY GRAND JURY, *STORM DRAINS IN LEUCADIA* https://www.sandiegocounty.gov/content/dam/sdc/grandjury/reports/2011-2012/StormDrainsLeucadia.pdf, SAN DIEGO COUNTY GRAND JURY 2011/2012 FINAL REPORT (June 21, 2012).

[8] Daniel L. Swain, Baird Langenbrunner, J. David Neelin, and Alex Hall, *Increasing precipitation volatility in twenty-first-century California*, Nature Climate Change **8** (2018), no. 5, 427–433.

[9] Wehtahnah Tucker, *Encinitas responds to grand jury report on Leucadia flooding* http://www.thecoastnews.com/encinitas-responds-to-grand-jury-report-on-leucadia-flooding/, The Coast News Group (August 23, 2012).

[10] Sean Vitousek, Patrick L. Barnard, Patrick Limber, Li Erikson, and Blake Cole, *A model integrating longshore and crossshore processes for predicting longterm shoreline response to climate change*, Journal of Geophysical Research: Earth Surface **122** (2018), no. 4.

[11] A. P. Young, R. E. Flick, W. C. O'Reilly, D. B. Chadwick, W. C. Crampton, and J. J. Helly, *Estimating cliff retreat in southern California considering sea level rise using a sand balance approach* http://www.sciencedirect.com/science/article/pii/S0025322713002478, Marine Geology **348** (2014), no. 0, 15–26.