

COFFEY ENGINEERING, INC.

Preliminary Drainage Study Erb-Creamer

4285 1/3 Goldfinch Street San Diego, CA 92103

APN 444-272-09-00 PTS 595127

Prepared for:

Ty Creamer



June 14, 2019

Table of Contents

1.	Existing Conditions
2.	Proposed Project
3.	Purpose and Scope of Report
4.	Method of Calculations
5.	Results and Conclusions:
6.	Clean Water Act (CWA) Compliance
7.	Declaration of Responsible Charge

Appendix A – Referenced Plans & Drainage Maps

- Conceptual Site & Grading Plan
- Drainage Map 'A' Existing Street Drainage Conditions
- Drainage Map 'B' Existing Site Conditions
- Drainage Map 'C' Proposed Site Conditions

Appendix B – Calculations/Evaluations

t

- Existing and Proposed Flow Characteristics Table A
- Existing and Proposed drainage System Flows Evaluations

Appendix C – Reference Tables & Figures (City of San Diego Drainage Design Manual 2017)

- Figure A-1– Intensity-Duration Design Chart
- Table A-1 Runoff Coefficients for Rational Method

1. Existing Conditions

In existing conditions, this site is a 5748 SF vacant lot located in a hillside area and is composed of various shrub, dirt, and other vegetation. In pre-construction conditions, the site contains one drainage basin (Basin 'B'). Basin 'B' generates approximately Q(100)=0.30 cfs that sheet flows downhill in the Southeasterly direction towards an existing vegetated hill open space. Street preconstruction condition are in Drainage Map 'A'.

See Drainage Map 'A' and 'B'.

2. Proposed Project

In proposed conditions, this site will contain a single-family residence with new landscape and hardscape features. This project proposes 4,258 SF of impervious area, which includes the roof, driveway, stairs and other proposed on-site hardscape areas. The site is composed one drainage basin (Basins 'C').

This basin is expected to generate Q(100)=0.48 cfs of runoff. We are going to collect in a sumppump the water generated from Basin 'C' and send it to the street.

See Drainage Map 'C'.

3. Purpose and Scope of Report

This report will evaluate the existing street runoff and the proposed site runoff that we are sending to the street and we will verify that no adverse impacts will occur to the street existing storm drain system.

4. Method of Calculations

The Rational Method, as defined by *City of San Diego Drainage Design Manual 2017*, will be used to calculate storm water flow rates. Where noted, the following calculations were used to determine flow properties:

 $\frac{\text{Rainfall Characteristics}}{Q = C * I * A, \text{ where}}$

Q = Flow rate (ft³/sec) C = Runoff coefficient (Runoff coefficient per *City of San Diego Drainage Design Manual 2017* reproduced in Appendix C. Soil type D determined from the *Soil Hydrologic Groups* map from the County of San Diego Hydrology Manual reproduced in Appendix C also.) I = Rainfall intensity (in/hr.) A = Area (acres)

5. Results and Conclusions:

In existing conditions the street generates Q(100) = 2.29 cfs. The street runoff is collected on grated 3'X5' inlet located at Barr Ave low point and discharge to the creek with a 15" CMP drain (See Drainage Map 'A'). Based on the calculated post- construction drainage conditions, we are expecting to add (pump) to the street Q(100) = 0.367 cfs generated runoff from the site due to proposed new development.

The capacity of existing 15"CMP @ 32% 19.79 cfs. Therefore no adverse impacts will occur to the street existing storm drain system in post construction conditions.

6. Clean Water Act (CWA) Compliance

The proposed project is exempt from permitting under Federal Clean Water Act section 401 or 404 because it does not directly discharge into navigable waters of the United States.

7. Declaration of Responsible Charge

I hereby declare that I am the Civil Engineer of work for this project, that I have exercised responsible charge over the design of the project as defined in section 6703 of the business and professions code, and that the design is consistent with current design.

I understand that the check of project drawings and specifications by the City of San Diego is confined to a review only and does not relieve me, as Engineer of Work, of my responsibilities for project design.

PRELIMINARY

Michael C. Kinnear

RCE 76785 Exp. 12-30-18 Date



Appendix A – Reference Plans Drainage Maps



COFFEY ENGINEERING, INC.

LEGEND						
DESCRIPTION PROPERTY LINE	<u>SYMBOL</u>					
EXISTING CONTOUR						
DIRECTION OF FLOW	\rightarrow \rightarrow					
SITE BASIN						
VATER COURSE DISTANCE	<u>L-699'</u>					
BASIN A.1 AREA= 41,607 SF STREETS AREA =13,740 SF SINGLE FAMILY RESIDENCE =2	27,867 SF					
C=(0.90x13,740+0.55x27,867	7)/41,607=0.666					
<u>BASIN 'A.1' —</u> BASIN AREA(A): 0.96 AC. RUNOFF COEFFICIENT(C) (WEIGHT NTENSITY(I)(FIGURE A—1): 3.6 00—YR. STORM FLOW: CIA=2.29	ED): 0.666 CFS.					
	\mathbf{N}					
	SCALE: $T = 50$					
ERB-CREAMER 4285 1/3 Goldfinch Street, CA 92103 DRAINAGE MAP 'A' BARR ST EXISTING CONDITIONS SCALE: 1"=50'						



LEGEND					
D <u>ESCRIPTION</u> PROPERTY LINE XISTING CONTOUR DIRECTION OF FLOW					
VATER COURSE DISTANCE	<u>L=699'</u>				
BASIN 'B.1' – BASIN AREA(A): 8493 AC.=0.195 RUNOFF COEFFICIENT (C): 0.35 NTENSITY(I)(FIGURE A-1): 4.4 00-YR. STORM FLOW: CIA=0.30	Ac CFS.				
ERB-CREAMER 4285 1/3 Goldfinch S DRAINAGE MAP 'B' SITE-EXISTING COND SCALE: 1"=20'	<u>treet, CA 92103</u> <u>ITIO</u> NS				

GOLDFINCH STREET O OBSTRUCTIONS, INCLUDING LANDSCAPING OR ALD WALLS IN THE VISIBILITY TRANSLE AREA ALL EXCEED 3 FEET IN HEIGHT. PLANT URENALS, OTHER THAW TREES, WITHIN THE PUBLIC SHT-OF-WAY THAT IS LOCATED WITHIN THE SIBILITY TRANSLE AREAS SHALL NOT EXCEED I INCHES IN HEIGHT, WESSURED FROM THE TOP THE ADJACENT CURB. BARR **AVENUE** B" CURB 10/128.59 0.00 PP215512 REE WATR. MTR. PP23284 FIRE WTR. MTR. 12"TREE 12"TREE -2.0' 69'57'52" E 100.00 83 TW P23287 지 なな LOJ LOJ LOT⁵ NO. 334 MAP NO. 334 SEWER 50.01 --23 53 2 LO² SEWER 5) (236.05) Lol 334 (208,20) LAUNDR 5'SIDE BLDG SETBACK 89'57'11" E 100.00' NO, ADS 53 MAP 15,2 13.0' BACKSIDE BASIN 'C. Ö ____ 55 0.152 Ac. 5 C=0.55 N STREET n 51 TW 5 12 G NCH 5'SIDE BLDG SETBACK CE COFFEY ENGINEERING, INC.



Appendix B – Calculation/Evaluations

Table A - Time of Co	ncentration	Flow Chara	cteristics								
Urban Overland Flow				Pipe Flow			Summary				
Flow ID	Urban Runoff Verland Flow Pipe Length, Lp Average Pipe travel Total time-of-time.of-t		(5 min minimum) Total time-of- concentration, T _c (min)	Rainfall Intensity, I (in/hr)	Basin Area, A (acres)	Q (cfs)					
								PRE-CONSTRUCTION- STREET			
A.1	163	3.00	0.67	6.92	0	6.0	1.50	8.42	3.60	0.955	2.290
								PRE CONSTRUCTION-SITE			
B.1	197	30.00	0.35	0.73	0	0.0	0.00	5.00	4.40	0.195	0.300
								POST-CONSTRUCTION- ON-SITE			
C.1	197	30.00	0.55	4.47	0	0.0	0.00	5.00	4.40	0.152	0.367

Feature Layer			ArcGIS Explorer -	Coffey Default Map		
ay Tools Appearance						
Information	Coordinates: Degrees-Minutes-Seconds *	Effects Receive Signa	1 Call			
- 🛛 Position Information	Distance: Meters, Kilometers *	Stars 🛄 Atmospheric Halo 📃 Center location	on Go Captu			
Target Indicator	✓ Grid ✓ Scalebar	Fog Sun Lighting Track location	To Waypo	int second design of the		
lions	Units	3D Environment · GPS	Receiver			
				Contraction of the local states	A PROPERTY	
		A REAL PROPERTY AND A REAL	Sales of the set	a state of the second		
			- Andrews			
		Contraction of the second		and the second states		
	A CONTRACTOR OF A CONTRACT OF		-			
inel in						
				ALC: NOT THE REAL PROPERTY OF		
8						
			There allow	interesting and the second		
			10000			Constant and the second
110						
	A THE REAL PROPERTY AND	the second states	and the second			
			A Martin			Dennis - I and the Mark
				The second se		
A BANK		The Part of the Pa	Contraction of the			
Constant Section	Carlos de la compañía		S. S. P.F.F.	Child of the second		
			X 3 10			
			and the second second	4 X	Amplement of the Market of the Amplement	and the second second
18. is 19. 19			- 15			
	a second and the second	Contraction of the second second	DIAMETER	15		
	and the second		HEIGHT	0	Assertion of the	
	ALL REAL PROPERTY.		ACT_LENGTH	49	12 pel status	
			MATERIAL	CMP		and the state of the
		STORE STATES AND A STATES	CONV_SHP	219		
		A LAND A LAND	TO_ELEV	203.3		CLASS STREET
		and the second sec	SLOPE	32		
			EASEMENT	9/25/1050 12:00:00 AM		
	The second s		ASBUILT DA	6/20/1959 12:00:00 AM		
		Carlos and a second	DRAWING_NO	5930-D		
			EASEMENT_D			
			SUBDIVISIO	20020		
			STATUS	A		教生的主要的主要的 的法律法
Contraction of the second			COMMENTS		and the second second second	A CALL AND A CALL AND A CALL
			OWNER	S	the second second	Children and and a
			MAINT	6 FROM INLET TO OUTLET VIA PIPE		
	A CONTRACT OF A DESCRIPTION OF A DESCRIP		SHAPE_Leng	52.5026492278		The state of the second second
						STATES PROFILE
N 117-10'15"W			3 8 9 /			
Contraction of the Contraction o	THE REAL PROPERTY AND ADDRESS OF THE REAL PROPERTY ADDRESS OF THE R	A REAL PROPERTY AND A REAL				A REAL PROPERTY OF A REA

EXISTING 15" CMP SD CAPACITY

, **'**

TIME: 08:27:36

(1) Diameter (inches) 15.	(2) Mannings n024
(3) slope (ft/ft)3200	(4) Q (cfs) 19.79
(5) depth (ft) 1.25	(6) depth/Diameter 1.00
Velocity (fps) 16.12	Velocity Head 4.04
Area (Sq. Ft.) 1.23	
Critical Depth 1.25	Critical Slope 0.3038
Critical Velocity 16.13	Froude Number N/A

Appendix C – Reference Tables & Figures (City of San Diego Drainage Manual 2017)







Long di Uno	Runoff Coefficient (C) Soil Type (1)		
Land Use			
Residential:			
Single Family	0.55		
Multi-Units	0.70		
Mobile Homes	0.65		
Rural (lots greater than ½ acre)	0.45		
Commercial ⁽²⁾			
80% Impervious	0.85		
Industrial ⁽²⁾			
90% Impervious	0.95		

Table A-1. Runoff Coefficients for Rational Method

Note:

 $\overline{^{(1)}}$ Type D soil to be used for all areas.

⁽²⁾ Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

Actual imp	=	50%		
Tabulated i	=	80%		
Revised C	=	(50/80) x 0.85	=	0.53

The values in Table A–1 are typical for urban areas. However, if the basin contains rural or agricultural land use, parks, golf courses, or other types of nonurban land use that are expected to be permanent, the appropriate value should be selected based upon the soil and cover and approved by the City.

A.1.3. Rainfall Intensity

The rainfall intensity (I) is the rainfall in inches per hour (in/hr.) for a duration equal to the T_c for a selected storm frequency. Once a particular storm frequency has been selected for design and a T_c calculated for the drainage area, the rainfall intensity can be determined from the Intensity-Duration-Frequency Design Chart (Figure A-1).

