



Leighton and Associates, Inc.

PHOTOGRAPHIC RECORD

December 14, 2016

Client Name:

Newland Sierra, LLC

Site Location:

San Diego County, California

Project No.

10618.002

Photo No. 1

**View Direction of
Photo:**

West

Description:

View of POC 19, hard
rock waterfall and
resulting grade
control structure.



Photo No. 2

**View Direction of
Photo:**

West

Description:

View of POC 19,
Grass growing in
hard rock channel
with hard bedrock
visible at surface of
channel





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Project No.

10618.002

Photo No. 3

View Direction of Photo:
Southwest

Description:

View of POC 19, Hard rock pile and resulting waterfall grade control structure.

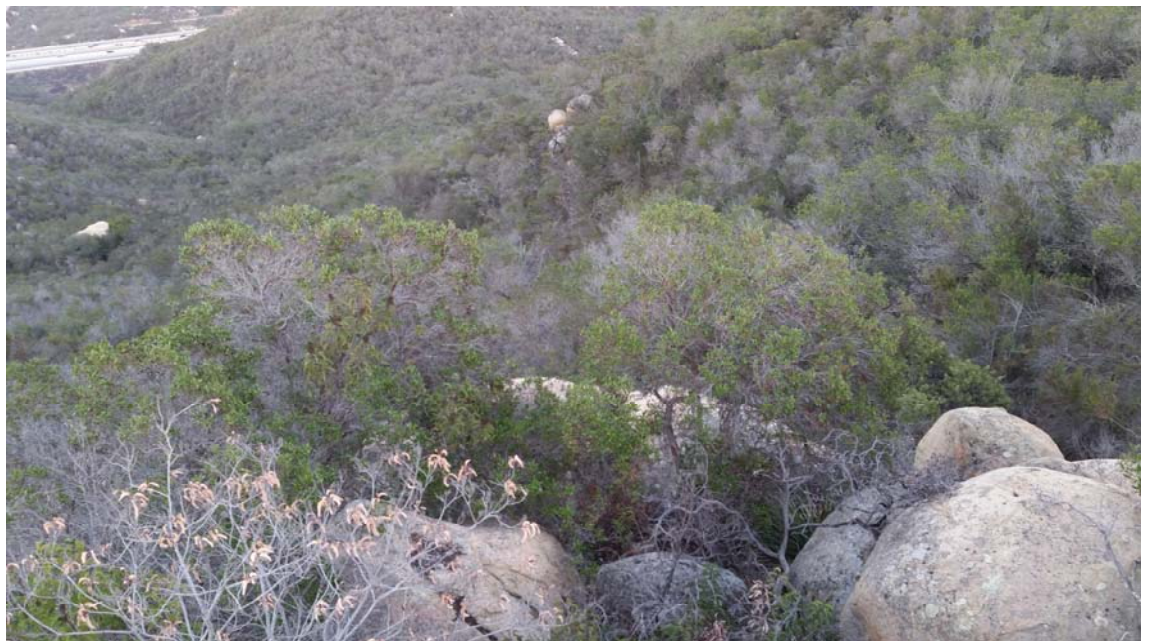


Photo No. 4

View Direction of Photo:
East

Description:

View of upper POC 13B Reach C with large boulders.





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Photo No. 5		
View Direction of Photo: South		
Description: View of upper area of POC 13B Reach C, dense brush, large boulder control structure, dense brush and leaves		

Photo No. 6		
View Direction of Photo: South		
Description: View of upper area of POC 13B Reach C, where very hard bedrock is exposed in channel bottom. Note a lack of sediment to sample.		



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Photo No. 7		
View Direction of Photo: South		
Description: View of upper area of POC 13B Reach B, dense brush, large boulder control structure.		

Photo No. 8		
View Direction of Photo: East		
Description: View of upper area of POC 13B Reach B, standing above the dense brush and large boulder control structures.		



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Photo No. 9

View Direction of Photo:

North

Description:

View of upper portion of POC 26, note large bedrock exposures at surface of channel creating a control structure. Also note very dense brush and a lack of sediment.



Photo No. 10

View Direction of Photo:

West

Description:

View of POC 26, note large boulders in channel creating a massive control structure through out the drainage. Also note very dense brush and a lack of sediment.





Aerial View of POC-13B + POC-A Location. Notice thick vegetation and rocks visible even from aerial picture. Also, noticed location of R2 and R3.



Aerial View of POC-19 Location. Notice thick vegetation and Bed-rock showing (BR).



Aerial View of POC-26. Notice thick vegetation and rocks visible even from aerial picture.



Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

December 15, 2016

Project No. 10618.002

To: Ms. Rita Brandin
Newland Sierra, LLC
9820 Town Centre Drive, Suite 100
San Diego, California 92121

Subject: Geomorphic Observations of Natural Drainages, Contributing Areas of POC 13B (Reach B and C), POC 19, and POC 26
Newland Sierra, San Diego County, California

In accordance with your request, we have conducted geomorphic mapping and observations of three natural drainage areas which exist within the Sierra Project site located in northern San Diego County, California (Figure 1). We visited the site on May 31, December 7, and December 9, 2016, to conduct geomorphic mapping and observations within the contributing areas of the Points of Compliance (POC) 13B, 19, and 26 as shown on the attached Newland Sierra Critical Coarse Sediment Yield Impact Exhibit (Fusco, 2016). The purpose of this field work was to provide the design team with appropriate geologic and geomorphic information regarding the nature of the existing subject drainages to aid in the stream channel susceptibility characterization process for storm water management design.

Based on our recent site visits and geomorphic mapping, along with performing a review of our referenced preliminary geotechnical report (Leighton, 2015), the primary bedrock unit onsite is Cretaceous-aged Granite. Jurassic-aged Metavolcanic rock is present along the western margin of the site but is not within any of the subject drainages. These units are in turn overlain by surficial units consisting of colluvium, alluvium, slopewash, and minor undocumented fill soils.

We have confirmed through our geomorphic mapping of contributing areas to POCs 13B, 19, and 26 that the network of drainages located within these areas exhibits steep topographic relief and dense canopies of native brush. The drainage channel bottoms (along the flowlines) consist of predominantly exposed outcrops of very hard igneous granite bedrock along with large boulders. Granite bedrock exposed in the drainages is

classified as fresh to moderately weathered in accordance with Table 4.4, Engineering Geology Field Manual, 1998. Due to the lack of observable sediment within the subject drainages, it is not possible to perform a grain size analysis to determine a D50 size representative of the field conditions. Therefore, we relied on geomorphic mapping to characterize the subject drainages.

As discussed above, granite bedrock, as observed in the subject drainages and throughout the Project site, is highly resistant to erosion. In addition to the exposed bedrock in the subject drainages, we observed numerous grade control structures such as natural waterfalls and large boulders. These grade control structures serve as geologically fixed points in the drainage profile that prevent the occurrence of erosion in between grade control structures (please see the photo documentation of the subject drainages attached to this letter). It should be noted, neither vertical nor lateral areas of active erosion of the subject stream beds were observed. Specifically, the areas observed within the contributing areas of POCs 13B and 20 were generally covered with a very thick mat of either grass or leaves underlying a very dense cover of brush, and POC 26 had large boulders in addition to localized dense brush and grass. Also, a portion of the drainage area contributing to POC 13B, Reach C, contained exposed bedrock outcropping at the ground surface at the top of the contributing drainage.

Collectively, the observations and photo documentation described above indicate a lack of erosion within the subject drainage channels not only vertically but also laterally. Therefore, there is no significant potential for the development of any coarse grained sediments to be produced or transported within the subject drainages, especially for the hydromodification range of analysis.

In conclusion, the bed resistance of the existing network of drainages located in the contributing areas of POCs 13B, 19, and 26 is not susceptible to erosion in its current state, in particular for the range of rainfall and runoff events associated with the highest hydromodification impact. Based on the presence of abundant grade control structures, dense existing vegetation and underlying ground cover, hard bedrock outcroppings at various intervals and the lack of fine-grained sediments within the subject drainages, there is no significant potential for hydromodification impact to occur within the subject drainages.

The recommendations contained in this letter report are based on available project information. Final engineering and construction plans should be reviewed by Leighton to verify compliance with the recommendations contained in the Geotechnical Report and the conclusions reached herein.



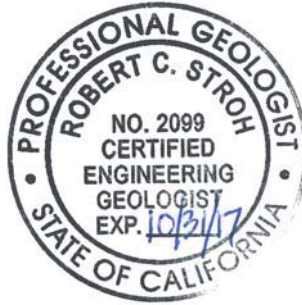
If you have any questions regarding our letter, please contact this office.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.



Robert C. Stroh, CEG 2099
Associate Engineering Geologist
Extension: 4090, rstroh@leightongroup.com



Distribution: (1) Addressee via electronic PDF
(1) Fuscoe Engineering; Attention: Mr. Eric Armstrong

Attachments: Figure 1 – Site Location Map
Newland Sierra Critical Coarse Sediment Yield Impact Exhibit
Photographs



REFERENCES

City of Escondido, 2011, Hydromodification Management Plan, Adopted from the Countywide Model HMP, dated January 2011.

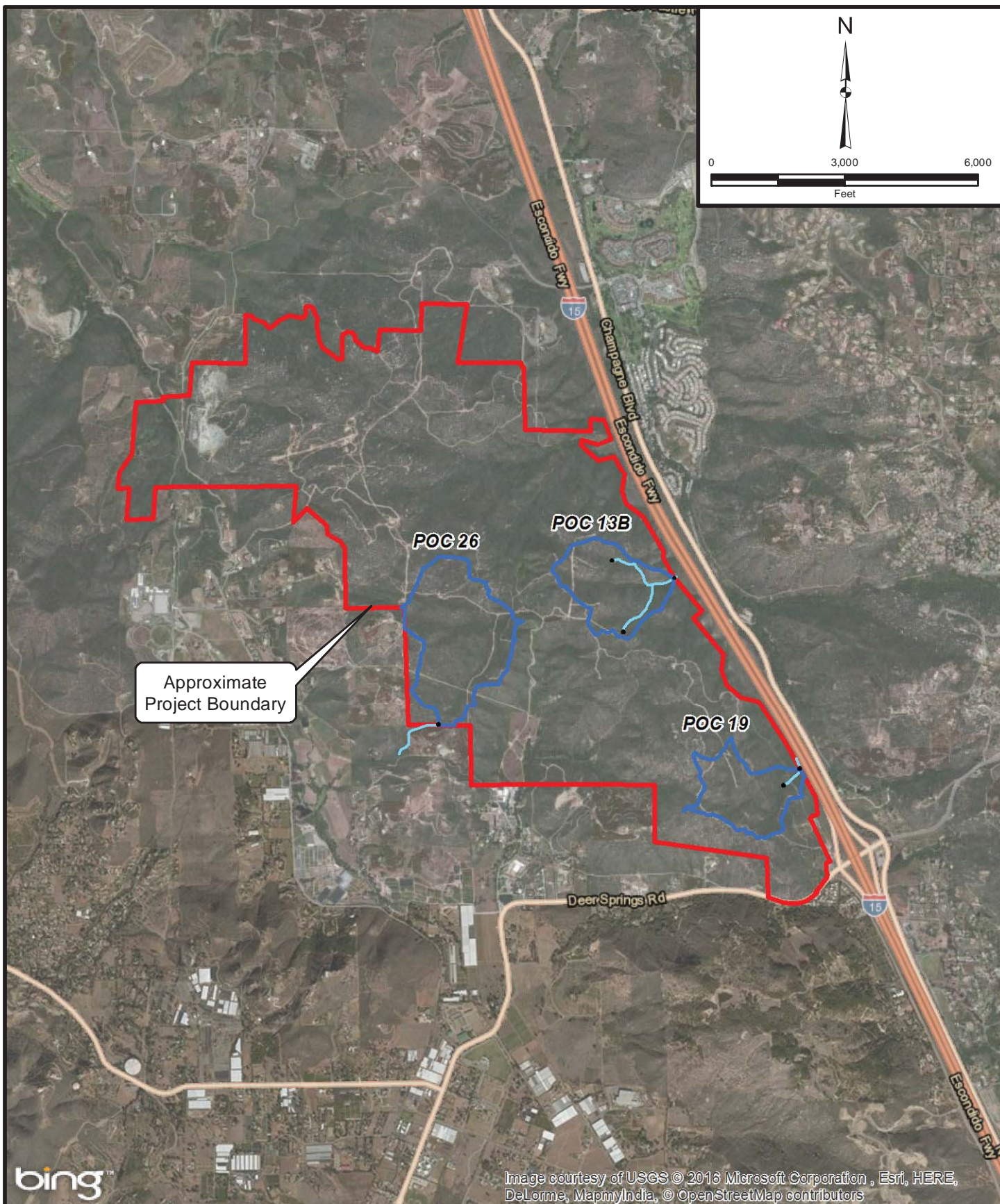
Fisschenich, 2001, Stability of Stream Restoration Materials, ERDC TN-EMRRP-SR-29

Fuscoe Engineering, Newland Sierra Critical Coarse Sediment Yield Impact Exhibit, dated February, 2016.

Leighton and Associates, Preliminary Geotechnical Investigation, Newland Sierra, San Diego County, California, Project No. 10618.002, dated June 26, 2015.

United States Department of Agriculture, 2007, Part 654 Stream Restoration Design National Engineering Handbook, Chapter 8 Threshold Channel Design, issued August 2007.

United States Department of the Interior, Bureau of Reclamation, Engineering Geology Field Manual Second Edition, Volumes 1 and 2, dated 1998 and reprinted 2001.



Project: 10618.002 Eng/Geol: WDO/RCS

Scale: 1" = 3,000' Date: June 2016

Base Map: ESRI ArcGIS Online 2016

Author: mmurphy (mmurphy)

SITE LOCATION MAP

Newland Sierra
San Diego, California

Figure 1

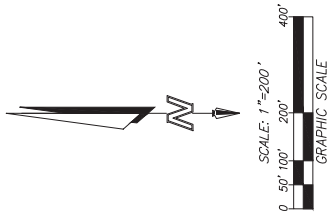
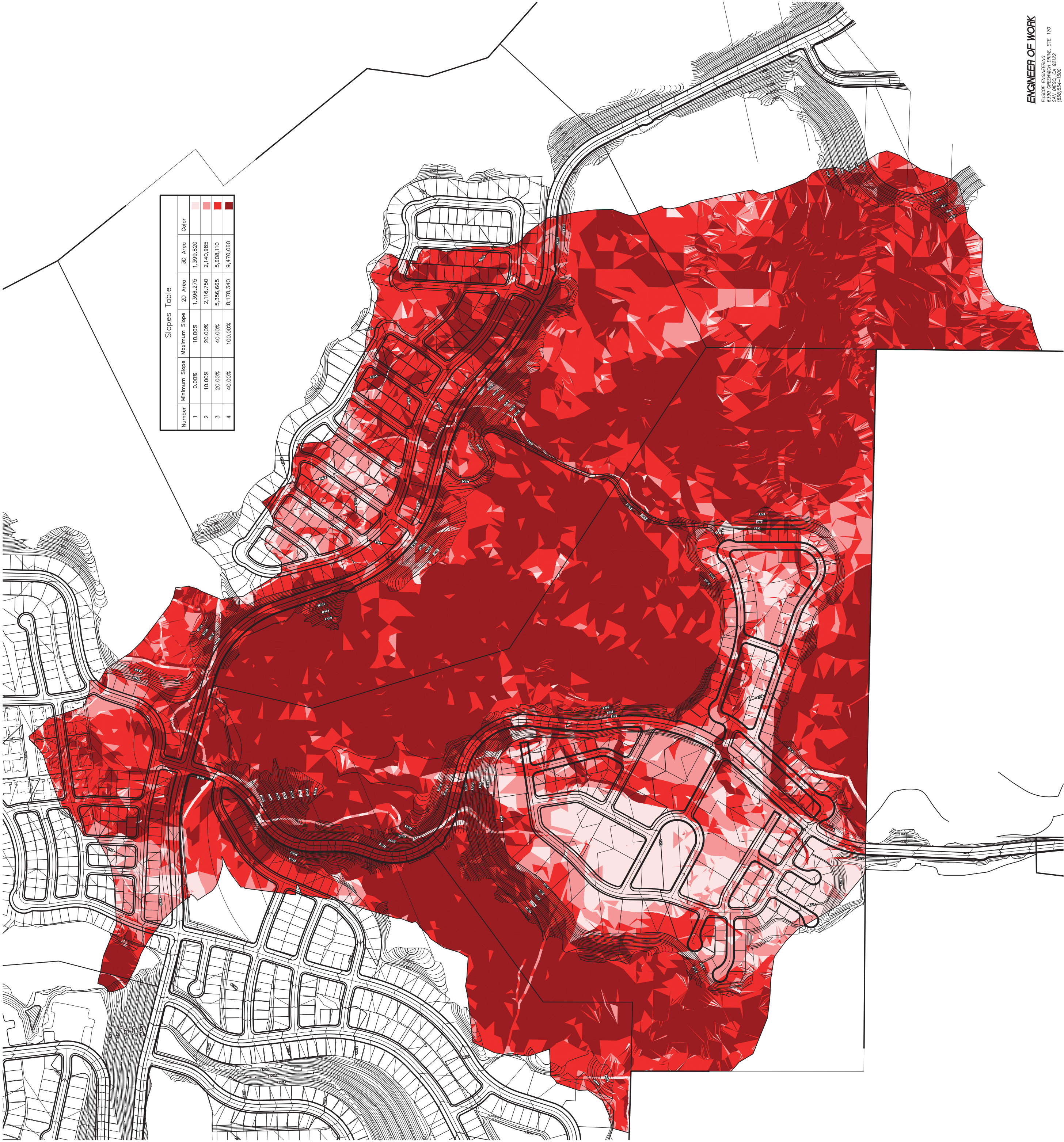


Leighton

Appendix 3:

- Pre and Post-Development Slope Analysis Maps (Fusco, August 2016)
- Pre and Post-Development GLU Areas (Fusco, October 2016)
- Fill and Cut Slope Map (Fusco, October 2016)
- NHD-Plus Channel Map (Fusco, October 2016)
- New Avoidance/Bypass Exhibits, (Fusco, December 2016)

EXISTING BASIN 25A
SLOPE ANALYSIS
NEWLAND SIERRA

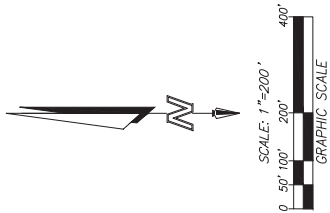
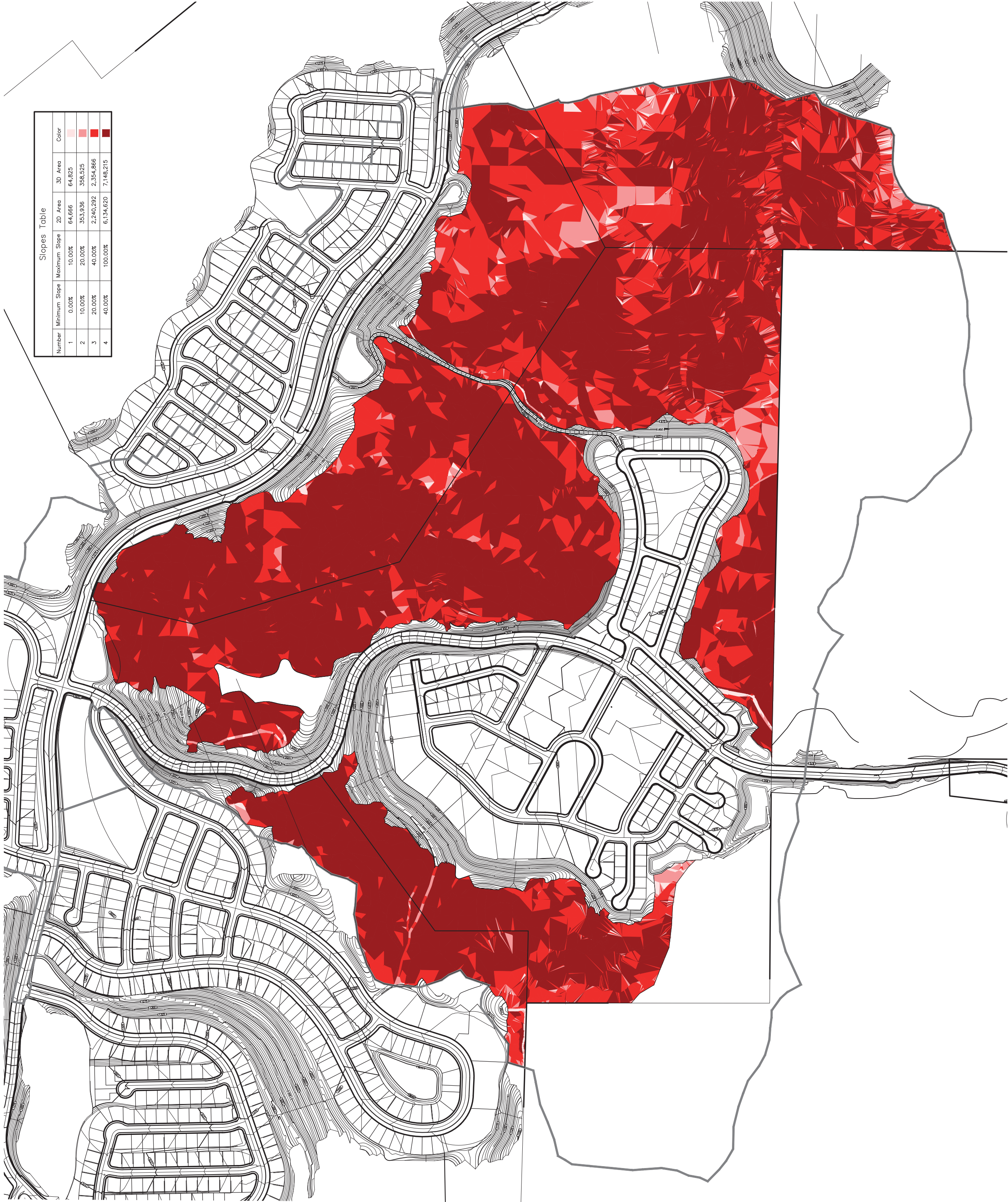


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BY _____
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POST-DEVELOPMENT NATURAL AREAS
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