Attachment C

ENGEO Letters

Project No.
8889.200.000

April 1, 2019
Revised April 22, 2019

Mr. Steve Abbs
Davidon Homes
1600 South Main Street, Suite 150
Walnut Creek, CA 94596

Subject: Magee Preserve
Danville, California

RESPONSE TO PUBLIC COMMENT

References:

1. ENGEO; Geotechnical Exploration, Magee Ranch Project, Danville, California; November 26, 2013; Project No. 8889.000.000.
2. ENGEO; Geotechnical Report Update, Magee Ranch, Danville, California; July 21, 2017, Revised July 31, 2017; Project No. 8889.200.000.
3. ENGEO; Basis of Design Report for the Bridge Crossing at Green Valley Creek Project No. 8889.200.000.
4. David and Linda Gates, 2018, Letter RE: Magee Ranch Preserve- Residential Development Draft EIR, October 1, 2018.
5. David and Linda Gates, 2018, Markups of Civil Plan and Cross Sections, RE: Magee Ranch Preserve- Residential Development Draft EIR, September 25, 2018.
6. Ruggeri-Jensen-Azar, Vesting Tentative Map, Subdivision 9291, Magee Preserve, Town of Danville, Contra Costa County, California, January 22, 2019.

Dear Mr. Abbs:

This letter provides responses to comments presented by David and Linda Gates (Gates) in References 4 and 5 that are relevant to grading, hydrology and geotechnical issues of the Magee Preserve project. Reference 4 includes a narrative discussion of the Gates's concerns while Reference 5 presents a markup of the 2017 project grading plans. The following sections of this letter provide our responses to their comments.

Gates Letter, October 1, 2018

Gates Comment, Paragraph 2

The proposed plans fail to accurately identify the modifications to the creek corridor required to construct the development. Cross-sections depict a creek at 3:1 slopes and no significant trees. In reality, the creek is deeply incised with numerous vertical banks and a dense canopy of mature trees lining the slopes. To construct the project (EVA Road and 4' storm inlet (Outfall)), *will require the removal of a number of large oak trees, the construction of major retaining walls in the creek channel and thus, significant modification to creek hydrology.*

ENGEO Response

This comment points out that the topographic contours shown on the grading plans (Reference 6) do not fully depict incised creek conditions in the area north of the proposed EVA road. The incised creek conditions were recognized during project planning and documented by performing ground surveys in the creek channel in 2013 (recently updated in 2018) to obtain accurate representations of the creek bank morphology. The eroded area described in the Gates's letters was documented and discussed in the 2013 ENGEO report (Reference 1, Figure 6, and on Cross Section 10, Figure 5B). The design of corrective grading for the EVA road presented in References 1 and 2 recognizes the eroded creek bank condition and provides mitigation measures as described below.

On the second page of Reference 5, the Gates overlaid a diagrammatic cross section (Section D-D') from the 2017 grading plan on another cross section depicting the ground surface profile about 30 feet to the east (Referred to as "Actual Cross Section"). Because the Gates exhibit compares two completely different ground surface profiles, the overlay erroneously implies that the proposed EVA road grading will require filling on steep slopes directly over an existing steep creek bank and that an earth retention system will be required inside the creek banks. In fact, the Gates "Actual Cross Section" appears to be the same or similar to ENGEO Cross Section 10-10', (shown on attached Figure 1). Our Cross Section 10-10' includes the proposed geotechnical corrective grading, and the actual location and elevation of the proposed EVA road. As shown on our Cross Section 10-10', the proposed EVA road will be constructed in cut and will be located more than 30 feet from the top of the steep creek bank. The EVA road construction will not require retaining walls for support.

The ENGEO geotechnical reports (References 1 and 2) provide recommendations for construction of a stable foundation for the EVA road. As shown on Cross Section 10-10', the proposed stabilization measures will include excavation of a 10-foot-deep, 25-foot-wide keyway, and replacement of geogrid-reinforced backfill. All of the proposed corrective grading will be constructed within the approximate limit of disturbance as shown on Figure 1 without the need for tree removal. Surveyed tree locations on the creek banks are depicted on the grading plans, as shown on Figure 1.

The storm drain outfall described in Reference 4 has been relocated downstream, to the project detention basin outfall as shown on Reference 6. Therefore, there will be no grading impacts in the area of the formerly proposed outfall.

Gates Comment, Paragraph 3

The EIR details the mitigation measures for the loss of .3 acre creek habitat associated with bridge, but does not mention or quantify the loss of habitat to construct 4' storm drain inlet (outfall) *of EVA or utility lines under EVA. The key value of creek for habitat is as a continuous corridor. Finally, the EIR does not address the risk to the adjacent homes along the creek from the hydrological modifications to the creek. The 4' storm drain and walls required for EVA will accelerate creek flow velocity and magnify further erosion of unstable slopes.*

ENGEO Response

As described above, the storm drain outfall has been relocated to a point downstream from the eroded portions of the creek channel. There will therefore be no increase in hydrological flows in the eroded area. Hydrologic flows from the project will actually be re-routed to avoid discharging into this reach of creek which will slightly reduce overall peak discharges and velocities in the creek in this area. The storm drain ("utility") lines will be located under the EVA road and entirely within the disturbance envelope shown on Figure 1. There are no retaining walls proposed on the creek banks or in the creek channel.

CONCLUSIONS

The alleged unconsidered grading impacts along the proposed EVA road appear to be based on a misunderstanding of the grading plans and the creek bank profiles. The proposed EVA road grading and geotechnical mitigation will be limited to the slopes immediately surrounding the EVA road and will not require removal of existing trees or construction of retaining walls on creek banks or in the creek channel. The formerly proposed storm drain outfall has been relocated downstream, and, at the new location, it will not increase peak hydrologic flows and velocities in the eroded creek channel area.

If you have any questions or comments regarding this letter, please call and we will be glad to discuss them with you.

Sincerely,

ENGEO Incorporated

CERTIFIED ENGINEERING GEOLOGIST
PHILIP STUECHELI
No. 1640
STATE OF CALIFORNIA

Philip Stuecheli, CEG

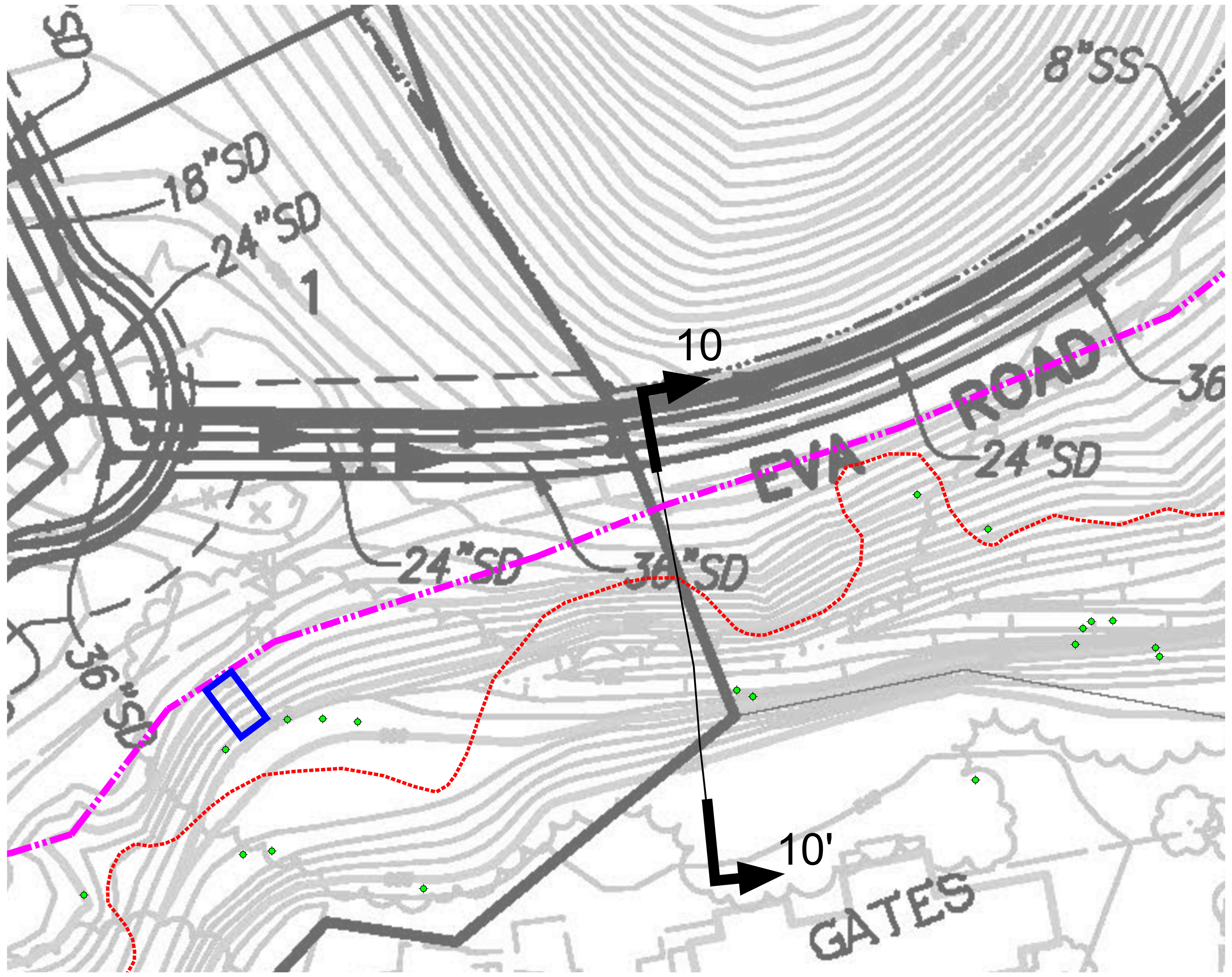
REGISTERED PROFESSIONAL ENGINEER
MACY M.S. TONG
No. 2300
GEOTECHNICAL
STATE OF CALIFORNIA

Macy Tong, GE

ps/mt/jf

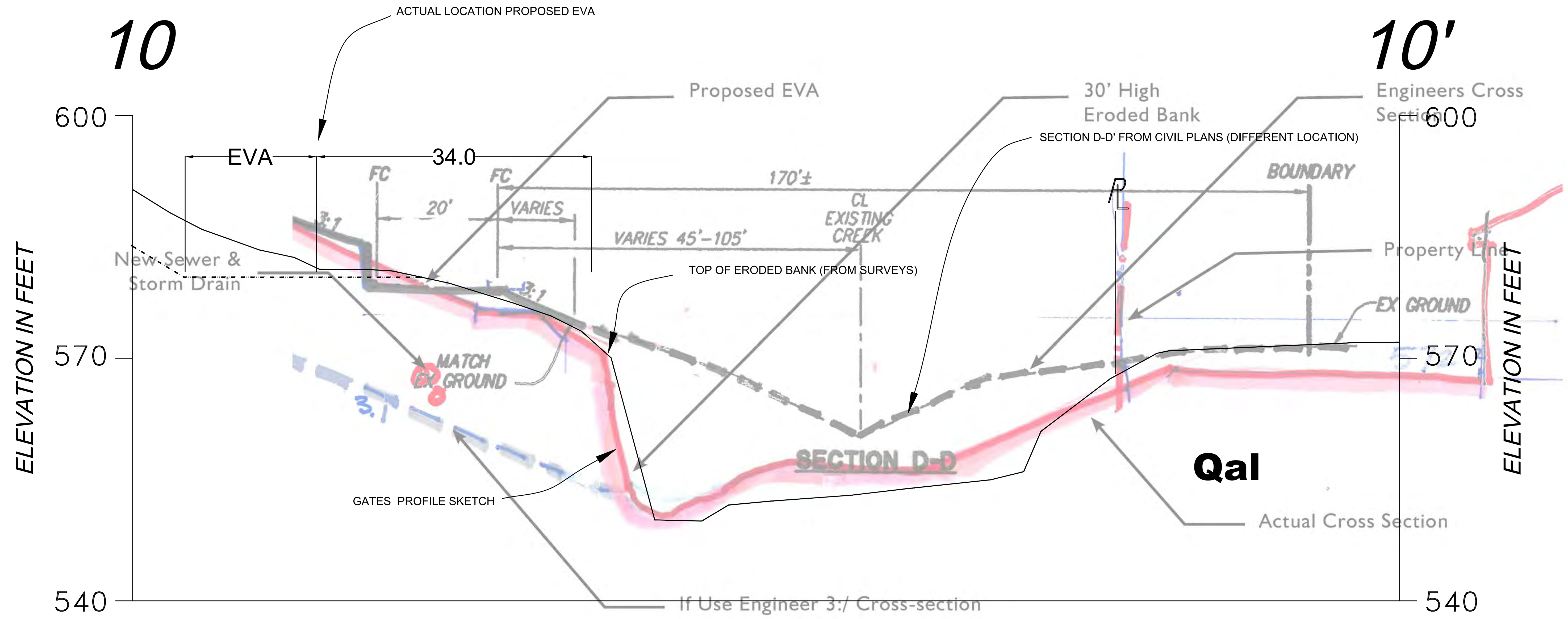
Attachment: Figure 1

DRAFT

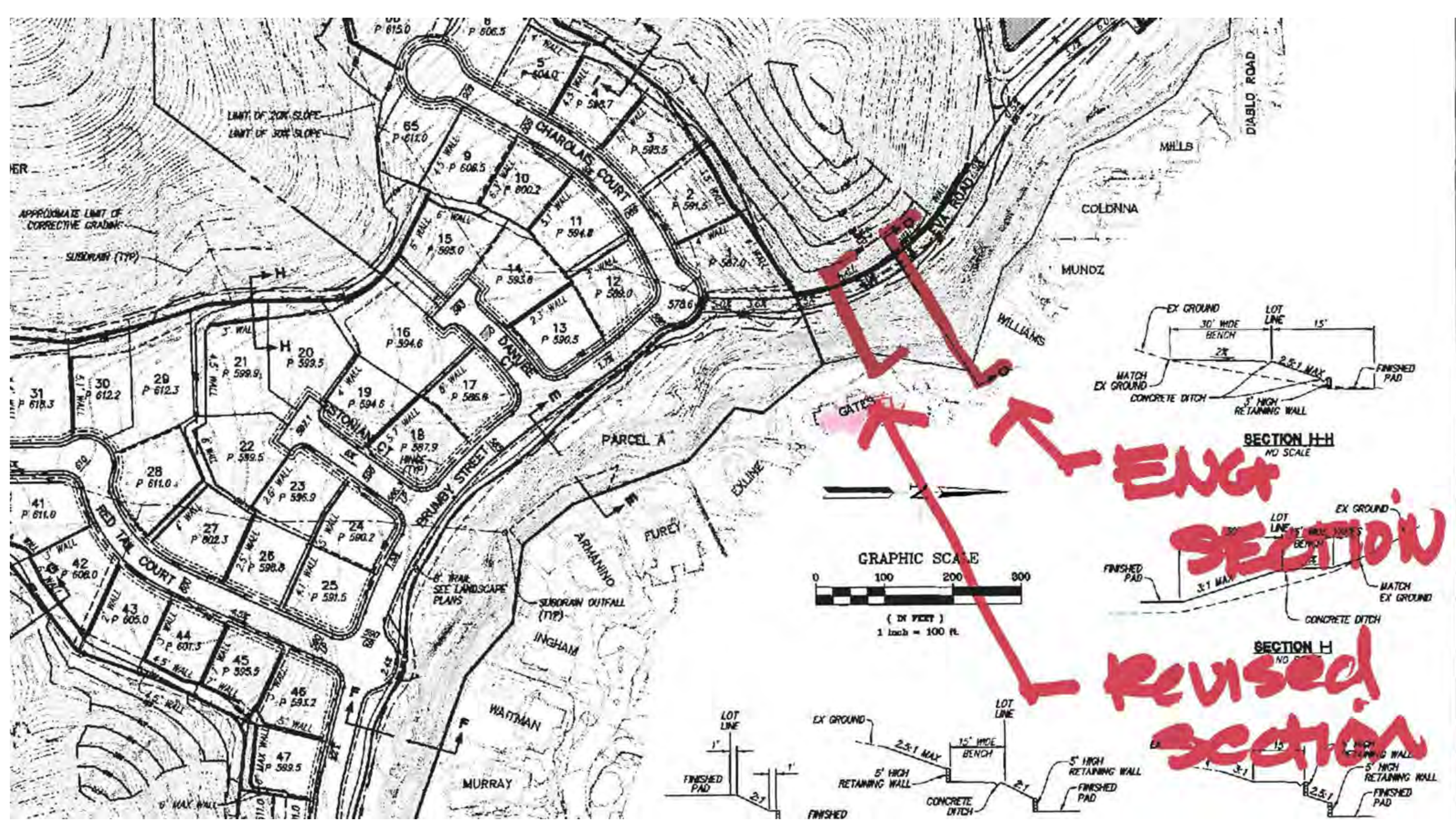


PLAN VIEW ENGEO CROSS SECTION LOCATION AND CREEK CONDITIONS

0 30
FEET

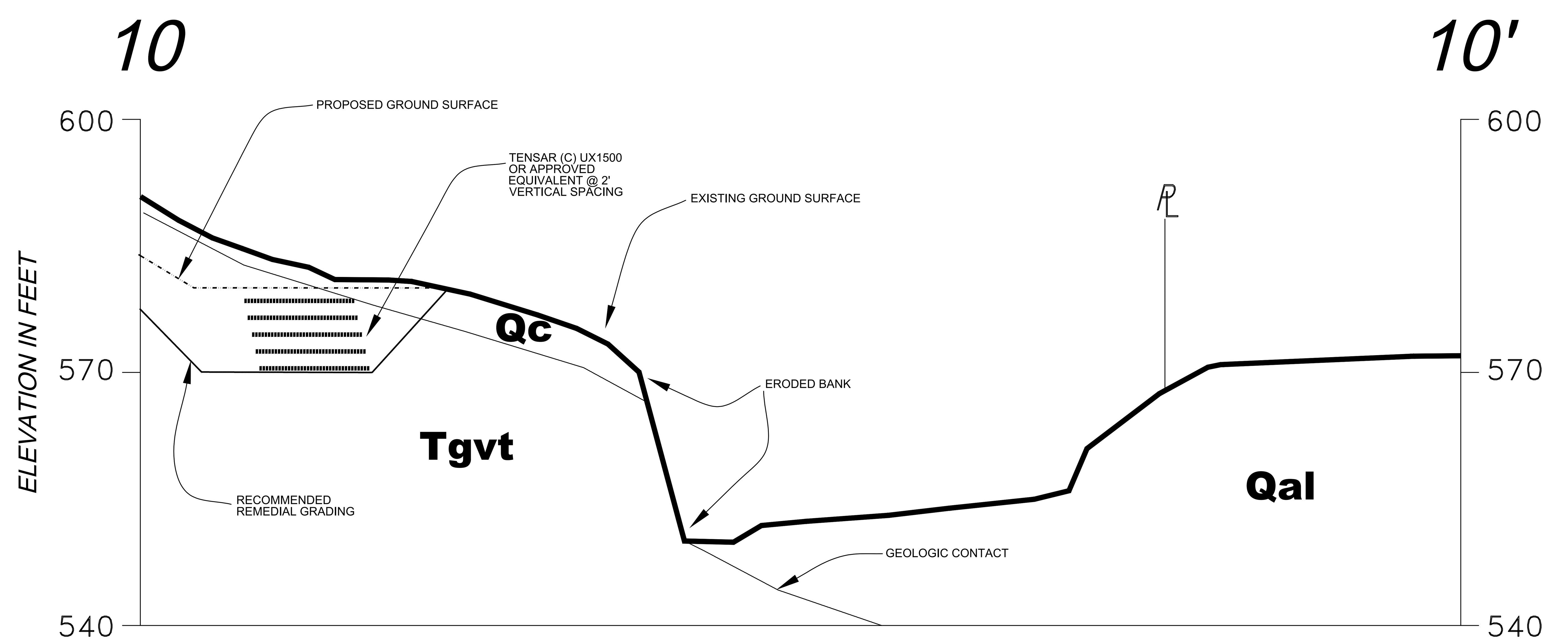


SECTION 10-10' SUPERIMPOSED ON GATES SKETCH
1"=10'



PLAN FROM GATES EXHIBIT

0 200
FEET



ENGEO SECTION 10-10' (2013 AND 2017 REPORTS)
1"=10'

EXPLANATION

- 10 / 10' CROSS SECTION LOCATION
- APPROXIMATE TOP OF ERODED CREEK BANK
- PROPOSED LIMIT OF CIVIL AND CORRECTIVE GRADING DISTURBANCE
- PREVIOUS STORM DRAIN OUTFALL LOCATION, NOW RE-LOCATED
- SURVEYED TREE LOCATION

DRAFT

BASE MAP SOURCE: RJA TENTATIVE MAP

ENGEO Expect Excellence	CREEK SECTION AND EVA GRADING MAGEE PREXERVE DANVILLE, CALIFORNIA	PROJECT NO.: 8889.200.000 SCALE: AS SHOWN DRAWN BY: XXX CHECKED BY: XXX	FIGURE NO. 1

ORIGINAL FIGURE PRINTED IN COLOR

Project No.
8889.200.000

April 26, 2019

Mr. Steve Abbs
Davidon Homes
1600 South Main Street, Suite 150
Walnut Creek, CA 94596

Subject: Magee Preserve
Danville, California

RELOCATED STORM DRAIN OUTFALL ANALYSIS

References:

1. ENGEO; Magee Ranches Project Regional Hydrologic Analysis; November 14, 2011.

2. Ruggeri-Jensen-Azar; Magee Ranches Subdivisions 9291 & 9320 Improvement Plans; December 3, 2014.

Dear Mr. Abbs:

As requested, we are providing an analysis for a relocated storm drain outfall into the East Branch of Green Valley Creek at the proposed Magee Preserve redevelopment project. The storm drain outfall was originally located near the intersection of proposed Charolais Court and EVA Road on the original Improvement plans for the project prepared by Ruggeri-Jensen-Azar (Reference 2), but is proposed to be relocated approximately 1,000 feet downstream closer to the intersection of Diablo Road and proposed EVA Road. The relocated outfall would discharge in the same general location as the proposed project detention basin. The purpose of this analysis is to determine the effect of the storm drain outfall relocation on the timing of project discharges into the East Branch of Green Valley Creek. In Reference 1, we performed an analysis that indicated that timing of project stormwater discharges into the creek would not coincide with the timing of peak discharges from the Green Valley Creek watershed and, therefore, would not increase peak flow discharges downstream of the proposed project.

We note that the project storm drain system, which is proposed to be relocated, conveys open space run-off through the project and is designed to convey storm events up to the 10-year recurrence interval. Flows greater than the 10-year recurrence interval event would discharge overland into Green Valley Creek through the proposed project in approximately the same location as the pre-project condition.

STORM DRAIN TRAVEL TIME

According to the civil engineer for the project, Ruggeri-Jensen-Azar, the maximum velocity in the storm drain pipe segment that originates approximately at the original outfall location and continues to the new outfall location, is approximately 10 feet/second (fps). As shown in Figure 1, the storm drain travel distance between the previous and proposed outfall is approximately 956 feet. Accordingly, the travel time of stormwater through the proposed pipe segment is estimated at approximately 1.6 minutes

CREEK TRAVEL TIME

Based on ENGEO's previous regional hydrologic analysis for the project (Reference 1), the average 10-year flowrate in this segment of the creek is 728 cubic feet per second (cfs) (Reference 1). Based on a 2018 survey performed by Ruggeri-Jensen-Azar, the average bed slope in this segment of the creek appears to be approximately 1%. In addition, the average bed width is approximately 8 feet, with side slopes of 1.25:1 (horizontal to vertical). Based on a site reconnaissance and previous experience, we estimate the creek roughness to be approximately 0.045, which is characteristic of a clean winding channel with some pools, shoals, weeds, and stones. Using Manning's Equation, we calculated the 10-year velocities to be 7.6 fps respectively. Manning's calculations are attached. As shown in Figure 1, the creek travel distance between the previous and proposed outfall is approximately 992 feet. Accordingly, the 10-year travel time is approximately 2.2 minutes.

CLOSING

With the proposed relocation of the storm drain outfall, we estimate that project stormwater from the proposed storm drain system will concentrate at the project detention basin outfall in the East Branch of Green Valley Creek approximately 0.6 minute sooner during a 10-year storm, as compared to the previously proposed outfall condition. This small time difference would have no effect on the timing of discharge or magnitude of peak flow at the relocated outfall in the East Branch of Green Valley Creek, which was previously calculated using the United States Army Corps of Engineers' Hydrologic Engineering Center Hydraulic Modeling System (HEC-HMS) software utilizing 15-minute time steps (Reference 1), since the difference in travel time is so small. It is therefore our professional opinion that the proposed storm drain outfall relocation will have a negligible effect on the timing of discharge or magnitude of peak flow in the East Branch of Green Valley Creek.

If you have any questions regarding the contents of this analysis, please contact us.

Sincerely,

ENGEO Incorporated

REGISTERED PROFESSIONAL ENGINEER
JONATHAN BUCK
No. 67302
CIVIL
STATE OF CALIFORNIA

Chase Hemming Jonathan Buck, PE

ch/jb/ps/jf

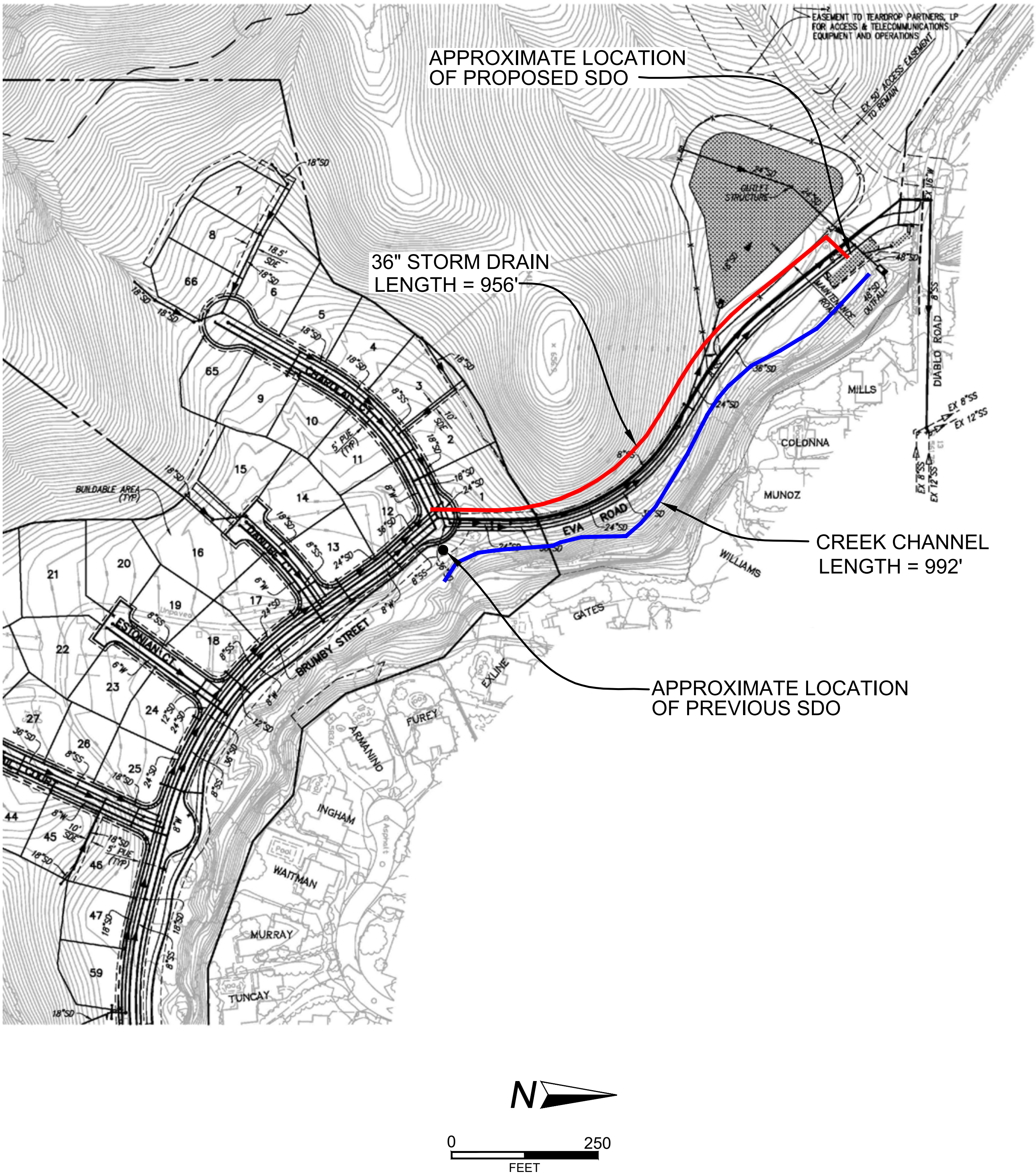
Attachments: Relocated Storm Drain Outfall Analysis Figure
East Branch of Green Valley Creek Manning's Calculations

ENGEO
Expect Excellence

ENGEO
MAGEE PRESERVE

Relocated Storm Drain Outfall Analysis Figure

8889.200.000
April 26, 2019



BASE MAP SOURCE: RUGGERI–JENSEN–AZAR

ENGEO
Expect Excellence

RELOCATED STORM DRAIN OUTFALL ANALYSIS MAGEE PRESERVE DANVILLE, CALIFORNIA	PROJECT NO.: 8889.200.000 SCALE: AS SHOWN DRAWN BY: CH / CHECKED BY: JB	FIGURE NO. 1

G:\Active Projects\8889\8889200000\drafting\SDO Analysis\SDO analysis.dwg

ORIGINAL FIGURE PRINTED IN COLOR

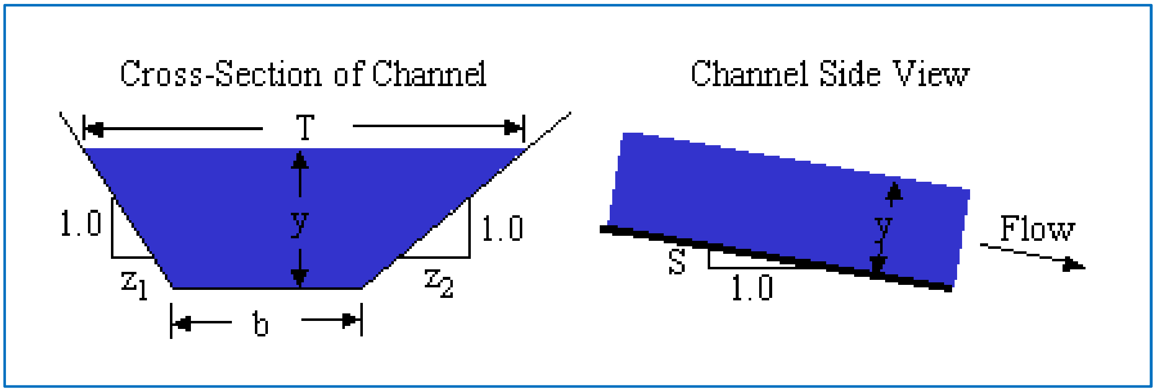
ENGEO
MAGEE PRESERVE

East Branch of Green Valley Creek Manning's Calculations

8889.200.000
April 26, 2019

East Branch of Green Valley Creek, 10-year Storm - Manning's Calculation

Channel Geometry



Base Width (b)	=	8 ft
Side Slope 1 (z_1)	=	1.25
Side Slope 2 (z_2)	=	1.25
Depth (y)	=	6.12 ft
Slope (S)	=	0.01
Manning's Roughness (n)	=	0.045

Calculated Geometric Parameters

Area	=	95.87 ft^2
Wetted Perimeter	=	27.61 ft
Hydraulic Radius	=	3.47 ft

Manning's Equation

$$Q = \frac{1.49}{n} \times A \times R_h^{2/3} \times S^{1/2}$$

Flowrate and Velocity

Flowrate (Q)	=	728 ft^3/s
Velocity (v)	=	7.6 ft/s