Appendix G:
Hydrology and Water Quality Supporting Information

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G.1 - Preliminary Hydrologic Analysis

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PRELIMINARY HYDROLOGIC ANALYSIS

THE TRAILS AT CORONA

City of Corona,
County of Riverside, California





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Section

1
INTRODUCTION

1.1 STUDY OVERVIEW

KWC Engineers (KWC) has performed a preliminary hydrologic and detention basin routing analysis for The Trails at Corona project (The Trails). The Trails project is located on the closed Mountain View Golf Course, south of the 91 Freeway, along the east and west sides of Serfas Club Drive, partially in the City of Corona and in unincorporated Riverside County (see Figure 1).

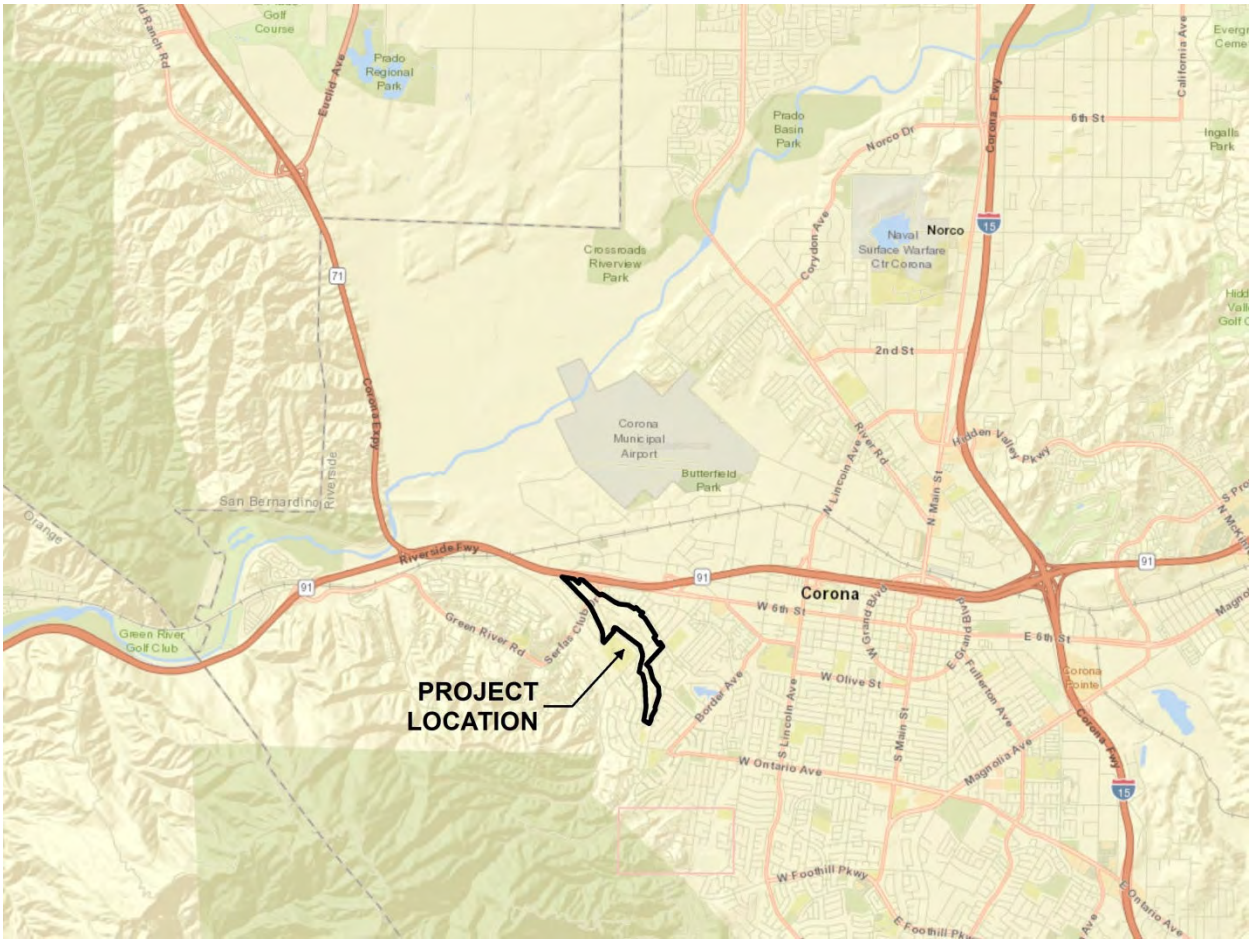


Figure 1: Project Vicinity Map

The main purpose of this study is to determine if there is sufficient detention storage available to attenuate the 100-year discharge in order to meet the existing capacity of the SR-91 culvert.

Existing and proposed hydrologic conditions were analyzed using the Synthetic Unit Hydrograph Method as outlined in the Riverside County Flood Control and Water Conservation District Hydrology Manual (RCHM) dated April 1978. The CivilDesign Unit Hydrograph Analysis and Flood Hydrograph Routing computer programs (version 7.0) were used to perform the rainfall-runoff calculations and detention routing for the 100-year 3-, 6-, and 24-hour duration storms. Hydraulic analysis of the SR-91 culvert was performed using the WSPG computer program to determine its capacity.

A single detention basin (PA3) is provided to mitigate the proposed condition 100-year discharge to such that the proposed conditions peak outflow is not greater than the existing capacity of the SR-91 Freeway culvert.

1.2 STUDY AREA

Figure 2 shows the study area for the proposed Trails development.

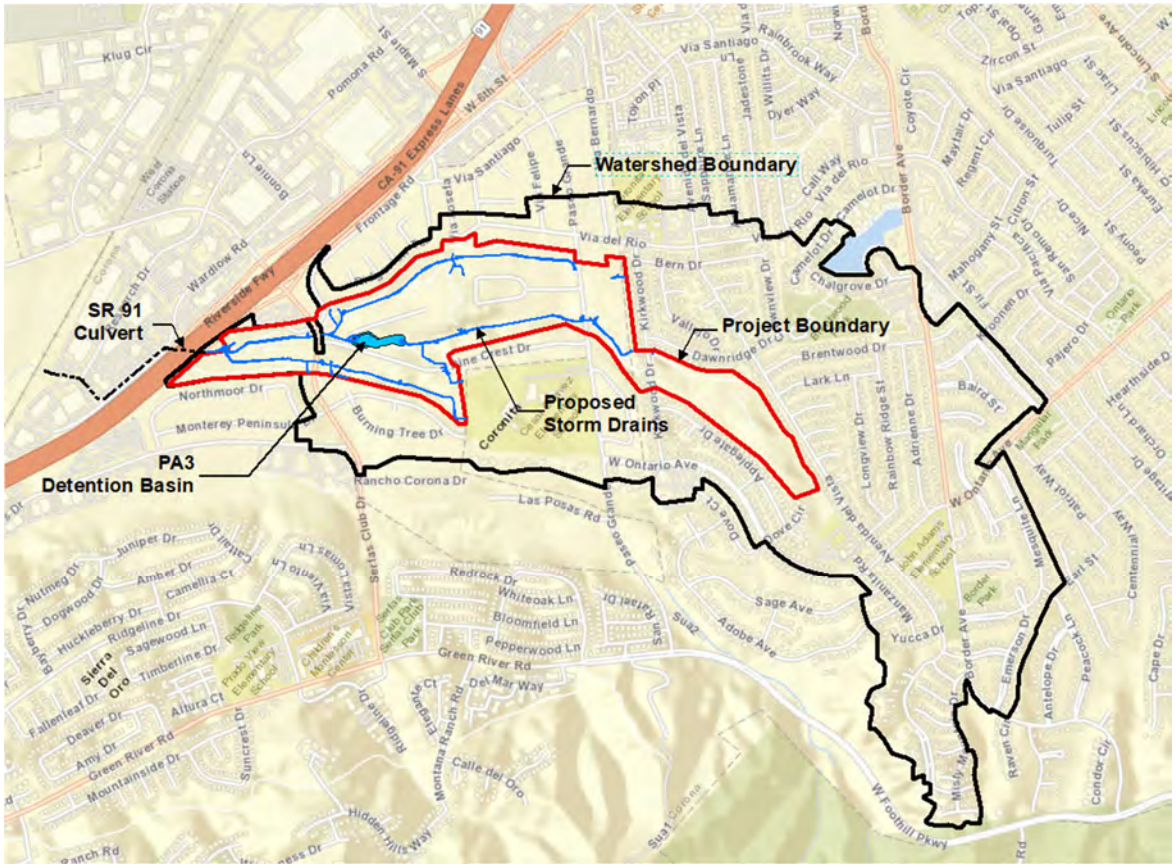


Figure 2: Study Area

The proposed Trails development consists of 370 Medium Density Residential (MDR) homes, 56 Low Density Residential (LDR) homes, 0.9 acres of commercial retail, and approximately 34.3 acres of open space areas within the 105-acre development envelope. Land use within the

open space areas consists of approximately 15 acres of existing rolling hillside and native habitat is to remain natural and undisturbed.
The proposed storm drain system (see Figure 2) runs northerly towards the 91 Freeway, where the entire project drains to. A single detention basin (PA3) is part of the proposed storm drain system as shown in Figure 2. The tributary drainage area at the 91 Freeway is approximately 698 acres consisting mostly of existing single family residential developments and open space areas (former Mountain View Golf Course). Stormwater runoff from the site will discharge to a single outfall located at the 91 Freeway culvert. Review of CALTRANS storm drain plans indicated that this existing culvert is an 8'x 8' Reinforced Concrete Box (RCB). Regardless of the existing condition flowrates at this location, the project is constrained to limit the post project condition flowrate to meet the existing capacity of the CALTRANS culvert.

1.3 FLOODPLAIN MAPPING

The National Flood Insurance Act (1968) established the National Flood Insurance Program (NFIP), which is based on minimum requirements for floodplain management and is designed to minimize flood damage within Special Flood Hazard Areas (SFHAs). The Federal Emergency Management Agency (FEMA) is the agency which administrates the NFIP. SFHAs are defined as areas that have a 1% chance of flooding within a given year. This also referred to as the 100-year flood. Flood Insurance Rate Maps (FIRMs) were developed to identify areas of flood hazards within a community.

According to the FIRM catalog, there are FIRMs produced by FEMA for the Project site:

Map Number: 06065C0688G and 06065C1351G
Map Effective Date: both maps effective date are August 28, 2008

Exhibits C-1 and C-2 (see Appendix G) shows the flood zones for the Trails project site. The project site contains two SFHAs; County Club Creek and County Club Creek North Tributary. Both of these SFHAs are designated as Zone AE with floodways and Zone X. The Zone AE is the area subject to flooding by the 1% annual chance flood with the flood elevations determined. The floodway is the channel of the stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. Zone X are areas of 0.2% annual chance flood or 1% annual chance flood with average depths less than one foot or with drainage areas less than one square mile.

These floodplains are located in the open space areas of the closed Mountain View Golf Course. Redevelopment of the golf course area into residential/commercial developments will impact the FEMA floodplains and requires a Conditional Letter of Map Revision (CLOMR) prior to issue of grading permit. CLOMR requests also need to include documented compliance with the Endangered Species Act (ESA) from the National Marine Fisheries Service or the United States Fish and Wildlife Service. Prior to inspection for occupancy, a Letter of Map Revision (LOMR) is required.

Section

2
HYDROLOGY

2.1 EXISTING CONDITIONS

KWC delineated the existing conditions drainage watershed based on the 2017 1-foot contour topographic map prepared by Inland Aerial Survey Inc. Additional topographic information was supplemented with 1995 RCFCWCD topographic maps and Google Earth Pro aerial images. ArcView GIS was used to delineate the existing watershed boundaries and flow paths as shown in Exhibit A-1 in Appendix B.

The outlet point where the peak flow was calculated is located at the south side of the 91 Freeway where the flows concentrate at an 8'x 8' reinforced concrete box (RCB) culvert as shown in Figure 3.



Figure 3: Existing Condition Watershed

Hydrologic soil data was obtained from the Riverside County Flood Control and Water Conservation District Hydrology Manual (RCHM). Exhibit A-3 (Appendix B) shows the

hydrologic soil group distribution for the project location and its tributary watersheds. As shown in Exhibit A-3, soil types within the watershed boundaries consist of a mixture of soils B, C, and D and a small amount of soil A. The land use was obtained from site visits and aerial photos. Land cover for the existing conditions was assumed to be natural, grass in fair condition for the open space locations (golf course areas), community parks, schools, commercial, and single-family residential areas as indicated in Exhibit A-2 (Appendix B).

Precipitation point values for the 2-year and 100-year frequency storm with durations of 3-hour, 6-hour, and 24-hour were taken from the isohyetal maps shown on shown on Plates E-5.1 through E-5.6 of the RCHM (see Appendix A). The centroid of the watershed was used as the location on the isohyetal maps to determine the point precipitation values (see Appendix A).

Table 1: Precipitation Depth-Duration-Frequency Summary

Frequency	Duration		
	3-Hour Depth	6-Hour Depth	24-Hour Depth
	(in)	(in)	(in)
2-Year	1.04	1.52	2.76
100-Year	2.45	3.55	8.55

Average storm rainfall tends to decrease as the size of the tributary watershed increase. Depth-Area Reduction Factors (DARFs) were used to reduce the point rainfall in accordance with the RCHM procedures. DARFs are ratios that are applied to convert point rainfall values to an equivalent uniform depth over the entire watershed. The point rainfall depths were adjusted using the DARFs from the curves on Plate E-5.8 of the RCHM (see Appendix A). The CivilDesign software computer program performs these adjustments based on the input drainage area.

Per the recommendations in the RCHM, an antecedent soil moisture conditions of AMC II were used for the 100-year frequency storms. Residential areas were estimated as 50% impervious, parks 15% impervious, schools 40% impervious and commercial areas 90% impervious.

Rainfall loss rates vary with each land use and soil type combination. The watersheds consist of multiple land uses and soil types, making it difficult to manually sum up all the different combinations. Using the spatial analysis capabilities of the ArcGIS computer program makes this otherwise laborious task manageable. Unique soil-land use polygons are constructed from the soil and land use maps (see Exhibit B) and summarized for direct input to the CivilDesign computer program (see Table 2).

Table 2: Existing Condition Watershed E1 Soil-Land Use Summary

Land Use	Hydrologic Soil Group	RI	Area (ac)	Percent Impervious
Residential	A	32	9.95	0.50
Residential	B	56	69.26	0.50
School	B	65	0.29	0.40
Park	B	56	9.27	0.15
Open Space	B	68	34.36	0.00
Residential	C	69	290.87	0.50
Commercial	C	69	3.36	0.90
Park	C	69	5.46	0.15
Open Space	C	75	27.11	0.00
Residential	D	75	147.89	0.50
School	D	82	11.24	0.40
Commercial	D	75	2.04	0.90
Park	D	75	3.00	0.15
Open Space	D	84	51.27	0.00

The rainfall-runoff transformation was determined using the S-graph method as outlined in Section E of the RCHM. The RCHM has four S-graphs (Plates E-4.1 through E-4.4) titled Valley, Foothill, Mountain, and Desert, respectively, to represent the specific runoff characteristics of watersheds in Riverside County. The Valley S-graph was selected as the most appropriate for this study area.

Watershed Lag is defined as the elapsed time in hours from the beginning of unit effective rainfall to the instant that the summation hydrograph for the concentration point of an area reaches 50 percent of ultimate discharge. Lag time for the watersheds were calculated using the equation on Plate E-3 of the RCHM. It is calculated from the physical characteristics of a watershed area by the empirical formula:

$$\text{Log} = 24\bar{n}\left[\frac{L \cdot L_{ca}}{\sqrt{S}}\right]^{(0.38)}$$

Where:

Lag = Lag time in hours
$\bar{n}$ = The visually estimated basin roughness coefficient
L = Length of longest watercourse (miles)
Lca = Length along longest watercourse, measured upstream to a point opposite the centroid of the area (miles)
S = Overall slope of the longest watercourse between headwater and the collection point (feet per mile)

Because the watershed consists of developed areas and open space (undeveloped) areas, a weighted average n-bar value was estimated. The watershed flow path consisted of approximately 44% developed surfaces ($\bar{n}$ = 0.015) and 56% light grassy/brush rolling terrain with gentle side slopes ($\bar{n}$ = 0.025).
An existing condition weighted average n-bar ($\bar{n}$) value of 0.021 was calculated ((0.015 x 0.44) + (0.025 x 0.56) = 0.021).

Table 3 summarizes the watershed lag calculations for existing conditions.

Table 3: Existing Conditions Watershed Lag Time Parameters

Subarea	Area	L	Lca	Elev_Up	Elev_Dn	Elev Diff	$\bar{n}$	Lag
(ID)	(ac)	(mi)	(mi)	(ft)	(ft)	(ft)		(hr)
E1	698.3	13,772	6,247	1157	583	574	0.021	0.278

2.2 EXISTING CONDITIONS HYDROLOGY RESULTS

Table 4 summarizes the unit hydrograph method results for existing condition at the project outlet (91 Freeway culvert). Refer to the Existing Condition Hydrology Map Exhibit A-1 in Appendix B. See Appendix B for CivilDesign Unit Hydrograph output files.

Table 4: Existing Condition Unit Hydrograph Result Summary at 91 Freeway Culvert

Storm Frequency	Duration	Peak Flow	Runoff Volume
(yr)	(hr)	(cfs)	(ac-ft)
100	3	1025.5	104.2
	6	977.3	131.6
	24	633.2	303.2

The proposed detention basin (PA3) will need to mitigate for increase runoff due to the proposed development and to limit the 100-year discharge to meet the existing culvert capacity.

2.3 PROPOSED CONDITIONS

KWC delineated the proposed conditions drainage areas according to the 2023 Planning Area Study plans as shown in Figure 4. Copies of Planning Areas 1 through 5 Conceptual Plans are included in Appendix F. A Preliminary Storm Drain Maintenance Exhibit has been prepared showing the overall storm drain system and the responsible agencies (see Appendix N).

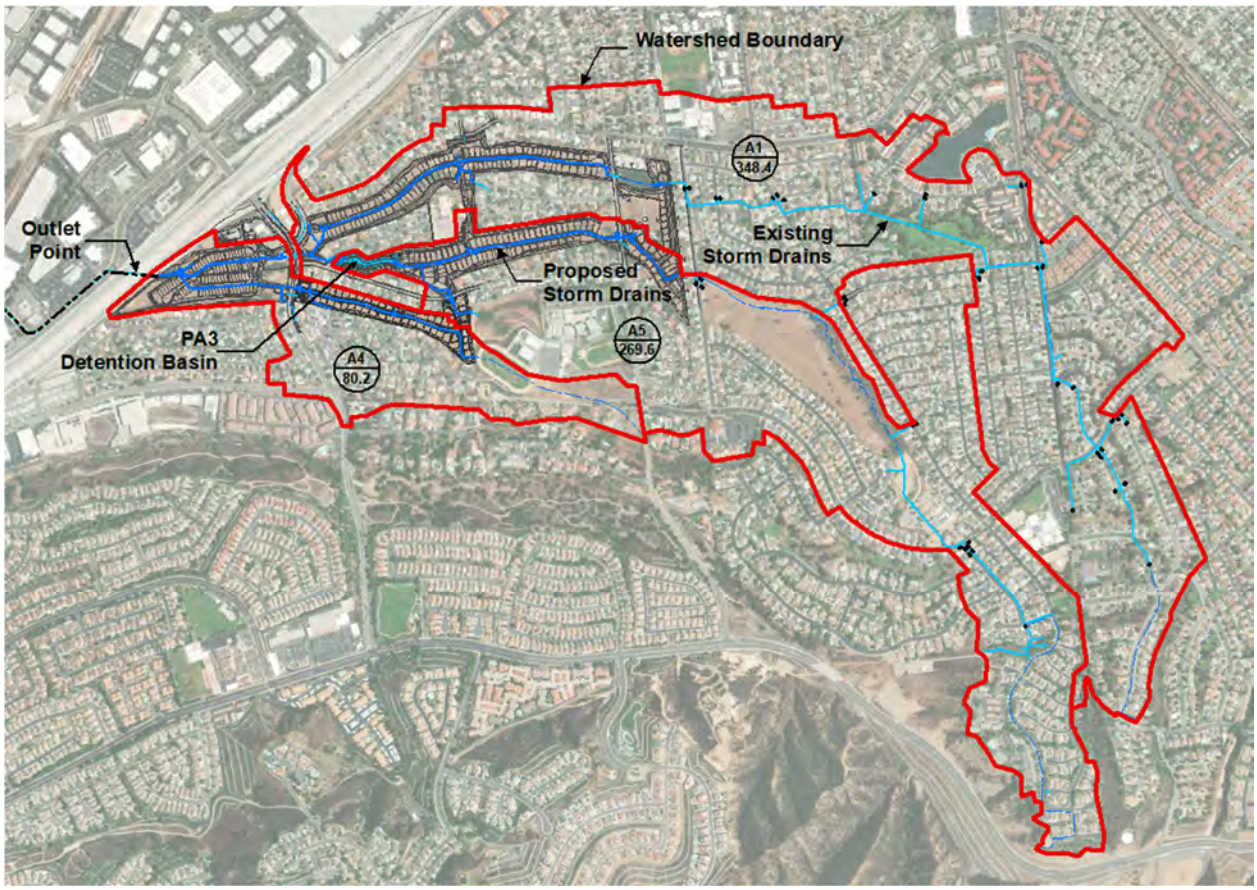


Figure 4: Proposed Condition Watersheds

Because the proposed development is an infill project (conversion of the golf course to single family residential development), within an existing urban watershed, the downstream watershed boundary at the SR 91 culvert does not change. The proposed condition hydrology was divided into three sub-watersheds as shown in Figure 4. Watershed A5 is tributary to Detention Basin PA3. Watershed A1 confluences with the outflows from Watershed A5, the combined outflows are routed downstream to the 91 Freeway culvert where it combines with Watershed A4. Watershed boundaries, centroids, flow paths and elevations are shown in Exhibit B-1 of Appendix C.

Land use information was taken from 2023 Planning Area Conceptual Plans (Appendix F) as shown in Exhibit B-2 of Appendix C. Comparison of Exhibits A-2 and B-2 shows most of the existing open space areas (golf course) has been converted to residential developments. Tables 5 through 7 summarize the soil-lands for each sub-watershed.

Watershed lag times were adjusted based on the new flow path lengths, slopes, basin roughness ($\bar{n}$), and conveyances per the proposed improvements and shown in Table 8.

Table 5: Watershed A1 Proposed Condition Soil-Land Use Summary

Land Use	Hydrologic Soil Group	RI	Area (ac)	Percent Impervious
Residential	A	32	9.95	0.50
School	B	65	0.29	0.40
Residential	B	56	78.66	0.50
Park	B	56	9.27	0.15
Open Space	B	68	2.55	0.00
School	C	77	9.21	0.40
Residential	C	69	148.43	0.50
Park	C	69	3.70	0.15
Open Space	C	75	5.09	0.00
Residential	D	75	74.67	0.50
Park	D	75	3.00	0.15
Open Space	D	84	3.62	0.00

Table 6: Watershed A4 Proposed Condition Soil-Land Use Summary

Land Use	Hydrologic Soil Group	RI	Area (ac)	Percent Impervious
Residential	B	56	8.67	0.50
Open Space	B	68	3.60	0.00
School	C	77	6.12	0.40
Residential	C	69	34.54	0.50
Open Space	C	75	1.40	0.00
Commercial	C	69	0.26	0.90
School	D	82	2.74	0.40
Residential	D	75	17.33	0.50
Open Space	D	84	5.15	0.00
Commercial	D	75	0.44	0.90

Table 7: Watershed A5 Proposed Condition Soil-Land Use Summary

Land Use	Hydrologic Soil Group	RI	Area (ac)	Percent Impervious
Residential	B	56	7.23	0.50
Open Space	B	68	2.91	0.00
School	C	77	17.60	0.40
Residential	C	69	112.48	0.50
Park	C	69	1.76	0.15
Open Space	C	75	15.78	0.00
Commercial	C	69	3.36	0.90
School	D	82	8.50	0.40
Residential	D	75	80.84	0.50
Open Space	D	84	17.10	0.00
Commercial	D	75	2.04	0.90

Table 8: Proposed Conditions Watershed Lag Time Parameters

Watershed	Area	L	Lca	Elev_Up	Elev_Dn	Elev_Diff	n	Lag
(ID)	(ac)	(ft)	(ft)	(ft)	(ft)	(ft/mi)		(hr)
A1	348.4	12,683	5,913	1102	613.7	488.3	0.015	0.191
A4	80.2	5,129	2,243	784	583	201	0.018	0.112
A5	269.6	12,158	5,865	1157	615.5	541.5	0.017	0.207

The CivilDesign SCS convex channel routing method was used to route the combined flows from watersheds A1 and A5 to the 91 Freeway culvert. The reach length, pipe slope, manning's roughness, and cross section geometry are summarized in Table 9.

Table 9: Proposed Conditions Routing Parameters

Reach	Length	Slope	Manning's n	Shape	Diameter
(ID)	(ft)	(ft/ft)			(in)
1	1465	0.021	0.013	Circular	96

2.4 PROPOSED CONDITIONS HYDROLOGY RESULTS

Table 10 summarizes the proposed condition (no detention) unit hydrograph results at the project outlet (91 Freeway culvert). Refer to the Proposed Condition Hydrology Map B-1 shown in Appendix C for locations of the drainage sub-watersheds.

Table10: Proposed Conditions (No Detention) Unit Hydrograph Result Summary at 91 Frwy Culvert

Storm Frequency	Duration	Peak Flow	Runoff Volume
(yr)	(hr)	(cfs)	(ac-ft)
100	3	1116.0	105.5
	6	1088.2	133.5
	24	659.1	308.3

See Appendix C for the proposed condition (no detention) CivilDesign Unit Hydrograph output files.

2.5 CATCH BASIN HYDROLOGY

The 10-year and 100-year discharges at each catch basin were estimated using a discharge per acre ratio and its tributary drainage area. For the 10-year discharge, the ratio is 1.92 cfs per acre and for the 100-year discharge, the ratio is 3.0 cfs per acre. Table 11 summarizes the results.

Refer to Catch Basin Hydrology Map (see Appendix K) for catch basin locations and tributary areas.

Table 11: Summary of Estimated Catch Basin Discharges

Catch Basin No.	Tributary Area	10-Year Discharge	100-Year Discharge
	(ac)	(cfs)	(cfs)
1	2.85	5.5	8.6
2	2.27	4.4	6.8
3	2.21	4.2	6.6
4	0.45	0.9	1.4
5	1.67	3.2	5.0
6	3.44	6.6	10.3
7	3.53	6.8	10.6
8	2.28	4.4	6.8
9	0.28	0.5	0.8
10	0.53	1.0	1.6
11	0.28	0.5	0.8
12	6.00	11.5	18.0
13	3.22	6.2	9.7
14	7.01	13.5	21.0
15	3.78	7.3	11.3
16	3.47	6.7	10.4
17	5.37	10.3	16.1
18	3.57	6.9	10.7
19	3.40	6.5	10.2
20	5.48	10.5	16.4
21	8.96	17.2	26.9
22	29.57	56.8	88.7
23	2.37	4.6	7.1
24	25.04	48.1	75.1
25	1.92	3.7	5.8
26	3.04	5.8	9.1

Discharges presented in Table 11 can be used to preliminarily size the catch basins.

Section

3
DETENTION ANALYSIS

3.1 DESIGN CRITERIA

1) Storms to be studied are the 3-hour, 6-hour, and 24-hour durations for the 100-year return frequency storm. Detention basin and outlet sizing have been performed to limit the downstream discharge to meet the capacity of the CALTRANS culvert at the SR 91 Freeway.

2) Loss rates were determined for the 100-year storm using an AMC II condition. All durations incorporated constant loss rates, except for the 24-hour where a variable loss rate is used.

3) A single plot showing the pre-development, post-development and routed hydrographs for each storm event considered shall be included with the submittal of the hydrology study.

4) The detention structure must be capable of passing the 100-year storm without damage to the facility.

3.2 PROPOSED DETENTION BASIN

In order to limit the discharge at the SR 91 freeway culvert, detention basin PA3 is proposed, and will mitigate the increase runoff from the proposed development as shown in Exhibit B-1. Table 12 shows the stage storage outflow relationship for the PA3 detention basin.

Detention Basin PA3 has a storage volume of 14.25 ac-feet, 2:1 side slopes, and a height of 16.5 feet. The outlet structure is a single 3.0’ high x 6.0’ wide opening placed at the basin bottom which limits the outflows from the basin and provides the required attenuation to limit the downstream flowrate to the SR 91 freeway culvert capacity. Table 12 summarizes the Detention Basin PA3 stage storage outflow relationship.

Table 12: Detention Basin PA3 Stage Storage Outflow Data

Elevation (ft)	Stage (ft)	Storage (ac-ft)	Outflow (cfs)
615.5	0	0.00	0.00
616.0	0.5	0.29	17.51
617.0	1.5	0.92	52.53
618.0	2.5	1.60	87.55
619.0	3.5	2.33	122.57
620.0	4.5	3.13	150.12
621.0	5.5	3.98	173.34
622.0	6.5	4.89	193.80
623.0	7.5	5.85	212.30
624.0	8.5	6.87	229.31
625.0	9.5	7.96	245.14
626.0	10.5	9.10	260.01
627.0	11.5	10.31	274.07
628.0	12.5	11.57	287.45
629.0	13.5	12.90	300.23
630.0	14.5	14.29	312.49
631.0	15.5	15.74	324.29
632.0	16.5	17.25	353.67

The storm hydrographs were routed through the proposed PA3 detention basin and were evaluated with respect to the critical duration. It was found that the 100-year 6-hour storm resulted in the highest water surface (Elev. 626.73) in the basin, therefore the 100-year 6-hour storm is the critical duration. The detention basin will include an emergency spillway that can discharge the 100-year storm assuming that all the outlet structures have failed. Appendix D contains the calculations for the detention basin outlet structures stage–outflow relationship that were used in the routing analysis.

3.3 PEAK OUTFLOWS AT THE OUTLET

Table 13 presents a comparison between the existing, proposed (no detention), and proposed (with detention) condition outflows at the downstream outlet point located at the 91 Freeway culvert.

Table 13: Unit Hydrograph Summary Existing & Proposed Conditions at 91 FreewayCulvert

		Existing Condition		Proposed Condition No Detention		Proposed Condition With Detention
STORM FREQUENCY	DURATION (HOURS)	PEAK FLOW (CFS)	TOTAL VOL, AC-FT	PEAK FLOW (CFS)	TOTAL VOL, AC-FT	PEAK FLOW (CFS)
100						
	3	1025.5	104.2	1116.0	105.5	924.8
	6	977.3	131.6	1088.2	133.5	923.4
	24	633.2	303.2	659.1	308.3	614.3

As indicated in Table 13, the proposed conditions (with detention) peak flows are lower than the existing conditions peak flow for all storm events modeled. Detailed results from the CivilDesign proposed condition model are included in Appendix D.

3.4 DETENTION BASIN PEAK STORAGE AND MAXIMUM WATER SURFACE ELEVATION

Table 14 summarizes PA3 Detention Basin maximum storage and water surface elevation for each storm event.

Table 14: Detention Basin PA 3 Peak Storage and Water Surface Elevation

Storm Event	Inflow (cfs)	Outflow (cfs)	Maximum Water Surface (ft)	Peak Storage (ac-ft)	Freeboard (ft)
100-yr 3-hr	431.2	266.4	626.46	8.5	5.54
100-yr 6-hr	420.0	270.3	626.73	8.8	5.27
100-yr 24-hr	257.4	221.6	623.55	5.3	8.45

3.5 EMERGENCY SPILLWAY AND FLOWPATH

PA3 detention basin will need to have an emergency spillway to pass the peak 100-year inflow in the event the outlet structure is clogged or if the design storm (100-year) has been exceeded. PA3 Detention Basin has a spillway length of 68 feet, side slopes of 10:1, crest elevation of 632.0, and top of basin of 634.0. The spillway can pass 431.2 cfs using a flow depth of 1.3 feet, resulting in 0.7 feet of freeboard. Spillway calculations are included in Appendix D.

HEC-RAS was used to determine the 100-year emergency flow path from Basin PA3 to Serfas Club Drive (see Exhibit F in Appendix M). Discharges from the spillway flows into the low-lying area formed between Pine Crest Drive and Mountain View Drive where the flows pond up to a maximum elevation of 632.3 and then spills into the open space area. Flows are conveyed through the open space area and then ponds up to an elevation of 628 before spilling onto Serfas Club Drive. A comparison with the existing condition was made utilizing the Country Club

Creek LOMR, MR365 map to determine the impacts of the proposed Basin PA3. Review of the LOMR map indicated more extensive flooding than shown on Exhibit F. The County Club Creek Topographic Workmap is included in Appendix M.

Section

4

HYDRAULIC ANALYSIS

4.1 ONSITE STORM DRAIN ANALYSIS

The hydraulic analysis and sizing of the major storm drain system associated with the project was performed for the 100-year flow rates using the Water Surface Pressure Gradient" (WSPG) computer program (see Appendix J for WSPG input and output files).

The starting water surface control elevation for Line B was taken from Line A hydraulic grade line at channel station 37+22.40 (see 1511LINE-A.out). Line C water surface control elevation was taken from the maximum design water surface elevation in PA3 Detention Basin. Line D starting water surface control was taken from Line A hydraulic grade line at channel station 25+88.18. Figure 5 shows the existing and proposed storm drain facilities.

The 100-year discharges used in the storm drain hydraulic analysis were estimated using the 100-year 3-hour unit hydrograph results. For locations where discharges were not calculated, discharges were estimated using a "cfs/ac" ratio from the unit hydrograph analysis. Table 15 summarizes the 100-year discharges used in the storm drain hydraulic analysis.

Table 15: Estimated Storm Drain Discharge Summary

Storm Drain ID	Storm Drain Station	Location	Tributary Area (ac)	100-Year Discharge (cfs)
Line A	70+69.86	Paseo Grande	274.55	440.7[(1)]
Line A	54+23.26	Street "B" Storm Drain	313.01	502.4[(1)]
Line A	40+81.43	Street "A" Catch Basins	321.60	516.2[(1)]
Line A	37+18.37	Line B Confluence	618.00	801.1[(2)]
Line A	25+90.68	Line D Confluence	678.92	913.2[(7)]
Line A	24+15.78	Line A-1 Confluence	698.20	924.8[(2)]
Line B	13+35.87	Detention Basin Outflow	269.60	270.3[(3)]
Line C	46+02.56	Kirkwood Avenue	175.34	280.4[(4)]
Line C	67+32.51	Paseo Grande	208.95	334.1[(4)]
Line C	53+10.81	Street "B" Catch Basins	219.09	350.3[(4)]
Line C	46+89.00	Detention Basin Inflow	269.60	431.2[(5)]
Line D	40+05.60	U/S End of Storm Drain	3.38	6.2[(6)]
Line D	29+97.00	Catch Basins	7.53	13.9[(6)]
Line D	20+56.74	U/S of Serfas Club Dr	11.80	21.7[(6)]
Line D	18+88.06	D/S of Serfas Club Dr	60.92	112.1[(6)]

Table 15 notes:

(1) cfs/ac Ratio = 559.3 cfs/348.4 ac = 1.605 cfs/ac (see 100-yr-3-hr Proposed Condition Unit Hydrograph Calculations).
(2) See 100-yr 3-hr Routing Results
(3) See 100-yr 6-hr Routing Results
(4) cfs/ac Ratio = 431.2 cfs/269.6 ac = 1.599 cfs/ac (see 100-yr 3-hr Proposed Condition Unit Hydrograph Calculations)
(5) See 100-yr 3-hr Proposed Condition Unit Hydrograph Calculations
(6) cfs/ac Ratio = 147.6 cfs/80.2 ac = 1.840 cfs/ac (see 100-yr 3-hr Proposed Condition Unit Hydrograph Calculations)
(7) Q100 = 801.1 cfs + Line D Confluence = 801.1 cfs + 112.1 cfs = 913.2 cfs

Refer to the Storm Drain Hydrology Map (see Appendix L) for locations and tributary areas used in the estimated discharges determination. Pipes will be designed as reinforced concrete pipes while maintaining the hydraulic grade lines (HGL) a minimum of one foot below the proposed finished surface.

Storm Drain Improvement Plans are included in Appendix I. Also included in Appendix I is the Storm Drain Maintenance Exhibit showing the various agencies' responsibility. Flood Control has the right to regularly and routinely maintain their facilities as needed.

4.2 SR 91 CULVERT ANALYSIS

The entire project site and its offsite tributary areas all drain to the existing SR-91 culvert (8' x 8' reinforced concrete box). In order to determine the capacity of the existing culvert at the SR 91, a WSPG hydraulic analysis was performed. As-built drawings of the SR-91 culvert and subsequent downstream facilities leading to Prado Basin were obtained and assembled into a WSPG analysis "1511Line-A.WSW" (see Appendix H for reference as-built plans). The WSPG model was then extended upstream to Paseo Grande and used to analyze the proposed Line A storm drain improvements. The starting water surface control elevation was taken from the 100-year maximum water surface elevation in Prado Basin.

Review of the As-Built Storm Drain Improvement Plans (see City of Corona Drawing No. 85-14B) indicated a Q100 of 900 cfs at Station 18+07.36, and a water surface elevation of approximately 584.0 (NGVD29). Review of the proposed condition WSPG Model results (see 1511Line-A WSPG output file) at Station 18+07.36 indicated at Q100 of 924.8 cfs (3% increase in Q100) and the resulting water surface elevation is 578.3. It is concluded that based on the WSPG analysis and using the mitigated Q100 of 924.8 cfs (see Section 3.3 Table 13 of this report), that there are no increases in the water surface elevations as compared to the As-Built Plans.

Also included in Appendix H is the "Drainage Constraints Exhibit" showing an index of the existing As-Built Storm Drain Plans for the 91 Freeway Culvert and other existing storm drains.

CITY OF CORONA
COUNTY OF RIVERSIDE

PA 3
TTM 37501

TERRACE

RIDGEVIEW

VIA ANTONIO

VIA FELIPE

VIA DEL RIO

PASEO GRANDE

72"

66"

36"

24"

LINE A

66"

24"

EX. LAKE

OUTLET STRUCTURE

66"

51"

BRAE BURN DR

CONNECT TO EX. STORM DRAIN

8'X8'

PA 2
TTM 37519

SERFAS CLUB DRIVE

96"

96"

84"

LINE A

MOUNTAIN VIEW DR

LINE C OUTLET STRUCTURE

96"

96"-72"

60"

60"

60"

LINE C

54"

PA 5
TTM 37503

96"

LINE A

42"

42"

36"

36"

24"

24"

LINE B

DETENTION BASIN

LINE B INLET STRUCTURE

24"

LINE C

PINE CREST DR

PASEO GRANDE

LINE C

54"

54"

54"

PINE CREST DR

COUNTY OF RIVERSIDE
CITY OF CORONA

NORTH MOOR DR

PA 1
TTM 37504

24"

24"

24"

24"

MONTEREY PENINSULA DRIVE

PA 4
TTM 37502

KIRKWOOD DR

LINE C INLET STRUCTURE

30"

AVENUE

200' 0 200' 400' 600'
SCALE IN FEET

FIGURE 5

THE TRAILS AT CORONA
PROPOSED STORM DRAIN FACILITIES

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1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881-3370 951-734-2130

JOB NO. 15.1511 R:\15\1511\PRELIM\EXH\PRELIM HYDRAULICS\Maintenance and Pipesizes Exhibit.dwg

Section

5
CONCLUSIONS

5.1 DISCUSSION

The hydrologic calculations presented in this report have been performed in accordance with the procedures and recommendations per the RCHM. This preliminary drainage study has determined that there is sufficient detention storage available to limit the discharge at the SR 91 Freeway to meet the culvert capacity (3% increase in Q100). PA3 Detention Basin attenuates the peak discharge from Watershed A5 from 431.2 cfs to 270.3 cfs. As a result of the PA3 Detention Basin, reduction of peak flows at the SR 91 culvert from 1116.0 cfs to 924.8 cfs has been determined.

In addition, a preliminary hydraulic analysis of the major storm drains (Lines A, B, C, and D) was performed using approximated discharges estimates from the unit hydrograph results.

A comparison with the existing condition floodplain was made utilizing the Country Club Creek LOMR, MR365 map to determine the impacts of the proposed Basin PA3 emergency spillway flowpath. Review of the LOMR map indicated more extensive flooding than shown on Exhibit F.

Section

6
REFERENCES

KWC Engineers, The Trails at Corona Conceptual Plans Planning Areas 1 through 5, December 2023

Riverside County Flood Control and Water Conservation District, *Hydrology Manual*. April 1978

County of Riverside, California. Water Quality Management Plan Guidance Document for the Santa Ana Region of Riverside County. October 22, 2012

USACE, Los Angeles District, Prado Dam Box Culvert Plan, Profile, and Details

Caltrans, Drainage Profiles, DP-C15

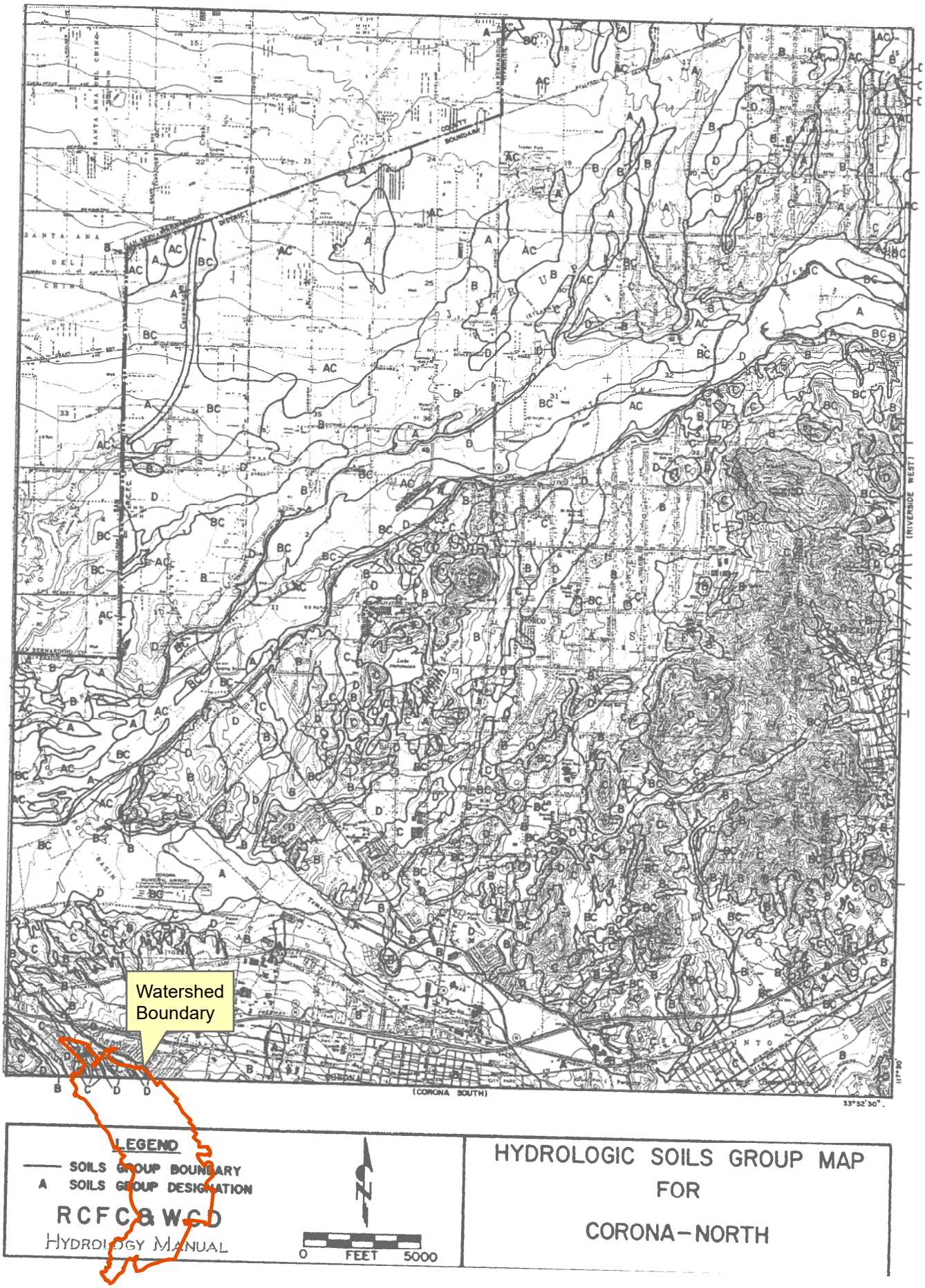
City of Corona, Lines “A” and “A-1” Storm Drain Improvement Plans

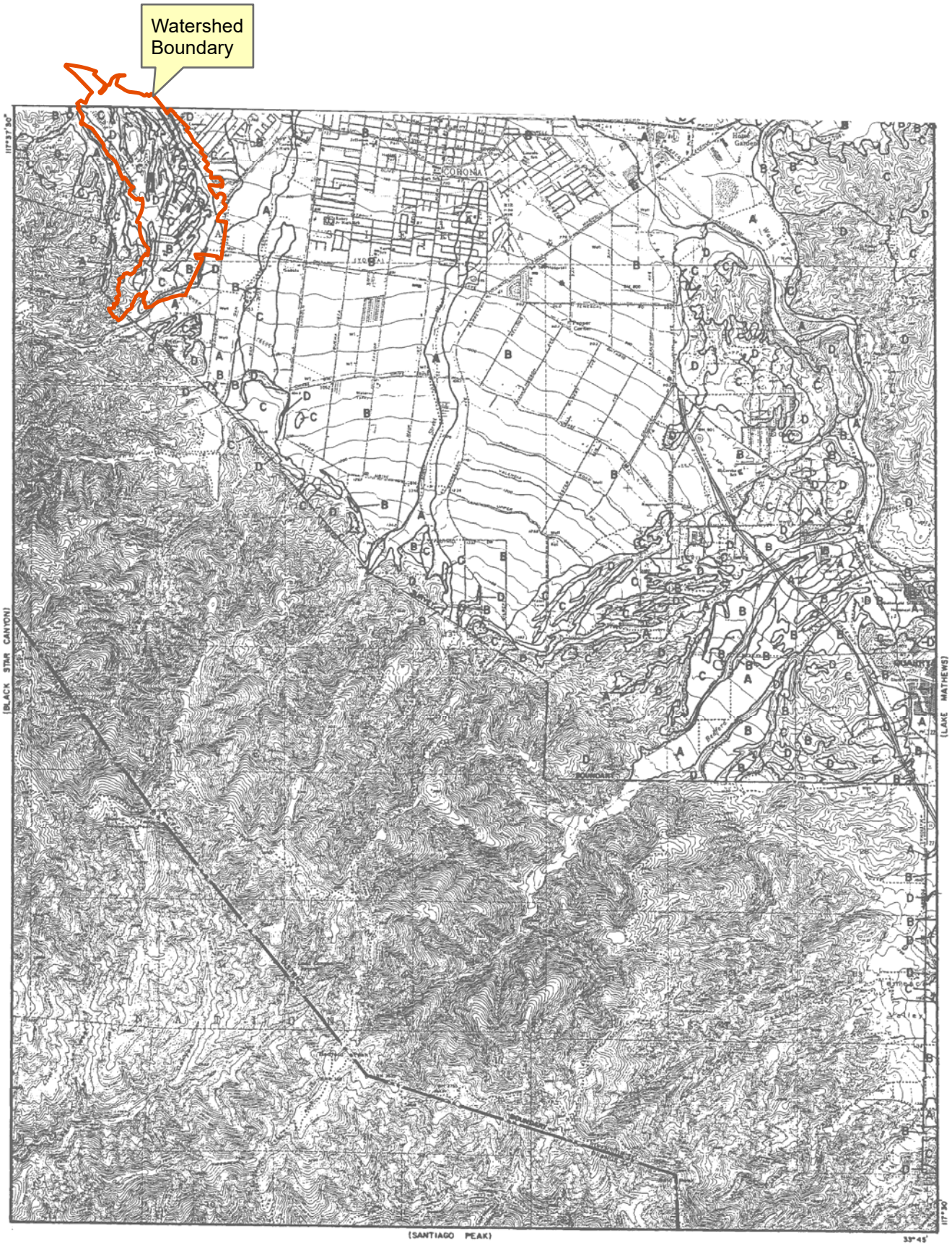
Riverside County Flood Control and Water Conservation District, Topographic Workmap Country Club Creek – LOMR, MR365

Appendix

A

RCFC&WCD HYDROLOGIC DATA


Watershed Boundary
LEGEND
SOILS GROUP BOUNDARY
A SOILS GROUP DESIGNATION
RCFC & WCD
HYDROLOGY MANUAL
N
0 FEET 5000
HYDROLOGIC SOILS GROUP MAP
FOR
CORONA – NORTH
(CORONA SOUTH)
(RIVERSIDE WEST)



LEGEND

SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC&WCD

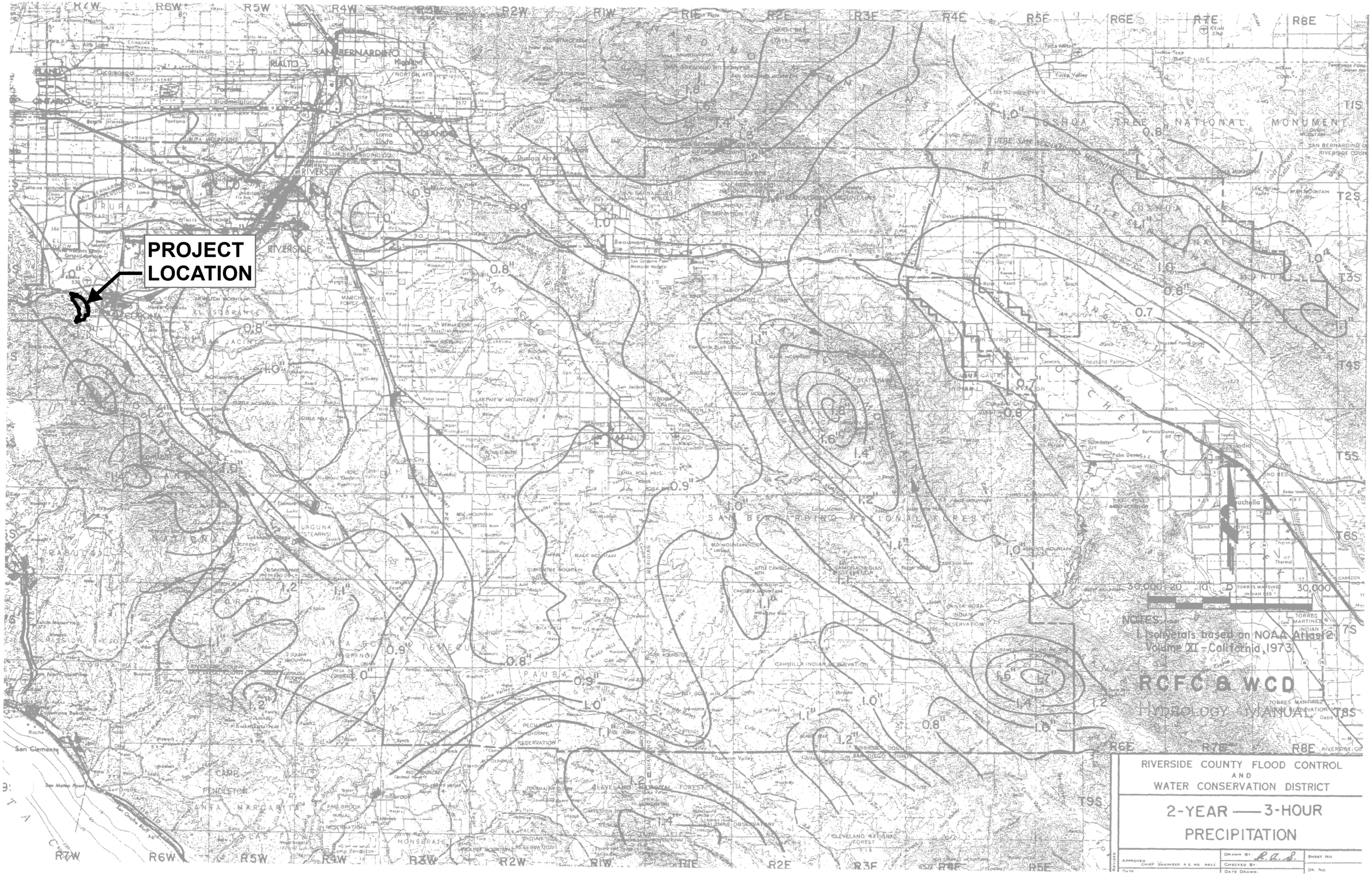
HYDROLOGY MANUAL

N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR CORONA-SOUTH

PLATE C-I.27



NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973.

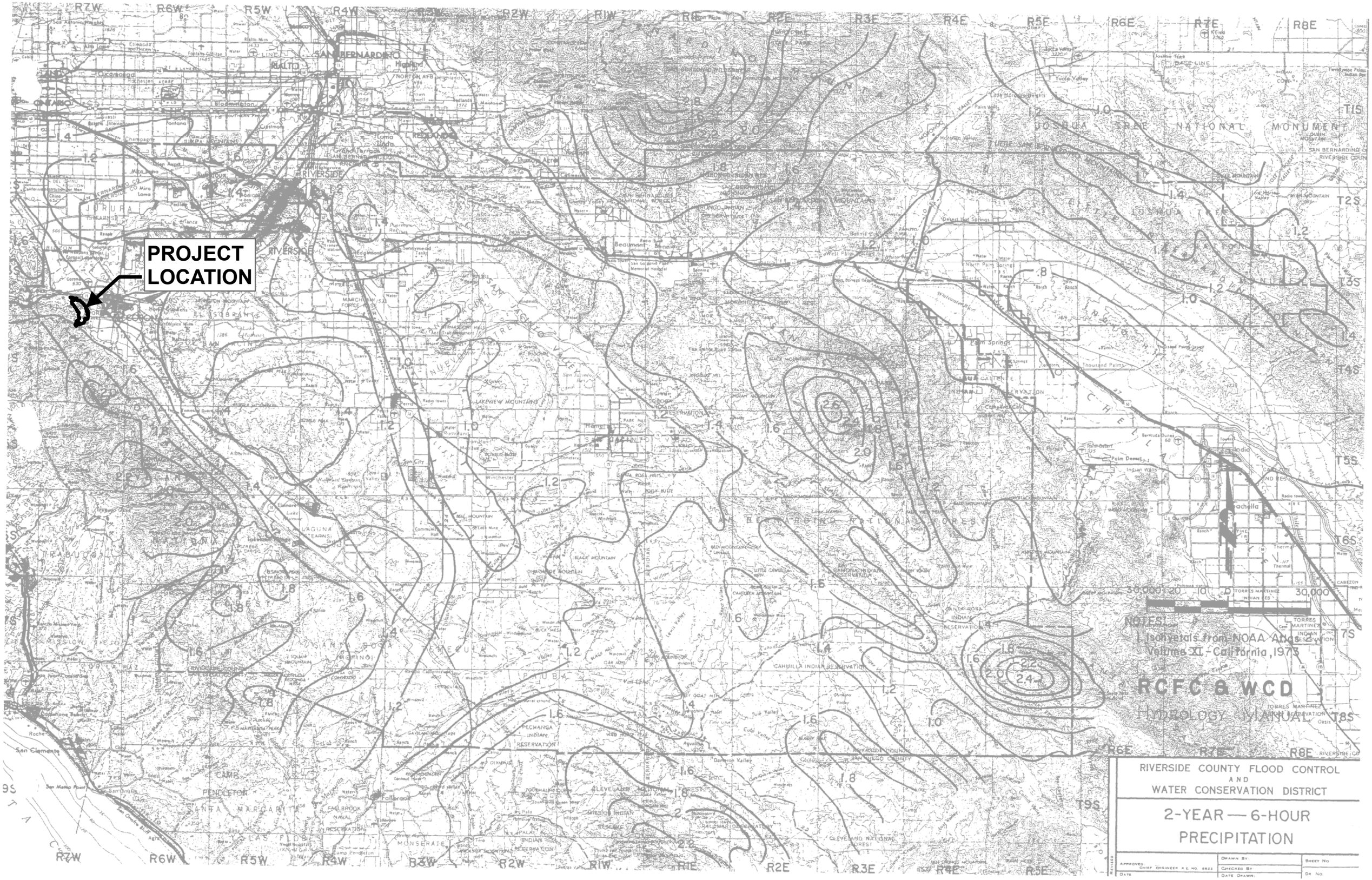
RCFC & WCD

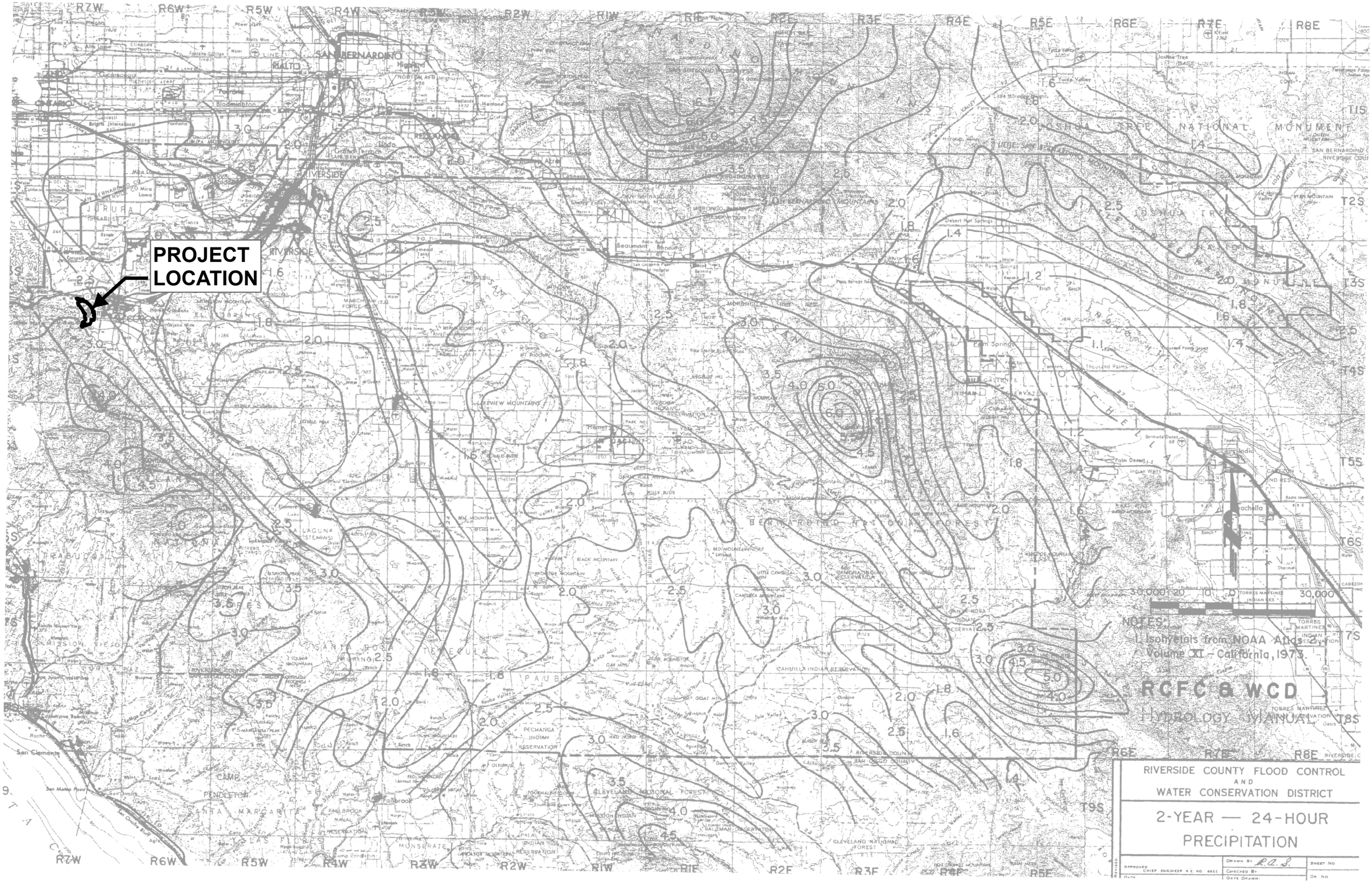
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

2-YEAR — 3-HOUR PRECIPITATION

APPROVED CHIEF ENGINEER R.E. NO. 4611 DATE	DRAWN BY R.A.S.	SHEET NO.
	CHECKED BY	DR. NO.
	DATE DRAWN:	

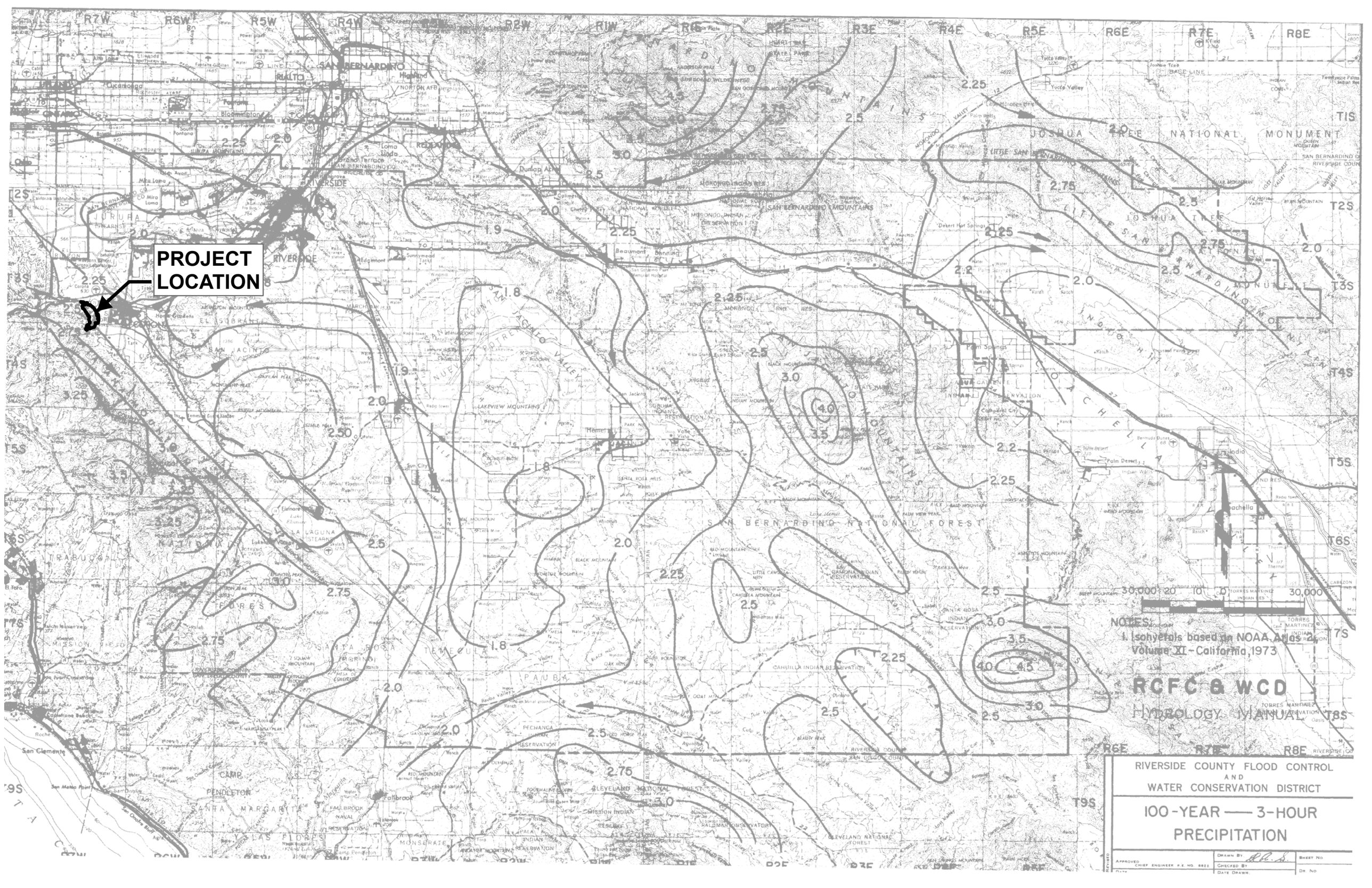

PROJECT LOCATION
NOTES
Isohyetals from NOAA Atlas Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
2-YEAR — 6-HOUR PRECIPITATION
APPROVED: CHIEF ENGINEER R.E. NO. 6822
DATE
DRAWN BY:
CHECKED BY:
DATE DRAWN:
SHEET NO.
OR NO.
SAN BERNARDINO
RIVERSIDE
RIALTO
COLTON
ONTARIO
CHINO
CORONA
NORCO
JURUPA
MIRA LOMA
LOMA LINDA
REDLANDS
HIGHLAND
NORTON AFB
MARCH AIR FORCE BASE
MORENO
SUNNYMEAD
MORENO VALLEY
PERRIS
SAN JACINTO
HEMET
SAN JACINTO MOUNTAINS
SAN JACINTO PEAK
SAN JACINTO WILDERNESS
SAN JACINTO RIVER
LAKEVIEW MOUNTAINS
BOX SPRINGS MOUNTAINS
BOX SPRINGS
BEAUMONT
BANNING
SAN GORGONIO PASS
MORONGO INDIAN RESERVATION
SAN BERNARDINO NATIONAL FOREST
SAN GORGONIO WILDERNESS
SAN GABRIEL MOUNTAINS
SAN GABRIEL WILDERNESS
CAHUILLA INDIAN RESERVATION
SANTA ROSA INDIAN RESERVATION
SANTA ROSA MOUNTAINS
SANTA ROSA WILDERNESS
SAN JACINTO WILDERNESS
PECHANGA INDIAN RESERVATION
LAGUNA MOUNTAINS
CLEVELAND NATIONAL FOREST
JOSHUA TREE NATIONAL MONUMENT
PALM SPRINGS
PALM DESERT
INDIO
THERMAL
TORRES MARTINEZ INDIAN RES
SAN CLEMENTE
CAMP PENDLETON
FALLBROOK
TEMECULA
MURRIETA
LAKE ELSINORE
CANYON LAKE
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
R3E
R4E
R5E
R6E
R7E
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T2S
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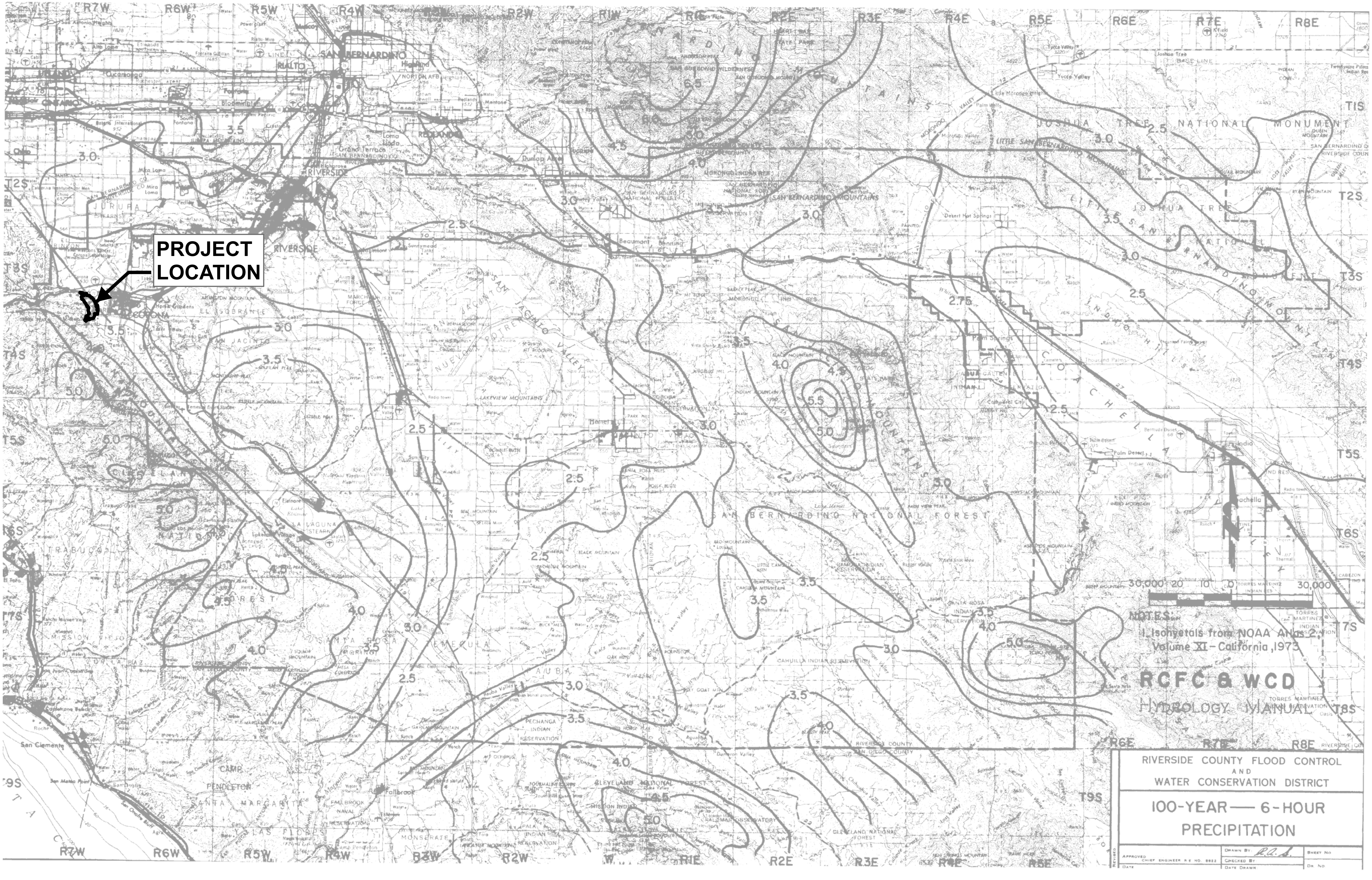


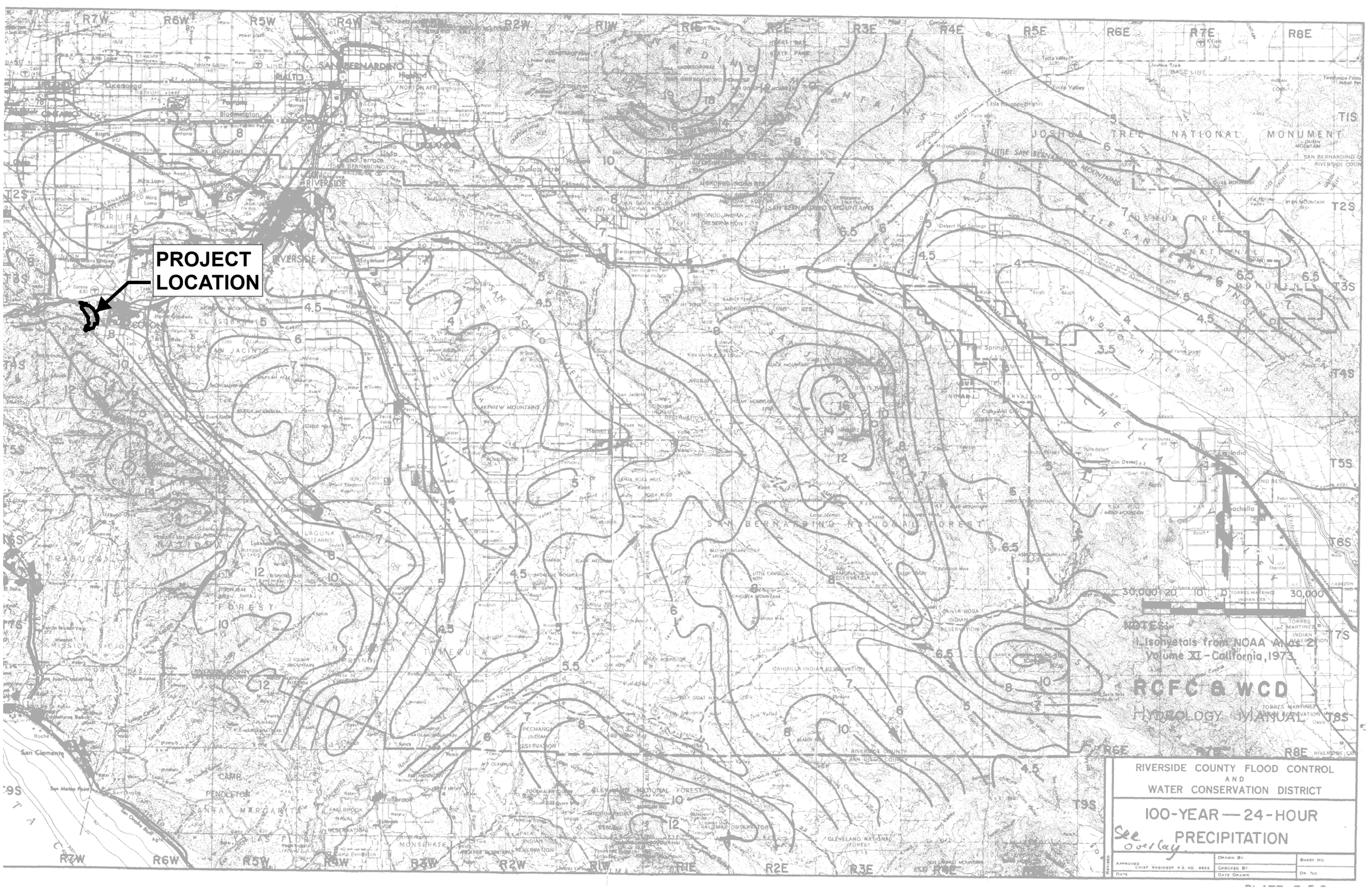
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

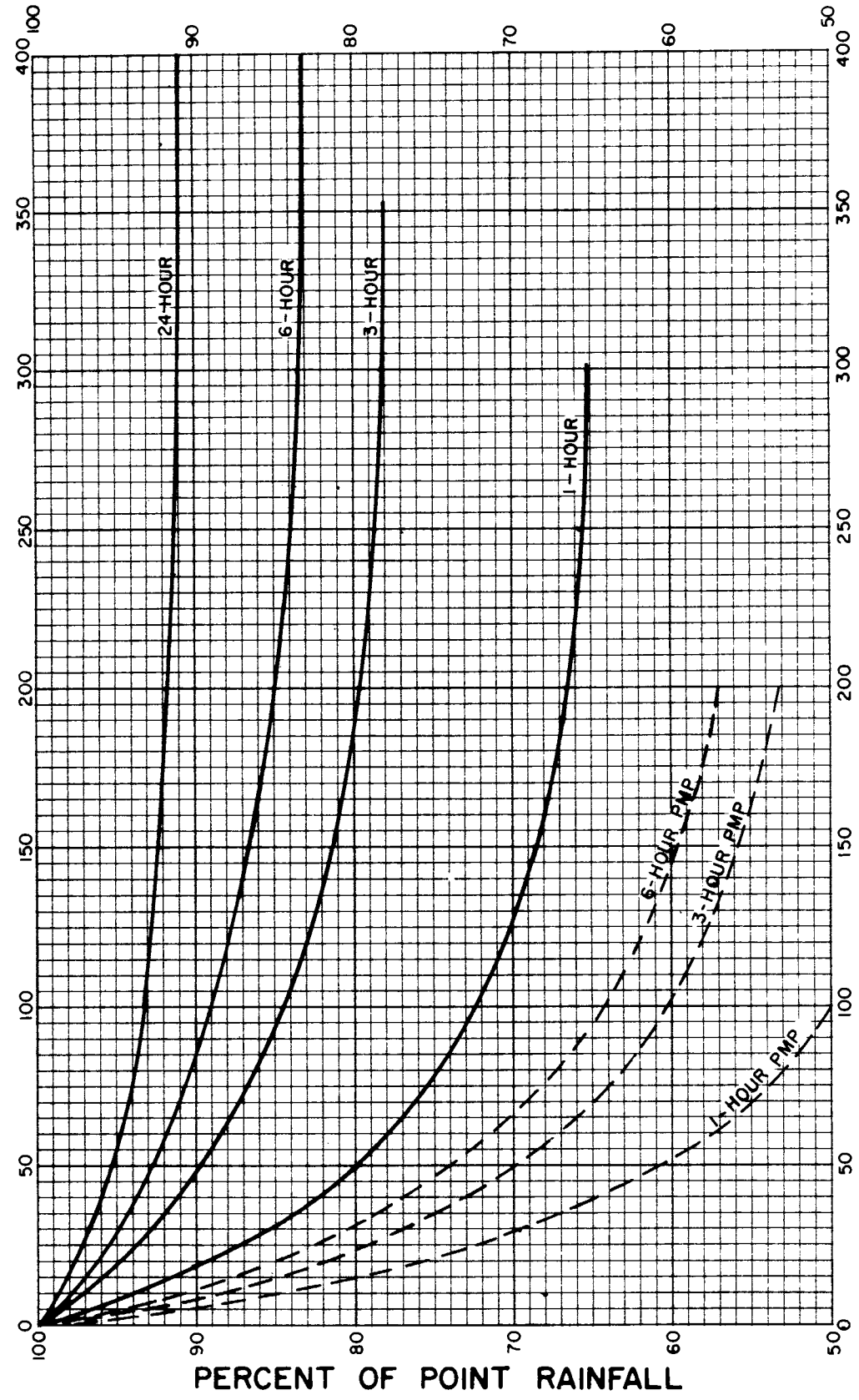
2-YEAR — 24-HOUR PRECIPITATION

APPROVED CHIEF ENGINEER R.C.E. NO. 6821	DRAWN BY P.C.S.	SHEET NO
DATE	CHECKED BY	
REVISED	DATE DRAWN:	DR. NO


PROJECT LOCATION
SAN BERNARDINO
RIALTO
RIVERSIDE
Highland
Redlands
Loma Linda
Grand Terrace
Colton
Mira Loma
Jurupa
Norco
Corona
Eastvale
Ontario
Fontana
Rancho Cucamonga
Bloomington
Mentone
Dunlap Acres
Beaumont
Banning
Sunnymead
Edgemont
Moreno Valley
March AFB
Norton AFB
Lake Elsinore
Wildomar
Murrieta
Temecula
Hemet
San Jacinto
Sun City
Menifee
Perris
Lake Mathews
Lake Perris
Lake Skinner
Vail Lake
Pechanga Indian Reservation
Cahuilla Indian Reservation
Morongo Indian Reservation
Santa Rosa Indian Reservation
Agua Caliente Indian Reservation
Torres Martinez Indian Reservation
Coachella Valley Preserve
Joshua Tree National Monument
San Bernardino National Forest
Cleveland National Forest
Santa Margarita
Las Flores
Camp Pendleton
Fallbrook
San Clemente
Palm Springs
Desert Hot Springs
Cathedral City
Rancho Mirage
Palm Desert
Indian Wells
La Quinta
Indio
Coachella
Thermal
Mecca
Oasis
Yucca Valley
Twentynine Palms
Joshua Tree
Landers
Morongo Valley
Little San Bernardino Mountains
Box Spring Mountains
Santa Ana Mountains
Santa Rosa Mountains
Orocopia Mountains
Chuckwalla Mountains
Eagle Mountains
Palen Mountains
Palen Dry Lake
Chocolate Mountains
Salton Sea
Lake Cahuilla
Lake Elsinore
Lake Matthews
Lake Perris
Lake Skinner
Vail Lake
Lake Hemet
Lake Cahuilla
Lake Fulmor
Lake Henshaw
Lake Morena
Lake Cuyamaca
Lake Hodges
Lake Poway
Lake Sutherland
Lake Wohlford
Lake Dixon
Lake Jennings
Lake Murray
Lake Miramar
Lake Otay
Lake Sweetwater
Lake Loveland
Lake Barrett
Lake Morena
Lake Cuyamaca
Lake Hodges
Lake Poway
Lake Sutherland
Lake Wohlford
Lake Dixon
Lake Jennings
Lake Murray
Lake Miramar
Lake Otay
Lake Sweetwater
Lake Loveland
Lake Barrett
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
R3E
R4E
R5E
R6E
R7E
R8E
T2S
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T4S
T5S
T6S
T7S
T8S
T9S
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3.5
4.0
4.5
1.8
1.9
2.2
30,000 20 10 0 30,000
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
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DRAWN BY
CHECKED BY
DATE DRAWN
REVISED
SHEET NO
DR. NO


PROJECT LOCATION
NOTES:
1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973
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RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 6-HOUR PRECIPITATION
30,000 20 10 0 30,000
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
R3E
R4E
R5E
R6E
R7E
R8E
T1S
T2S
T3S
T4S
T5S
T6S
T7S
T8S
T9S
RIVERSIDE
SAN BERNARDINO
CORONA
SAN BERNARDINO NATIONAL FOREST
JOSHUA TREE NATIONAL MONUMENT
CLEVELAND NATIONAL FOREST
SANTA ROSA
TEMECULA
PALM SPRINGS
COACHELLA
CAMP PENDLETON
SAN JACINTO VALLEY
LAKEVIEW MOUNTAINS
2.5
2.75
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5


PROJECT LOCATION
NOTES:
1. Isohyetals from NOAA Atlas 2 Volume XI - California, 1973.
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 24-HOUR PRECIPITATION
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APPROVED CHIEF ENGINEER R.E. NO. 8822
DATE
DRAWN BY:
CHECKED BY:
DATE DRAWN:
SHEET NO.
DR. NO.
REVISED



Reference: Bibliography items No. 27 & 29.

RCFC & WCD

HYDROLOGY MANUAL

DEPTH–AREA–DURATION RELATIONSHIPS

PLATE E-5.8

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

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HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREAS

PLATE E-6.1 (1 of 2)

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
AGRICULTURAL COVERS (cont.) -					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Deciduous (Apples, apricots, pears, walnuts, etc.)		See Note 4			
Orchards, Evergreen (Citrus, avocados, etc.)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
Pasture, Dryland (Annual grasses)	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Pasture, Irrigated (Legumes and perennial grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
Row Crops (Field crops - tomatoes, sugar beets, etc.)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Wheat, oats, barley, etc.)	Poor	65	76	84	88
	Good	63	75	83	87
Vineyard		See Note 4			

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.

2. Quality of cover definitions:
   Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.
   Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.
   Good-Heavy or dense cover with more than 75 percent of the ground surface protected.

3. See Plate C-2 for a detailed description of cover types.

4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.

5. Reference Bibliography item 17.

Appendix

B

EXISTING CONDITION HYDROLOGY

91 Freeway

Via Del Rio

Bern Dr

Dawnridge Dr

Pine Crest Dr

Lca=6,248 ft

L=13,772 ft

SD3

Santa Cruz Dr

Paseo Grande

Kirkwood Dr

E1
698.3

1157

1157 Node Elevation

Watershed Flowpath

Existing Storm Drains

Watershed Boundary

Watershed Centroid

E1 Watershed ID

698.3 Drainage Area (ac)

N

L.Johnson 1/29/24

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The Trails at Corona

Exhibit A-1
Existing Condition
Watershed Map

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91 Freeway

Bern Dr

Dawnridge Dr

Pine Crest Dr

Sedas Club Dr

Paseo Grande

Kirkwood Dr

E1
698.3

Legend

Watershed Boundary

Existing Land Use

- Commercial (90% Impervious)
- Open Space (0% Impervious)
- Park (15% Impervious)
- Residential (50% Impervious)
- Schooll (40% Impervious)

L.Johnson 1/29/24

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The Trails at Corona

Exhibit A-2
Existing Condition
Land Use Map

R:/1511/prelim/reports\gis/1511clomn-hydrology.mxd

91 Freeway

Bern Dr

Dawnridge Dr

Pine Crest Dr

Sedas Club Dr

Paseo Grande

Kirkwood Dr

E1
698.3

Legend

Watershed Boundary

Hydrologic Soil Group

- A
- B
- C
- D

N

Data Source: RCFC&WCD Hydrologic Soil Group Map

L.Johnson 1/29/24

KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS

The Trails at Corona

Exhibit A-3
Existing Condition
Hydrologic Soil Map

R:/1511/prelim/reports/gis/1511clomr-hydrology.mxd

U n i t H y d r o g r a p h A n a l y s i s

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Study date 01/18/24 File: A4E3100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6062

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

THE TRAILS PROJECT
Existing Condition Watershed E1
100-Year 3-Hour Storm
L.Johnson, 1/18/2024

Drainage Area = 698.30(Ac.) = 1.091 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 698.30(Ac.) = 1.091 Sq. Mi.
Length along longest watercourse = 13772.00(Ft.)
Length along longest watercourse measured to centroid = 6247.00(Ft.)
Length along longest watercourse = 2.608 Mi.
Length along longest watercourse measured to centroid = 1.183 Mi.
Difference in elevation = 574.00(Ft.)
Slope along watercourse = 220.0639 Ft./Mi.
Average Manning's 'N' = 0.021
Lag time = 0.278 Hr.
Lag time = 16.65 Min.
25% of lag time = 4.16 Min.
40% of lag time = 6.66 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
698.30	1.04	726.23

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
698.30	2.45	1710.84

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.040(In)
Area Averaged 100-Year Rainfall = 2.450(In)

Point rain (area averaged) = 2.450(In)
Areal adjustment factor = 99.69 %
Adjusted average point rain = 2.443(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

9.950	32.00	0.500
69.259	56.00	0.500
0.291	65.00	0.400
9.273	56.00	0.150
34.345	68.00	0.000
290.870	69.00	0.500
32.922	77.00	0.400
3.363	69.00	0.900
5.457	69.00	0.150
27.114	75.00	0.000
147.909	75.00	0.500
11.239	82.00	0.400
2.035	75.00	0.900
3.003	75.00	0.150
51.270	84.00	0.000

Total Area Entered = 698.30(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.500	0.408	0.014	0.006
56.0	56.0	0.511	0.500	0.281	0.099	0.028
65.0	65.0	0.416	0.400	0.266	0.000	0.000
56.0	56.0	0.511	0.150	0.442	0.013	0.006
68.0	68.0	0.384	0.000	0.384	0.049	0.019
69.0	69.0	0.373	0.500	0.205	0.417	0.085
77.0	77.0	0.279	0.400	0.179	0.047	0.008
69.0	69.0	0.373	0.900	0.071	0.005	0.000
69.0	69.0	0.373	0.150	0.322	0.008	0.003
75.0	75.0	0.303	0.000	0.303	0.039	0.012
75.0	75.0	0.303	0.500	0.167	0.212	0.035
82.0	82.0	0.221	0.400	0.142	0.016	0.002
75.0	75.0	0.303	0.900	0.058	0.003	0.000
75.0	75.0	0.303	0.150	0.262	0.004	0.001
84.0	84.0	0.198	0.000	0.198	0.073	0.015
					Sum (F) =	0.220

Area averaged mean soil loss (F) (In/Hr) = 0.220
Minimum soil loss rate ((In/Hr)) = 0.110
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.574

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	30.026	2.903	20.433
2	0.167	60.052	10.648	74.933
3	0.250	90.079	18.598	130.883
4	0.333	120.105	20.165	141.915
5	0.417	150.131	12.802	90.096
6	0.500	180.157	7.363	51.821
7	0.583	210.183	4.757	33.478
8	0.667	240.210	3.710	26.107
9	0.750	270.236	2.994	21.070
10	0.833	300.262	2.491	17.533
11	0.917	330.288	1.985	13.967
12	1.000	360.314	1.773	12.479
13	1.083	390.340	1.425	10.026
14	1.167	420.367	1.238	8.714
15	1.250	450.393	0.979	6.893
16	1.333	480.419	0.930	6.545
17	1.417	510.445	0.886	6.237
18	1.500	540.471	0.712	5.008
19	1.583	570.498	0.633	4.452

20	1.667	600.524	0.547	3.846
21	1.750	630.550	0.478	3.366
22	1.833	660.576	0.413	2.906
23	1.917	690.602	0.325	2.290
24	2.000	720.629	0.300	2.113
25	2.083	750.655	0.300	2.113
26	2.167	780.681	0.300	2.113
27	2.250	810.707	0.343	2.416
		Sum = 100.000	Sum=	703.755

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.381	0.220	---	0.16
2	0.17	1.30	0.381	0.220	---	0.16
3	0.25	1.10	0.322	0.220	---	0.10
4	0.33	1.50	0.440	0.220	---	0.22
5	0.42	1.50	0.440	0.220	---	0.22
6	0.50	1.80	0.528	0.220	---	0.31
7	0.58	1.50	0.440	0.220	---	0.22
8	0.67	1.80	0.528	0.220	---	0.31
9	0.75	1.80	0.528	0.220	---	0.31
10	0.83	1.50	0.440	0.220	---	0.22
11	0.92	1.60	0.469	0.220	---	0.25
12	1.00	1.80	0.528	0.220	---	0.31
13	1.08	2.20	0.645	0.220	---	0.42
14	1.17	2.20	0.645	0.220	---	0.42
15	1.25	2.20	0.645	0.220	---	0.42
16	1.33	2.00	0.586	0.220	---	0.37
17	1.42	2.60	0.762	0.220	---	0.54
18	1.50	2.70	0.791	0.220	---	0.57
19	1.58	2.40	0.703	0.220	---	0.48
20	1.67	2.70	0.791	0.220	---	0.57
21	1.75	3.30	0.967	0.220	---	0.75
22	1.83	3.10	0.909	0.220	---	0.69
23	1.92	2.90	0.850	0.220	---	0.63
24	2.00	3.00	0.879	0.220	---	0.66
25	2.08	3.10	0.909	0.220	---	0.69
26	2.17	4.20	1.231	0.220	---	1.01
27	2.25	5.00	1.466	0.220	---	1.25
28	2.33	3.50	1.026	0.220	---	0.81
29	2.42	6.80	1.993	0.220	---	1.77
30	2.50	7.30	2.140	0.220	---	1.92
31	2.58	8.20	2.403	0.220	---	2.18
32	2.67	5.90	1.729	0.220	---	1.51
33	2.75	2.00	0.586	0.220	---	0.37
34	2.83	1.80	0.528	0.220	---	0.31
35	2.92	1.80	0.528	0.220	---	0.31
36	3.00	0.60	0.176	0.220	0.101	0.07
Sum =	100.0				Sum =	21.5

Flood volume = Effective rainfall 1.79(In)
times area 698.3(Ac.)/[(In)/(Ft.)] = 104.2(Ac.Ft)
Total soil loss = 0.65(In)
Total soil loss = 37.902(Ac.Ft)
Total rainfall = 2.44(In)
Flood volume = 4540360.5 Cubic Feet
Total soil loss = 1650997.6 Cubic Feet

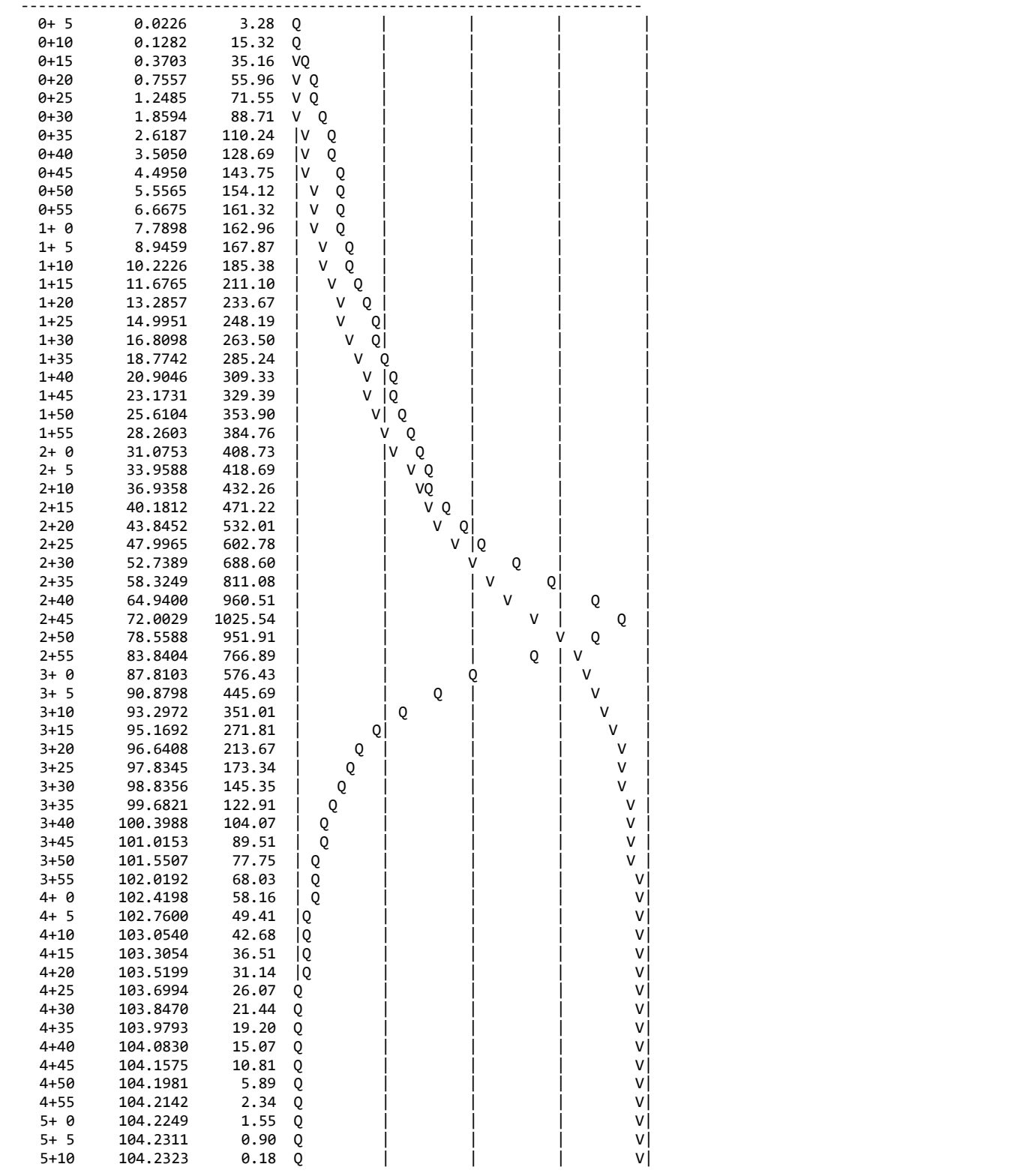
Peak flow rate of this hydrograph = 1025.543(CFS)

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3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	275.0	550.0	825.0	1100.0



U n i t H y d r o g r a p h A n a l y s i s

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Study date 01/26/24 File: A4E6100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6062

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

THE TRAILS PROJECT
Existing Condition Watershed E1
100-Year 6-Hour Storm
L.Johnson, 1/26/2024

Drainage Area = 698.30(Ac.) = 1.091 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 698.30(Ac.) = 1.091 Sq. Mi.
Length along longest watercourse = 13772.00(Ft.)
Length along longest watercourse measured to centroid = 6247.00(Ft.)
Length along longest watercourse = 2.608 Mi.
Length along longest watercourse measured to centroid = 1.183 Mi.
Difference in elevation = 574.00(Ft.)
Slope along watercourse = 220.0639 Ft./Mi.
Average Manning's 'N' = 0.021
Lag time = 0.278 Hr.
Lag time = 16.65 Min.
25% of lag time = 4.16 Min.
40% of lag time = 6.66 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
698.30	1.52	1061.42

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
698.30	3.55	2478.96

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.520(In)
Area Averaged 100-Year Rainfall = 3.550(In)

Point rain (area averaged) = 3.550(In)
Areal adjustment factor = 99.76 %
Adjusted average point rain = 3.541(In)

Sub-Area Data:
Area(Ac.) Runoff Index Impervious %

9.950	32.00	0.500
69.259	56.00	0.500
0.291	65.00	0.400
9.273	56.00	0.150
34.345	68.00	0.000
290.870	69.00	0.500
32.922	77.00	0.400
3.363	69.00	0.900
5.457	69.00	0.150
27.114	75.00	0.000
147.909	75.00	0.500
11.239	82.00	0.400
2.035	75.00	0.900
3.003	75.00	0.150
51.270	84.00	0.000

Total Area Entered = 698.30(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.500	0.408	0.014	0.006
56.0	56.0	0.511	0.500	0.281	0.099	0.028
65.0	65.0	0.416	0.400	0.266	0.000	0.000
56.0	56.0	0.511	0.150	0.442	0.013	0.006
68.0	68.0	0.384	0.000	0.384	0.049	0.019
69.0	69.0	0.373	0.500	0.205	0.417	0.085
77.0	77.0	0.279	0.400	0.179	0.047	0.008
69.0	69.0	0.373	0.900	0.071	0.005	0.000
69.0	69.0	0.373	0.150	0.322	0.008	0.003
75.0	75.0	0.303	0.000	0.303	0.039	0.012
75.0	75.0	0.303	0.500	0.167	0.212	0.035
82.0	82.0	0.221	0.400	0.142	0.016	0.002
75.0	75.0	0.303	0.900	0.058	0.003	0.000
75.0	75.0	0.303	0.150	0.262	0.004	0.001
84.0	84.0	0.198	0.000	0.198	0.073	0.015
					Sum (F) =	0.220

Area averaged mean soil loss (F) (In/Hr) = 0.220
Minimum soil loss rate ((In/Hr)) = 0.110
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.574

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	30.026	2.903	20.433
2	0.167	60.052	10.648	74.933
3	0.250	90.079	18.598	130.883
4	0.333	120.105	20.165	141.915
5	0.417	150.131	12.802	90.096
6	0.500	180.157	7.363	51.821
7	0.583	210.183	4.757	33.478
8	0.667	240.210	3.710	26.107
9	0.750	270.236	2.994	21.070
10	0.833	300.262	2.491	17.533
11	0.917	330.288	1.985	13.967
12	1.000	360.314	1.773	12.479
13	1.083	390.340	1.425	10.026
14	1.167	420.367	1.238	8.714
15	1.250	450.393	0.979	6.893
16	1.333	480.419	0.930	6.545
17	1.417	510.445	0.886	6.237
18	1.500	540.471	0.712	5.008
19	1.583	570.498	0.633	4.452

20	1.667	600.524	0.547	3.846
21	1.750	630.550	0.478	3.366
22	1.833	660.576	0.413	2.906
23	1.917	690.602	0.325	2.290
24	2.000	720.629	0.300	2.113
25	2.083	750.655	0.300	2.113
26	2.167	780.681	0.300	2.113
27	2.250	810.707	0.343	2.416
			Sum = 100.000	Sum= 703.755

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.212	0.220	0.122	0.09
2	0.17	0.60	0.255	0.220	---	0.03
3	0.25	0.60	0.255	0.220	---	0.03
4	0.33	0.60	0.255	0.220	---	0.03
5	0.42	0.60	0.255	0.220	---	0.03
6	0.50	0.70	0.297	0.220	---	0.08
7	0.58	0.70	0.297	0.220	---	0.08
8	0.67	0.70	0.297	0.220	---	0.08
9	0.75	0.70	0.297	0.220	---	0.08
10	0.83	0.70	0.297	0.220	---	0.08
11	0.92	0.70	0.297	0.220	---	0.08
12	1.00	0.80	0.340	0.220	---	0.12
13	1.08	0.80	0.340	0.220	---	0.12
14	1.17	0.80	0.340	0.220	---	0.12
15	1.25	0.80	0.340	0.220	---	0.12
16	1.33	0.80	0.340	0.220	---	0.12
17	1.42	0.80	0.340	0.220	---	0.12
18	1.50	0.80	0.340	0.220	---	0.12
19	1.58	0.80	0.340	0.220	---	0.12
20	1.67	0.80	0.340	0.220	---	0.12
21	1.75	0.80	0.340	0.220	---	0.12
22	1.83	0.80	0.340	0.220	---	0.12
23	1.92	0.80	0.340	0.220	---	0.12
24	2.00	0.90	0.382	0.220	---	0.16
25	2.08	0.80	0.340	0.220	---	0.12
26	2.17	0.90	0.382	0.220	---	0.16
27	2.25	0.90	0.382	0.220	---	0.16
28	2.33	0.90	0.382	0.220	---	0.16
29	2.42	0.90	0.382	0.220	---	0.16
30	2.50	0.90	0.382	0.220	---	0.16
31	2.58	0.90	0.382	0.220	---	0.16
32	2.67	0.90	0.382	0.220	---	0.16
33	2.75	1.00	0.425	0.220	---	0.20
34	2.83	1.00	0.425	0.220	---	0.20
35	2.92	1.00	0.425	0.220	---	0.20
36	3.00	1.00	0.425	0.220	---	0.20
37	3.08	1.00	0.425	0.220	---	0.20
38	3.17	1.10	0.467	0.220	---	0.25
39	3.25	1.10	0.467	0.220	---	0.25
40	3.33	1.10	0.467	0.220	---	0.25
41	3.42	1.20	0.510	0.220	---	0.29
42	3.50	1.30	0.552	0.220	---	0.33
43	3.58	1.40	0.595	0.220	---	0.37
44	3.67	1.40	0.595	0.220	---	0.37
45	3.75	1.50	0.637	0.220	---	0.42
46	3.83	1.50	0.637	0.220	---	0.42
47	3.92	1.60	0.680	0.220	---	0.46
48	4.00	1.60	0.680	0.220	---	0.46
49	4.08	1.70	0.722	0.220	---	0.50
50	4.17	1.80	0.765	0.220	---	0.54
51	4.25	1.90	0.807	0.220	---	0.59
52	4.33	2.00	0.850	0.220	---	0.63
53	4.42	2.10	0.892	0.220	---	0.67
54	4.50	2.10	0.892	0.220	---	0.67
55	4.58	2.20	0.935	0.220	---	0.71

56	4.67	2.30	0.977	0.220	---	0.76
57	4.75	2.40	1.020	0.220	---	0.80
58	4.83	2.40	1.020	0.220	---	0.80
59	4.92	2.50	1.062	0.220	---	0.84
60	5.00	2.60	1.105	0.220	---	0.88
61	5.08	3.10	1.317	0.220	---	1.10
62	5.17	3.60	1.530	0.220	---	1.31
63	5.25	3.90	1.657	0.220	---	1.44
64	5.33	4.20	1.785	0.220	---	1.56
65	5.42	4.70	1.997	0.220	---	1.78
66	5.50	5.60	2.380	0.220	---	2.16
67	5.58	1.90	0.807	0.220	---	0.59
68	5.67	0.90	0.382	0.220	---	0.16
69	5.75	0.60	0.255	0.220	---	0.03
70	5.83	0.50	0.212	0.220	0.122	0.09
71	5.92	0.30	0.127	0.220	0.073	0.05
72	6.00	0.20	0.085	0.220	0.049	0.04
Sum =		100.0			Sum =	27.1

Flood volume = Effective rainfall 2.26(In)
times area 698.3(Ac.)/[(In)/(Ft.)] = 131.6(Ac.Ft)
Total soil loss = 1.28(In)
Total soil loss = 74.461(Ac.Ft)
Total rainfall = 3.54(In)
Flood volume = 5733525.4 Cubic Feet
Total soil loss = 3243517.1 Cubic Feet

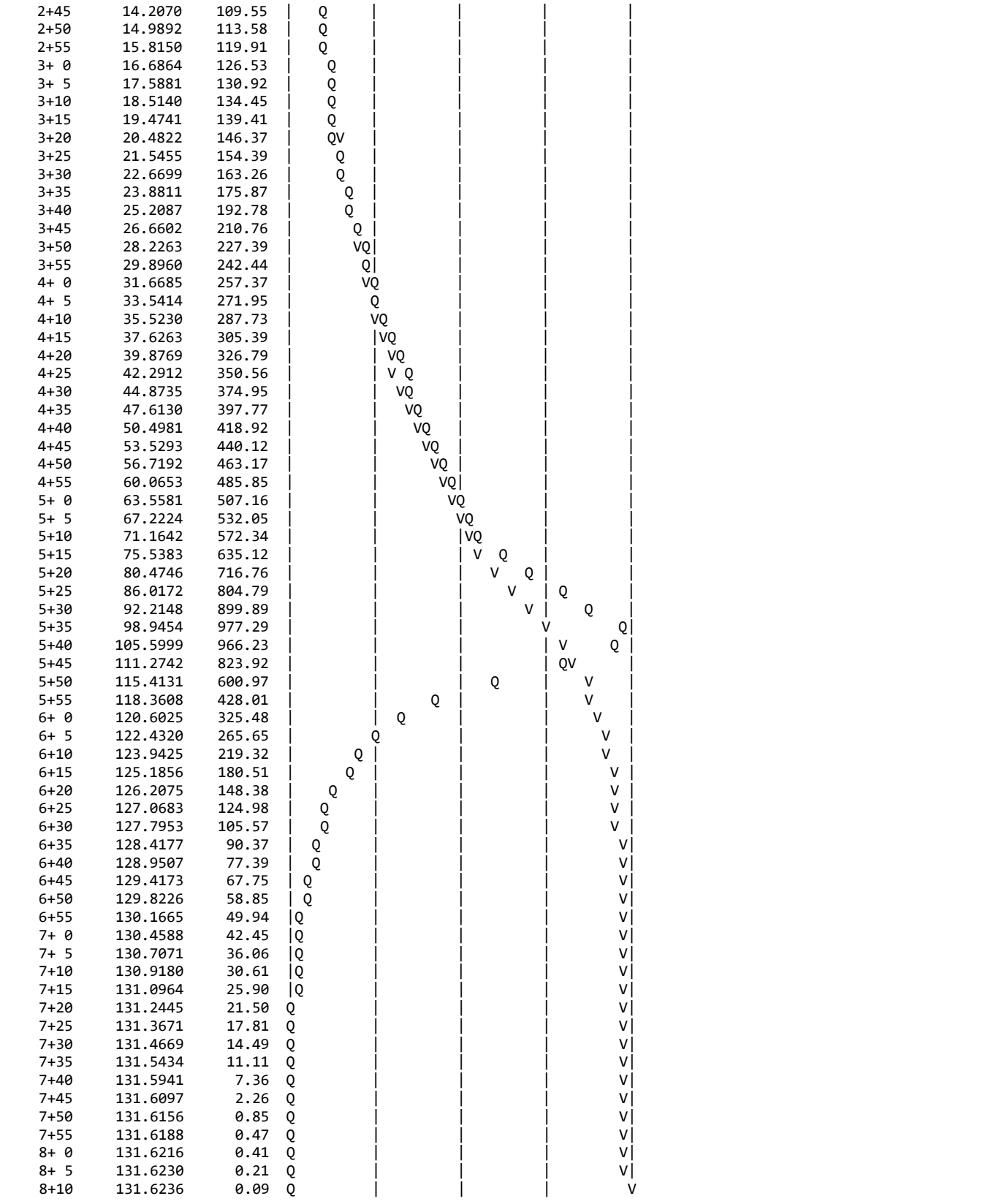
Peak flow rate of this hydrograph = 977.289(CFS)

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6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	250.0	500.0	750.0	1000.0
0+ 5	0.0127	1.85	Q				
0+10	0.0643	7.49	Q				
0+15	0.1687	15.15	Q				
0+20	0.3111	20.68	Q				
0+25	0.4550	20.89	Q				
0+30	0.6024	21.41	Q				
0+35	0.7727	24.72	Q				
0+40	0.9846	30.78	VQ				
0+45	1.2413	37.26	VQ				
0+50	1.5271	41.50	VQ				
0+55	1.8300	43.99	VQ				
1+ 0	2.1511	46.63	VQ				
1+ 5	2.5033	51.13	V Q				
1+10	2.9015	57.82	V Q				
1+15	3.3473	64.74	|VQ				
1+20	3.8250	69.37	|VQ				
1+25	4.3230	72.30	|VQ				
1+30	4.8344	74.25	|VQ				
1+35	5.3568	75.86	|V Q				
1+40	5.8881	77.15	|V Q				
1+45	6.4271	78.26	|V Q				
1+50	6.9725	79.19	| VQ				
1+55	7.5233	79.98	| VQ				
2+ 0	8.0848	81.53	| VQ				
2+ 5	8.6665	84.45	| VQ				
2+10	9.2740	88.21	| VQ				
2+15	9.9101	92.37	| Q				
2+20	10.5710	95.96	| Q				
2+25	11.2643	100.67	| VQ				
2+30	11.9805	104.00	| VQ				
2+35	12.7115	106.14	| VQ				
2+40	13.4525	107.60	| Q				



U n i t H y d r o g r a p h A n a l y s i s

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Study date 01/26/24 File: A4E24100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6062

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

THE TRAILS PROJECT
Existing Condition Watershed E1
100-Year 24-Hour Storm
L.Johnson, 1/26/2024

Drainage Area = 698.30(Ac.) = 1.091 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 698.30(Ac.) = 1.091 Sq. Mi.
Length along longest watercourse = 13772.00(Ft.)
Length along longest watercourse measured to centroid = 6247.00(Ft.)
Length along longest watercourse = 2.608 Mi.
Length along longest watercourse measured to centroid = 1.183 Mi.
Difference in elevation = 574.00(Ft.)
Slope along watercourse = 220.0639 Ft./Mi.
Average Manning's 'N' = 0.021
Lag time = 0.278 Hr.
Lag time = 16.65 Min.
25% of lag time = 4.16 Min.
40% of lag time = 6.66 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
698.30	2.76	1927.31

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
698.30	8.55	5970.47

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.760(In)
Area Averaged 100-Year Rainfall = 8.550(In)

Point rain (area averaged) = 8.550(In)
Areal adjustment factor = 99.86 %
Adjusted average point rain = 8.538(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

9.950	32.00	0.500
69.259	56.00	0.500
0.291	65.00	0.400
9.273	56.00	0.150
34.345	68.00	0.000
290.870	69.00	0.500
32.922	77.00	0.400
3.363	69.00	0.900
5.457	69.00	0.150
27.114	75.00	0.000
147.909	75.00	0.500
11.239	82.00	0.400
2.035	75.00	0.900
3.003	75.00	0.150
0.000	84.00	0.000
51.270	84.00	0.000

Total Area Entered = 698.30(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.500	0.408	0.014	0.006
56.0	56.0	0.511	0.500	0.281	0.099	0.028
65.0	65.0	0.416	0.400	0.266	0.000	0.000
56.0	56.0	0.511	0.150	0.442	0.013	0.006
68.0	68.0	0.384	0.000	0.384	0.049	0.019
69.0	69.0	0.373	0.500	0.205	0.417	0.085
77.0	77.0	0.279	0.400	0.179	0.047	0.008
69.0	69.0	0.373	0.900	0.071	0.005	0.000
69.0	69.0	0.373	0.150	0.322	0.008	0.003
75.0	75.0	0.303	0.000	0.303	0.039	0.012
75.0	75.0	0.303	0.500	0.167	0.212	0.035
82.0	82.0	0.221	0.400	0.142	0.016	0.002
75.0	75.0	0.303	0.900	0.058	0.003	0.000
75.0	75.0	0.303	0.150	0.262	0.004	0.001
84.0	84.0	0.198	0.000	0.198	0.000	0.000
84.0	84.0	0.198	0.000	0.198	0.073	0.015
					Sum (F) =	0.220

Area averaged mean soil loss (F) (In/Hr) = 0.220
Minimum soil loss rate ((In/Hr)) = 0.110
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.574

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	30.026	2.903	20.433
2	0.167	60.052	10.648	74.933
3	0.250	90.079	18.598	130.883
4	0.333	120.105	20.165	141.915
5	0.417	150.131	12.802	90.096
6	0.500	180.157	7.363	51.821
7	0.583	210.183	4.757	33.478
8	0.667	240.210	3.710	26.107
9	0.750	270.236	2.994	21.070
10	0.833	300.262	2.491	17.533
11	0.917	330.288	1.985	13.967
12	1.000	360.314	1.773	12.479
13	1.083	390.340	1.425	10.026
14	1.167	420.367	1.238	8.714
15	1.250	450.393	0.979	6.893
16	1.333	480.419	0.930	6.545
17	1.417	510.445	0.886	6.237

18	1.500	540.471	0.712	5.008
19	1.583	570.498	0.633	4.452
20	1.667	600.524	0.547	3.846
21	1.750	630.550	0.478	3.366
22	1.833	660.576	0.413	2.906
23	1.917	690.602	0.325	2.290
24	2.000	720.629	0.300	2.113
25	2.083	750.655	0.300	2.113
26	2.167	780.681	0.300	2.113
27	2.250	810.707	0.343	2.416
		Sum = 100.000	Sum=	703.755

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.068	0.391	0.039	0.03
2	0.17	0.07	0.068	0.389	0.039	0.03
3	0.25	0.07	0.068	0.388	0.039	0.03
4	0.33	0.10	0.102	0.386	0.059	0.04
5	0.42	0.10	0.102	0.385	0.059	0.04
6	0.50	0.10	0.102	0.383	0.059	0.04
7	0.58	0.10	0.102	0.382	0.059	0.04
8	0.67	0.10	0.102	0.380	0.059	0.04
9	0.75	0.10	0.102	0.379	0.059	0.04
10	0.83	0.13	0.137	0.377	0.078	0.06
11	0.92	0.13	0.137	0.376	0.078	0.06
12	1.00	0.13	0.137	0.374	0.078	0.06
13	1.08	0.10	0.102	0.373	0.059	0.04
14	1.17	0.10	0.102	0.371	0.059	0.04
15	1.25	0.10	0.102	0.370	0.059	0.04
16	1.33	0.10	0.102	0.368	0.059	0.04
17	1.42	0.10	0.102	0.367	0.059	0.04
18	1.50	0.10	0.102	0.365	0.059	0.04
19	1.58	0.10	0.102	0.364	0.059	0.04
20	1.67	0.10	0.102	0.363	0.059	0.04
21	1.75	0.10	0.102	0.361	0.059	0.04
22	1.83	0.13	0.137	0.360	0.078	0.06
23	1.92	0.13	0.137	0.358	0.078	0.06
24	2.00	0.13	0.137	0.357	0.078	0.06
25	2.08	0.13	0.137	0.355	0.078	0.06
26	2.17	0.13	0.137	0.354	0.078	0.06
27	2.25	0.13	0.137	0.352	0.078	0.06
28	2.33	0.13	0.137	0.351	0.078	0.06
29	2.42	0.13	0.137	0.350	0.078	0.06
30	2.50	0.13	0.137	0.348	0.078	0.06
31	2.58	0.17	0.171	0.347	0.098	0.07
32	2.67	0.17	0.171	0.345	0.098	0.07
33	2.75	0.17	0.171	0.344	0.098	0.07
34	2.83	0.17	0.171	0.342	0.098	0.07
35	2.92	0.17	0.171	0.341	0.098	0.07
36	3.00	0.17	0.171	0.340	0.098	0.07
37	3.08	0.17	0.171	0.338	0.098	0.07
38	3.17	0.17	0.171	0.337	0.098	0.07
39	3.25	0.17	0.171	0.335	0.098	0.07
40	3.33	0.17	0.171	0.334	0.098	0.07
41	3.42	0.17	0.171	0.333	0.098	0.07
42	3.50	0.17	0.171	0.331	0.098	0.07
43	3.58	0.17	0.171	0.330	0.098	0.07
44	3.67	0.17	0.171	0.328	0.098	0.07
45	3.75	0.17	0.171	0.327	0.098	0.07
46	3.83	0.20	0.205	0.326	0.118	0.09
47	3.92	0.20	0.205	0.324	0.118	0.09
48	4.00	0.20	0.205	0.323	0.118	0.09
49	4.08	0.20	0.205	0.322	0.118	0.09
50	4.17	0.20	0.205	0.320	0.118	0.09
51	4.25	0.20	0.205	0.319	0.118	0.09
52	4.33	0.23	0.239	0.317	0.137	0.10
53	4.42	0.23	0.239	0.316	0.137	0.10

54	4.50	0.23	0.239	0.315	0.137	0.10
55	4.58	0.23	0.239	0.313	0.137	0.10
56	4.67	0.23	0.239	0.312	0.137	0.10
57	4.75	0.23	0.239	0.311	0.137	0.10
58	4.83	0.27	0.273	0.309	0.157	0.12
59	4.92	0.27	0.273	0.308	0.157	0.12
60	5.00	0.27	0.273	0.307	0.157	0.12
61	5.08	0.20	0.205	0.305	0.118	0.09
62	5.17	0.20	0.205	0.304	0.118	0.09
63	5.25	0.20	0.205	0.303	0.118	0.09
64	5.33	0.23	0.239	0.301	0.137	0.10
65	5.42	0.23	0.239	0.300	0.137	0.10
66	5.50	0.23	0.239	0.299	0.137	0.10
67	5.58	0.27	0.273	0.297	0.157	0.12
68	5.67	0.27	0.273	0.296	0.157	0.12
69	5.75	0.27	0.273	0.295	0.157	0.12
70	5.83	0.27	0.273	0.294	0.157	0.12
71	5.92	0.27	0.273	0.292	0.157	0.12
72	6.00	0.27	0.273	0.291	0.157	0.12
73	6.08	0.30	0.307	0.290	---	0.02
74	6.17	0.30	0.307	0.288	---	0.02
75	6.25	0.30	0.307	0.287	---	0.02
76	6.33	0.30	0.307	0.286	---	0.02
77	6.42	0.30	0.307	0.285	---	0.02
78	6.50	0.30	0.307	0.283	---	0.02
79	6.58	0.33	0.342	0.282	---	0.06
80	6.67	0.33	0.342	0.281	---	0.06
81	6.75	0.33	0.342	0.279	---	0.06
82	6.83	0.33	0.342	0.278	---	0.06
83	6.92	0.33	0.342	0.277	---	0.06
84	7.00	0.33	0.342	0.276	---	0.07
85	7.08	0.33	0.342	0.274	---	0.07
86	7.17	0.33	0.342	0.273	---	0.07
87	7.25	0.33	0.342	0.272	---	0.07
88	7.33	0.37	0.376	0.271	---	0.11
89	7.42	0.37	0.376	0.269	---	0.11
90	7.50	0.37	0.376	0.268	---	0.11
91	7.58	0.40	0.410	0.267	---	0.14
92	7.67	0.40	0.410	0.266	---	0.14
93	7.75	0.40	0.410	0.265	---	0.15
94	7.83	0.43	0.444	0.263	---	0.18
95	7.92	0.43	0.444	0.262	---	0.18
96	8.00	0.43	0.444	0.261	---	0.18
97	8.08	0.50	0.512	0.260	---	0.25
98	8.17	0.50	0.512	0.258	---	0.25
99	8.25	0.50	0.512	0.257	---	0.26
100	8.33	0.50	0.512	0.256	---	0.26
101	8.42	0.50	0.512	0.255	---	0.26
102	8.50	0.50	0.512	0.254	---	0.26
103	8.58	0.53	0.546	0.252	---	0.29
104	8.67	0.53	0.546	0.251	---	0.30
105	8.75	0.53	0.546	0.250	---	0.30
106	8.83	0.57	0.581	0.249	---	0.33
107	8.92	0.57	0.581	0.248	---	0.33
108	9.00	0.57	0.581	0.247	---	0.33
109	9.08	0.63	0.649	0.245	---	0.40
110	9.17	0.63	0.649	0.244	---	0.40
111	9.25	0.63	0.649	0.243	---	0.41
112	9.33	0.67	0.683	0.242	---	0.44
113	9.42	0.67	0.683	0.241	---	0.44
114	9.50	0.67	0.683	0.240	---	0.44
115	9.58	0.70	0.717	0.238	---	0.48
116	9.67	0.70	0.717	0.237	---	0.48
117	9.75	0.70	0.717	0.236	---	0.48
118	9.83	0.73	0.751	0.235	---	0.52
119	9.92	0.73	0.751	0.234	---	0.52
120	10.00	0.73	0.751	0.233	---	0.52
121	10.08	0.50	0.512	0.232	---	0.28
122	10.17	0.50	0.512	0.231	---	0.28

123	10.25	0.50	0.512	0.229	---	0.28
124	10.33	0.50	0.512	0.228	---	0.28
125	10.42	0.50	0.512	0.227	---	0.29
126	10.50	0.50	0.512	0.226	---	0.29
127	10.58	0.67	0.683	0.225	---	0.46
128	10.67	0.67	0.683	0.224	---	0.46
129	10.75	0.67	0.683	0.223	---	0.46
130	10.83	0.67	0.683	0.222	---	0.46
131	10.92	0.67	0.683	0.221	---	0.46
132	11.00	0.67	0.683	0.220	---	0.46
133	11.08	0.63	0.649	0.218	---	0.43
134	11.17	0.63	0.649	0.217	---	0.43
135	11.25	0.63	0.649	0.216	---	0.43
136	11.33	0.63	0.649	0.215	---	0.43
137	11.42	0.63	0.649	0.214	---	0.43
138	11.50	0.63	0.649	0.213	---	0.44
139	11.58	0.57	0.581	0.212	---	0.37
140	11.67	0.57	0.581	0.211	---	0.37
141	11.75	0.57	0.581	0.210	---	0.37
142	11.83	0.60	0.615	0.209	---	0.41
143	11.92	0.60	0.615	0.208	---	0.41
144	12.00	0.60	0.615	0.207	---	0.41
145	12.08	0.83	0.854	0.206	---	0.65
146	12.17	0.83	0.854	0.205	---	0.65
147	12.25	0.83	0.854	0.204	---	0.65
148	12.33	0.87	0.888	0.203	---	0.69
149	12.42	0.87	0.888	0.202	---	0.69
150	12.50	0.87	0.888	0.201	---	0.69
151	12.58	0.93	0.956	0.200	---	0.76
152	12.67	0.93	0.956	0.199	---	0.76
153	12.75	0.93	0.956	0.198	---	0.76
154	12.83	0.97	0.990	0.197	---	0.79
155	12.92	0.97	0.990	0.196	---	0.79
156	13.00	0.97	0.990	0.195	---	0.80
157	13.08	1.13	1.161	0.194	---	0.97
158	13.17	1.13	1.161	0.193	---	0.97
159	13.25	1.13	1.161	0.192	---	0.97
160	13.33	1.13	1.161	0.191	---	0.97
161	13.42	1.13	1.161	0.190	---	0.97
162	13.50	1.13	1.161	0.189	---	0.97
163	13.58	0.77	0.786	0.188	---	0.60
164	13.67	0.77	0.786	0.187	---	0.60
165	13.75	0.77	0.786	0.186	---	0.60
166	13.83	0.77	0.786	0.185	---	0.60
167	13.92	0.77	0.786	0.184	---	0.60
168	14.00	0.77	0.786	0.183	---	0.60
169	14.08	0.90	0.922	0.182	---	0.74
170	14.17	0.90	0.922	0.181	---	0.74
171	14.25	0.90	0.922	0.180	---	0.74
172	14.33	0.87	0.888	0.179	---	0.71
173	14.42	0.87	0.888	0.178	---	0.71
174	14.50	0.87	0.888	0.178	---	0.71
175	14.58	0.87	0.888	0.177	---	0.71
176	14.67	0.87	0.888	0.176	---	0.71
177	14.75	0.87	0.888	0.175	---	0.71
178	14.83	0.83	0.854	0.174	---	0.68
179	14.92	0.83	0.854	0.173	---	0.68
180	15.00	0.83	0.854	0.172	---	0.68
181	15.08	0.80	0.820	0.171	---	0.65
182	15.17	0.80	0.820	0.170	---	0.65
183	15.25	0.80	0.820	0.170	---	0.65
184	15.33	0.77	0.786	0.169	---	0.62
185	15.42	0.77	0.786	0.168	---	0.62
186	15.50	0.77	0.786	0.167	---	0.62
187	15.58	0.63	0.649	0.166	---	0.48
188	15.67	0.63	0.649	0.165	---	0.48
189	15.75	0.63	0.649	0.164	---	0.48
190	15.83	0.63	0.649	0.164	---	0.49
191	15.92	0.63	0.649	0.163	---	0.49

192	16.00	0.63	0.649	0.162	---	0.49
193	16.08	0.13	0.137	0.161	0.078	0.06
194	16.17	0.13	0.137	0.160	0.078	0.06
195	16.25	0.13	0.137	0.159	0.078	0.06
196	16.33	0.13	0.137	0.159	0.078	0.06
197	16.42	0.13	0.137	0.158	0.078	0.06
198	16.50	0.13	0.137	0.157	0.078	0.06
199	16.58	0.10	0.102	0.156	0.059	0.04
200	16.67	0.10	0.102	0.155	0.059	0.04
201	16.75	0.10	0.102	0.155	0.059	0.04
202	16.83	0.10	0.102	0.154	0.059	0.04
203	16.92	0.10	0.102	0.153	0.059	0.04
204	17.00	0.10	0.102	0.152	0.059	0.04
205	17.08	0.17	0.171	0.151	---	0.02
206	17.17	0.17	0.171	0.151	---	0.02
207	17.25	0.17	0.171	0.150	---	0.02
208	17.33	0.17	0.171	0.149	---	0.02
209	17.42	0.17	0.171	0.148	---	0.02
210	17.50	0.17	0.171	0.148	---	0.02
211	17.58	0.17	0.171	0.147	---	0.02
212	17.67	0.17	0.171	0.146	---	0.02
213	17.75	0.17	0.171	0.146	---	0.03
214	17.83	0.13	0.137	0.145	0.078	0.06
215	17.92	0.13	0.137	0.144	0.078	0.06
216	18.00	0.13	0.137	0.143	0.078	0.06
217	18.08	0.13	0.137	0.143	0.078	0.06
218	18.17	0.13	0.137	0.142	0.078	0.06
219	18.25	0.13	0.137	0.141	0.078	0.06
220	18.33	0.13	0.137	0.141	0.078	0.06
221	18.42	0.13	0.137	0.140	0.078	0.06
222	18.50	0.13	0.137	0.139	0.078	0.06
223	18.58	0.10	0.102	0.139	0.059	0.04
224	18.67	0.10	0.102	0.138	0.059	0.04
225	18.75	0.10	0.102	0.137	0.059	0.04
226	18.83	0.07	0.068	0.137	0.039	0.03
227	18.92	0.07	0.068	0.136	0.039	0.03
228	19.00	0.07	0.068	0.135	0.039	0.03
229	19.08	0.10	0.102	0.135	0.059	0.04
230	19.17	0.10	0.102	0.134	0.059	0.04
231	19.25	0.10	0.102	0.133	0.059	0.04
232	19.33	0.13	0.137	0.133	---	0.00
233	19.42	0.13	0.137	0.132	---	0.00
234	19.50	0.13	0.137	0.132	---	0.01
235	19.58	0.10	0.102	0.131	0.059	0.04
236	19.67	0.10	0.102	0.130	0.059	0.04
237	19.75	0.10	0.102	0.130	0.059	0.04
238	19.83	0.07	0.068	0.129	0.039	0.03
239	19.92	0.07	0.068	0.129	0.039	0.03
240	20.00	0.07	0.068	0.128	0.039	0.03
241	20.08	0.10	0.102	0.127	0.059	0.04
242	20.17	0.10	0.102	0.127	0.059	0.04
243	20.25	0.10	0.102	0.126	0.059	0.04
244	20.33	0.10	0.102	0.126	0.059	0.04
245	20.42	0.10	0.102	0.125	0.059	0.04
246	20.50	0.10	0.102	0.125	0.059	0.04
247	20.58	0.10	0.102	0.124	0.059	0.04
248	20.67	0.10	0.102	0.124	0.059	0.04
249	20.75	0.10	0.102	0.123	0.059	0.04
250	20.83	0.07	0.068	0.123	0.039	0.03
251	20.92	0.07	0.068	0.122	0.039	0.03
252	21.00	0.07	0.068	0.122	0.039	0.03
253	21.08	0.10	0.102	0.121	0.059	0.04
254	21.17	0.10	0.102	0.121	0.059	0.04
255	21.25	0.10	0.102	0.120	0.059	0.04
256	21.33	0.07	0.068	0.120	0.039	0.03
257	21.42	0.07	0.068	0.119	0.039	0.03
258	21.50	0.07	0.068	0.119	0.039	0.03
259	21.58	0.10	0.102	0.118	0.059	0.04
260	21.67	0.10	0.102	0.118	0.059	0.04

261	21.75	0.10	0.102	0.118	0.059	0.04
262	21.83	0.07	0.068	0.117	0.039	0.03
263	21.92	0.07	0.068	0.117	0.039	0.03
264	22.00	0.07	0.068	0.116	0.039	0.03
265	22.08	0.10	0.102	0.116	0.059	0.04
266	22.17	0.10	0.102	0.116	0.059	0.04
267	22.25	0.10	0.102	0.115	0.059	0.04
268	22.33	0.07	0.068	0.115	0.039	0.03
269	22.42	0.07	0.068	0.115	0.039	0.03
270	22.50	0.07	0.068	0.114	0.039	0.03
271	22.58	0.07	0.068	0.114	0.039	0.03
272	22.67	0.07	0.068	0.114	0.039	0.03
273	22.75	0.07	0.068	0.113	0.039	0.03
274	22.83	0.07	0.068	0.113	0.039	0.03
275	22.92	0.07	0.068	0.113	0.039	0.03
276	23.00	0.07	0.068	0.112	0.039	0.03
277	23.08	0.07	0.068	0.112	0.039	0.03
278	23.17	0.07	0.068	0.112	0.039	0.03
279	23.25	0.07	0.068	0.112	0.039	0.03
280	23.33	0.07	0.068	0.111	0.039	0.03
281	23.42	0.07	0.068	0.111	0.039	0.03
282	23.50	0.07	0.068	0.111	0.039	0.03
283	23.58	0.07	0.068	0.111	0.039	0.03
284	23.67	0.07	0.068	0.111	0.039	0.03
285	23.75	0.07	0.068	0.111	0.039	0.03
286	23.83	0.07	0.068	0.110	0.039	0.03
287	23.92	0.07	0.068	0.110	0.039	0.03
288	24.00	0.07	0.068	0.110	0.039	0.03
Sum =		100.0			Sum =	62.5

Flood volume = Effective rainfall 5.21(In)
times area 698.3(Ac.)/[(In)/(Ft.)] = 303.2(Ac.Ft)
Total soil loss = 3.33(In)
Total soil loss = 193.631(Ac.Ft)
Total rainfall = 8.54(In)
Flood volume = 13208674.3 Cubic Feet
Total soil loss = 8434554.9 Cubic Feet

Peak flow rate of this hydrograph = 633.181(CFS)

++

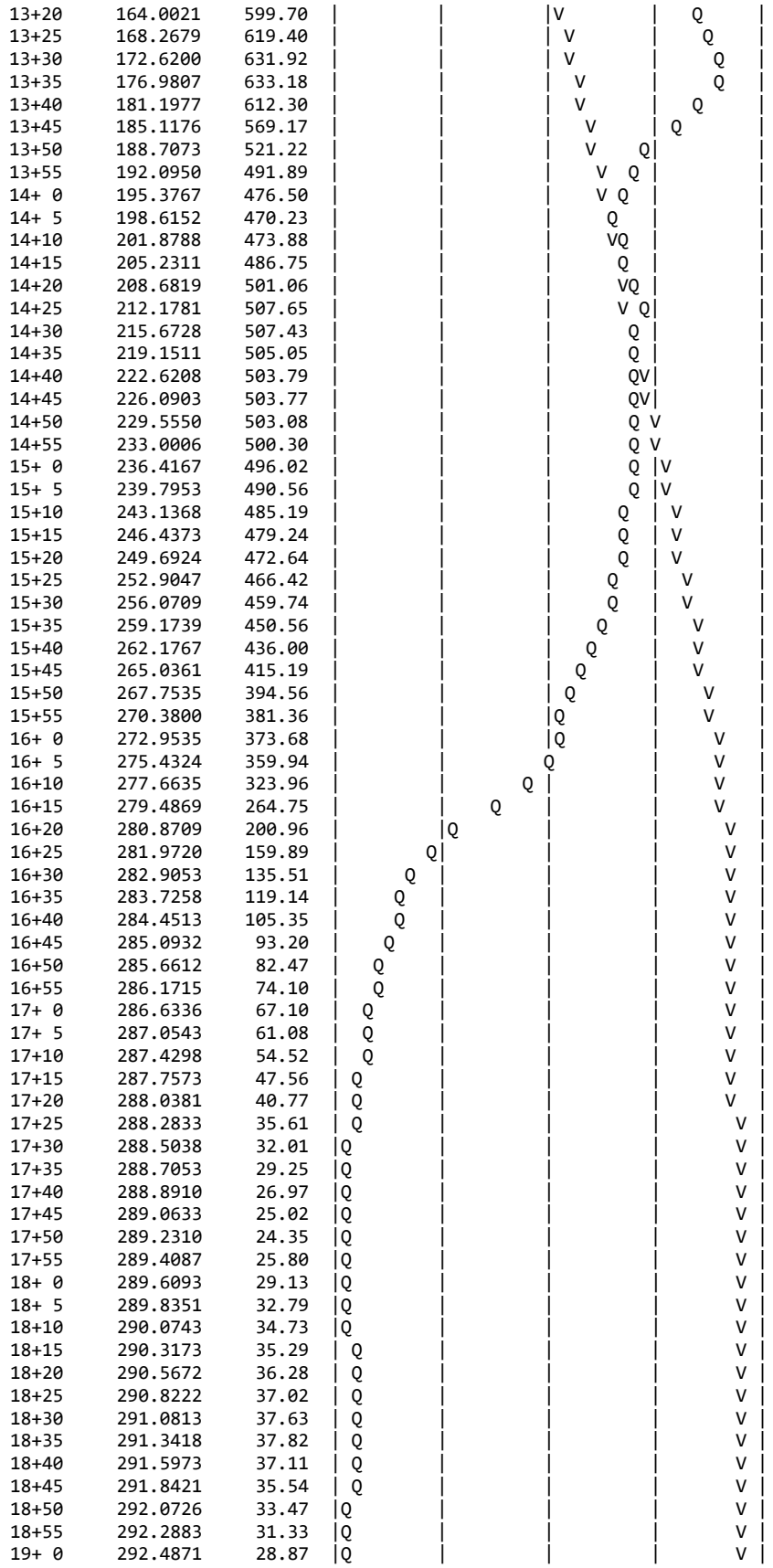
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	175.0	350.0	525.0	700.0
0+ 5	0.0041	0.59	Q	|	|	|	|
0+10	0.0232	2.78	Q	|	|	|	|
0+15	0.0686	6.59	Q	|	|	|	|
0+20	0.1445	11.02	Q	|	|	|	|
0+25	0.2459	14.73	Q	|	|	|	|
0+30	0.3709	18.14	VQ	|	|	|	|
0+35	0.5168	21.18	VQ	|	|	|	|
0+40	0.6769	23.26	VQ	|	|	|	|
0+45	0.8465	24.62	VQ	|	|	|	|
0+50	1.0250	25.92	VQ	|	|	|	|
0+55	1.2164	27.80	VQ	|	|	|	|
1+ 0	1.4256	30.37	VQ	|	|	|	|
1+ 5	1.6507	32.69	VQ	|	|	|	|
1+10	1.8805	33.36	VQ	|	|	|	|
1+15	2.1050	32.60	VQ	|	|	|	|
1+20	2.3209	31.35	VQ	|	|	|	|
1+25	2.5326	30.73	VQ	|	|	|	|
1+30	2.7429	30.53	VQ	|	|	|	|
1+35	2.9531	30.52	VQ	|	|	|	|
1+40	3.1635	30.55	VQ	|	|	|	|
1+45	3.3742	30.59	VQ	|	|	|	|

```
1+50       3.5872     30.93  VQ       |         |         |         |
1+55       3.8081     32.07  VQ       |         |         |         |
2+ 0       4.0422     34.00  VQ       |         |         |         |
2+ 5       4.2910     36.12  V Q      |         |         |         |
2+10       4.5492     37.49  V Q      |         |         |         |
2+15       4.8131     38.32  V Q      |         |         |         |
2+20       5.0804     38.81  V Q      |         |         |         |
2+25       5.3503     39.18  V Q      |         |         |         |
2+30       5.6223     39.50  V Q      |         |         |         |
2+35       5.8981     40.03  V Q      |         |         |         |
2+40       6.1825     41.30  V Q      |         |         |         |
2+45       6.4812     43.37  V Q      |         |         |         |
2+50       6.7951     45.57  V Q      |         |         |         |
2+55       7.1188     47.01  V Q      |         |         |         |
3+ 0       7.4485     47.87  V Q      |         |         |         |
3+ 5       7.7820     48.42  |VQ      |         |         |         |
3+10       8.1185     48.86  |VQ      |         |         |         |
3+15       8.4573     49.20  |VQ      |         |         |         |
3+20       8.7984     49.52  |VQ      |         |         |         |
3+25       9.1413     49.78  |VQ      |         |         |         |
3+30       9.4857     50.01  |VQ      |         |         |         |
3+35       9.8315     50.20  |VQ      |         |         |         |
3+40      10.1783     50.36  |VQ      |         |         |         |
3+45      10.5261     50.49  |VQ      |         |         |         |
3+50      10.8768     50.92  |VQ      |         |         |         |
3+55      11.2358     52.13  |VQ      |         |         |         |
4+ 0      11.6087     54.14  |V Q     |         |         |         |
4+ 5      11.9962     56.27  |V Q     |         |         |         |
4+10      12.3932     57.64  |V Q     |         |         |         |
4+15      12.7957     58.44  |V Q     |         |         |         |
4+20      13.2039     59.27  |V Q     |         |         |         |
4+25      13.6225     60.78  |V Q     |         |         |         |
4+30      14.0565     63.02  |V Q     |         |         |         |
4+35      14.5067     65.37  |V Q     |         |         |         |
4+40      14.9675     66.92  |V Q     |         |         |         |
4+45      15.4351     67.89  | VQ     |         |         |         |
4+50      15.9090     68.82  | VQ     |         |         |         |
4+55      16.3940     70.42  | V Q    |         |         |         |
5+ 0      16.8949     72.73  | V Q    |         |         |         |
5+ 5      17.4083     74.55  | V Q    |         |         |         |
5+10      17.9178     73.97  | V Q    |         |         |         |
5+15      18.4079     71.17  | V Q    |         |         |         |
5+20      18.8765     68.04  | VQ     |         |         |         |
5+25      19.3384     67.07  | VQ     |         |         |         |
5+30      19.8061     67.92  | VQ     |         |         |         |
5+35      20.2862     69.70  | VQ     |         |         |         |
5+40      20.7797     71.67  | V Q    |         |         |         |
5+45      21.2894     74.00  | V Q    |         |         |         |
5+50      21.8148     76.29  | V Q    |         |         |         |
5+55      22.3505     77.78  | V Q    |         |         |         |
6+ 0      22.8923     78.67  |  VQ    |         |         |         |
6+ 5      23.4242     77.24  |  VQ    |         |         |         |
6+10      23.9085     70.32  |  VQ    |         |         |         |
6+15      24.3073     57.91  |  Q     |         |         |         |
6+20      24.6138     44.50  | QV     |         |         |         |
6+25      24.8638     36.31  | QV     |         |         |         |
6+30      25.0842     32.00  |Q V     |         |         |         |
6+35      25.2923     30.20  |Q V     |         |         |         |
6+40      25.5059     31.02  |Q V     |         |         |         |
6+45      25.7417     34.25  |Q V     |         |         |         |
6+50      26.0050     38.22  | QV     |         |         |         |
6+55      26.2860     40.81  | QV     |         |         |         |
7+ 0      26.5769     42.23  | QV     |         |         |         |
7+ 5      26.8746     43.23  | QV     |         |         |         |
7+10      27.1784     44.11  | QV     |         |         |         |
7+15      27.4882     44.98  | QV     |         |         |         |
7+20      27.8086     46.53  | QV     |         |         |         |
7+25      28.1520     49.86  | QV     |         |         |         |
7+30      28.5319     55.17  |  Q     |         |         |         |
```

7+35	28.9555	61.49	Q			
7+40	29.4233	67.93	Q			
7+45	29.9396	74.97	VQ			
7+50	30.5074	82.45	Q			
7+55	31.1260	89.82	VQ			
8+ 0	31.7982	97.60	VQ			
8+ 5	32.5310	106.39	V Q			
8+10	33.3350	116.74	V Q			
8+15	34.2257	129.34	V Q			
8+20	35.2042	142.08	V Q			
8+25	36.2431	150.84	V Q			
8+30	37.3221	156.69	V Q			
8+35	38.4362	161.76	V Q			
8+40	39.5933	168.01	V Q			
8+45	40.8033	175.69	V Q			
8+50	42.0704	183.99	V Q			
8+55	43.3932	192.07	V Q			
9+ 0	44.7743	200.53	V Q			
9+ 5	46.2199	209.91	V Q			
9+10	47.7410	220.85	V Q			
9+15	49.3522	233.95	V Q			
9+20	51.0580	247.69	V Q			
9+25	52.8439	259.31	V Q			
9+30	54.7028	269.91	V Q			
9+35	56.6310	279.98	V Q			
9+40	58.6242	289.41	V Q			
9+45	60.6831	298.96	V Q			
9+50	62.8078	308.50	V Q			
9+55	64.9946	317.53	V Q			
10+ 0	67.2452	326.79	V Q			
10+ 5	69.5214	330.50	V Q			
10+10	71.7178	318.92	V Q			
10+15	73.7305	292.25	V Q			
10+20	75.5342	261.89	V Q			
10+25	77.2107	243.43	V Q			
10+30	78.8205	233.74	V Q			
10+35	80.4159	231.66	V Q			
10+40	82.0716	240.40	V Q			
10+45	83.8603	259.73	V Q			
10+50	85.7994	281.55	V Q			
10+55	87.8328	295.25	V Q			
11+ 0	89.9172	302.65	V Q			
11+ 5	92.0292	306.67	V Q			
11+10	94.1492	307.82	V Q			
11+15	96.2607	306.59	V Q			
11+20	98.3562	304.26	V Q			
11+25	100.4438	303.12	V Q			
11+30	102.5328	303.32	V Q			
11+35	104.6151	302.35	V Q			
11+40	106.6662	297.82	V Q			
11+45	108.6595	289.43	V Q			
11+50	110.5953	281.08	V Q			
11+55	112.5122	278.34	VQ			
12+ 0	114.4407	280.02	VQ			
12+ 5	116.4251	288.13	VQ			
12+10	118.5458	307.94	V Q			
12+15	120.8879	340.07	V Q			
12+20	123.4752	375.67	V Q			
12+25	126.2343	400.63	V Q			
12+30	129.1150	418.28	V Q			
12+35	132.0997	433.38	V Q			
12+40	135.1897	448.66	V Q			
12+45	138.3948	465.39	V Q			
12+50	141.7119	481.63	V Q			
12+55	145.1216	495.09	V Q			
13+ 0	148.6157	507.34	V Q			
13+ 5	152.2075	521.53	V Q			
13+10	155.9426	542.34	V Q			
13+15	159.8719	570.55	V Q			



19+ 5	292.6717	26.80	|Q	|	|	|	V |
19+10	292.8533	26.37	|Q	|	|	|	V |
19+15	293.0416	27.34	|Q	|	|	|	V |
19+20	293.2345	28.01	|Q	|	|	|	V |
19+25	293.4129	25.91	|Q	|	|	|	V |
19+30	293.5586	21.15	|Q	|	|	|	V |
19+35	293.6729	16.60	Q	|	|	|	V |
19+40	293.7845	16.21	Q	|	|	|	V |
19+45	293.9184	19.43	|Q	|	|	|	V |
19+50	294.0799	23.45	|Q	|	|	|	V |
19+55	294.2514	24.91	|Q	|	|	|	V |
20+ 0	294.4187	24.29	|Q	|	|	|	V |
20+ 5	294.5780	23.13	|Q	|	|	|	V |
20+10	294.7388	23.36	|Q	|	|	|	V |
20+15	294.9098	24.83	|Q	|	|	|	V |
20+20	295.0936	26.69	|Q	|	|	|	V |
20+25	295.2852	27.82	|Q	|	|	|	V |
20+30	295.4814	28.48	|Q	|	|	|	V |
20+35	295.6800	28.84	|Q	|	|	|	V|
20+40	295.8805	29.11	|Q	|	|	|	V|
20+45	296.0822	29.29	|Q	|	|	|	V|
20+50	296.2833	29.20	|Q	|	|	|	V|
20+55	296.4781	28.28	|Q	|	|	|	V|
21+ 0	296.6607	26.51	|Q	|	|	|	V|
21+ 5	296.8321	24.89	|Q	|	|	|	V|
21+10	297.0028	24.79	|Q	|	|	|	V|
21+15	297.1823	26.06	|Q	|	|	|	V|
21+20	297.3710	27.40	|Q	|	|	|	V|
21+25	297.5589	27.28	|Q	|	|	|	V|
21+30	297.7368	25.84	|Q	|	|	|	V|
21+35	297.9049	24.41	|Q	|	|	|	V|
21+40	298.0734	24.47	|Q	|	|	|	V|
21+45	298.2515	25.86	|Q	|	|	|	V|
21+50	298.4392	27.26	|Q	|	|	|	V|
21+55	298.6263	27.18	|Q	|	|	|	V|
22+ 0	298.8040	25.80	|Q	|	|	|	V|
22+ 5	298.9716	24.34	|Q	|	|	|	V|
22+10	299.1394	24.36	|Q	|	|	|	V|
22+15	299.3165	25.70	|Q	|	|	|	V|
22+20	299.5033	27.12	|Q	|	|	|	V|
22+25	299.6897	27.08	|Q	|	|	|	V|
22+30	299.8669	25.72	|Q	|	|	|	V|
22+35	300.0319	23.96	|Q	|	|	|	V|
22+40	300.1895	22.89	|Q	|	|	|	V|
22+45	300.3431	22.30	|Q	|	|	|	V|
22+50	300.4944	21.97	|Q	|	|	|	V|
22+55	300.6439	21.70	|Q	|	|	|	V|
23+ 0	300.7919	21.49	|Q	|	|	|	V|
23+ 5	300.9389	21.34	|Q	|	|	|	V|
23+10	301.0851	21.23	|Q	|	|	|	V|
23+15	301.2306	21.13	|Q	|	|	|	V|
23+20	301.3754	21.02	|Q	|	|	|	V|
23+25	301.5196	20.94	|Q	|	|	|	V|
23+30	301.6632	20.85	|Q	|	|	|	V|
23+35	301.8066	20.81	|Q	|	|	|	V|
23+40	301.9496	20.77	|Q	|	|	|	V|
23+45	302.0926	20.76	|Q	|	|	|	V|
23+50	302.2351	20.70	|Q	|	|	|	V|
23+55	302.3774	20.65	|Q	|	|	|	V|
24+ 0	302.5192	20.60	|Q	|	|	|	V|
24+ 5	302.6569	19.99	|Q	|	|	|	V|
24+10	302.7795	17.80	|Q	|	|	|	V|
24+15	302.8759	14.00	Q	|	|	|	V|
24+20	302.9436	9.84	Q	|	|	|	V|
24+25	302.9931	7.18	Q	|	|	|	V|
24+30	303.0319	5.64	Q	|	|	|	V|
24+35	303.0641	4.66	Q	|	|	|	V|
24+40	303.0909	3.90	Q	|	|	|	V|
24+45	303.1136	3.29	Q	|	|	|	V|

```
   24+50     303.1328      2.78  Q        |         |         |        V|
   24+55     303.1491      2.37  Q        |         |         |        V|
   25+ 0     303.1629      2.01  Q        |         |         |        V|
   25+ 5     303.1748      1.72  Q        |         |         |        V|
   25+10     303.1849      1.46  Q        |         |         |        V|
   25+15     303.1936      1.26  Q        |         |         |        V|
   25+20     303.2010      1.07  Q        |         |         |        V|
   25+25     303.2071      0.89  Q        |         |         |        V|
   25+30     303.2122      0.75  Q        |         |         |        V|
   25+35     303.2165      0.62  Q        |         |         |        V|
   25+40     303.2199      0.50  Q        |         |         |        V|
   25+45     303.2227      0.41  Q        |         |         |        V|
   25+50     303.2250      0.32  Q        |         |         |        V|
   25+55     303.2267      0.25  Q        |         |         |        V|
   26+ 0     303.2280      0.19  Q        |         |         |        V|
   26+ 5     303.2290      0.13  Q        |         |         |        V|
   26+10     303.2294      0.07  Q        |         |         |        V|
-------------------------------------------------------------------------
```

Appendix

C

PROPOSED CONDITION HYDROLOGY

91 Freeway

Via Del Rio

Bern Dr

Dawnridge Dr

Paseo Grande

Kirkwood Dr

Pine Crest Dr

Santa Cruz Dr

Lca=5,913 ft

L=12,683 ft

Lca=5,865 ft

L=12,158 ft

L=5,129 ft

Lca=2,243 ft

L=3,515 ft

Lca=3,426 ft

A1
348.4

A4
80.2

A5
269.6

583

615.5

784

1102

1157

Legend

- 1157 — Node Elevation
- Watershed Flowpath
- Existing Storm Drains
- Proposed Storm Drains
- Watershed Boundary
- Centroid
- A1 / 348.4 — Watershed ID / Drainage Area (ac)

0 200 400 800 1,200 1,600 Feet

N

L.Johnson 1/16/24

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The Trails at Corona

Exhibit B-1
Proposed Condition Hydrology Watershed Map

R:/1511/prelim/reports/gis/1511clomr-proposedhydrology.mxd

91 Freeway

Via Del Rio

Bern Dr

A1
348.4

Dawnridge Dr

Pine Crest Dr

Paseo Grande

Kirkwood Dr

Sierra Club Dr

A4
80.2

A5
269.6

Legend

Watershed Boundary

Existing Land Use

- Commercial (90% Impervious)
- Open Space (0% Impervious)
- Park (15% Impervious)
- Residential (50% Impervious)
- Schooll (40% Impervious)

N

0 200 400 800 1,200 1,600 Feet

L.Johnson 1/16/24

KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS

The Trails at Corona

Exhibit B-2
Proposed Condition
Land Use Map

R:/1511/prelim/reports/gis/1511domt-proposedhydrology.mxd

91 Freeway

Via Del Rio

Bern Dr

A1
348.4

Dawnridge Dr

Paseo Grande

Pine Crest Dr

Sierra Club Dr

Kirkwood Dr

A4
80.2

A5
269.6

Legend

Watershed Boundary

Hydrologic Soil Group

- A
- B
- C
- D

N

0 200 400 800 1,200 1,600 Feet

Data Source: RCFC&WCD Hydrologic Soil Group Map

L.Johnson 1/16/24

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The Trails at Corona

Exhibit B-3
Proposed Condition
Hydrologic Soil Map

R:/1511/prelim/reports/gis/1511domt-proposedhydrology.mxd

U n i t H y d r o g r a p h A n a l y s i s

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Study date 01/25/24 File: A1P3100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6062

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

THE TRAILS PROJECT
Proposed Condition Watershed A1
100-Year 3-Hour Storm
L.Johnson, 1/25/2024

Drainage Area = 348.40(Ac.) = 0.544 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 348.40(Ac.) = 0.544 Sq. Mi.
Length along longest watercourse = 12683.00(Ft.)
Length along longest watercourse measured to centroid = 5913.00(Ft.)
Length along longest watercourse = 2.402 Mi.
Length along longest watercourse measured to centroid = 1.120 Mi.
Difference in elevation = 488.30(Ft.)
Slope along watercourse = 203.2819 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.191 Hr.
Lag time = 11.46 Min.
25% of lag time = 2.87 Min.
40% of lag time = 4.58 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
348.40	1.04	362.34

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
348.40	2.45	853.58

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.040(In)
Area Averaged 100-Year Rainfall = 2.450(In)

Point rain (area averaged) = 2.450(In)
Areal adjustment factor = 99.85 %
Adjusted average point rain = 2.446(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

9.950	32.00	0.500
0.291	65.00	0.400
78.661	56.00	0.500
9.273	56.00	0.150
2.547	68.00	0.000
9.211	77.00	0.400
148.426	69.00	0.500
3.701	69.00	0.150
5.093	75.00	0.000
74.669	75.00	0.500
3.003	75.00	0.150
3.575	84.00	0.000

Total Area Entered = 348.40(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.500	0.408	0.029	0.012
65.0	65.0	0.416	0.400	0.266	0.001	0.000
56.0	56.0	0.511	0.500	0.281	0.226	0.063
56.0	56.0	0.511	0.150	0.442	0.027	0.012
68.0	68.0	0.384	0.000	0.384	0.007	0.003
77.0	77.0	0.279	0.400	0.179	0.026	0.005
69.0	69.0	0.373	0.500	0.205	0.426	0.087
69.0	69.0	0.373	0.150	0.322	0.011	0.003
75.0	75.0	0.303	0.000	0.303	0.015	0.004
75.0	75.0	0.303	0.500	0.167	0.214	0.036
75.0	75.0	0.303	0.150	0.262	0.009	0.002
84.0	84.0	0.198	0.000	0.198	0.010	0.002
					Sum (F) =	0.230

Area averaged mean soil loss (F) (In/Hr) = 0.230
Minimum soil loss rate ((In/Hr)) = 0.115
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.528

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	43.626	4.969	17.449
2	0.167	87.252	20.802	73.040
3	0.250	130.878	28.270	99.262
4	0.333	174.504	15.664	54.999
5	0.417	218.130	7.644	26.841
6	0.500	261.756	5.115	17.960
7	0.583	305.382	3.816	13.400
8	0.667	349.008	2.851	10.010
9	0.750	392.634	2.284	8.020
10	0.833	436.260	1.739	6.106
11	0.917	479.886	1.383	4.856
12	1.000	523.512	1.262	4.433
13	1.083	567.138	0.983	3.453
14	1.167	610.764	0.812	2.852
15	1.250	654.390	0.659	2.315
16	1.333	698.016	0.507	1.780
17	1.417	741.642	0.436	1.532
18	1.500	785.268	0.436	1.532
19	1.583	828.894	0.365	1.283
			Sum = 100.000	Sum= 351.122

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)

1	0.08	1.30	0.382	0.230	---	0.15
2	0.17	1.30	0.382	0.230	---	0.15
3	0.25	1.10	0.323	0.230	---	0.09
4	0.33	1.50	0.440	0.230	---	0.21
5	0.42	1.50	0.440	0.230	---	0.21
6	0.50	1.80	0.528	0.230	---	0.30
7	0.58	1.50	0.440	0.230	---	0.21
8	0.67	1.80	0.528	0.230	---	0.30
9	0.75	1.80	0.528	0.230	---	0.30
10	0.83	1.50	0.440	0.230	---	0.21
11	0.92	1.60	0.470	0.230	---	0.24
12	1.00	1.80	0.528	0.230	---	0.30
13	1.08	2.20	0.646	0.230	---	0.42
14	1.17	2.20	0.646	0.230	---	0.42
15	1.25	2.20	0.646	0.230	---	0.42
16	1.33	2.00	0.587	0.230	---	0.36
17	1.42	2.60	0.763	0.230	---	0.53
18	1.50	2.70	0.793	0.230	---	0.56
19	1.58	2.40	0.705	0.230	---	0.47
20	1.67	2.70	0.793	0.230	---	0.56
21	1.75	3.30	0.969	0.230	---	0.74
22	1.83	3.10	0.910	0.230	---	0.68
23	1.92	2.90	0.851	0.230	---	0.62
24	2.00	3.00	0.881	0.230	---	0.65
25	2.08	3.10	0.910	0.230	---	0.68
26	2.17	4.20	1.233	0.230	---	1.00
27	2.25	5.00	1.468	0.230	---	1.24
28	2.33	3.50	1.027	0.230	---	0.80
29	2.42	6.80	1.996	0.230	---	1.77
30	2.50	7.30	2.143	0.230	---	1.91
31	2.58	8.20	2.407	0.230	---	2.18
32	2.67	5.90	1.732	0.230	---	1.50
33	2.75	2.00	0.587	0.230	---	0.36
34	2.83	1.80	0.528	0.230	---	0.30
35	2.92	1.80	0.528	0.230	---	0.30
36	3.00	0.60	0.176	0.230	0.093	0.08
Sum =		100.0			Sum =	21.2

Flood volume = Effective rainfall 1.77(In)
times area 348.4(Ac.)/[(In)/(Ft.)] = 51.3(Ac.Ft)
Total soil loss = 0.68(In)
Total soil loss = 19.686(Ac.Ft)
Total rainfall = 2.45(In)
Flood volume = 2236248.8 Cubic Feet
Total soil loss = 857523.7 Cubic Feet

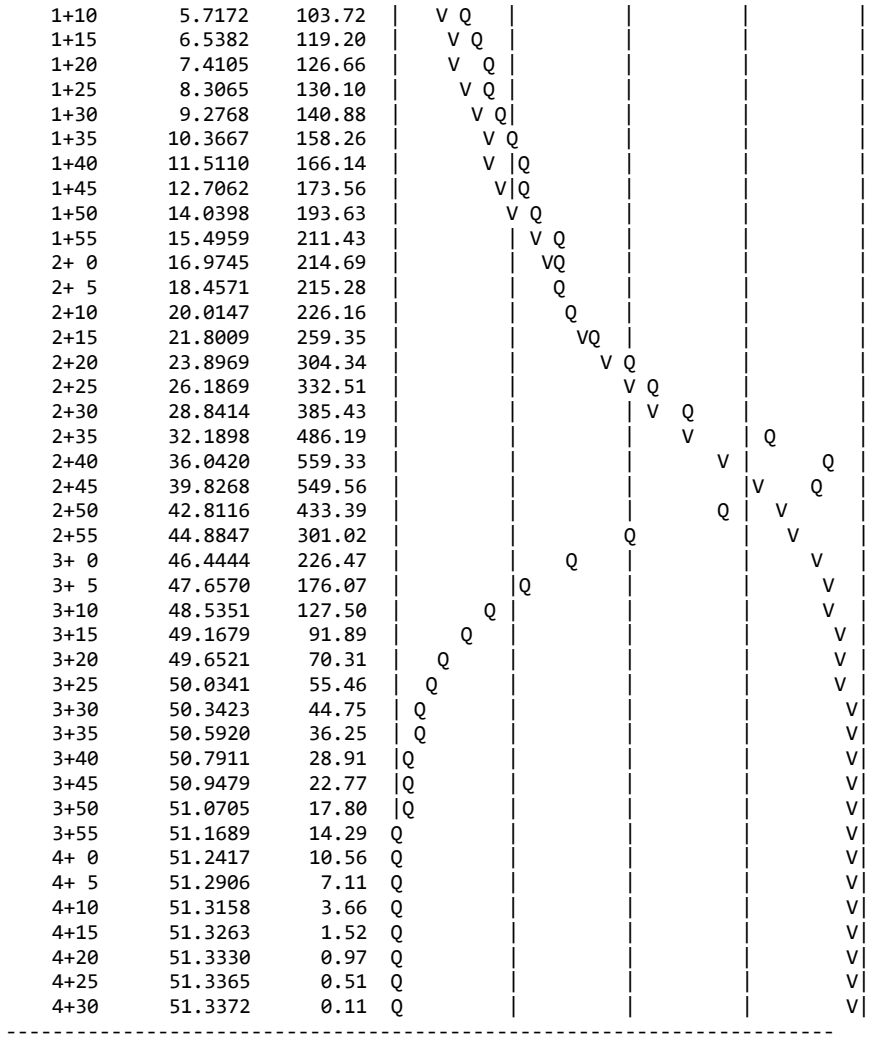
Peak flow rate of this hydrograph = 559.329(CFS)

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3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

```
Time(h+m) Volume Ac.Ft   Q(CFS)  0      150.0     300.0     450.0     600.0
-------------------------------------------------------------------------
  0+ 5       0.0183      2.65  Q         |         |         |         |
  0+10       0.1129     13.74  Q         |         |         |         |
  0+15       0.3043     27.79  VQ        |         |         |         |
  0+20       0.5378     33.91  V Q       |         |         |         |
  0+25       0.8184     40.73  V Q       |         |         |         |
  0+30       1.1863     53.43  V  Q      |         |         |         |
  0+35       1.6357     65.25  |V  Q     |         |         |         |
  0+40       2.1365     72.71  |V  Q     |         |         |         |
  0+45       2.6722     77.79  | V  Q    |         |         |         |
  0+50       3.2537     84.43  | V  Q    |         |         |         |
  0+55       3.8323     84.01  | V  Q    |         |         |         |
  1+ 0       4.3947     81.66  |  V Q    |         |         |         |
  1+ 5       5.0029     88.31  |  V Q    |         |         |         |
```



1+10	5.7172	103.72	V Q				
1+15	6.5382	119.20	V Q				
1+20	7.4105	126.66	V Q				
1+25	8.3065	130.10	V Q				
1+30	9.2768	140.88	V Q				
1+35	10.3667	158.26	V Q				
1+40	11.5110	166.14	V Q				
1+45	12.7062	173.56	V Q				
1+50	14.0398	193.63	V Q				
1+55	15.4959	211.43	V Q				
2+ 0	16.9745	214.69	VQ				
2+ 5	18.4571	215.28	Q				
2+10	20.0147	226.16	Q				
2+15	21.8009	259.35	VQ				
2+20	23.8969	304.34	V Q				
2+25	26.1869	332.51	V Q				
2+30	28.8414	385.43	V Q				
2+35	32.1898	486.19	V	Q			
2+40	36.0420	559.33	V	Q			
2+45	39.8268	549.56	V	Q			
2+50	42.8116	433.39	Q	V			
2+55	44.8847	301.02	Q	V			
3+ 0	46.4444	226.47	Q	V			
3+ 5	47.6570	176.07	Q	V			
3+10	48.5351	127.50	Q	V			
3+15	49.1679	91.89	Q	V			
3+20	49.6521	70.31	Q	V			
3+25	50.0341	55.46	Q	V			
3+30	50.3423	44.75	Q	V			
3+35	50.5920	36.25	Q	V			
3+40	50.7911	28.91	Q	V			
3+45	50.9479	22.77	Q	V			
3+50	51.0705	17.80	Q	V			
3+55	51.1689	14.29	Q	V			
4+ 0	51.2417	10.56	Q	V			
4+ 5	51.2906	7.11	Q	V			
4+10	51.3158	3.66	Q	V			
4+15	51.3263	1.52	Q	V			
4+20	51.3330	0.97	Q	V			
4+25	51.3365	0.51	Q	V			
4+30	51.3372	0.11	Q	V			

U n i t H y d r o g r a p h A n a l y s i s

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Study date 01/25/24 File: A4P3100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6062

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

THE TRAILS PROJECT
Proposed Condition Watershed A4
100-Year 3-Hour Storm
L.Johnson, 1/25/2024

Drainage Area = 80.20(Ac.) = 0.125 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 80.20(Ac.) = 0.125 Sq. Mi.
Length along longest watercourse = 5129.00(Ft.)
Length along longest watercourse measured to centroid = 2243.00(Ft.)
Length along longest watercourse = 0.971 Mi.
Length along longest watercourse measured to centroid = 0.425 Mi.
Difference in elevation = 201.00(Ft.)
Slope along watercourse = 206.9175 Ft./Mi.
Average Manning's 'N' = 0.018
Lag time = 0.112 Hr.
Lag time = 6.72 Min.
25% of lag time = 1.68 Min.
40% of lag time = 2.69 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
80.20	1.04	83.41

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
80.20	2.45	196.49

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.040(In)
Area Averaged 100-Year Rainfall = 2.450(In)

Point rain (area averaged) = 2.450(In)
Areal adjustment factor = 99.96 %
Adjusted average point rain = 2.449(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

8.668	56.00	0.500
3.597	68.00	0.000
6.117	77.00	0.400
34.495	69.00	0.500
1.398	75.00	0.000
0.262	69.00	0.900
2.741	82.00	0.400
17.330	75.00	0.500
5.149	84.00	0.000
0.443	75.00	0.900

Total Area Entered = 80.20(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.500	0.281	0.108	0.030
68.0	68.0	0.384	0.000	0.384	0.045	0.017
77.0	77.0	0.279	0.400	0.179	0.076	0.014
69.0	69.0	0.373	0.500	0.205	0.430	0.088
75.0	75.0	0.303	0.000	0.303	0.017	0.005
69.0	69.0	0.373	0.900	0.071	0.003	0.000
82.0	82.0	0.221	0.400	0.142	0.034	0.005
75.0	75.0	0.303	0.500	0.167	0.216	0.036
84.0	84.0	0.198	0.000	0.198	0.064	0.013
75.0	75.0	0.303	0.900	0.058	0.006	0.000
					Sum (F) =	0.209

Area averaged mean soil loss (F) (In/Hr) = 0.209
Minimum soil loss rate ((In/Hr)) = 0.104
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.557

U n i t H y d r o g r a p h
VALLEY S-Curve

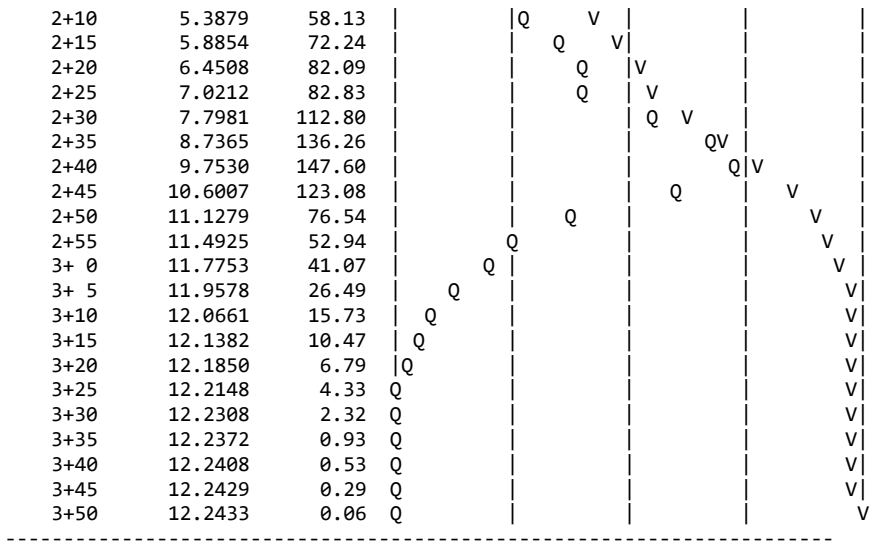
Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	74.372	11.766	9.510
2	0.167	148.744	42.208	34.115
3	0.250	223.117	21.676	17.520
4	0.333	297.489	8.644	6.987
5	0.417	371.861	5.235	4.231
6	0.500	446.233	3.397	2.746
7	0.583	520.606	2.354	1.903
8	0.667	594.978	1.737	1.404
9	0.750	669.350	1.223	0.988
10	0.833	743.722	0.826	0.667
11	0.917	818.094	0.935	0.755
			Sum = 100.000	Sum= 80.827

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.382	0.209	---	0.17
2	0.17	1.30	0.382	0.209	---	0.17
3	0.25	1.10	0.323	0.209	---	0.11
4	0.33	1.50	0.441	0.209	---	0.23
5	0.42	1.50	0.441	0.209	---	0.23
6	0.50	1.80	0.529	0.209	---	0.32
7	0.58	1.50	0.441	0.209	---	0.23
8	0.67	1.80	0.529	0.209	---	0.32
9	0.75	1.80	0.529	0.209	---	0.32
10	0.83	1.50	0.441	0.209	---	0.23
11	0.92	1.60	0.470	0.209	---	0.26
12	1.00	1.80	0.529	0.209	---	0.32

```
13   1.08     2.20      0.647         0.209      ---          0.44
14   1.17     2.20      0.647         0.209      ---          0.44
15   1.25     2.20      0.647         0.209      ---          0.44
16   1.33     2.00      0.588         0.209      ---          0.38
17   1.42     2.60      0.764         0.209      ---          0.56
18   1.50     2.70      0.794         0.209      ---          0.58
19   1.58     2.40      0.705         0.209      ---          0.50
20   1.67     2.70      0.794         0.209      ---          0.58
21   1.75     3.30      0.970         0.209      ---          0.76
22   1.83     3.10      0.911         0.209      ---          0.70
23   1.92     2.90      0.852         0.209      ---          0.64
24   2.00     3.00      0.882         0.209      ---          0.67
25   2.08     3.10      0.911         0.209      ---          0.70
26   2.17     4.20      1.234         0.209      ---          1.03
27   2.25     5.00      1.469         0.209      ---          1.26
28   2.33     3.50      1.029         0.209      ---          0.82
29   2.42     6.80      1.998         0.209      ---          1.79
30   2.50     7.30      2.145         0.209      ---          1.94
31   2.58     8.20      2.410         0.209      ---          2.20
32   2.67     5.90      1.734         0.209      ---          1.53
33   2.75     2.00      0.588         0.209      ---          0.38
34   2.83     1.80      0.529         0.209      ---          0.32
35   2.92     1.80      0.529         0.209      ---          0.32
36   3.00     0.60      0.176         0.209    0.098          0.08
   Sum =     100.0                                 Sum =     22.0
      Flood volume = Effective rainfall      1.83(In)
       times area      80.2(Ac.)/[(In)/(Ft.)] =      12.2(Ac.Ft)
      Total soil loss =      0.62(In)
      Total soil loss =     4.125(Ac.Ft)
      Total rainfall =      2.45(In)
      Flood volume =      533317.0 Cubic Feet
      Total soil loss =      179691.4 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =    147.599(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          3 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
-------------------------------------------------------------------------
  0+ 5       0.0114      1.65  Q         |         |         |         |
  0+10       0.0634      7.56  VQ        |         |         |         |
  0+15       0.1326     10.04  V Q       |         |         |         |
  0+20       0.2039     10.36  V Q       |         |         |         |
  0+25       0.3009     14.08  V Q       |         |         |         |
  0+30       0.4183     17.04  |V Q      |         |         |         |
  0+35       0.5568     20.12  |V  Q     |         |         |         |
  0+40       0.6951     20.07  | V Q     |         |         |         |
  0+45       0.8503     22.53  | V Q     |         |         |         |
  0+50       1.0104     23.25  |  VQ     |         |         |         |
  0+55       1.1567     21.25  |  VQ     |         |         |         |
  1+ 0       1.3058     21.64  |   Q     |         |         |         |
  1+ 5       1.4772     24.90  |   Q     |         |         |         |
  1+10       1.6838     29.99  |    Q    |         |         |         |
  1+15       1.9072     32.44  |     Q   |         |         |         |
  1+20       2.1342     32.96  |     Q   |         |         |         |
  1+25       2.3630     33.22  |     QV  |         |         |         |
  1+30       2.6311     38.94  |      QV |         |         |         |
  1+35       2.9208     42.06  |       QV|         |         |         |
  1+40       3.2071     41.56  |       Q V         |         |         |
  1+45       3.5216     45.67  |        Q|V        |         |         |
  1+50       3.8845     52.68  |         Q V       |         |         |
  1+55       4.2555     53.87  |         Q  V      |         |         |
  2+ 0       4.6186     52.73  |         Q    V    |         |         |
  2+ 5       4.9875     53.57  |         Q     V   |         |         |
```


2+10 5.3879 58.13
2+15 5.8854 72.24
2+20 6.4508 82.09
2+25 7.0212 82.83
2+30 7.7981 112.80
2+35 8.7365 136.26
2+40 9.7530 147.60
2+45 10.6007 123.08
2+50 11.1279 76.54
2+55 11.4925 52.94
3+ 0 11.7753 41.07
3+ 5 11.9578 26.49
3+10 12.0661 15.73
3+15 12.1382 10.47
3+20 12.1850 6.79
3+25 12.2148 4.33
3+30 12.2308 2.32
3+35 12.2372 0.93
3+40 12.2408 0.53
3+45 12.2429 0.29
3+50 12.2433 0.06

U n i t H y d r o g r a p h A n a l y s i s

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Study date 01/25/24 File: A5P3100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6062

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

THE TRAILS PROJECT
Proposed Condition Watershed A5
100-Year 3-Hour Storm
L.Johnson, 1/25/2024

Drainage Area = 269.60(Ac.) = 0.421 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 269.60(Ac.) = 0.421 Sq. Mi.
Length along longest watercourse = 12158.00(Ft.)
Length along longest watercourse measured to centroid = 5865.00(Ft.)
Length along longest watercourse = 2.303 Mi.
Length along longest watercourse measured to centroid = 1.111 Mi.
Difference in elevation = 541.50(Ft.)
Slope along watercourse = 235.1637 Ft./Mi.
Average Manning's 'N' = 0.017
Lag time = 0.207 Hr.
Lag time = 12.39 Min.
25% of lag time = 3.10 Min.
40% of lag time = 4.96 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
269.60	1.04	280.38

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
269.60	2.45	660.52

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.040(In)
Area Averaged 100-Year Rainfall = 2.450(In)

Point rain (area averaged) = 2.450(In)
Areal adjustment factor = 99.88 %
Adjusted average point rain = 2.447(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

7.225	56.00	0.500
2.906	68.00	0.000
17.598	77.00	0.400
112.492	69.00	0.500
1.756	69.00	0.150
15.784	75.00	0.000
3.363	69.00	0.900
8.502	82.00	0.400
80.838	75.00	0.500
17.101	84.00	0.000
2.035	75.00	0.900

Total Area Entered = 269.60(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.500	0.281	0.027	0.008
68.0	68.0	0.384	0.000	0.384	0.011	0.004
77.0	77.0	0.279	0.400	0.179	0.065	0.012
69.0	69.0	0.373	0.500	0.205	0.417	0.086
69.0	69.0	0.373	0.150	0.322	0.007	0.002
75.0	75.0	0.303	0.000	0.303	0.059	0.018
69.0	69.0	0.373	0.900	0.071	0.012	0.001
82.0	82.0	0.221	0.400	0.142	0.032	0.004
75.0	75.0	0.303	0.500	0.167	0.300	0.050
84.0	84.0	0.198	0.000	0.198	0.063	0.013
75.0	75.0	0.303	0.900	0.058	0.008	0.000
					Sum (F) =	0.197

Area averaged mean soil loss (F) (In/Hr) = 0.197
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.556

U n i t H y d r o g r a p h
VALLEY S-Curve

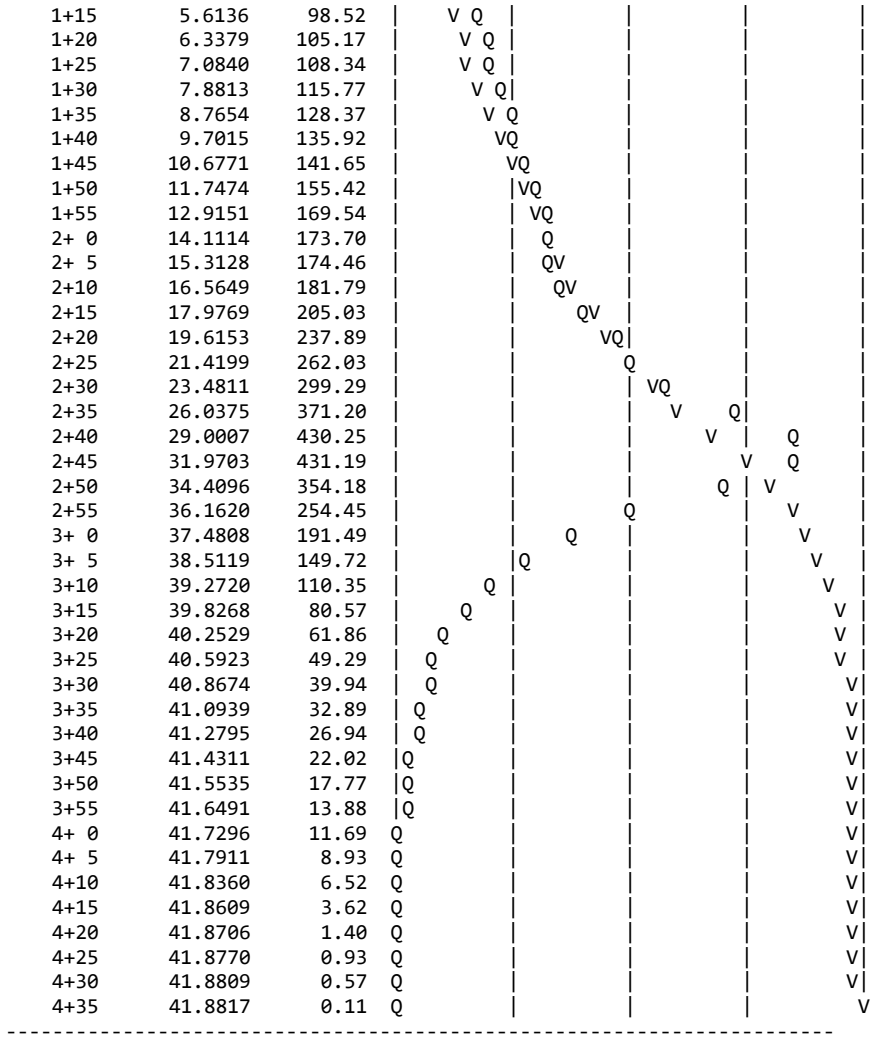
Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	40.340	4.412	11.988
2	0.167	80.679	18.156	49.330
3	0.250	121.019	26.933	73.178
4	0.333	161.358	17.278	46.947
5	0.417	201.698	8.430	22.904
6	0.500	242.037	5.344	14.519
7	0.583	282.377	4.002	10.873
8	0.667	322.717	3.053	8.294
9	0.750	363.056	2.433	6.610
10	0.833	403.396	1.921	5.219
11	0.917	443.735	1.494	4.059
12	1.000	484.075	1.262	3.429
13	1.083	524.414	1.152	3.130
14	1.167	564.754	0.902	2.450
15	1.250	605.094	0.757	2.058
16	1.333	645.433	0.626	1.702
17	1.417	685.773	0.501	1.362
18	1.500	726.112	0.404	1.099
19	1.583	766.452	0.403	1.096
20	1.667	806.791	0.537	1.460
			Sum = 100.000	Sum= 271.706

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.382	0.197	---	0.18

```
 2   0.17     1.30      0.382         0.197      ---          0.18
 3   0.25     1.10      0.323         0.197      ---          0.13
 4   0.33     1.50      0.440         0.197      ---          0.24
 5   0.42     1.50      0.440         0.197      ---          0.24
 6   0.50     1.80      0.529         0.197      ---          0.33
 7   0.58     1.50      0.440         0.197      ---          0.24
 8   0.67     1.80      0.529         0.197      ---          0.33
 9   0.75     1.80      0.529         0.197      ---          0.33
10   0.83     1.50      0.440         0.197      ---          0.24
11   0.92     1.60      0.470         0.197      ---          0.27
12   1.00     1.80      0.529         0.197      ---          0.33
13   1.08     2.20      0.646         0.197      ---          0.45
14   1.17     2.20      0.646         0.197      ---          0.45
15   1.25     2.20      0.646         0.197      ---          0.45
16   1.33     2.00      0.587         0.197      ---          0.39
17   1.42     2.60      0.763         0.197      ---          0.57
18   1.50     2.70      0.793         0.197      ---          0.60
19   1.58     2.40      0.705         0.197      ---          0.51
20   1.67     2.70      0.793         0.197      ---          0.60
21   1.75     3.30      0.969         0.197      ---          0.77
22   1.83     3.10      0.910         0.197      ---          0.71
23   1.92     2.90      0.852         0.197      ---          0.65
24   2.00     3.00      0.881         0.197      ---          0.68
25   2.08     3.10      0.910         0.197      ---          0.71
26   2.17     4.20      1.233         0.197      ---          1.04
27   2.25     5.00      1.468         0.197      ---          1.27
28   2.33     3.50      1.028         0.197      ---          0.83
29   2.42     6.80      1.997         0.197      ---          1.80
30   2.50     7.30      2.144         0.197      ---          1.95
31   2.58     8.20      2.408         0.197      ---          2.21
32   2.67     5.90      1.733         0.197      ---          1.54
33   2.75     2.00      0.587         0.197      ---          0.39
34   2.83     1.80      0.529         0.197      ---          0.33
35   2.92     1.80      0.529         0.197      ---          0.33
36   3.00     0.60      0.176         0.197    0.098          0.08
   Sum =     100.0                                 Sum =     22.4
      Flood volume = Effective rainfall      1.86(In)
       times area     269.6(Ac.)/[(In)/(Ft.)] =      41.9(Ac.Ft)
      Total soil loss =      0.58(In)
      Total soil loss =    13.097(Ac.Ft)
      Total rainfall =      2.45(In)
      Flood volume =     1824367.3 Cubic Feet
      Total soil loss =      570492.3 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =    431.190(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          3 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0      125.0     250.0     375.0     500.0
---------------------------------------------------------------------------
  0+ 5       0.0153      2.22  Q         |         |         |         |
  0+10       0.0933     11.33  Q         |         |         |         |
  0+15       0.2596     24.15  VQ        |         |         |         |
  0+20       0.4754     31.33  V Q       |         |         |         |
  0+25       0.7306     37.06  V Q       |         |         |         |
  0+30       1.0519     46.64  |V Q      |         |         |         |
  0+35       1.4383     56.11  |V  Q     |         |         |         |
  0+40       1.8698     62.64  |V   Q    |         |         |         |
  0+45       2.3310     66.97  | V  Q    |         |         |         |
  0+50       2.8268     72.00  | V  Q    |         |         |         |
  0+55       3.3278     72.74  |  V Q    |         |         |         |
  1+ 0       3.8184     71.24  |  V Q    |         |         |         |
  1+ 5       4.3389     75.57  |   V Q   |         |         |         |
  1+10       4.9350     86.56  |   V Q   |         |         |         |
```



1+15	5.6136	98.52	
1+20	6.3379	105.17	
1+25	7.0840	108.34	
1+30	7.8813	115.77	
1+35	8.7654	128.37	
1+40	9.7015	135.92	
1+45	10.6771	141.65	
1+50	11.7474	155.42	
1+55	12.9151	169.54	
2+ 0	14.1114	173.70	
2+ 5	15.3128	174.46	
2+10	16.5649	181.79	
2+15	17.9769	205.03	
2+20	19.6153	237.89	
2+25	21.4199	262.03	
2+30	23.4811	299.29	
2+35	26.0375	371.20	
2+40	29.0007	430.25	
2+45	31.9703	431.19	
2+50	34.4096	354.18	
2+55	36.1620	254.45	
3+ 0	37.4808	191.49	
3+ 5	38.5119	149.72	
3+10	39.2720	110.35	
3+15	39.8268	80.57	
3+20	40.2529	61.86	
3+25	40.5923	49.29	
3+30	40.8674	39.94	
3+35	41.0939	32.89	
3+40	41.2795	26.94	
3+45	41.4311	22.02	
3+50	41.5535	17.77	
3+55	41.6491	13.88	
4+ 0	41.7296	11.69	
4+ 5	41.7911	8.93	
4+10	41.8360	6.52	
4+15	41.8609	3.62	
4+20	41.8706	1.40	
4+25	41.8770	0.93	
4+30	41.8809	0.57	
4+35	41.8817	0.11	

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 01/26/24

THE TRAILS PROJECT: Proposed Condition - No Detention Routing
100-Year 3-Hour Storm
L.Johnson, 1/26/2024

Program License Serial Number 6062

********** HYDROGRAPH INFORMATION **********

From study/file name: A5P3100.rte

**********HYDROGRAPH DATA**********

Number of intervals = 55
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 431.190 (CFS)
Total volume = 41.882 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++++++++++

Process from Point/Station 2.000 to Point/Station 3.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

****

********** HYDROGRAPH INFORMATION **********

From study/file name: A1P3100.rte

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P R I N T O F S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Add q(CFS)	Tot. Q	0	247.4	494.8	742.2	989.6
0+ 5	2.6501	4.87	Q				
0+10	13.7434	25.07	qQ				
0+15	27.7942	51.94	|qQ				
0+20	33.9068	65.24	|qQ				
0+25	40.7336	77.80	|q Q				
0+30	53.4295	100.07	| q Q				
0+35	65.2476	121.36	| q Q				
0+40	72.7141	135.36	| q Q				
0+45	77.7907	144.76	| q Q				
0+50	84.4319	156.43	| q Q				
0+55	84.0146	156.75	| q Q				
1+ 0	81.6587	152.90	| q Q				
1+ 5	88.3087	163.88	| q Q				
1+10	103.7193	190.28	| q Q				
1+15	119.2000	217.72	| q Q				
1+20	126.6649	231.83	| q Q|			
1+25	130.1015	238.44	| q Q|			
1+30	140.8807	256.65	| q Q				
1+35	158.2614	286.63	| q |Q				

```
    1+40     166.1393    302.06  |     q    | Q        |          |          |
    1+45     173.5557    315.20  |      q   | Q        |          |          |
    1+50     193.6298    349.05  |      q   |   Q      |          |          |
    1+55     211.4262    380.97  |       q  |    Q     |          |          |
    2+ 0     214.6948    388.39  |       q  |    Q     |          |          |
    2+ 5     215.2779    389.73  |       q  |    Q     |          |          |
    2+10     226.1598    407.95  |        q |     Q    |          |          |
    2+15     259.3540    464.38  |         q        Q |          |          |
    2+20     304.3437    542.24  |          | q        |Q         |          |
    2+25     332.5116    594.54  |          |  q       |   Q      |          |
    2+30     385.4287    684.72  |          |    q     |      Q   |          |
    2+35     486.1909    857.39  |          |        q |          |   Q      |
    2+40     559.3293    989.58  |          |          | q        |          Q
    2+45     549.5592    980.75  |          |          | q        |         Q|
    2+50     433.3920    787.57  |          |       q  |          |Q         |
    2+55     301.0206    555.47  |          | q        | Q        |          |
    3+ 0     226.4662    417.95  |        q |      Q   |          |          |
    3+ 5     176.0683    325.79  |       q  |  Q       |          |          |
    3+10     127.4952    237.85  |     q   Q|          |          |          |
    3+15      91.8873    172.45  |  q  Q    |          |          |          |
    3+20      70.3079    132.17  | q  Q     |          |          |          |
    3+25      55.4630    104.75  | q Q      |          |          |          |
    3+30      44.7538     84.69  |q Q       |          |          |          |
    3+35      36.2501     69.14  |qQ        |          |          |          |
    3+40      28.9118     55.85  |qQ        |          |          |          |
    3+45      22.7714     44.79  qQ         |          |          |          |
    3+50      17.7984     35.57  qQ         |          |          |          |
    3+55      14.2909     28.17  qQ         |          |          |          |
    4+ 0      10.5621     22.25  Q          |          |          |          |
    4+ 5       7.1055     16.03  Q          |          |          |          |
    4+10       3.6579     10.18  Q          |          |          |          |
    4+15       1.5219      5.14  Q          |          |          |          |
    4+20       0.9683      2.37  Q          |          |          |          |
    4+25       0.5107      1.44  Q          |          |          |          |
    4+30       0.1067      0.68  Q          |          |          |          |
    4+35       0.0000      0.11  Q          |          |          |          |
----------------------------------------------------------------------------
        ****************************HYDROGRAPH DATA****************************
                       Number of intervals =    55
                       Time interval =    5.0 (Min.)
                       Maximum/Peak flow rate =      989.580 (CFS)
                       Total volume =      93.219 (Ac.Ft)
              Status of hydrographs being held in storage
                         Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
              Peak (CFS)      0.000     0.000     0.000     0.000     0.000
              Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
        ************************************************************************

        ------------------------------------------------------------------


        ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
        Process from Point/Station        3.000 to Point/Station        4.000
        **** STREAM ROUTING SCS CONVEX METHOD ****
        ________________________________________________________________________
        HYDROGRAPH STREAM ROUTING DATA:
        Length of stream =   1465.00 (Ft.)
        Elevation difference =   30.70 (Ft.)
        Slope of channel =  0.020956 (Vert/Horiz)
        Channel type - Pipe


        Pipe length  =  1465.00(Ft.)   Elevation difference =  30.70(Ft.)
        Manning's N = 0.013   No. of pipes = 1
        Pipe evaluation using mean flow rate of hydrograph
        Required pipe flow  =   336.228(CFS)
        Given pipe size =     96.00(In.)
        Calculated individual pipe flow  =   336.228(CFS)
        Normal flow depth in pipe =   33.05(In.)
```

Flow top width inside pipe = 91.22(In.)
Critical Depth = 4.64(Ft.)
Pipe flow velocity = 21.95(Ft/s)
Travel time through pipe = 1.11 min.

Pipe length = 1465.00(Ft.) Elevation difference = 30.70(Ft.)
Manning's N = 0.013 No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow = 989.580(CFS)
Given pipe size = 96.00(In.)
Calculated individual pipe flow = 989.580(CFS)
Normal flow depth in pipe = 61.97(In.)
Flow top width inside pipe = 91.84(In.)
Critical Depth = 7.50(Ft.)
Pipe flow velocity = 28.82(Ft/s)
Travel time through pipe = 0.85 min.

********** SCS CONVEX CHANNEL ROUTING **********
Convex method of stream routing data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
where c* = 1 - (1-c)^e and dt = c(length)/velocity
c(v/v+1.7) = 0.9443 Travel time = 0.85 (min.)
dt*(unit time interval) = 5.00(min.), e= 4.4997
dt(routing time-step) = 0.80 (min.), c* = 1.0000

Output hydrograph delayed by 0 unit time increments

++
P R I N T O F S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Out = O(CFS)	In = I	0	247.4	494.8	742.2	989.6
0+ 5	4.0867	4.87	O				
0+10	21.8400	25.07	OI				
0+15	47.6424	51.94	|OI				
0+20	63.1114	65.24	| O				
0+25	75.7862	77.80	| O				
0+30	96.5077	100.07	| OI				
0+35	117.9556	121.36	| O				
0+40	133.1189	135.36	| O				
0+45	143.2555	144.76	| O				
0+50	154.5627	156.43	| O				
0+55	156.7007	156.75	| O				
1+ 0	153.5175	152.90	| O				
1+ 5	162.1204	163.88	| O				
1+10	186.0578	190.28	| O				
1+15	213.3326	217.72	| O				
1+20	229.5760	231.83	| O				
1+25	237.3843	238.44	| O				
1+30	253.7378	256.65	| O				
1+35	281.8336	286.63	| O				
1+40	299.5931	302.06	| O				
1+45	313.1009	315.20	| O				
1+50	343.6308	349.05	| OI				
1+55	375.8596	380.97	| O				
2+ 0	387.2065	388.39	| O				
2+ 5	389.5192	389.73	| O				
2+10	405.0382	407.95	| O				
2+15	455.3551	464.38	| O				
2+20	529.7791	542.24	| O				
2+25	586.1681	594.54	| OI				

```
   2+30     670.2855    684.72  |         |         |      O  |         |
   2+35     829.7590    857.39  |         |         |         |  OI     |
   2+40     968.4278    989.58  |         |         |         |        OI
   2+45     982.1626    980.75  |         |         |         |        O|
   2+50     818.4842    787.57  |         |         |         |I O      |
   2+55     592.6101    555.47  |         |         | IO      |         |
   3+ 0     439.9565    417.95  |         |     IO  |         |         |
   3+ 5     340.5380    325.79  |         |  O      |         |         |
   3+10     251.9215    237.85  |        IO         |         |         |
   3+15     182.9186    172.45  |     IO  |         |         |         |
   3+20     138.6143    132.17  |    O    |         |         |         |
   3+25     109.1378    104.75  |   O     |         |         |         |
   3+30      87.9022     84.69  |  O      |         |         |         |
   3+35      71.6321     69.14  | O       |         |         |         |
   3+40      57.9805     55.85  | O       |         |         |         |
   3+45      46.5598     44.79  |O        |         |         |         |
   3+50      37.0476     35.57  |O        |         |         |         |
   3+55      29.3529     28.17  |O        |         |         |         |
   4+ 0      23.1994     22.25  O         |         |         |         |
   4+ 5      17.0268     16.03  O         |         |         |         |
   4+10      11.1134     10.18  O         |         |         |         |
   4+15       5.9473      5.14  O         |         |         |         |
   4+20       2.8159      2.37  O         |         |         |         |
   4+25       1.5929      1.44  O         |         |         |         |
   4+30       0.7995      0.68  O         |         |         |         |
   4+35       0.2042      0.11  O         |         |         |         |
   4+40       0.0183      0.00  O         |         |         |         |
   4+45       0.0000      0.00  O         |         |         |         |
--------------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =    57
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =      982.163 (CFS)
                  Total volume =      93.219 (Ac.Ft)
           Status of hydrographs being held in storage
                     Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
           Peak (CFS)      0.000     0.000     0.000     0.000     0.000
           Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
      ************************************************************************

      ------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station        3.000 to Point/Station        4.000
      **** ADD/COMBINE/RECOVER HYDROGRAPHS ****
      ______________________________________________________________________
      ********************* HYDROGRAPH INFORMATION **********************

                  From study/file name: A4P3100.rte
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    P R I N T  O F  S T O R M
                  R u n o f f     H y d r o g r a p h
      ----------------------------------------------------------------------
              Hydrograph in   5   Minute intervals (CFS)

      ----------------------------------------------------------------------
  Time(h+m) Add q(CFS)  Tot. Q   0      279.0     558.0     837.0    1116.0
  ----------------------------------------------------------------------
    0+ 5       1.6484      5.74  Q         |         |         |         |
    0+10       7.5620     29.40  qQ        |         |         |         |
    0+15      10.0396     57.68  q Q       |         |         |         |
    0+20      10.3629     73.47  q Q       |         |         |         |
    0+25      14.0787     89.86  q  Q      |         |         |         |
    0+30      17.0433    113.55  q   Q     |         |         |         |
    0+35      20.1166    138.07  q   Q     |         |         |         |
    0+40      20.0711    153.19  q    Q    |         |         |         |
    0+45      22.5338    165.79  q    Q    |         |         |         |
    0+50      23.2542    177.82  q     Q   |         |         |         |
```

```
    0+55      21.2477    177.95  q     Q   |         |         |         |
    1+ 0      21.6405    175.16  q     Q   |         |         |         |
    1+ 5      24.8965    187.02  q     Q   |         |         |         |
    1+10      29.9916    216.05  |q     Q  |         |         |         |
    1+15      32.4409    245.77  |q      Q |         |         |         |
    1+20      32.9601    262.54  |q       Q|         |         |         |
    1+25      33.2151    270.60  |q       Q|         |         |         |
    1+30      38.9389    292.68  |q        Q         |         |         |
    1+35      42.0598    323.89  |q        |Q        |         |         |
    1+40      41.5645    341.16  |q        | Q       |         |         |
    1+45      45.6745    358.78  |q        | Q       |         |         |
    1+50      52.6832    396.31  |q        |   Q     |         |         |
    1+55      53.8743    429.73  |q        |    Q    |         |         |
    2+ 0      52.7267    439.93  |q        |    Q    |         |         |
    2+ 5      53.5655    443.08  |q        |    Q    |         |         |
    2+10      58.1309    463.17  | q       |     Q   |         |         |
    2+15      72.2383    527.59  | q       |       Q |         |         |
    2+20      82.0905    611.87  | q       |         |Q        |         |
    2+25      82.8296    669.00  | q       |         |  Q      |         |
    2+30     112.7971    783.08  |   q     |         |       Q |         |
    2+35     136.2650    966.02  |   q     |         |         |   Q     |
    2+40     147.5988   1116.03  |    q    |         |         |       Q
    2+45     123.0850   1105.25  |   q     |         |         |       Q|
    2+50      76.5420    895.03  | q       |         |         | Q       |
    2+55      52.9400    645.55  |q        |         |  Q      |         |
    3+ 0      41.0669    481.02  |q        |       Q |         |         |
    3+ 5      26.4925    367.03  q         |  Q      |         |         |
    3+10      15.7298    267.65  q        Q|         |         |         |
    3+15      10.4678    193.39  q     Q   |         |         |         |
    3+20       6.7939    145.41  q    Q    |         |         |         |
    3+25       4.3309    113.47  q   Q     |         |         |         |
    3+30       2.3210     90.22  q  Q      |         |         |         |
    3+35       0.9266     72.56  q Q       |         |         |         |
    3+40       0.5331     58.51  q Q       |         |         |         |
    3+45       0.2942     46.85  qQ        |         |         |         |
    3+50       0.0590     37.11  qQ        |         |         |         |
    3+55       0.0000     29.35  qQ        |         |         |         |
    4+ 0       0.0000     23.20  Q         |         |         |         |
    4+ 5       0.0000     17.03  Q         |         |         |         |
    4+10       0.0000     11.11  Q         |         |         |         |
    4+15       0.0000      5.95  Q         |         |         |         |
    4+20       0.0000      2.82  Q         |         |         |         |
    4+25       0.0000      1.59  Q         |         |         |         |
    4+30       0.0000      0.80  Q         |         |         |         |
    4+35       0.0000      0.20  Q         |         |         |         |
    4+40       0.0000      0.02  Q         |         |         |         |
    4+45       0.0000      0.00  Q         |         |         |         |
--------------------------------------------------------------------------
      ***************************HYDROGRAPH DATA**************************
                  Number of intervals =    57
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =     1116.027 (CFS)
                  Total volume =     105.462 (Ac.Ft)
           Status of hydrographs being held in storage
                    Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
           Peak (CFS)      0.000     0.000     0.000     0.000     0.000
           Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ****************************************************************************

      ----------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

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Study date 01/26/24 File: A1P6100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6062

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

THE TRAILS PROJECT
Proposed Condition Watershed A1
100-Year 6-Hour Storm
L.Johnson, 1/26/2024

Drainage Area = 348.40(Ac.) = 0.544 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 348.40(Ac.) = 0.544 Sq. Mi.
Length along longest watercourse = 12683.00(Ft.)
Length along longest watercourse measured to centroid = 5913.00(Ft.)
Length along longest watercourse = 2.402 Mi.
Length along longest watercourse measured to centroid = 1.120 Mi.
Difference in elevation = 488.30(Ft.)
Slope along watercourse = 203.2819 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.191 Hr.
Lag time = 11.46 Min.
25% of lag time = 2.87 Min.
40% of lag time = 4.58 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
348.40	1.52	529.57

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
348.40	3.55	1236.82

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.520(In)
Area Averaged 100-Year Rainfall = 3.550(In)

Point rain (area averaged) = 3.550(In)
Areal adjustment factor = 99.88 %
Adjusted average point rain = 3.546(In)

Sub-Area Data:
Area(Ac.) Runoff Index Impervious %

9.950	32.00	0.500
0.291	65.00	0.400
78.661	56.00	0.500
9.273	56.00	0.150
2.547	68.00	0.000
9.211	77.00	0.400
148.426	69.00	0.500
3.701	69.00	0.150
5.093	75.00	0.000
74.669	75.00	0.500
3.003	75.00	0.150
3.575	84.00	0.000

Total Area Entered = 348.40(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.500	0.408	0.029	0.012
65.0	65.0	0.416	0.400	0.266	0.001	0.000
56.0	56.0	0.511	0.500	0.281	0.226	0.063
56.0	56.0	0.511	0.150	0.442	0.027	0.012
68.0	68.0	0.384	0.000	0.384	0.007	0.003
77.0	77.0	0.279	0.400	0.179	0.026	0.005
69.0	69.0	0.373	0.500	0.205	0.426	0.087
69.0	69.0	0.373	0.150	0.322	0.011	0.003
75.0	75.0	0.303	0.000	0.303	0.015	0.004
75.0	75.0	0.303	0.500	0.167	0.214	0.036
75.0	75.0	0.303	0.150	0.262	0.009	0.002
84.0	84.0	0.198	0.000	0.198	0.010	0.002
					Sum (F) =	0.230

Area averaged mean soil loss (F) (In/Hr) = 0.230
Minimum soil loss rate ((In/Hr)) = 0.115
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.528

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

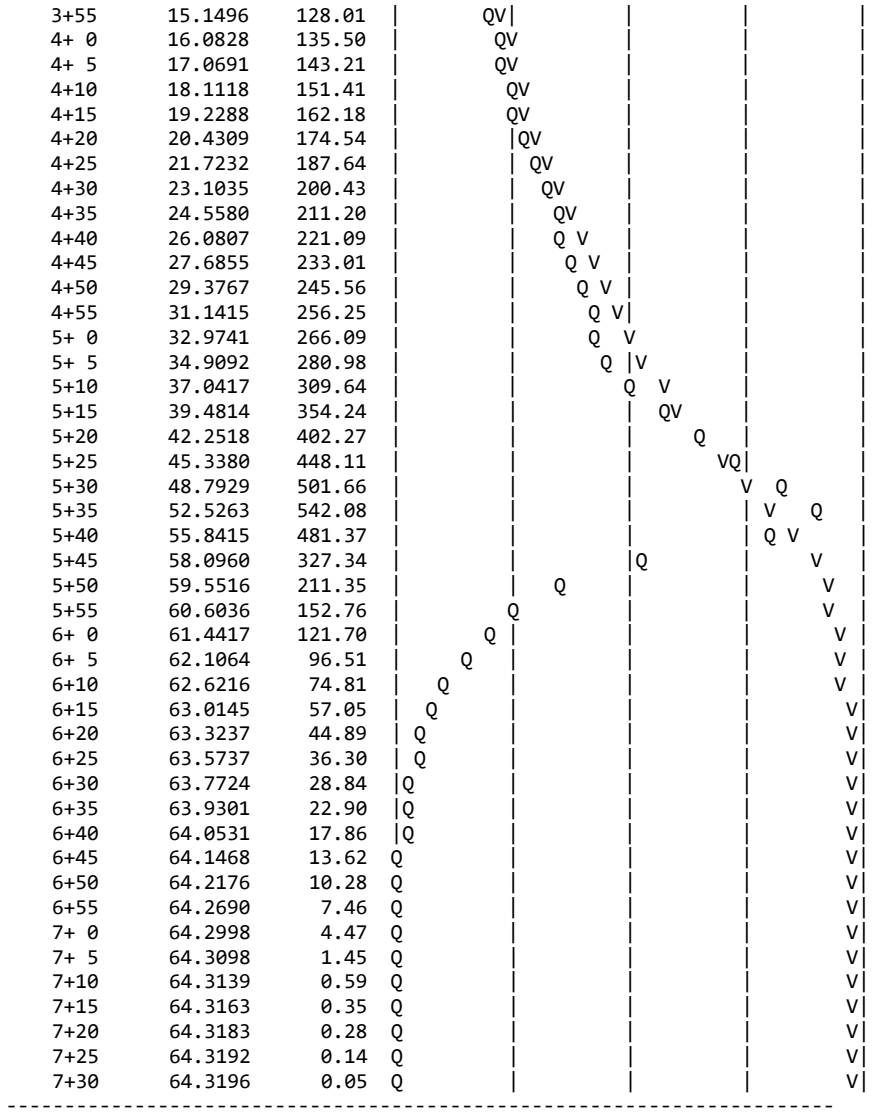
Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	43.626	4.969	17.449
2	0.167	87.252	20.802	73.040
3	0.250	130.878	28.270	99.262
4	0.333	174.504	15.664	54.999
5	0.417	218.130	7.644	26.841
6	0.500	261.756	5.115	17.960
7	0.583	305.382	3.816	13.400
8	0.667	349.008	2.851	10.010
9	0.750	392.634	2.284	8.020
10	0.833	436.260	1.739	6.106
11	0.917	479.886	1.383	4.856
12	1.000	523.512	1.262	4.433
13	1.083	567.138	0.983	3.453
14	1.167	610.764	0.812	2.852
15	1.250	654.390	0.659	2.315
16	1.333	698.016	0.507	1.780
17	1.417	741.642	0.436	1.532
18	1.500	785.268	0.436	1.532
19	1.583	828.894	0.365	1.283
			Sum = 100.000	Sum= 351.122

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)

1	0.08	0.50	0.213	0.230	0.112	0.10
2	0.17	0.60	0.255	0.230	---	0.03
3	0.25	0.60	0.255	0.230	---	0.03
4	0.33	0.60	0.255	0.230	---	0.03
5	0.42	0.60	0.255	0.230	---	0.03
6	0.50	0.70	0.298	0.230	---	0.07
7	0.58	0.70	0.298	0.230	---	0.07
8	0.67	0.70	0.298	0.230	---	0.07
9	0.75	0.70	0.298	0.230	---	0.07
10	0.83	0.70	0.298	0.230	---	0.07
11	0.92	0.70	0.298	0.230	---	0.07
12	1.00	0.80	0.340	0.230	---	0.11
13	1.08	0.80	0.340	0.230	---	0.11
14	1.17	0.80	0.340	0.230	---	0.11
15	1.25	0.80	0.340	0.230	---	0.11
16	1.33	0.80	0.340	0.230	---	0.11
17	1.42	0.80	0.340	0.230	---	0.11
18	1.50	0.80	0.340	0.230	---	0.11
19	1.58	0.80	0.340	0.230	---	0.11
20	1.67	0.80	0.340	0.230	---	0.11
21	1.75	0.80	0.340	0.230	---	0.11
22	1.83	0.80	0.340	0.230	---	0.11
23	1.92	0.80	0.340	0.230	---	0.11
24	2.00	0.90	0.383	0.230	---	0.15
25	2.08	0.80	0.340	0.230	---	0.11
26	2.17	0.90	0.383	0.230	---	0.15
27	2.25	0.90	0.383	0.230	---	0.15
28	2.33	0.90	0.383	0.230	---	0.15
29	2.42	0.90	0.383	0.230	---	0.15
30	2.50	0.90	0.383	0.230	---	0.15
31	2.58	0.90	0.383	0.230	---	0.15
32	2.67	0.90	0.383	0.230	---	0.15
33	2.75	1.00	0.425	0.230	---	0.20
34	2.83	1.00	0.425	0.230	---	0.20
35	2.92	1.00	0.425	0.230	---	0.20
36	3.00	1.00	0.425	0.230	---	0.20
37	3.08	1.00	0.425	0.230	---	0.20
38	3.17	1.10	0.468	0.230	---	0.24
39	3.25	1.10	0.468	0.230	---	0.24
40	3.33	1.10	0.468	0.230	---	0.24
41	3.42	1.20	0.511	0.230	---	0.28
42	3.50	1.30	0.553	0.230	---	0.32
43	3.58	1.40	0.596	0.230	---	0.37
44	3.67	1.40	0.596	0.230	---	0.37
45	3.75	1.50	0.638	0.230	---	0.41
46	3.83	1.50	0.638	0.230	---	0.41
47	3.92	1.60	0.681	0.230	---	0.45
48	4.00	1.60	0.681	0.230	---	0.45
49	4.08	1.70	0.723	0.230	---	0.49
50	4.17	1.80	0.766	0.230	---	0.54
51	4.25	1.90	0.808	0.230	---	0.58
52	4.33	2.00	0.851	0.230	---	0.62
53	4.42	2.10	0.894	0.230	---	0.66
54	4.50	2.10	0.894	0.230	---	0.66
55	4.58	2.20	0.936	0.230	---	0.71
56	4.67	2.30	0.979	0.230	---	0.75
57	4.75	2.40	1.021	0.230	---	0.79
58	4.83	2.40	1.021	0.230	---	0.79
59	4.92	2.50	1.064	0.230	---	0.83
60	5.00	2.60	1.106	0.230	---	0.88
61	5.08	3.10	1.319	0.230	---	1.09
62	5.17	3.60	1.532	0.230	---	1.30
63	5.25	3.90	1.659	0.230	---	1.43
64	5.33	4.20	1.787	0.230	---	1.56
65	5.42	4.70	2.000	0.230	---	1.77
66	5.50	5.60	2.383	0.230	---	2.15
67	5.58	1.90	0.808	0.230	---	0.58
68	5.67	0.90	0.383	0.230	---	0.15
69	5.75	0.60	0.255	0.230	---	0.03

```
70   5.83     0.50      0.213         0.230     0.112         0.10
71   5.92     0.30      0.128         0.230     0.067         0.06
72   6.00     0.20      0.085         0.230     0.045         0.04
   Sum =     100.0                                 Sum =    26.6
      Flood volume = Effective rainfall      2.22(In)
       times area     348.4(Ac.)/[(In)/(Ft.)] =      64.3(Ac.Ft)
      Total soil loss =      1.33(In)
      Total soil loss =    38.625(Ac.Ft)
      Total rainfall =      3.55(In)
      Flood volume =     2801760.2 Cubic Feet
      Total soil loss =     1682519.4 Cubic Feet
      --------------------------------------------------------------------
       Peak flow rate of this hydrograph =    542.085(CFS)
      --------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      --------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      --------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0      150.0     300.0     450.0     600.0
-------------------------------------------------------------------------
  0+ 5       0.0121      1.75  Q         |         |         |         |
  0+10       0.0657      7.78  Q         |         |         |         |
  0+15       0.1502     12.28  Q         |         |         |         |
  0+20       0.2216     10.36  Q         |         |         |         |
  0+25       0.2831      8.94  Q         |         |         |         |
  0+30       0.3484      9.47  Q         |         |         |         |
  0+35       0.4350     12.58  Q         |         |         |         |
  0+40       0.5507     16.81  VQ        |         |         |         |
  0+45       0.6830     19.20  VQ        |         |         |         |
  0+50       0.8232     20.36  VQ        |         |         |         |
  0+55       0.9689     21.15  VQ        |         |         |         |
  1+ 0       1.1241     22.55  VQ        |         |         |         |
  1+ 5       1.3039     26.10  VQ        |         |         |         |
  1+10       1.5152     30.69  V Q       |         |         |         |
  1+15       1.7447     33.31  |VQ       |         |         |         |
  1+20       1.9834     34.67  |VQ       |         |         |         |
  1+25       2.2289     35.64  |VQ       |         |         |         |
  1+30       2.4795     36.40  |VQ       |         |         |         |
  1+35       2.7340     36.96  |VQ       |         |         |         |
  1+40       2.9909     37.30  |VQ       |         |         |         |
  1+45       3.2501     37.64  | Q       |         |         |         |
  1+50       3.5112     37.91  | Q       |         |         |         |
  1+55       3.7741     38.16  | Q       |         |         |         |
  2+ 0       4.0434     39.11  | Q       |         |         |         |
  2+ 5       4.3299     41.60  | Q       |         |         |         |
  2+10       4.6298     43.55  | Q       |         |         |         |
  2+15       4.9387     44.85  | QV      |         |         |         |
  2+20       5.2689     47.95  |  Q      |         |         |         |
  2+25       5.6131     49.97  |  Q      |         |         |         |
  2+30       5.9642     50.98  |  Q      |         |         |         |
  2+35       6.3196     51.60  |  Q      |         |         |         |
  2+40       6.6783     52.08  |  QV     |         |         |         |
  2+45       7.0444     53.17  |  QV     |         |         |         |
  2+50       7.4340     56.57  |  QV     |         |         |         |
  2+55       7.8544     61.04  |   Q     |         |         |         |
  3+ 0       8.2920     63.54  |   QV    |         |         |         |
  3+ 5       8.7386     64.85  |   QV    |         |         |         |
  3+10       9.1965     66.48  |   QV    |         |         |         |
  3+15       9.6804     70.26  |   Q V   |         |         |         |
  3+20      10.1969     75.00  |   Q V   |         |         |         |
  3+25      10.7375     78.50  |    QV   |         |         |         |
  3+30      11.3147     83.81  |    Q V  |         |         |         |
  3+35      11.9543     92.87  |     QV  |         |         |         |
  3+40      12.6661    103.36  |     QV  |         |         |         |
  3+45      13.4401    112.38  |      QV |         |         |         |
  3+50      14.2680    120.21  |       Q |         |         |         |
```



3+55	15.1496	128.01	
4+ 0	16.0828	135.50	
4+ 5	17.0691	143.21	
4+10	18.1118	151.41	
4+15	19.2288	162.18	
4+20	20.4309	174.54	
4+25	21.7232	187.64	
4+30	23.1035	200.43	
4+35	24.5580	211.20	
4+40	26.0807	221.09	
4+45	27.6855	233.01	
4+50	29.3767	245.56	
4+55	31.1415	256.25	
5+ 0	32.9741	266.09	
5+ 5	34.9092	280.98	
5+10	37.0417	309.64	
5+15	39.4814	354.24	
5+20	42.2518	402.27	
5+25	45.3380	448.11	
5+30	48.7929	501.66	
5+35	52.5263	542.08	
5+40	55.8415	481.37	
5+45	58.0960	327.34	
5+50	59.5516	211.35	
5+55	60.6036	152.76	
6+ 0	61.4417	121.70	
6+ 5	62.1064	96.51	
6+10	62.6216	74.81	
6+15	63.0145	57.05	
6+20	63.3237	44.89	
6+25	63.5737	36.30	
6+30	63.7724	28.84	
6+35	63.9301	22.90	
6+40	64.0531	17.86	
6+45	64.1468	13.62	
6+50	64.2176	10.28	
6+55	64.2690	7.46	
7+ 0	64.2998	4.47	
7+ 5	64.3098	1.45	
7+10	64.3139	0.59	
7+15	64.3163	0.35	
7+20	64.3183	0.28	
7+25	64.3192	0.14	
7+30	64.3196	0.05	

U n i t H y d r o g r a p h A n a l y s i s

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Study date 01/26/24 File: A4P6100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6062

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

THE TRAILS PROJECT
Proposed Condition Watershed A4
100-Year 6-Hour Storm
L.Johnson, 1/26/2024

Drainage Area = 80.20(Ac.) = 0.125 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 80.20(Ac.) = 0.125 Sq. Mi.
Length along longest watercourse = 5129.00(Ft.)
Length along longest watercourse measured to centroid = 2243.00(Ft.)
Length along longest watercourse = 0.971 Mi.
Length along longest watercourse measured to centroid = 0.425 Mi.
Difference in elevation = 201.00(Ft.)
Slope along watercourse = 206.9175 Ft./Mi.
Average Manning's 'N' = 0.018
Lag time = 0.112 Hr.
Lag time = 6.72 Min.
25% of lag time = 1.68 Min.
40% of lag time = 2.69 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
80.20	1.52	121.90

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
80.20	3.55	284.71

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.520(In)
Area Averaged 100-Year Rainfall = 3.550(In)

Point rain (area averaged) = 3.550(In)
Areal adjustment factor = 99.97 %
Adjusted average point rain = 3.549(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

8.668	56.00	0.500
3.597	68.00	0.000
6.117	77.00	0.400
34.495	69.00	0.500
1.398	75.00	0.000
0.262	69.00	0.900
2.741	82.00	0.400
17.330	75.00	0.500
5.149	84.00	0.000
0.443	75.00	0.900

Total Area Entered = 80.20(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.500	0.281	0.108	0.030
68.0	68.0	0.384	0.000	0.384	0.045	0.017
77.0	77.0	0.279	0.400	0.179	0.076	0.014
69.0	69.0	0.373	0.500	0.205	0.430	0.088
75.0	75.0	0.303	0.000	0.303	0.017	0.005
69.0	69.0	0.373	0.900	0.071	0.003	0.000
82.0	82.0	0.221	0.400	0.142	0.034	0.005
75.0	75.0	0.303	0.500	0.167	0.216	0.036
84.0	84.0	0.198	0.000	0.198	0.064	0.013
75.0	75.0	0.303	0.900	0.058	0.006	0.000
					Sum (F) =	0.209

Area averaged mean soil loss (F) (In/Hr) = 0.209
Minimum soil loss rate ((In/Hr)) = 0.104
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.557

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	74.372	11.766	9.510
2	0.167	148.744	42.208	34.115
3	0.250	223.117	21.676	17.520
4	0.333	297.489	8.644	6.987
5	0.417	371.861	5.235	4.231
6	0.500	446.233	3.397	2.746
7	0.583	520.606	2.354	1.903
8	0.667	594.978	1.737	1.404
9	0.750	669.350	1.223	0.988
10	0.833	743.722	0.826	0.667
11	0.917	818.094	0.935	0.755
			Sum = 100.000	Sum= 80.827

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.213	0.209	---	0.00
2	0.17	0.60	0.256	0.209	---	0.05
3	0.25	0.60	0.256	0.209	---	0.05
4	0.33	0.60	0.256	0.209	---	0.05
5	0.42	0.60	0.256	0.209	---	0.05
6	0.50	0.70	0.298	0.209	---	0.09
7	0.58	0.70	0.298	0.209	---	0.09
8	0.67	0.70	0.298	0.209	---	0.09
9	0.75	0.70	0.298	0.209	---	0.09
10	0.83	0.70	0.298	0.209	---	0.09
11	0.92	0.70	0.298	0.209	---	0.09
12	1.00	0.80	0.341	0.209	---	0.13

13	1.08	0.80	0.341	0.209	---	0.13
14	1.17	0.80	0.341	0.209	---	0.13
15	1.25	0.80	0.341	0.209	---	0.13
16	1.33	0.80	0.341	0.209	---	0.13
17	1.42	0.80	0.341	0.209	---	0.13
18	1.50	0.80	0.341	0.209	---	0.13
19	1.58	0.80	0.341	0.209	---	0.13
20	1.67	0.80	0.341	0.209	---	0.13
21	1.75	0.80	0.341	0.209	---	0.13
22	1.83	0.80	0.341	0.209	---	0.13
23	1.92	0.80	0.341	0.209	---	0.13
24	2.00	0.90	0.383	0.209	---	0.17
25	2.08	0.80	0.341	0.209	---	0.13
26	2.17	0.90	0.383	0.209	---	0.17
27	2.25	0.90	0.383	0.209	---	0.17
28	2.33	0.90	0.383	0.209	---	0.17
29	2.42	0.90	0.383	0.209	---	0.17
30	2.50	0.90	0.383	0.209	---	0.17
31	2.58	0.90	0.383	0.209	---	0.17
32	2.67	0.90	0.383	0.209	---	0.17
33	2.75	1.00	0.426	0.209	---	0.22
34	2.83	1.00	0.426	0.209	---	0.22
35	2.92	1.00	0.426	0.209	---	0.22
36	3.00	1.00	0.426	0.209	---	0.22
37	3.08	1.00	0.426	0.209	---	0.22
38	3.17	1.10	0.468	0.209	---	0.26
39	3.25	1.10	0.468	0.209	---	0.26
40	3.33	1.10	0.468	0.209	---	0.26
41	3.42	1.20	0.511	0.209	---	0.30
42	3.50	1.30	0.554	0.209	---	0.34
43	3.58	1.40	0.596	0.209	---	0.39
44	3.67	1.40	0.596	0.209	---	0.39
45	3.75	1.50	0.639	0.209	---	0.43
46	3.83	1.50	0.639	0.209	---	0.43
47	3.92	1.60	0.681	0.209	---	0.47
48	4.00	1.60	0.681	0.209	---	0.47
49	4.08	1.70	0.724	0.209	---	0.52
50	4.17	1.80	0.767	0.209	---	0.56
51	4.25	1.90	0.809	0.209	---	0.60
52	4.33	2.00	0.852	0.209	---	0.64
53	4.42	2.10	0.894	0.209	---	0.69
54	4.50	2.10	0.894	0.209	---	0.69
55	4.58	2.20	0.937	0.209	---	0.73
56	4.67	2.30	0.980	0.209	---	0.77
57	4.75	2.40	1.022	0.209	---	0.81
58	4.83	2.40	1.022	0.209	---	0.81
59	4.92	2.50	1.065	0.209	---	0.86
60	5.00	2.60	1.107	0.209	---	0.90
61	5.08	3.10	1.320	0.209	---	1.11
62	5.17	3.60	1.533	0.209	---	1.32
63	5.25	3.90	1.661	0.209	---	1.45
64	5.33	4.20	1.789	0.209	---	1.58
65	5.42	4.70	2.002	0.209	---	1.79
66	5.50	5.60	2.385	0.209	---	2.18
67	5.58	1.90	0.809	0.209	---	0.60
68	5.67	0.90	0.383	0.209	---	0.17
69	5.75	0.60	0.256	0.209	---	0.05
70	5.83	0.50	0.213	0.209	---	0.00
71	5.92	0.30	0.128	0.209	0.071	0.06
72	6.00	0.20	0.085	0.209	0.047	0.04
Sum =		100.0			Sum =	27.9

Flood volume = Effective rainfall 2.32(In)
times area 80.2(Ac.)/[(In)/(Ft.)] = 15.5(Ac.Ft)
Total soil loss = 1.23(In)
Total soil loss = 8.207(Ac.Ft)
Total rainfall = 3.55(In)
Flood volume = 675717.8 Cubic Feet
Total soil loss = 357494.6 Cubic Feet

Peak flow rate of this hydrograph = 137.628(CFS)

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0
0+ 5	0.0003	0.04	Q				
0+10	0.0043	0.59	Q				
0+15	0.0188	2.11	Q				
0+20	0.0387	2.89	Q				
0+25	0.0608	3.20	Q				
0+30	0.0869	3.80	Q				
0+35	0.1240	5.38	VQ				
0+40	0.1667	6.21	VQ				
0+45	0.2120	6.57	VQ				
0+50	0.2588	6.80	VQ				
0+55	0.3067	6.95	VQ				
1+ 0	0.3581	7.46	VQ				
1+ 5	0.4199	8.98	|Q				
1+10	0.4872	9.77	|Q				
1+15	0.5567	10.09	|VQ				
1+20	0.6276	10.31	|VQ				
1+25	0.6994	10.42	|VQ				
1+30	0.7718	10.50	|VQ				
1+35	0.8445	10.56	| Q				
1+40	0.9175	10.61	| Q				
1+45	0.9908	10.63	| Q				
1+50	1.0642	10.67	| Q				
1+55	1.1377	10.67	| Q				
2+ 0	1.2139	11.07	| QV				
2+ 5	1.2974	12.12	| QV				
2+10	1.3788	11.82	| QV				
2+15	1.4671	12.82	| QV				
2+20	1.5597	13.45	| Q V				
2+25	1.6540	13.69	| Q V				
2+30	1.7492	13.83	| Q V				
2+35	1.8452	13.93	| Q V				
2+40	1.9415	13.99	| Q V				
2+45	2.0410	14.44	| Q V				
2+50	2.1507	15.94	| Q V				
2+55	2.2656	16.68	| Q V				
3+ 0	2.3828	17.01	| Q V				
3+ 5	2.5012	17.19	| Q V				
3+10	2.6232	17.72	| Q V				
3+15	2.7558	19.25	| Q V				
3+20	2.8939	20.06	| Q V				
3+25	3.0372	20.80	| Q V				
3+30	3.1947	22.87	| Q V				
3+35	3.3712	25.62	| Q V				
3+40	3.5654	28.20	| Q V				
3+45	3.7713	29.89	| Q V				
3+50	3.9915	31.98	| Q V				
3+55	4.2225	33.54	| Q V				
4+ 0	4.4676	35.58	| Q |V				
4+ 5	4.7231	37.10	| Q | V				
4+10	4.9951	39.50	| Q | V				
4+15	5.2877	42.47	| Q | V				
4+20	5.6018	45.61	| Q| V				
4+25	5.9382	48.85	| Q| V				
4+30	6.2945	51.73	| Q V				
4+35	6.6639	53.64	| Q V				
4+40	7.0514	56.26	| |Q V				
4+45	7.4603	59.38	| |Q V|				
4+50	7.8887	62.20	| | Q V				

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    4+55       8.3300     64.08  |         | Q       |V        |         |
    5+ 0       8.7893     66.69  |         |  Q      | V       |         |
    5+ 5       9.2811     71.40  |         |   Q     |  V      |         |
    5+10       9.8462     82.06  |         |     Q   |    V    |         |
    5+15      10.5003     94.97  |         |       Q |      V  |         |
    5+20      11.2316    106.19  |         |         |Q      V |         |
    5+25      12.0409    117.51  |         |         |  Q      |V        |
    5+30      12.9586    133.25  |         |         |     Q   |  V      |
    5+35      13.9065    137.63  |         |         |      Q  |    V    |
    5+40      14.5240     89.66  |         |      Q  |         |      V  |
    5+45      14.8755     51.04  |         |Q        |         |       V |
    5+50      15.0876     30.81  |     Q   |         |         |       V |
    5+55      15.2256     20.03  |   Q     |         |         |        V|
    6+ 0      15.3308     15.27  |  Q      |         |         |        V|
    6+ 5      15.4073     11.11  | Q       |         |         |        V|
    6+10      15.4550      6.92  |Q        |         |         |        V|
    6+15      15.4842      4.25  Q         |         |         |        V|
    6+20      15.5022      2.61  Q         |         |         |        V|
    6+25      15.5079      0.83  Q         |         |         |        V|
    6+30      15.5101      0.32  Q         |         |         |        V|
    6+35      15.5111      0.15  Q         |         |         |        V|
    6+40      15.5117      0.08  Q         |         |         |        V|
    6+45      15.5122      0.07  Q         |         |         |        V|
    6+50      15.5123      0.03  Q         |         |         |        V|
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U n i t H y d r o g r a p h A n a l y s i s

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Study date 01/26/24 File: A5P6100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6062

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

THE TRAILS PROJECT
Proposed Condition Watershed A5
100-Year 6-Hour Storm
L.Johnson, 1/26/2024

Drainage Area = 269.60(Ac.) = 0.421 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 269.60(Ac.) = 0.421 Sq. Mi.
Length along longest watercourse = 12158.00(Ft.)
Length along longest watercourse measured to centroid = 5865.00(Ft.)
Length along longest watercourse = 2.303 Mi.
Length along longest watercourse measured to centroid = 1.111 Mi.
Difference in elevation = 541.50(Ft.)
Slope along watercourse = 235.1637 Ft./Mi.
Average Manning's 'N' = 0.017
Lag time = 0.207 Hr.
Lag time = 12.39 Min.
25% of lag time = 3.10 Min.
40% of lag time = 4.96 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
269.60	1.52	409.79

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
269.60	3.55	957.08

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.520(In)
Area Averaged 100-Year Rainfall = 3.550(In)

Point rain (area averaged) = 3.550(In)
Areal adjustment factor = 99.91 %
Adjusted average point rain = 3.547(In)

Sub-Area Data:
Area(Ac.) Runoff Index Impervious %

7.225	56.00	0.500
2.906	68.00	0.000
17.598	77.00	0.400
112.492	69.00	0.500
1.756	69.00	0.150
15.784	75.00	0.000
3.363	69.00	0.900
8.502	82.00	0.400
80.838	75.00	0.500
17.101	84.00	0.000
2.035	75.00	0.900

Total Area Entered = 269.60(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.500	0.281	0.027	0.008
68.0	68.0	0.384	0.000	0.384	0.011	0.004
77.0	77.0	0.279	0.400	0.179	0.065	0.012
69.0	69.0	0.373	0.500	0.205	0.417	0.086
69.0	69.0	0.373	0.150	0.322	0.007	0.002
75.0	75.0	0.303	0.000	0.303	0.059	0.018
69.0	69.0	0.373	0.900	0.071	0.012	0.001
82.0	82.0	0.221	0.400	0.142	0.032	0.004
75.0	75.0	0.303	0.500	0.167	0.300	0.050
84.0	84.0	0.198	0.000	0.198	0.063	0.013
75.0	75.0	0.303	0.900	0.058	0.008	0.000
					Sum (F) =	0.197

Area averaged mean soil loss (F) (In/Hr) = 0.197
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.556

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

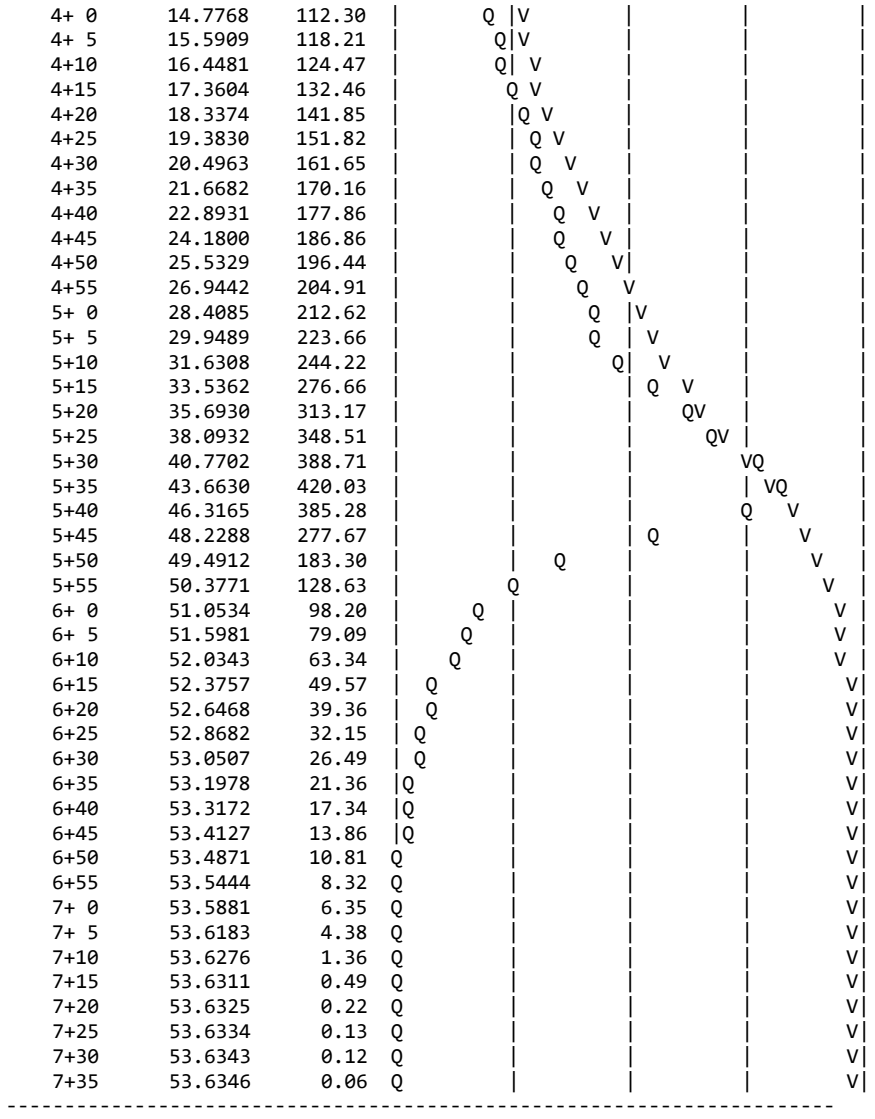
Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	40.340	4.412	11.988
2	0.167	80.679	18.156	49.330
3	0.250	121.019	26.933	73.178
4	0.333	161.358	17.278	46.947
5	0.417	201.698	8.430	22.904
6	0.500	242.037	5.344	14.519
7	0.583	282.377	4.002	10.873
8	0.667	322.717	3.053	8.294
9	0.750	363.056	2.433	6.610
10	0.833	403.396	1.921	5.219
11	0.917	443.735	1.494	4.059
12	1.000	484.075	1.262	3.429
13	1.083	524.414	1.152	3.130
14	1.167	564.754	0.902	2.450
15	1.250	605.094	0.757	2.058
16	1.333	645.433	0.626	1.702
17	1.417	685.773	0.501	1.362
18	1.500	726.112	0.404	1.099
19	1.583	766.452	0.403	1.096
20	1.667	806.791	0.537	1.460
			Sum = 100.000	Sum= 271.706

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.213	0.197	---	0.02

2	0.17	0.60	0.255	0.197	---	0.06
3	0.25	0.60	0.255	0.197	---	0.06
4	0.33	0.60	0.255	0.197	---	0.06
5	0.42	0.60	0.255	0.197	---	0.06
6	0.50	0.70	0.298	0.197	---	0.10
7	0.58	0.70	0.298	0.197	---	0.10
8	0.67	0.70	0.298	0.197	---	0.10
9	0.75	0.70	0.298	0.197	---	0.10
10	0.83	0.70	0.298	0.197	---	0.10
11	0.92	0.70	0.298	0.197	---	0.10
12	1.00	0.80	0.340	0.197	---	0.14
13	1.08	0.80	0.340	0.197	---	0.14
14	1.17	0.80	0.340	0.197	---	0.14
15	1.25	0.80	0.340	0.197	---	0.14
16	1.33	0.80	0.340	0.197	---	0.14
17	1.42	0.80	0.340	0.197	---	0.14
18	1.50	0.80	0.340	0.197	---	0.14
19	1.58	0.80	0.340	0.197	---	0.14
20	1.67	0.80	0.340	0.197	---	0.14
21	1.75	0.80	0.340	0.197	---	0.14
22	1.83	0.80	0.340	0.197	---	0.14
23	1.92	0.80	0.340	0.197	---	0.14
24	2.00	0.90	0.383	0.197	---	0.19
25	2.08	0.80	0.340	0.197	---	0.14
26	2.17	0.90	0.383	0.197	---	0.19
27	2.25	0.90	0.383	0.197	---	0.19
28	2.33	0.90	0.383	0.197	---	0.19
29	2.42	0.90	0.383	0.197	---	0.19
30	2.50	0.90	0.383	0.197	---	0.19
31	2.58	0.90	0.383	0.197	---	0.19
32	2.67	0.90	0.383	0.197	---	0.19
33	2.75	1.00	0.426	0.197	---	0.23
34	2.83	1.00	0.426	0.197	---	0.23
35	2.92	1.00	0.426	0.197	---	0.23
36	3.00	1.00	0.426	0.197	---	0.23
37	3.08	1.00	0.426	0.197	---	0.23
38	3.17	1.10	0.468	0.197	---	0.27
39	3.25	1.10	0.468	0.197	---	0.27
40	3.33	1.10	0.468	0.197	---	0.27
41	3.42	1.20	0.511	0.197	---	0.31
42	3.50	1.30	0.553	0.197	---	0.36
43	3.58	1.40	0.596	0.197	---	0.40
44	3.67	1.40	0.596	0.197	---	0.40
45	3.75	1.50	0.638	0.197	---	0.44
46	3.83	1.50	0.638	0.197	---	0.44
47	3.92	1.60	0.681	0.197	---	0.48
48	4.00	1.60	0.681	0.197	---	0.48
49	4.08	1.70	0.724	0.197	---	0.53
50	4.17	1.80	0.766	0.197	---	0.57
51	4.25	1.90	0.809	0.197	---	0.61
52	4.33	2.00	0.851	0.197	---	0.65
53	4.42	2.10	0.894	0.197	---	0.70
54	4.50	2.10	0.894	0.197	---	0.70
55	4.58	2.20	0.936	0.197	---	0.74
56	4.67	2.30	0.979	0.197	---	0.78
57	4.75	2.40	1.021	0.197	---	0.82
58	4.83	2.40	1.021	0.197	---	0.82
59	4.92	2.50	1.064	0.197	---	0.87
60	5.00	2.60	1.107	0.197	---	0.91
61	5.08	3.10	1.319	0.197	---	1.12
62	5.17	3.60	1.532	0.197	---	1.34
63	5.25	3.90	1.660	0.197	---	1.46
64	5.33	4.20	1.788	0.197	---	1.59
65	5.42	4.70	2.000	0.197	---	1.80
66	5.50	5.60	2.383	0.197	---	2.19
67	5.58	1.90	0.809	0.197	---	0.61
68	5.67	0.90	0.383	0.197	---	0.19
69	5.75	0.60	0.255	0.197	---	0.06
70	5.83	0.50	0.213	0.197	---	0.02

```
71   5.92     0.30      0.128         0.197     0.071         0.06
72   6.00     0.20      0.085         0.197     0.047         0.04
   Sum =     100.0                                 Sum =     28.6
      Flood volume = Effective rainfall      2.39(In)
       times area     269.6(Ac.)/[(In)/(Ft.)] =      53.6(Ac.Ft)
      Total soil loss =      1.16(In)
      Total soil loss =    26.048(Ac.Ft)
      Total rainfall =      3.55(In)
      Flood volume =     2336325.3 Cubic Feet
      Total soil loss =     1134655.4 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =    420.032(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0      125.0     250.0     375.0     500.0
-------------------------------------------------------------------------
  0+ 5       0.0013      0.19  Q         |         |         |         |
  0+10       0.0115      1.48  Q         |         |         |         |
  0+15       0.0440      4.73  Q         |         |         |         |
  0+20       0.1031      8.58  Q         |         |         |         |
  0+25       0.1785     10.94  Q         |         |         |         |
  0+30       0.2657     12.66  VQ        |         |         |         |
  0+35       0.3728     15.55  VQ        |         |         |         |
  0+40       0.5054     19.26  VQ        |         |         |         |
  0+45       0.6550     21.71  VQ        |         |         |         |
  0+50       0.8137     23.05  VQ        |         |         |         |
  0+55       0.9787     23.96  VQ        |         |         |         |
  1+ 0       1.1520     25.16  V Q       |         |         |         |
  1+ 5       1.3435     27.81  |VQ       |         |         |         |
  1+10       1.5596     31.38  |VQ       |         |         |         |
  1+15       1.7919     33.73  |VQ       |         |         |         |
  1+20       2.0329     35.00  |VQ       |         |         |         |
  1+25       2.2799     35.86  |VQ       |         |         |         |
  1+30       2.5314     36.53  |VQ       |         |         |         |
  1+35       2.7866     37.05  | Q       |         |         |         |
  1+40       3.0448     37.49  | Q       |         |         |         |
  1+45       3.3054     37.84  | VQ      |         |         |         |
  1+50       3.5676     38.07  | VQ      |         |         |         |
  1+55       3.8312     38.27  | VQ      |         |         |         |
  2+ 0       4.0995     38.96  |  Q      |         |         |         |
  2+ 5       4.3799     40.71  |  Q      |         |         |         |
  2+10       4.6714     42.33  |  Q      |         |         |         |
  2+15       4.9702     43.38  |  Q      |         |         |         |
  2+20       5.2838     45.53  |  Q      |         |         |         |
  2+25       5.6090     47.22  |  QV     |         |         |         |
  2+30       5.9402     48.09  |  QV     |         |         |         |
  2+35       6.2753     48.66  |  QV     |         |         |         |
  2+40       6.6132     49.05  |  QV     |         |         |         |
  2+45       6.9565     49.86  |  Q V    |         |         |         |
  2+50       7.3160     52.19  |   QV    |         |         |         |
  2+55       7.6982     55.50  |   QV    |         |         |         |
  3+ 0       8.0953     57.66  |   Q V   |         |         |         |
  3+ 5       8.4999     58.75  |   Q V   |         |         |         |
  3+10       8.9131     60.00  |   Q V   |         |         |         |
  3+15       9.3446     62.65  |    QV   |         |         |         |
  3+20       9.8005     66.19  |    Q V  |         |         |         |
  3+25      10.2760     69.05  |    Q V  |         |         |         |
  3+30      10.7782     72.91  |    Q  V |         |         |         |
  3+35      11.3256     79.49  |     Q V |         |         |         |
  3+40      11.9269     87.30  |     Q V |         |         |         |
  3+45      12.5774     94.45  |      Q V|         |         |         |
  3+50      13.2697    100.53  |       QV|         |         |         |
  3+55      14.0033    106.52  |       Q V         |         |         |
```


4+ 0 14.7768 112.30
4+ 5 15.5909 118.21
4+10 16.4481 124.47
4+15 17.3604 132.46
4+20 18.3374 141.85
4+25 19.3830 151.82
4+30 20.4963 161.65
4+35 21.6682 170.16
4+40 22.8931 177.86
4+45 24.1800 186.86
4+50 25.5329 196.44
4+55 26.9442 204.91
5+ 0 28.4085 212.62
5+ 5 29.9489 223.66
5+10 31.6308 244.22
5+15 33.5362 276.66
5+20 35.6930 313.17
5+25 38.0932 348.51
5+30 40.7702 388.71
5+35 43.6630 420.03
5+40 46.3165 385.28
5+45 48.2288 277.67
5+50 49.4912 183.30
5+55 50.3771 128.63
6+ 0 51.0534 98.20
6+ 5 51.5981 79.09
6+10 52.0343 63.34
6+15 52.3757 49.57
6+20 52.6468 39.36
6+25 52.8682 32.15
6+30 53.0507 26.49
6+35 53.1978 21.36
6+40 53.3172 17.34
6+45 53.4127 13.86
6+50 53.4871 10.81
6+55 53.5444 8.32
7+ 0 53.5881 6.35
7+ 5 53.6183 4.38
7+10 53.6276 1.36
7+15 53.6311 0.49
7+20 53.6325 0.22
7+25 53.6334 0.13
7+30 53.6343 0.12
7+35 53.6346 0.06

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 01/26/24

THE TRAILS PROJECT: Proposed Condition - No Detention Routing
100-Year 6-Hour Storm
L.Johnson, 1/26/2024

Program License Serial Number 6062

********** HYDROGRAPH INFORMATION **********

From study/file name: A5P6100.rte

**********HYDROGRAPH DATA**********

Number of intervals = 91
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 420.032 (CFS)
Total volume = 53.635 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++++++++++

Process from Point/Station 2.000 to Point/Station 3.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

****

********** HYDROGRAPH INFORMATION **********

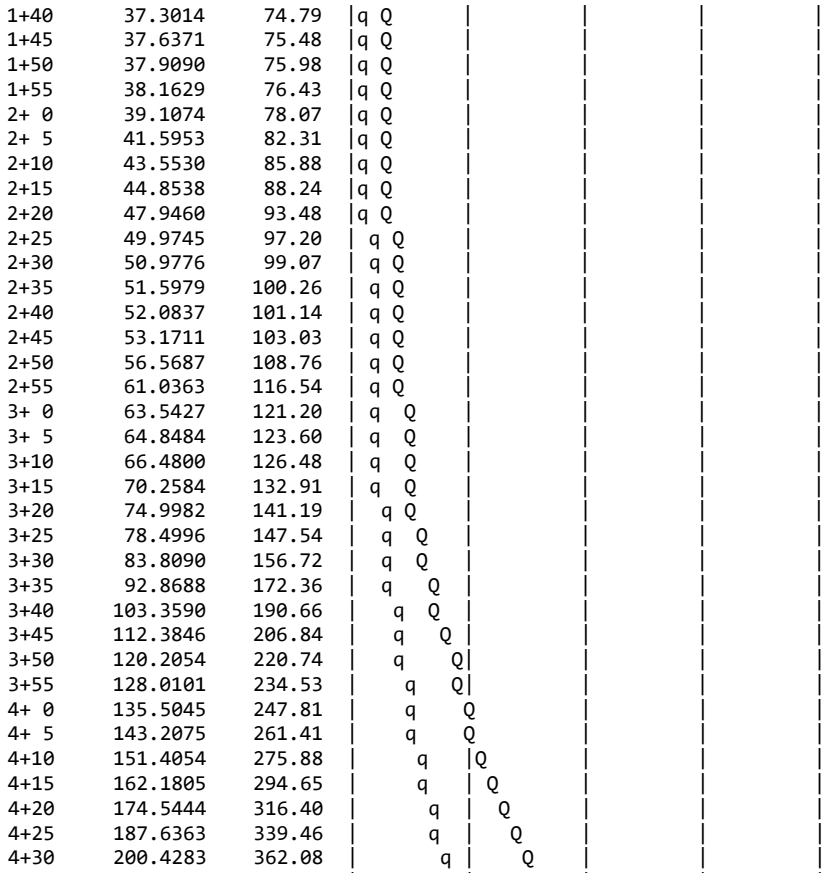
From study/file name: A1P6100.rte

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P R I N T O F S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Add q(CFS)	Tot. Q	0	240.5	481.1	721.6	962.1
0+ 5	1.7530	1.94	Q				
0+10	7.7830	9.26	Q				
0+15	12.2792	17.01	Q				
0+20	10.3623	18.95	Q				
0+25	8.9353	19.88	Q				
0+30	9.4701	22.13	Q				
0+35	12.5791	28.13	qQ				
0+40	16.8058	36.06	qQ				
0+45	19.2024	40.92	qQ				
0+50	20.3571	43.41	qQ				
0+55	21.1518	45.11	qQ				
1+ 0	22.5463	47.70	qQ				
1+ 5	26.0964	53.90	|qQ				
1+10	30.6911	62.07	|qQ				
1+15	33.3112	67.05	|qQ				
1+20	34.6658	69.66	|qQ				
1+25	35.6395	71.49	|qQ				
1+30	36.3960	72.92	|q Q				
1+35	36.9576	74.01	|q Q				

1+40	37.3014	74.79					
1+45	37.6371	75.48					
1+50	37.9090	75.98					
1+55	38.1629	76.43					
2+ 0	39.1074	78.07					
2+ 5	41.5953	82.31					
2+10	43.5530	85.88					
2+15	44.8538	88.24					
2+20	47.9460	93.48					
2+25	49.9745	97.20					
2+30	50.9776	99.07					
2+35	51.5979	100.26					
2+40	52.0837	101.14					
2+45	53.1711	103.03					
2+50	56.5687	108.76					
2+55	61.0363	116.54					
3+ 0	63.5427	121.20					
3+ 5	64.8484	123.60					
3+10	66.4800	126.48					
3+15	70.2584	132.91					
3+20	74.9982	141.19					
3+25	78.4996	147.54					
3+30	83.8090	156.72					
3+35	92.8688	172.36					
3+40	103.3590	190.66					
3+45	112.3846	206.84					
3+50	120.2054	220.74					
3+55	128.0101	234.53					
4+ 0	135.5045	247.81					
4+ 5	143.2075	261.41					
4+10	151.4054	275.88					
4+15	162.1805	294.65					
4+20	174.5444	316.40					
4+25	187.6363	339.46					
4+30	200.4283	362.08					
4+35	211.1962	381.36					
4+40	221.0925	398.95					
4+45	233.0089	419.87					
4+50	245.5641	442.01					
4+55	256.2519	461.16					
5+ 0	266.0926	478.72					
5+ 5	280.9816	504.64					
5+10	309.6356	553.86					
5+15	354.2437	630.90					
5+20	402.2667	715.44					
5+25	448.1116	796.62					
5+30	501.6592	890.36					
5+35	542.0846	962.12					
5+40	481.3702	866.65					
5+45	327.3447	605.01					
5+50	211.3525	394.66					
5+55	152.7590	281.39					
6+ 0	121.6960	219.90					
6+ 5	96.5072	175.59					
6+10	74.8092	138.15					
6+15	57.0524	106.62					
6+20	44.8871	84.25					
6+25	36.3049	68.46					
6+30	28.8436	55.34					
6+35	22.9008	44.26					
6+40	17.8588	35.20					
6+45	13.6166	27.48					
6+50	10.2784	21.09					
6+55	7.4631	15.78					
7+ 0	4.4741	10.82					
7+ 5	1.4495	5.83					
7+10	0.5898	1.95					
7+15	0.3505	0.84					
7+20	0.2828	0.50					

```
    7+25       0.1389      0.27  Q         |         |         |         |
    7+30       0.0516      0.18  Q         |         |         |         |
    7+35       0.0000      0.06  Q         |         |         |         |
----------------------------------------------------------------------
        ***************************HYDROGRAPH DATA**************************
                    Number of intervals =    91
                    Time interval =    5.0 (Min.)
                    Maximum/Peak flow rate =      962.117 (CFS)
                    Total volume =     117.954 (Ac.Ft)
            Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
        ******************************************************************************

        ------------------------------------------------------------------


        ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
        Process from Point/Station        3.000 to Point/Station        4.000
        **** STREAM ROUTING SCS CONVEX METHOD ****
        ________________________________________________________________________
        HYDROGRAPH STREAM ROUTING DATA:
        Length of stream =   1465.00 (Ft.)
        Elevation difference =   30.70 (Ft.)
        Slope of channel =  0.020956 (Vert/Horiz)
        Channel type - Pipe


        Pipe length  =  1465.00(Ft.)   Elevation difference =  30.70(Ft.)
        Manning's N = 0.013   No. of pipes = 1
        Pipe evaluation using mean flow rate of hydrograph
        Required pipe flow  =   223.744(CFS)
        Given pipe size =     96.00(In.)
        Calculated individual pipe flow  =   223.744(CFS)
        Normal flow depth in pipe =   26.74(In.)
        Flow top width inside pipe =   86.07(In.)
        Critical Depth =    3.75(Ft.)
        Pipe flow velocity =     19.57(Ft/s)
        Travel time through pipe =    1.25 min.


        Pipe length  =  1465.00(Ft.)   Elevation difference =  30.70(Ft.)
        Manning's N = 0.013   No. of pipes = 1
        Pipe evaluation using maximum flow rate of hydrograph
        Required pipe flow  =   962.117(CFS)
        Given pipe size =     96.00(In.)
        Calculated individual pipe flow  =   962.117(CFS)
        Normal flow depth in pipe =   60.84(In.)
        Flow top width inside pipe =   92.50(In.)
        Critical Depth =    7.46(Ft.)
        Pipe flow velocity =     28.66(Ft/s)
        Travel time through pipe =    0.85 min.


        ********************** SCS CONVEX CHANNEL ROUTING ********************
        Convex method of stream routing  data items:
        Using equation: Outflow =
        O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
                  where c* = 1 - (1-c)^e and dt = c(length)/velocity
                  c(v/v+1.7) =   0.9440   Travel time =   0.85 (min.)
                dt*(unit time interval) =   5.00(min.),  e=   4.4787
                dt(routing time-step) =   0.80 (min.),   c* =   1.0000

        Output hydrograph delayed by 0  unit time increments


        ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                         P R I N T  O F  S T O R M
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R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Out = O(CFS)	In = I	0	240.5	481.1	721.6	962.1
0+ 5	1.6295	1.94	O				
0+10	8.0821	9.26	O				
0+15	15.7616	17.01	O				
0+20	18.6345	18.95	O				
0+25	19.7289	19.88	O				
0+30	21.7664	22.13	O				
0+35	27.1624	28.13	|O				
0+40	34.7872	36.06	|O				
0+45	40.1361	40.92	|O				
0+50	43.0092	43.41	|O				
0+55	44.8360	45.11	|O				
1+ 0	47.2868	47.70	|O				
1+ 5	52.9063	53.90	| O				
1+10	60.7544	62.07	| O				
1+15	66.2450	67.05	| O				
1+20	69.2418	69.66	| O				
1+25	71.2001	71.49	| O				
1+30	72.6931	72.92	| O				
1+35	73.8317	74.01	| O				
1+40	74.6626	74.79	| O				
1+45	75.3696	75.48	| O				
1+50	75.9029	75.98	| O				
1+55	76.3587	76.43	| O				
2+ 0	77.8025	78.07	| O				
2+ 5	81.6274	82.31	| O				
2+10	85.3069	85.88	| O				
2+15	87.8591	88.24	| O				
2+20	92.6375	93.48	| O				
2+25	96.6001	97.20	| O				
2+30	98.7671	99.07	| O				
2+35	100.0672	100.26	| O				
2+40	100.9947	101.14	| O				
2+45	102.7233	103.03	| O				
2+50	107.8363	108.76	| O				
2+55	115.2859	116.54	| O				
3+ 0	120.4522	121.20	| O				
3+ 5	123.2150	123.60	| O				
3+10	126.0149	126.48	| O				
3+15	131.8745	132.91	| O				
3+20	139.8590	141.19	| O				
3+25	146.5229	147.54	| O				
3+30	155.2449	156.72	| O				
3+35	169.8455	172.36	| O				
3+40	187.7174	190.66	| O				
3+45	204.2343	206.84	| O				
3+50	218.5001	220.74	| O				
3+55	232.3142	234.53	| O				
4+ 0	245.6723	247.81	| O				
4+ 5	259.2254	261.41	| O				
4+10	273.5509	275.88	| O				
4+15	291.6267	294.65	| O				
4+20	312.8992	316.40	| O				
4+25	335.7511	339.46	| OI				
4+30	358.4410	362.08	| OI				
4+35	378.2549	381.36	| O				
4+40	396.1209	398.95	| O				
4+45	416.5072	419.87	| O				
4+50	438.4485	442.01	| O				
4+55	458.0821	461.16	| O				
5+ 0	475.8922	478.72	| O				
5+ 5	500.4707	504.64	| O				
5+10	545.9435	553.86	| OI				

```
   5+15     618.5123    630.90  |         |         |    OI   |         |
   5+20     701.8428    715.44  |         |         |        O|         |
   5+25     783.5621    796.62  |         |         |         | OI      |
   5+30     875.2878    890.36  |         |         |         |     OI  |
   5+35     950.5771    962.12  |         |         |         |        OI
   5+40     882.0045    866.65  |         |         |         |     O   |
   5+45     647.0910    605.01  |         |         |    IO   |         |
   5+50     428.4867    394.66  |         |     IO  |         |         |
   5+55     299.6079    281.39  |         |IO       |         |         |
   6+ 0     229.7868    219.90  |        O|         |         |         |
   6+ 5     182.7177    175.59  |      O  |         |         |         |
   6+10     144.1684    138.15  |    O    |         |         |         |
   6+15     111.6910    106.62  |   O     |         |         |         |
   6+20      87.8462     84.25  |  O      |         |         |         |
   6+25      70.9975     68.46  | O       |         |         |         |
   6+30      57.4472     55.34  | O       |         |         |         |
   6+35      46.0434     44.26  |O        |         |         |         |
   6+40      36.6579     35.20  |O        |         |         |         |
   6+45      28.7202     27.48  |O        |         |         |         |
   6+50      22.1133     21.09  O         |         |         |         |
   6+55      16.6356     15.78  O         |         |         |         |
   7+ 0      11.6180     10.82  O         |         |         |         |
   7+ 5       6.6350      5.83  O         |         |         |         |
   7+10       2.5718      1.95  O         |         |         |         |
   7+15       1.0221      0.84  O         |         |         |         |
   7+20       0.5547      0.50  O         |         |         |         |
   7+25       0.3031      0.27  O         |         |         |         |
   7+30       0.1902      0.18  O         |         |         |         |
   7+35       0.0746      0.06  O         |         |         |         |
   7+40       0.0089      0.00  O         |         |         |         |
   7+45       0.0000      0.00  O         |         |         |         |
--------------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                    Number of intervals =    93
                    Time interval =    5.0 (Min.)
                    Maximum/Peak flow rate =      950.577 (CFS)
                    Total volume =     117.954 (Ac.Ft)
             Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
             Peak (CFS)      0.000     0.000     0.000     0.000     0.000
             Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ************************************************************************

      ------------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station        3.000 to Point/Station        4.000
      **** ADD/COMBINE/RECOVER HYDROGRAPHS ****
      ________________________________________________________________________
      ********************** HYDROGRAPH INFORMATION **********************

                    From study/file name: A4P6100.rte
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                      P R I N T  O F  S T O R M
                    R u n o f f     H y d r o g r a p h
      ------------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals (CFS)

      ------------------------------------------------------------------------
  Time(h+m) Add q(CFS)  Tot. Q   0      272.1     544.1     816.2    1088.2
  ------------------------------------------------------------------------
    0+ 5       0.0393      1.67  Q         |         |         |         |
    0+10       0.5853      8.67  Q         |         |         |         |
    0+15       2.1113     17.87  Q         |         |         |         |
    0+20       2.8867     21.52  Q         |         |         |         |
    0+25       3.2018     22.93  Q         |         |         |         |
    0+30       3.7987     25.57  Q         |         |         |         |
    0+35       5.3772     32.54  qQ        |         |         |         |
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0+40       6.2106     41.00  qQ        |         |         |         |
0+45       6.5722     46.71  qQ        |         |         |         |
0+50       6.7974     49.81  qQ        |         |         |         |
0+55       6.9459     51.78  qQ        |         |         |         |
1+ 0       7.4644     54.75  q Q       |         |         |         |
1+ 5       8.9779     61.88  q Q       |         |         |         |
1+10       9.7665     70.52  q Q       |         |         |         |
1+15      10.0927     76.34  q Q       |         |         |         |
1+20      10.3052     79.55  q Q       |         |         |         |
1+25      10.4222     81.62  q  Q      |         |         |         |
1+30      10.5032     83.20  q  Q      |         |         |         |
1+35      10.5631     84.39  q  Q      |         |         |         |
1+40      10.6052     85.27  q  Q      |         |         |         |
1+45      10.6336     86.00  q  Q      |         |         |         |
1+50      10.6658     86.57  q  Q      |         |         |         |
1+55      10.6658     87.02  q  Q      |         |         |         |
2+ 0      11.0710     88.87  q  Q      |         |         |         |
2+ 5      12.1195     93.75  q  Q      |         |         |         |
2+10      11.8175     97.12  q  Q      |         |         |         |
2+15      12.8224    100.68  q  Q      |         |         |         |
2+20      13.4515    106.09  q  Q      |         |         |         |
2+25      13.6859    110.29  q   Q     |         |         |         |
2+30      13.8303    112.60  q   Q     |         |         |         |
2+35      13.9260    113.99  q   Q     |         |         |         |
2+40      13.9894    114.98  q   Q     |         |         |         |
2+45      14.4408    117.16  q   Q     |         |         |         |
2+50      15.9403    123.78  q   Q     |         |         |         |
2+55      16.6831    131.97  q   Q     |         |         |         |
3+ 0      17.0129    137.47  q    Q    |         |         |         |
3+ 5      17.1932    140.41  q    Q    |         |         |         |
3+10      17.7155    143.73  q    Q    |         |         |         |
3+15      19.2502    151.12  q    Q    |         |         |         |
3+20      20.0565    159.92  q    Q    |         |         |         |
3+25      20.8016    167.32  q     Q   |         |         |         |
3+30      22.8692    178.11  q     Q   |         |         |         |
3+35      25.6238    195.47  q      Q  |         |         |         |
3+40      28.2027    215.92  |q     Q  |         |         |         |
3+45      29.8923    234.13  |q      Q |         |         |         |
3+50      31.9831    250.48  |q       Q|         |         |         |
3+55      33.5416    265.86  |q       Q|         |         |         |
4+ 0      35.5831    281.26  |q        Q         |         |         |
4+ 5      37.0981    296.32  |q        Q         |         |         |
4+10      39.5021    313.05  |q        |Q        |         |         |
4+15      42.4716    334.10  |q        | Q       |         |         |
4+20      45.6122    358.51  |q        |  Q      |         |         |
4+25      48.8509    384.60  |q        |   Q     |         |         |
4+30      51.7344    410.18  |q        |    Q    |         |         |
4+35      53.6365    431.89  |q        |    Q    |         |         |
4+40      56.2597    452.38  | q       |     Q   |         |         |
4+45      59.3776    475.88  | q       |      Q  |         |         |
4+50      62.2039    500.65  | q       |       Q |         |         |
4+55      64.0773    522.16  | q       |        Q|         |         |
5+ 0      66.6938    542.59  | q       |        Q|         |         |
5+ 5      71.4012    571.87  | q       |         |Q        |         |
5+10      82.0583    628.00  |  q      |         |  Q      |         |
5+15      94.9681    713.48  |  q      |         |     Q   |         |
5+20     106.1935    808.04  |  q      |         |      Q  |         |
5+25     117.5109    901.07  |   q     |         |         |  Q      |
5+30     133.2469   1008.53  |   q     |         |         |     Q   |
5+35     137.6278   1088.20  |    q    |         |         |       Q |
5+40      89.6643    971.67  |  q      |         |         |    Q    |
5+45      51.0364    698.13  |q        |         |    Q    |         |
5+50      30.8052    459.29  |q        |     Q   |         |         |
5+55      20.0304    319.64  q         |Q        |         |         |
6+ 0      15.2719    245.06  q        Q|         |         |         |
6+ 5      11.1115    193.83  q      Q  |         |         |         |
6+10       6.9214    151.09  q    Q    |         |         |         |
6+15       4.2507    115.94  q   Q     |         |         |         |
6+20       2.6069     90.45  q  Q      |         |         |         |
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    6+25       0.8337     71.83  q Q       |         |         |         |
    6+30       0.3185     57.77  q Q       |         |         |         |
    6+35       0.1470     46.19  qQ        |         |         |         |
    6+40       0.0782     36.74  qQ        |         |         |         |
    6+45       0.0680     28.79  qQ        |         |         |         |
    6+50       0.0285     22.14  Q         |         |         |         |
    6+55       0.0000     16.64  Q         |         |         |         |
    7+ 0       0.0000     11.62  Q         |         |         |         |
    7+ 5       0.0000      6.63  Q         |         |         |         |
    7+10       0.0000      2.57  Q         |         |         |         |
    7+15       0.0000      1.02  Q         |         |         |         |
    7+20       0.0000      0.55  Q         |         |         |         |
    7+25       0.0000      0.30  Q         |         |         |         |
    7+30       0.0000      0.19  Q         |         |         |         |
    7+35       0.0000      0.07  Q         |         |         |         |
    7+40       0.0000      0.01  Q         |         |         |         |
    7+45       0.0000      0.00  Q         |         |         |         |
--------------------------------------------------------------------------
       ***************************HYDROGRAPH DATA**************************
                      Number of intervals =    93
                      Time interval =    5.0 (Min.)
                      Maximum/Peak flow rate =     1088.205 (CFS)
                      Total volume =     133.467 (Ac.Ft)
              Status of hydrographs being held in storage
                         Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
              Peak (CFS)      0.000     0.000     0.000     0.000     0.000
              Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
       ********************************************************************

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U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004, Version 7.0
Study date 01/26/24 File: A1P24100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6062

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

THE TRAILS PROJECT
Proposed Condition Watershed A1
100-Year 24-Hour Storm
L.Johnson, 1/26/2024

Drainage Area = 348.40(Ac.) = 0.544 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 348.40(Ac.) = 0.544 Sq. Mi.
Length along longest watercourse = 12683.00(Ft.)
Length along longest watercourse measured to centroid = 5913.00(Ft.)
Length along longest watercourse = 2.402 Mi.
Length along longest watercourse measured to centroid = 1.120 Mi.
Difference in elevation = 488.30(Ft.)
Slope along watercourse = 203.2819 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.191 Hr.
Lag time = 11.46 Min.
25% of lag time = 2.87 Min.
40% of lag time = 4.58 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
348.40	2.76	961.58

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
348.40	8.55	2978.82

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.760(In)
Area Averaged 100-Year Rainfall = 8.550(In)

Point rain (area averaged) = 8.550(In)
Areal adjustment factor = 99.93 %
Adjusted average point rain = 8.544(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

9.950	32.00	0.500
0.291	65.00	0.400
78.661	56.00	0.500
9.273	56.00	0.150
2.547	68.00	0.000
9.211	77.00	0.400
148.426	69.00	0.500
3.701	69.00	0.150
5.093	75.00	0.000
74.669	75.00	0.500
3.003	75.00	0.150
3.575	84.00	0.000

Total Area Entered = 348.40(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.500	0.408	0.029	0.012
65.0	65.0	0.416	0.400	0.266	0.001	0.000
56.0	56.0	0.511	0.500	0.281	0.226	0.063
56.0	56.0	0.511	0.150	0.442	0.027	0.012
68.0	68.0	0.384	0.000	0.384	0.007	0.003
77.0	77.0	0.279	0.400	0.179	0.026	0.005
69.0	69.0	0.373	0.500	0.205	0.426	0.087
69.0	69.0	0.373	0.150	0.322	0.011	0.003
75.0	75.0	0.303	0.000	0.303	0.015	0.004
75.0	75.0	0.303	0.500	0.167	0.214	0.036
75.0	75.0	0.303	0.150	0.262	0.009	0.002
84.0	84.0	0.198	0.000	0.198	0.010	0.002
					Sum (F) =	0.230

Area averaged mean soil loss (F) (In/Hr) = 0.230
Minimum soil loss rate ((In/Hr)) = 0.115
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.528

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	43.626	4.969	17.449
2	0.167	87.252	20.802	73.040
3	0.250	130.878	28.270	99.262
4	0.333	174.504	15.664	54.999
5	0.417	218.130	7.644	26.841
6	0.500	261.756	5.115	17.960
7	0.583	305.382	3.816	13.400
8	0.667	349.008	2.851	10.010
9	0.750	392.634	2.284	8.020
10	0.833	436.260	1.739	6.106
11	0.917	479.886	1.383	4.856
12	1.000	523.512	1.262	4.433
13	1.083	567.138	0.983	3.453
14	1.167	610.764	0.812	2.852
15	1.250	654.390	0.659	2.315
16	1.333	698.016	0.507	1.780
17	1.417	741.642	0.436	1.532
18	1.500	785.268	0.436	1.532
19	1.583	828.894	0.365	1.283
			Sum = 100.000	Sum= 351.122

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)

1	0.08	0.07	0.068	0.407	0.036	0.03
2	0.17	0.07	0.068	0.406	0.036	0.03
3	0.25	0.07	0.068	0.404	0.036	0.03
4	0.33	0.10	0.103	0.403	0.054	0.05
5	0.42	0.10	0.103	0.401	0.054	0.05
6	0.50	0.10	0.103	0.400	0.054	0.05
7	0.58	0.10	0.103	0.398	0.054	0.05
8	0.67	0.10	0.103	0.396	0.054	0.05
9	0.75	0.10	0.103	0.395	0.054	0.05
10	0.83	0.13	0.137	0.393	0.072	0.06
11	0.92	0.13	0.137	0.392	0.072	0.06
12	1.00	0.13	0.137	0.390	0.072	0.06
13	1.08	0.10	0.103	0.389	0.054	0.05
14	1.17	0.10	0.103	0.387	0.054	0.05
15	1.25	0.10	0.103	0.386	0.054	0.05
16	1.33	0.10	0.103	0.384	0.054	0.05
17	1.42	0.10	0.103	0.383	0.054	0.05
18	1.50	0.10	0.103	0.381	0.054	0.05
19	1.58	0.10	0.103	0.380	0.054	0.05
20	1.67	0.10	0.103	0.378	0.054	0.05
21	1.75	0.10	0.103	0.376	0.054	0.05
22	1.83	0.13	0.137	0.375	0.072	0.06
23	1.92	0.13	0.137	0.373	0.072	0.06
24	2.00	0.13	0.137	0.372	0.072	0.06
25	2.08	0.13	0.137	0.370	0.072	0.06
26	2.17	0.13	0.137	0.369	0.072	0.06
27	2.25	0.13	0.137	0.367	0.072	0.06
28	2.33	0.13	0.137	0.366	0.072	0.06
29	2.42	0.13	0.137	0.364	0.072	0.06
30	2.50	0.13	0.137	0.363	0.072	0.06
31	2.58	0.17	0.171	0.361	0.090	0.08
32	2.67	0.17	0.171	0.360	0.090	0.08
33	2.75	0.17	0.171	0.359	0.090	0.08
34	2.83	0.17	0.171	0.357	0.090	0.08
35	2.92	0.17	0.171	0.356	0.090	0.08
36	3.00	0.17	0.171	0.354	0.090	0.08
37	3.08	0.17	0.171	0.353	0.090	0.08
38	3.17	0.17	0.171	0.351	0.090	0.08
39	3.25	0.17	0.171	0.350	0.090	0.08
40	3.33	0.17	0.171	0.348	0.090	0.08
41	3.42	0.17	0.171	0.347	0.090	0.08
42	3.50	0.17	0.171	0.345	0.090	0.08
43	3.58	0.17	0.171	0.344	0.090	0.08
44	3.67	0.17	0.171	0.342	0.090	0.08
45	3.75	0.17	0.171	0.341	0.090	0.08
46	3.83	0.20	0.205	0.340	0.108	0.10
47	3.92	0.20	0.205	0.338	0.108	0.10
48	4.00	0.20	0.205	0.337	0.108	0.10
49	4.08	0.20	0.205	0.335	0.108	0.10
50	4.17	0.20	0.205	0.334	0.108	0.10
51	4.25	0.20	0.205	0.332	0.108	0.10
52	4.33	0.23	0.239	0.331	0.126	0.11
53	4.42	0.23	0.239	0.330	0.126	0.11
54	4.50	0.23	0.239	0.328	0.126	0.11
55	4.58	0.23	0.239	0.327	0.126	0.11
56	4.67	0.23	0.239	0.325	0.126	0.11
57	4.75	0.23	0.239	0.324	0.126	0.11
58	4.83	0.27	0.273	0.323	0.144	0.13
59	4.92	0.27	0.273	0.321	0.144	0.13
60	5.00	0.27	0.273	0.320	0.144	0.13
61	5.08	0.20	0.205	0.318	0.108	0.10
62	5.17	0.20	0.205	0.317	0.108	0.10
63	5.25	0.20	0.205	0.316	0.108	0.10
64	5.33	0.23	0.239	0.314	0.126	0.11
65	5.42	0.23	0.239	0.313	0.126	0.11
66	5.50	0.23	0.239	0.312	0.126	0.11
67	5.58	0.27	0.273	0.310	0.144	0.13
68	5.67	0.27	0.273	0.309	0.144	0.13
69	5.75	0.27	0.273	0.307	0.144	0.13

70	5.83	0.27	0.273	0.306	0.144	0.13
71	5.92	0.27	0.273	0.305	0.144	0.13
72	6.00	0.27	0.273	0.303	0.144	0.13
73	6.08	0.30	0.308	0.302	---	0.01
74	6.17	0.30	0.308	0.301	---	0.01
75	6.25	0.30	0.308	0.299	---	0.01
76	6.33	0.30	0.308	0.298	---	0.01
77	6.42	0.30	0.308	0.297	---	0.01
78	6.50	0.30	0.308	0.295	---	0.01
79	6.58	0.33	0.342	0.294	---	0.05
80	6.67	0.33	0.342	0.293	---	0.05
81	6.75	0.33	0.342	0.291	---	0.05
82	6.83	0.33	0.342	0.290	---	0.05
83	6.92	0.33	0.342	0.289	---	0.05
84	7.00	0.33	0.342	0.287	---	0.05
85	7.08	0.33	0.342	0.286	---	0.06
86	7.17	0.33	0.342	0.285	---	0.06
87	7.25	0.33	0.342	0.284	---	0.06
88	7.33	0.37	0.376	0.282	---	0.09
89	7.42	0.37	0.376	0.281	---	0.10
90	7.50	0.37	0.376	0.280	---	0.10
91	7.58	0.40	0.410	0.278	---	0.13
92	7.67	0.40	0.410	0.277	---	0.13
93	7.75	0.40	0.410	0.276	---	0.13
94	7.83	0.43	0.444	0.275	---	0.17
95	7.92	0.43	0.444	0.273	---	0.17
96	8.00	0.43	0.444	0.272	---	0.17
97	8.08	0.50	0.513	0.271	---	0.24
98	8.17	0.50	0.513	0.269	---	0.24
99	8.25	0.50	0.513	0.268	---	0.24
100	8.33	0.50	0.513	0.267	---	0.25
101	8.42	0.50	0.513	0.266	---	0.25
102	8.50	0.50	0.513	0.264	---	0.25
103	8.58	0.53	0.547	0.263	---	0.28
104	8.67	0.53	0.547	0.262	---	0.28
105	8.75	0.53	0.547	0.261	---	0.29
106	8.83	0.57	0.581	0.260	---	0.32
107	8.92	0.57	0.581	0.258	---	0.32
108	9.00	0.57	0.581	0.257	---	0.32
109	9.08	0.63	0.649	0.256	---	0.39
110	9.17	0.63	0.649	0.255	---	0.39
111	9.25	0.63	0.649	0.253	---	0.40
112	9.33	0.67	0.684	0.252	---	0.43
113	9.42	0.67	0.684	0.251	---	0.43
114	9.50	0.67	0.684	0.250	---	0.43
115	9.58	0.70	0.718	0.249	---	0.47
116	9.67	0.70	0.718	0.247	---	0.47
117	9.75	0.70	0.718	0.246	---	0.47
118	9.83	0.73	0.752	0.245	---	0.51
119	9.92	0.73	0.752	0.244	---	0.51
120	10.00	0.73	0.752	0.243	---	0.51
121	10.08	0.50	0.513	0.242	---	0.27
122	10.17	0.50	0.513	0.240	---	0.27
123	10.25	0.50	0.513	0.239	---	0.27
124	10.33	0.50	0.513	0.238	---	0.27
125	10.42	0.50	0.513	0.237	---	0.28
126	10.50	0.50	0.513	0.236	---	0.28
127	10.58	0.67	0.684	0.235	---	0.45
128	10.67	0.67	0.684	0.233	---	0.45
129	10.75	0.67	0.684	0.232	---	0.45
130	10.83	0.67	0.684	0.231	---	0.45
131	10.92	0.67	0.684	0.230	---	0.45
132	11.00	0.67	0.684	0.229	---	0.45
133	11.08	0.63	0.649	0.228	---	0.42
134	11.17	0.63	0.649	0.227	---	0.42
135	11.25	0.63	0.649	0.225	---	0.42
136	11.33	0.63	0.649	0.224	---	0.42
137	11.42	0.63	0.649	0.223	---	0.43
138	11.50	0.63	0.649	0.222	---	0.43

139	11.58	0.57	0.581	0.221	---	0.36
140	11.67	0.57	0.581	0.220	---	0.36
141	11.75	0.57	0.581	0.219	---	0.36
142	11.83	0.60	0.615	0.218	---	0.40
143	11.92	0.60	0.615	0.217	---	0.40
144	12.00	0.60	0.615	0.216	---	0.40
145	12.08	0.83	0.854	0.215	---	0.64
146	12.17	0.83	0.854	0.213	---	0.64
147	12.25	0.83	0.854	0.212	---	0.64
148	12.33	0.87	0.889	0.211	---	0.68
149	12.42	0.87	0.889	0.210	---	0.68
150	12.50	0.87	0.889	0.209	---	0.68
151	12.58	0.93	0.957	0.208	---	0.75
152	12.67	0.93	0.957	0.207	---	0.75
153	12.75	0.93	0.957	0.206	---	0.75
154	12.83	0.97	0.991	0.205	---	0.79
155	12.92	0.97	0.991	0.204	---	0.79
156	13.00	0.97	0.991	0.203	---	0.79
157	13.08	1.13	1.162	0.202	---	0.96
158	13.17	1.13	1.162	0.201	---	0.96
159	13.25	1.13	1.162	0.200	---	0.96
160	13.33	1.13	1.162	0.199	---	0.96
161	13.42	1.13	1.162	0.198	---	0.96
162	13.50	1.13	1.162	0.197	---	0.97
163	13.58	0.77	0.786	0.196	---	0.59
164	13.67	0.77	0.786	0.195	---	0.59
165	13.75	0.77	0.786	0.194	---	0.59
166	13.83	0.77	0.786	0.193	---	0.59
167	13.92	0.77	0.786	0.192	---	0.59
168	14.00	0.77	0.786	0.191	---	0.60
169	14.08	0.90	0.923	0.190	---	0.73
170	14.17	0.90	0.923	0.189	---	0.73
171	14.25	0.90	0.923	0.188	---	0.73
172	14.33	0.87	0.889	0.187	---	0.70
173	14.42	0.87	0.889	0.186	---	0.70
174	14.50	0.87	0.889	0.185	---	0.70
175	14.58	0.87	0.889	0.184	---	0.70
176	14.67	0.87	0.889	0.183	---	0.71
177	14.75	0.87	0.889	0.182	---	0.71
178	14.83	0.83	0.854	0.181	---	0.67
179	14.92	0.83	0.854	0.180	---	0.67
180	15.00	0.83	0.854	0.179	---	0.67
181	15.08	0.80	0.820	0.179	---	0.64
182	15.17	0.80	0.820	0.178	---	0.64
183	15.25	0.80	0.820	0.177	---	0.64
184	15.33	0.77	0.786	0.176	---	0.61
185	15.42	0.77	0.786	0.175	---	0.61
186	15.50	0.77	0.786	0.174	---	0.61
187	15.58	0.63	0.649	0.173	---	0.48
188	15.67	0.63	0.649	0.172	---	0.48
189	15.75	0.63	0.649	0.171	---	0.48
190	15.83	0.63	0.649	0.171	---	0.48
191	15.92	0.63	0.649	0.170	---	0.48
192	16.00	0.63	0.649	0.169	---	0.48
193	16.08	0.13	0.137	0.168	0.072	0.06
194	16.17	0.13	0.137	0.167	0.072	0.06
195	16.25	0.13	0.137	0.166	0.072	0.06
196	16.33	0.13	0.137	0.165	0.072	0.06
197	16.42	0.13	0.137	0.165	0.072	0.06
198	16.50	0.13	0.137	0.164	0.072	0.06
199	16.58	0.10	0.103	0.163	0.054	0.05
200	16.67	0.10	0.103	0.162	0.054	0.05
201	16.75	0.10	0.103	0.161	0.054	0.05
202	16.83	0.10	0.103	0.160	0.054	0.05
203	16.92	0.10	0.103	0.160	0.054	0.05
204	17.00	0.10	0.103	0.159	0.054	0.05
205	17.08	0.17	0.171	0.158	---	0.01
206	17.17	0.17	0.171	0.157	---	0.01
207	17.25	0.17	0.171	0.156	---	0.01

208	17.33	0.17	0.171	0.156	---	0.02
209	17.42	0.17	0.171	0.155	---	0.02
210	17.50	0.17	0.171	0.154	---	0.02
211	17.58	0.17	0.171	0.153	---	0.02
212	17.67	0.17	0.171	0.152	---	0.02
213	17.75	0.17	0.171	0.152	---	0.02
214	17.83	0.13	0.137	0.151	0.072	0.06
215	17.92	0.13	0.137	0.150	0.072	0.06
216	18.00	0.13	0.137	0.149	0.072	0.06
217	18.08	0.13	0.137	0.149	0.072	0.06
218	18.17	0.13	0.137	0.148	0.072	0.06
219	18.25	0.13	0.137	0.147	0.072	0.06
220	18.33	0.13	0.137	0.147	0.072	0.06
221	18.42	0.13	0.137	0.146	0.072	0.06
222	18.50	0.13	0.137	0.145	0.072	0.06
223	18.58	0.10	0.103	0.144	0.054	0.05
224	18.67	0.10	0.103	0.144	0.054	0.05
225	18.75	0.10	0.103	0.143	0.054	0.05
226	18.83	0.07	0.068	0.142	0.036	0.03
227	18.92	0.07	0.068	0.142	0.036	0.03
228	19.00	0.07	0.068	0.141	0.036	0.03
229	19.08	0.10	0.103	0.140	0.054	0.05
230	19.17	0.10	0.103	0.140	0.054	0.05
231	19.25	0.10	0.103	0.139	0.054	0.05
232	19.33	0.13	0.137	0.138	0.072	0.06
233	19.42	0.13	0.137	0.138	0.072	0.06
234	19.50	0.13	0.137	0.137	0.072	0.06
235	19.58	0.10	0.103	0.136	0.054	0.05
236	19.67	0.10	0.103	0.136	0.054	0.05
237	19.75	0.10	0.103	0.135	0.054	0.05
238	19.83	0.07	0.068	0.135	0.036	0.03
239	19.92	0.07	0.068	0.134	0.036	0.03
240	20.00	0.07	0.068	0.133	0.036	0.03
241	20.08	0.10	0.103	0.133	0.054	0.05
242	20.17	0.10	0.103	0.132	0.054	0.05
243	20.25	0.10	0.103	0.132	0.054	0.05
244	20.33	0.10	0.103	0.131	0.054	0.05
245	20.42	0.10	0.103	0.131	0.054	0.05
246	20.50	0.10	0.103	0.130	0.054	0.05
247	20.58	0.10	0.103	0.129	0.054	0.05
248	20.67	0.10	0.103	0.129	0.054	0.05
249	20.75	0.10	0.103	0.128	0.054	0.05
250	20.83	0.07	0.068	0.128	0.036	0.03
251	20.92	0.07	0.068	0.127	0.036	0.03
252	21.00	0.07	0.068	0.127	0.036	0.03
253	21.08	0.10	0.103	0.126	0.054	0.05
254	21.17	0.10	0.103	0.126	0.054	0.05
255	21.25	0.10	0.103	0.125	0.054	0.05
256	21.33	0.07	0.068	0.125	0.036	0.03
257	21.42	0.07	0.068	0.124	0.036	0.03
258	21.50	0.07	0.068	0.124	0.036	0.03
259	21.58	0.10	0.103	0.123	0.054	0.05
260	21.67	0.10	0.103	0.123	0.054	0.05
261	21.75	0.10	0.103	0.123	0.054	0.05
262	21.83	0.07	0.068	0.122	0.036	0.03
263	21.92	0.07	0.068	0.122	0.036	0.03
264	22.00	0.07	0.068	0.121	0.036	0.03
265	22.08	0.10	0.103	0.121	0.054	0.05
266	22.17	0.10	0.103	0.121	0.054	0.05
267	22.25	0.10	0.103	0.120	0.054	0.05
268	22.33	0.07	0.068	0.120	0.036	0.03
269	22.42	0.07	0.068	0.119	0.036	0.03
270	22.50	0.07	0.068	0.119	0.036	0.03
271	22.58	0.07	0.068	0.119	0.036	0.03
272	22.67	0.07	0.068	0.118	0.036	0.03
273	22.75	0.07	0.068	0.118	0.036	0.03
274	22.83	0.07	0.068	0.118	0.036	0.03
275	22.92	0.07	0.068	0.117	0.036	0.03
276	23.00	0.07	0.068	0.117	0.036	0.03

277	23.08	0.07	0.068	0.117	0.036	0.03
278	23.17	0.07	0.068	0.117	0.036	0.03
279	23.25	0.07	0.068	0.116	0.036	0.03
280	23.33	0.07	0.068	0.116	0.036	0.03
281	23.42	0.07	0.068	0.116	0.036	0.03
282	23.50	0.07	0.068	0.116	0.036	0.03
283	23.58	0.07	0.068	0.116	0.036	0.03
284	23.67	0.07	0.068	0.115	0.036	0.03
285	23.75	0.07	0.068	0.115	0.036	0.03
286	23.83	0.07	0.068	0.115	0.036	0.03
287	23.92	0.07	0.068	0.115	0.036	0.03
288	24.00	0.07	0.068	0.115	0.036	0.03
Sum =		100.0			Sum =	62.5

Flood volume = Effective rainfall 5.21(In)
times area 348.4(Ac.)/[(In)/(Ft.)] = 151.3(Ac.Ft)
Total soil loss = 3.33(In)
Total soil loss = 96.806(Ac.Ft)
Total rainfall = 8.54(In)
Flood volume = 6588871.2 Cubic Feet
Total soil loss = 4216887.4 Cubic Feet

Peak flow rate of this hydrograph = 324.749(CFS)

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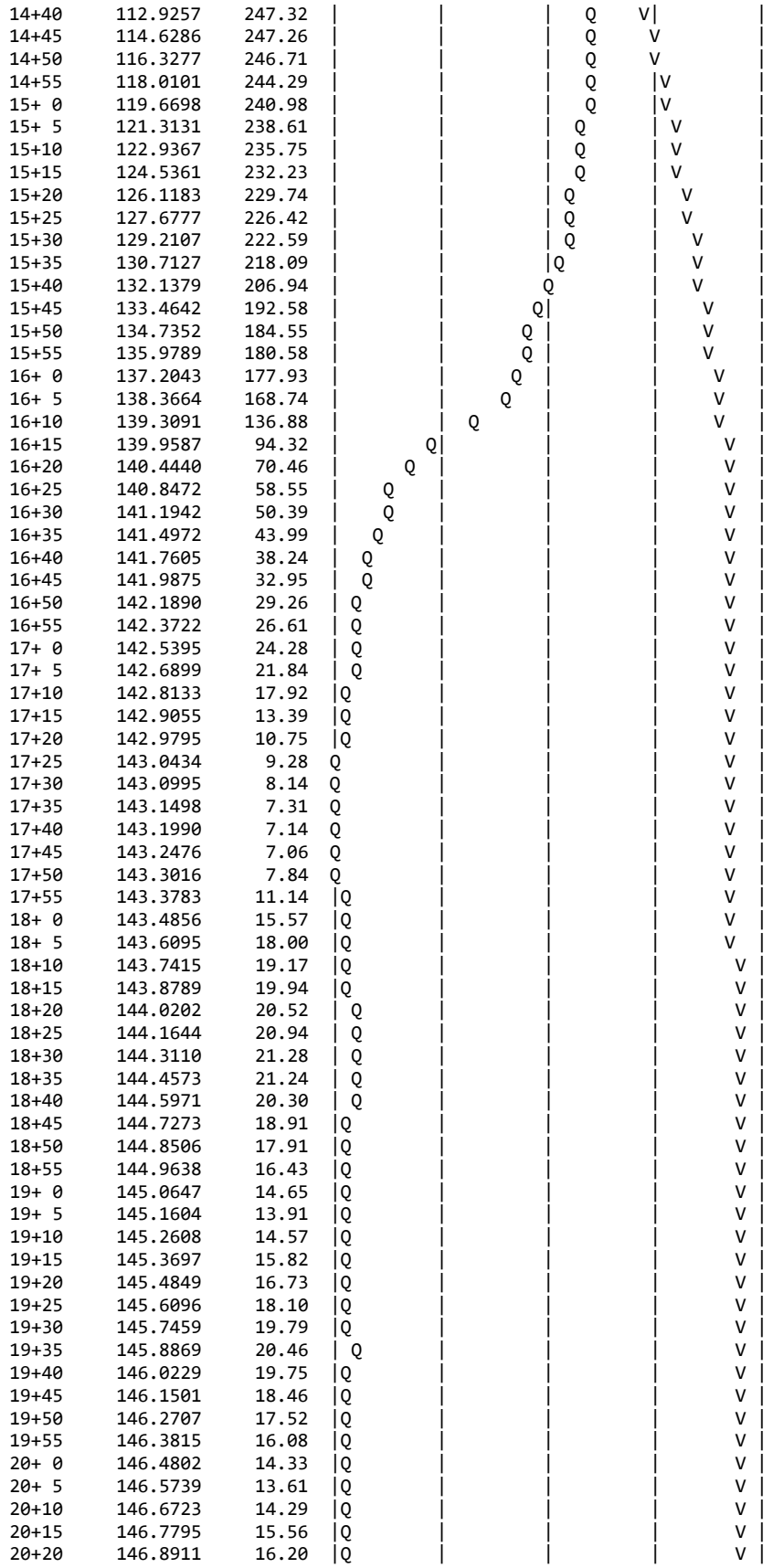
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	100.0	200.0	300.0	400.0
0+ 5	0.0039	0.56	Q	|	|	|	|
0+10	0.0240	2.92	Q	|	|	|	|
0+15	0.0662	6.13	Q	|	|	|	|
0+20	0.1225	8.18	Q	|	|	|	|
0+25	0.1930	10.23	VQ	|	|	|	|
0+30	0.2784	12.41	VQ	|	|	|	|
0+35	0.3730	13.73	VQ	|	|	|	|
0+40	0.4727	14.49	VQ	|	|	|	|
0+45	0.5763	15.03	VQ	|	|	|	|
0+50	0.6846	15.73	VQ	|	|	|	|
0+55	0.8033	17.23	VQ	|	|	|	|
1+ 0	0.9348	19.10	VQ	|	|	|	|
1+ 5	1.0720	19.92	VQ	|	|	|	|
1+10	1.2052	19.34	VQ	|	|	|	|
1+15	1.3304	18.18	VQ	|	|	|	|
1+20	1.4517	17.62	VQ	|	|	|	|
1+25	1.5718	17.44	VQ	|	|	|	|
1+30	1.6914	17.37	VQ	|	|	|	|
1+35	1.8107	17.32	VQ	|	|	|	|
1+40	1.9296	17.26	VQ	|	|	|	|
1+45	2.0483	17.23	VQ	|	|	|	|
1+50	2.1687	17.49	VQ	|	|	|	|
1+55	2.2970	18.63	VQ	|	|	|	|
2+ 0	2.4362	20.20	V Q	|	|	|	|
2+ 5	2.5812	21.06	V Q	|	|	|	|
2+10	2.7291	21.48	V Q	|	|	|	|
2+15	2.8790	21.75	V Q	|	|	|	|
2+20	3.0302	21.96	V Q	|	|	|	|
2+25	3.1824	22.10	V Q	|	|	|	|
2+30	3.3353	22.20	V Q	|	|	|	|
2+35	3.4907	22.56	V Q	|	|	|	|
2+40	3.6547	23.82	V Q	|	|	|	|
2+45	3.8303	25.49	|VQ	|	|	|	|
2+50	4.0124	26.44	|VQ	|	|	|	|
2+55	4.1977	26.92	|VQ	|	|	|	|
3+ 0	4.3854	27.24	|VQ	|	|	|	|
3+ 5	4.5747	27.49	|VQ	|	|	|	|

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3+10       4.7652     27.67  |VQ       |         |         |         |
3+15       4.9569     27.83  |VQ       |         |         |         |
3+20       5.1494     27.95  |VQ       |         |         |         |
3+25       5.3424     28.03  |VQ       |         |         |         |
3+30       5.5359     28.10  |VQ       |         |         |         |
3+35       5.7298     28.15  |VQ       |         |         |         |
3+40       5.9240     28.20  |VQ       |         |         |         |
3+45       6.1185     28.24  |VQ       |         |         |         |
3+50       6.3151     28.55  |VQ       |         |         |         |
3+55       6.5199     29.75  |VQ       |         |         |         |
4+ 0       6.7360     31.38  |V Q      |         |         |         |
4+ 5       6.9584     32.29  |V Q      |         |         |         |
4+10       7.1837     32.72  |V Q      |         |         |         |
4+15       7.4111     33.01  |V Q      |         |         |         |
4+20       7.6418     33.51  | VQ      |         |         |         |
4+25       7.8818     34.85  | VQ      |         |         |         |
4+30       8.1337     36.58  | VQ      |         |         |         |
4+35       8.3924     37.56  | VQ      |         |         |         |
4+40       8.6547     38.08  | VQ      |         |         |         |
4+45       8.9194     38.44  | VQ      |         |         |         |
4+50       9.1879     38.99  | VQ      |         |         |         |
4+55       9.4660     40.38  | V Q     |         |         |         |
5+ 0       9.7563     42.15  | V Q     |         |         |         |
5+ 5      10.0496     42.60  | V Q     |         |         |         |
5+10      10.3305     40.78  | V Q     |         |         |         |
5+15      10.5919     37.96  | VQ      |         |         |         |
5+20      10.8450     36.76  | VQ      |         |         |         |
5+25      11.1018     37.28  | VQ      |         |         |         |
5+30      11.3667     38.47  |  Q      |         |         |         |
5+35      11.6376     39.33  |  Q      |         |         |         |
5+40      11.9180     40.72  |  VQ     |         |         |         |
5+45      12.2104     42.45  |  VQ     |         |         |         |
5+50      12.5095     43.44  |  VQ     |         |         |         |
5+55      12.8120     43.92  |  VQ     |         |         |         |
6+ 0      13.1167     44.23  |  VQ     |         |         |         |
6+ 5      13.4080     42.31  |  VQ     |         |         |         |
6+10      13.6386     33.48  |  Q      |         |         |         |
6+15      13.7867     21.49  | QV      |         |         |         |
6+20      13.8905     15.07  |Q V      |         |         |         |
6+25      13.9742     12.16  |Q V      |         |         |         |
6+30      14.0456     10.36  |Q V      |         |         |         |
6+35      14.1126      9.73  Q  V      |         |         |         |
6+40      14.1916     11.47  |Q V      |         |         |         |
6+45      14.2905     14.35  |Q V      |         |         |         |
6+50      14.4003     15.95  |Q V      |         |         |         |
6+55      14.5155     16.73  |Q V      |         |         |         |
7+ 0      14.6344     17.26  |Q V      |         |         |         |
7+ 5      14.7566     17.75  |Q V      |         |         |         |
7+10      14.8819     18.19  |Q V      |         |         |         |
7+15      15.0102     18.63  |Q V      |         |         |         |
7+20      15.1456     19.66  |Q  V     |         |         |         |
7+25      15.3012     22.59  | Q V     |         |         |         |
7+30      15.4830     26.40  | Q V     |         |         |         |
7+35      15.6847     29.29  | Q V     |         |         |         |
7+40      15.9138     33.26  |  QV     |         |         |         |
7+45      16.1741     37.80  |  QV     |         |         |         |
7+50      16.4581     41.25  |   Q     |         |         |         |
7+55      16.7715     45.51  |   Q     |         |         |         |
8+ 0      17.1179     50.29  |   VQ    |         |         |         |
8+ 5      17.4934     54.52  |   VQ    |         |         |         |
8+10      17.9162     61.39  |   V Q   |         |         |         |
8+15      18.3960     69.67  |   V Q   |         |         |         |
8+20      18.9101     74.66  |    V Q  |         |         |         |
8+25      19.4442     77.54  |    V Q  |         |         |         |
8+30      19.9932     79.72  |    V Q  |         |         |         |
8+35      20.5583     82.06  |    V  Q |         |         |         |
8+40      21.1505     85.99  |    V  Q |         |         |         |
8+45      21.7749     90.66  |    V   Q|         |         |         |
8+50      22.4237     94.21  |    V   Q|         |         |         |
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8+55	23.1024	98.54	V Q|			
9+ 0	23.8147	103.42	V Q			
9+ 5	24.5566	107.73	V Q			
9+10	25.3463	114.66	V |Q			
9+15	26.1932	122.98	V | Q			
9+20	27.0789	128.60	V | Q			
9+25	28.0015	133.97	V | Q			
9+30	28.9626	139.55	V | Q			
9+35	29.9529	143.78	V | Q			
9+40	30.9761	148.57	V | Q			
9+45	32.0352	153.78	V | Q			
9+50	33.1215	157.73	V | Q			
9+55	34.2399	162.39	V| Q			
10+ 0	35.3937	167.53	V| Q			
10+ 5	36.5415	166.66	V| Q			
10+10	37.5832	151.26	V| Q			
10+15	38.4728	129.17	V Q			
10+20	39.2811	117.37	VQ			
10+25	40.0529	112.06	VQ			
10+30	40.8021	108.79	Q			
10+35	41.5559	109.45	Q			
10+40	42.3841	120.26	|VQ			
10+45	43.3208	136.00	|V Q			
10+50	44.3164	144.57	|V Q			
10+55	45.3395	148.55	|V Q			
11+ 0	46.3801	151.09	| V Q			
11+ 5	47.4301	152.47	| V Q			
11+10	48.4732	151.45	| V Q			
11+15	49.5016	149.32	| VQ			
11+20	50.5243	148.50	| VQ			
11+25	51.5466	148.44	| VQ			
11+30	52.5701	148.61	| VQ			
11+35	53.5869	147.64	| Q			
11+40	54.5730	143.18	| Q			
11+45	55.5158	136.90	| QV			
11+50	56.4402	134.22	| QV			
11+55	57.3724	135.36	| Q V			
12+ 0	58.3230	138.02	| Q V			
12+ 5	59.3123	143.65	| QV			
12+10	60.4256	161.65	| VQ			
12+15	61.7051	185.78	| V Q |			
12+20	63.0818	199.90	| V Q|			
12+25	64.5222	209.16	| V Q			
12+30	66.0177	217.14	| V |Q			
12+35	67.5585	223.73	| V | Q			
12+40	69.1590	232.38	| V | Q			
12+45	70.8261	242.07	| V | Q			
12+50	72.5390	248.71	| V| Q			
12+55	74.2946	254.91	| V| Q			
13+ 0	76.0936	261.21	| V Q			
13+ 5	77.9419	268.37	| V Q			
13+10	79.8959	283.72	| |V Q |			
13+15	81.9826	302.98	| |V Q			
13+20	84.1465	314.21	| | V |Q			
13+25	86.3524	320.30	| | V | Q			
13+30	88.5890	324.75	| | V | Q			
13+35	90.8042	321.65	| | V | Q			
13+40	92.8473	296.65	| | V Q|			
13+45	94.6476	261.41	| | VQ |			
13+50	96.3170	242.40	| | QV |			
13+55	97.9264	233.69	| | Q V |			
14+ 0	99.4982	228.22	| | Q V |			
14+ 5	101.0592	226.66	| | Q V |			
14+10	102.6691	233.77	| | Q V |			
14+15	104.3573	245.12	| | Q V |			
14+20	106.0821	250.44	| | Q V |			
14+25	107.8065	250.39	| | Q V |			
14+30	109.5172	248.39	| | Q V |			
14+35	111.2224	247.60	| | Q V|			



14+40	112.9257	247.32	
14+45	114.6286	247.26	
14+50	116.3277	246.71	
14+55	118.0101	244.29	
15+ 0	119.6698	240.98	
15+ 5	121.3131	238.61	
15+10	122.9367	235.75	
15+15	124.5361	232.23	
15+20	126.1183	229.74	
15+25	127.6777	226.42	
15+30	129.2107	222.59	
15+35	130.7127	218.09	
15+40	132.1379	206.94	
15+45	133.4642	192.58	
15+50	134.7352	184.55	
15+55	135.9789	180.58	
16+ 0	137.2043	177.93	
16+ 5	138.3664	168.74	
16+10	139.3091	136.88	
16+15	139.9587	94.32	
16+20	140.4440	70.46	
16+25	140.8472	58.55	
16+30	141.1942	50.39	
16+35	141.4972	43.99	
16+40	141.7605	38.24	
16+45	141.9875	32.95	
16+50	142.1890	29.26	
16+55	142.3722	26.61	
17+ 0	142.5395	24.28	
17+ 5	142.6899	21.84	
17+10	142.8133	17.92	
17+15	142.9055	13.39	
17+20	142.9795	10.75	
17+25	143.0434	9.28	
17+30	143.0995	8.14	
17+35	143.1498	7.31	
17+40	143.1990	7.14	
17+45	143.2476	7.06	
17+50	143.3016	7.84	
17+55	143.3783	11.14	
18+ 0	143.4856	15.57	
18+ 5	143.6095	18.00	
18+10	143.7415	19.17	
18+15	143.8789	19.94	
18+20	144.0202	20.52	
18+25	144.1644	20.94	
18+30	144.3110	21.28	
18+35	144.4573	21.24	
18+40	144.5971	20.30	
18+45	144.7273	18.91	
18+50	144.8506	17.91	
18+55	144.9638	16.43	
19+ 0	145.0647	14.65	
19+ 5	145.1604	13.91	
19+10	145.2608	14.57	
19+15	145.3697	15.82	
19+20	145.4849	16.73	
19+25	145.6096	18.10	
19+30	145.7459	19.79	
19+35	145.8869	20.46	
19+40	146.0229	19.75	
19+45	146.1501	18.46	
19+50	146.2707	17.52	
19+55	146.3815	16.08	
20+ 0	146.4802	14.33	
20+ 5	146.5739	13.61	
20+10	146.6723	14.29	
20+15	146.7795	15.56	
20+20	146.8911	16.20	

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   20+25     147.0044     16.46  |Q        |         |         |       V |
   20+30     147.1188     16.61  |Q        |         |         |       V |
   20+35     147.2340     16.72  |Q        |         |         |       V |
   20+40     147.3496     16.79  |Q        |         |         |       V |
   20+45     147.4655     16.83  |Q        |         |         |       V |
   20+50     147.5797     16.58  |Q        |         |         |        V|
   20+55     147.6859     15.41  |Q        |         |         |        V|
   21+ 0     147.7811     13.82  |Q        |         |         |        V|
   21+ 5     147.8721     13.22  |Q        |         |         |        V|
   21+10     147.9684     13.99  |Q        |         |         |        V|
   21+15     148.0739     15.31  |Q        |         |         |        V|
   21+20     148.1821     15.71  |Q        |         |         |        V|
   21+25     148.2842     14.83  |Q        |         |         |        V|
   21+30     148.3766     13.41  |Q        |         |         |        V|
   21+35     148.4657     12.94  |Q        |         |         |        V|
   21+40     148.5606     13.77  |Q        |         |         |        V|
   21+45     148.6648     15.14  |Q        |         |         |        V|
   21+50     148.7721     15.57  |Q        |         |         |        V|
   21+55     148.8733     14.70  |Q        |         |         |        V|
   22+ 0     148.9649     13.29  |Q        |         |         |        V|
   22+ 5     149.0532     12.83  |Q        |         |         |        V|
   22+10     149.1475     13.68  |Q        |         |         |        V|
   22+15     149.2512     15.06  |Q        |         |         |        V|
   22+20     149.3580     15.50  |Q        |         |         |        V|
   22+25     149.4589     14.65  |Q        |         |         |        V|
   22+30     149.5503     13.27  |Q        |         |         |        V|
   22+35     149.6367     12.55  |Q        |         |         |        V|
   22+40     149.7209     12.22  |Q        |         |         |        V|
   22+45     149.8036     12.00  |Q        |         |         |        V|
   22+50     149.8851     11.84  |Q        |         |         |        V|
   22+55     149.9659     11.73  |Q        |         |         |        V|
   23+ 0     150.0462     11.66  |Q        |         |         |        V|
   23+ 5     150.1261     11.61  |Q        |         |         |        V|
   23+10     150.2057     11.55  |Q        |         |         |        V|
   23+15     150.2849     11.49  |Q        |         |         |        V|
   23+20     150.3637     11.45  |Q        |         |         |        V|
   23+25     150.4424     11.42  |Q        |         |         |        V|
   23+30     150.5210     11.41  |Q        |         |         |        V|
   23+35     150.5995     11.40  |Q        |         |         |        V|
   23+40     150.6779     11.38  |Q        |         |         |        V|
   23+45     150.7561     11.35  |Q        |         |         |        V|
   23+50     150.8341     11.33  |Q        |         |         |        V|
   23+55     150.9122     11.33  |Q        |         |         |        V|
   24+ 0     150.9903     11.33  |Q        |         |         |        V|
   24+ 5     151.0644     10.77  |Q        |         |         |        V|
   24+10     151.1224      8.41  Q         |         |         |        V|
   24+15     151.1582      5.21  Q         |         |         |        V|
   24+20     151.1819      3.43  Q         |         |         |        V|
   24+25     151.1996      2.57  Q         |         |         |        V|
   24+30     151.2133      1.99  Q         |         |         |        V|
   24+35     151.2240      1.55  Q         |         |         |        V|
   24+40     151.2325      1.23  Q         |         |         |        V|
   24+45     151.2392      0.97  Q         |         |         |        V|
   24+50     151.2445      0.78  Q         |         |         |        V|
   24+55     151.2488      0.62  Q         |         |         |        V|
   25+ 0     151.2520      0.48  Q         |         |         |        V|
   25+ 5     151.2546      0.36  Q         |         |         |        V|
   25+10     151.2564      0.27  Q         |         |         |        V|
   25+15     151.2578      0.20  Q         |         |         |        V|
   25+20     151.2588      0.14  Q         |         |         |        V|
   25+25     151.2594      0.09  Q         |         |         |        V|
   25+30     151.2597      0.04  Q         |         |         |         V
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U n i t H y d r o g r a p h A n a l y s i s

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Study date 01/26/24 File: A4P24100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6062

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

THE TRAILS PROJECT
Proposed Condition Watershed A4
100-Year 24-Hour Storm
L.Johnson, 1/26/2024

Drainage Area = 80.20(Ac.) = 0.125 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 80.20(Ac.) = 0.125 Sq. Mi.
Length along longest watercourse = 5129.00(Ft.)
Length along longest watercourse measured to centroid = 2243.00(Ft.)
Length along longest watercourse = 0.971 Mi.
Length along longest watercourse measured to centroid = 0.425 Mi.
Difference in elevation = 201.00(Ft.)
Slope along watercourse = 206.9175 Ft./Mi.
Average Manning's 'N' = 0.018
Lag time = 0.112 Hr.
Lag time = 6.72 Min.
25% of lag time = 1.68 Min.
40% of lag time = 2.69 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
80.20	2.76	221.35

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
80.20	8.55	685.71

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.760(In)
Area Averaged 100-Year Rainfall = 8.550(In)

Point rain (area averaged) = 8.550(In)
Areal adjustment factor = 99.98 %
Adjusted average point rain = 8.549(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

8.668	56.00	0.500
3.597	68.00	0.000
6.117	77.00	0.400
34.495	69.00	0.500
1.398	75.00	0.000
0.262	69.00	0.900
2.741	82.00	0.400
17.330	75.00	0.500
5.149	84.00	0.000
0.443	75.00	0.900

Total Area Entered = 80.20(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.500	0.281	0.108	0.030
68.0	68.0	0.384	0.000	0.384	0.045	0.017
77.0	77.0	0.279	0.400	0.179	0.076	0.014
69.0	69.0	0.373	0.500	0.205	0.430	0.088
75.0	75.0	0.303	0.000	0.303	0.017	0.005
69.0	69.0	0.373	0.900	0.071	0.003	0.000
82.0	82.0	0.221	0.400	0.142	0.034	0.005
75.0	75.0	0.303	0.500	0.167	0.216	0.036
84.0	84.0	0.198	0.000	0.198	0.064	0.013
75.0	75.0	0.303	0.900	0.058	0.006	0.000
					Sum (F) =	0.209

Area averaged mean soil loss (F) (In/Hr) = 0.209
Minimum soil loss rate ((In/Hr)) = 0.104
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.557

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	74.372	11.766	9.510
2	0.167	148.744	42.208	34.115
3	0.250	223.117	21.676	17.520
4	0.333	297.489	8.644	6.987
5	0.417	371.861	5.235	4.231
6	0.500	446.233	3.397	2.746
7	0.583	520.606	2.354	1.903
8	0.667	594.978	1.737	1.404
9	0.750	669.350	1.223	0.988
10	0.833	743.722	0.826	0.667
11	0.917	818.094	0.935	0.755
			Sum = 100.000	Sum= 80.827

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.068	0.370	0.038	0.03
2	0.17	0.07	0.068	0.369	0.038	0.03
3	0.25	0.07	0.068	0.367	0.038	0.03
4	0.33	0.10	0.103	0.366	0.057	0.05
5	0.42	0.10	0.103	0.364	0.057	0.05
6	0.50	0.10	0.103	0.363	0.057	0.05
7	0.58	0.10	0.103	0.362	0.057	0.05
8	0.67	0.10	0.103	0.360	0.057	0.05
9	0.75	0.10	0.103	0.359	0.057	0.05
10	0.83	0.13	0.137	0.357	0.076	0.06
11	0.92	0.13	0.137	0.356	0.076	0.06
12	1.00	0.13	0.137	0.355	0.076	0.06

13	1.08	0.10	0.103	0.353	0.057	0.05
14	1.17	0.10	0.103	0.352	0.057	0.05
15	1.25	0.10	0.103	0.350	0.057	0.05
16	1.33	0.10	0.103	0.349	0.057	0.05
17	1.42	0.10	0.103	0.348	0.057	0.05
18	1.50	0.10	0.103	0.346	0.057	0.05
19	1.58	0.10	0.103	0.345	0.057	0.05
20	1.67	0.10	0.103	0.343	0.057	0.05
21	1.75	0.10	0.103	0.342	0.057	0.05
22	1.83	0.13	0.137	0.341	0.076	0.06
23	1.92	0.13	0.137	0.339	0.076	0.06
24	2.00	0.13	0.137	0.338	0.076	0.06
25	2.08	0.13	0.137	0.337	0.076	0.06
26	2.17	0.13	0.137	0.335	0.076	0.06
27	2.25	0.13	0.137	0.334	0.076	0.06
28	2.33	0.13	0.137	0.332	0.076	0.06
29	2.42	0.13	0.137	0.331	0.076	0.06
30	2.50	0.13	0.137	0.330	0.076	0.06
31	2.58	0.17	0.171	0.328	0.095	0.08
32	2.67	0.17	0.171	0.327	0.095	0.08
33	2.75	0.17	0.171	0.326	0.095	0.08
34	2.83	0.17	0.171	0.324	0.095	0.08
35	2.92	0.17	0.171	0.323	0.095	0.08
36	3.00	0.17	0.171	0.322	0.095	0.08
37	3.08	0.17	0.171	0.320	0.095	0.08
38	3.17	0.17	0.171	0.319	0.095	0.08
39	3.25	0.17	0.171	0.318	0.095	0.08
40	3.33	0.17	0.171	0.316	0.095	0.08
41	3.42	0.17	0.171	0.315	0.095	0.08
42	3.50	0.17	0.171	0.314	0.095	0.08
43	3.58	0.17	0.171	0.312	0.095	0.08
44	3.67	0.17	0.171	0.311	0.095	0.08
45	3.75	0.17	0.171	0.310	0.095	0.08
46	3.83	0.20	0.205	0.309	0.114	0.09
47	3.92	0.20	0.205	0.307	0.114	0.09
48	4.00	0.20	0.205	0.306	0.114	0.09
49	4.08	0.20	0.205	0.305	0.114	0.09
50	4.17	0.20	0.205	0.303	0.114	0.09
51	4.25	0.20	0.205	0.302	0.114	0.09
52	4.33	0.23	0.239	0.301	0.133	0.11
53	4.42	0.23	0.239	0.299	0.133	0.11
54	4.50	0.23	0.239	0.298	0.133	0.11
55	4.58	0.23	0.239	0.297	0.133	0.11
56	4.67	0.23	0.239	0.296	0.133	0.11
57	4.75	0.23	0.239	0.294	0.133	0.11
58	4.83	0.27	0.274	0.293	0.152	0.12
59	4.92	0.27	0.274	0.292	0.152	0.12
60	5.00	0.27	0.274	0.291	0.152	0.12
61	5.08	0.20	0.205	0.289	0.114	0.09
62	5.17	0.20	0.205	0.288	0.114	0.09
63	5.25	0.20	0.205	0.287	0.114	0.09
64	5.33	0.23	0.239	0.286	0.133	0.11
65	5.42	0.23	0.239	0.284	0.133	0.11
66	5.50	0.23	0.239	0.283	0.133	0.11
67	5.58	0.27	0.274	0.282	0.152	0.12
68	5.67	0.27	0.274	0.281	0.152	0.12
69	5.75	0.27	0.274	0.279	0.152	0.12
70	5.83	0.27	0.274	0.278	0.152	0.12
71	5.92	0.27	0.274	0.277	0.152	0.12
72	6.00	0.27	0.274	0.276	0.152	0.12
73	6.08	0.30	0.308	0.274	---	0.03
74	6.17	0.30	0.308	0.273	---	0.03
75	6.25	0.30	0.308	0.272	---	0.04
76	6.33	0.30	0.308	0.271	---	0.04
77	6.42	0.30	0.308	0.270	---	0.04
78	6.50	0.30	0.308	0.268	---	0.04
79	6.58	0.33	0.342	0.267	---	0.07
80	6.67	0.33	0.342	0.266	---	0.08
81	6.75	0.33	0.342	0.265	---	0.08

82	6.83	0.33	0.342	0.264	---	0.08
83	6.92	0.33	0.342	0.262	---	0.08
84	7.00	0.33	0.342	0.261	---	0.08
85	7.08	0.33	0.342	0.260	---	0.08
86	7.17	0.33	0.342	0.259	---	0.08
87	7.25	0.33	0.342	0.258	---	0.08
88	7.33	0.37	0.376	0.256	---	0.12
89	7.42	0.37	0.376	0.255	---	0.12
90	7.50	0.37	0.376	0.254	---	0.12
91	7.58	0.40	0.410	0.253	---	0.16
92	7.67	0.40	0.410	0.252	---	0.16
93	7.75	0.40	0.410	0.251	---	0.16
94	7.83	0.43	0.445	0.249	---	0.20
95	7.92	0.43	0.445	0.248	---	0.20
96	8.00	0.43	0.445	0.247	---	0.20
97	8.08	0.50	0.513	0.246	---	0.27
98	8.17	0.50	0.513	0.245	---	0.27
99	8.25	0.50	0.513	0.244	---	0.27
100	8.33	0.50	0.513	0.243	---	0.27
101	8.42	0.50	0.513	0.241	---	0.27
102	8.50	0.50	0.513	0.240	---	0.27
103	8.58	0.53	0.547	0.239	---	0.31
104	8.67	0.53	0.547	0.238	---	0.31
105	8.75	0.53	0.547	0.237	---	0.31
106	8.83	0.57	0.581	0.236	---	0.35
107	8.92	0.57	0.581	0.235	---	0.35
108	9.00	0.57	0.581	0.234	---	0.35
109	9.08	0.63	0.650	0.232	---	0.42
110	9.17	0.63	0.650	0.231	---	0.42
111	9.25	0.63	0.650	0.230	---	0.42
112	9.33	0.67	0.684	0.229	---	0.45
113	9.42	0.67	0.684	0.228	---	0.46
114	9.50	0.67	0.684	0.227	---	0.46
115	9.58	0.70	0.718	0.226	---	0.49
116	9.67	0.70	0.718	0.225	---	0.49
117	9.75	0.70	0.718	0.224	---	0.49
118	9.83	0.73	0.752	0.223	---	0.53
119	9.92	0.73	0.752	0.222	---	0.53
120	10.00	0.73	0.752	0.221	---	0.53
121	10.08	0.50	0.513	0.219	---	0.29
122	10.17	0.50	0.513	0.218	---	0.29
123	10.25	0.50	0.513	0.217	---	0.30
124	10.33	0.50	0.513	0.216	---	0.30
125	10.42	0.50	0.513	0.215	---	0.30
126	10.50	0.50	0.513	0.214	---	0.30
127	10.58	0.67	0.684	0.213	---	0.47
128	10.67	0.67	0.684	0.212	---	0.47
129	10.75	0.67	0.684	0.211	---	0.47
130	10.83	0.67	0.684	0.210	---	0.47
131	10.92	0.67	0.684	0.209	---	0.47
132	11.00	0.67	0.684	0.208	---	0.48
133	11.08	0.63	0.650	0.207	---	0.44
134	11.17	0.63	0.650	0.206	---	0.44
135	11.25	0.63	0.650	0.205	---	0.44
136	11.33	0.63	0.650	0.204	---	0.45
137	11.42	0.63	0.650	0.203	---	0.45
138	11.50	0.63	0.650	0.202	---	0.45
139	11.58	0.57	0.581	0.201	---	0.38
140	11.67	0.57	0.581	0.200	---	0.38
141	11.75	0.57	0.581	0.199	---	0.38
142	11.83	0.60	0.616	0.198	---	0.42
143	11.92	0.60	0.616	0.197	---	0.42
144	12.00	0.60	0.616	0.196	---	0.42
145	12.08	0.83	0.855	0.195	---	0.66
146	12.17	0.83	0.855	0.194	---	0.66
147	12.25	0.83	0.855	0.193	---	0.66
148	12.33	0.87	0.889	0.192	---	0.70
149	12.42	0.87	0.889	0.191	---	0.70
150	12.50	0.87	0.889	0.190	---	0.70

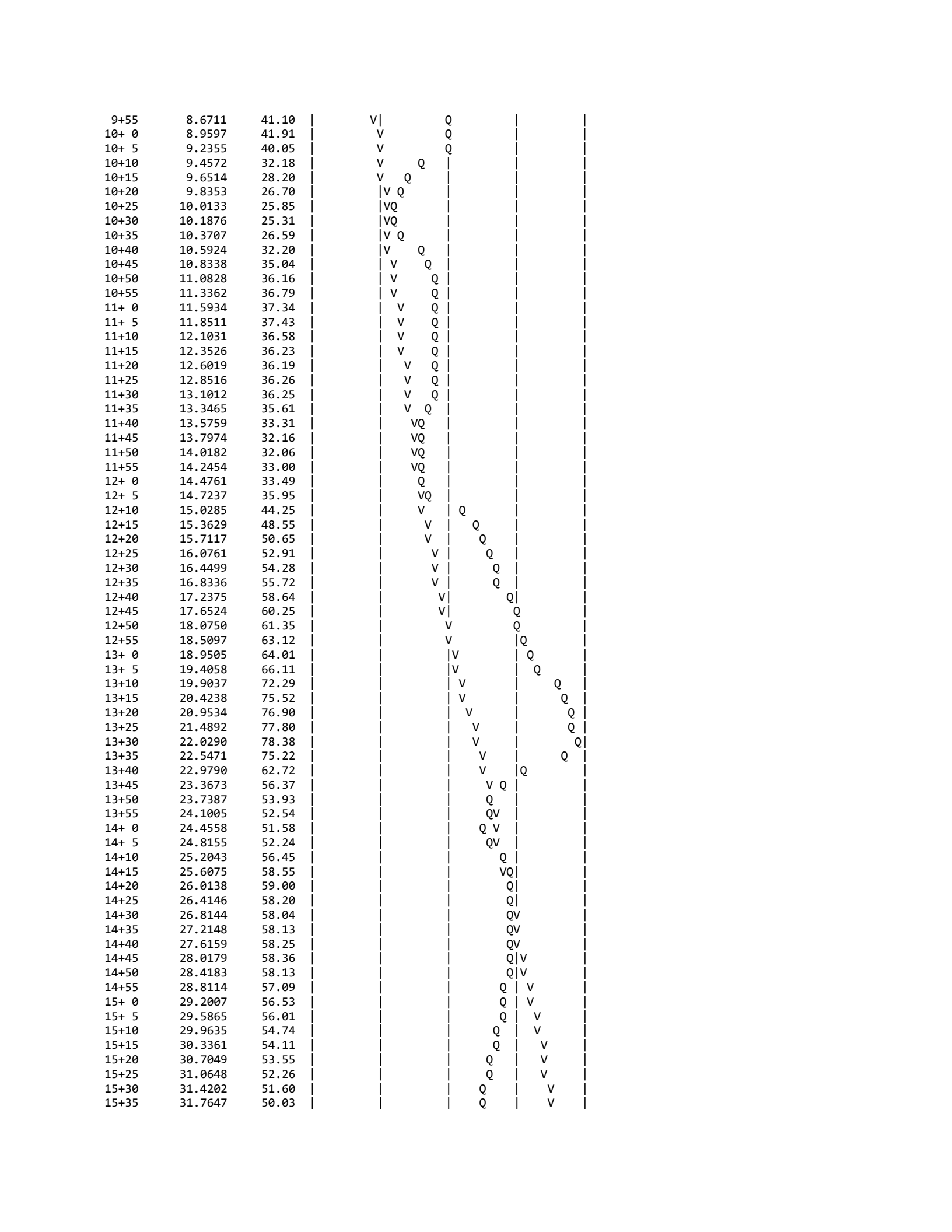
151	12.58	0.93	0.957	0.189	---	0.77
152	12.67	0.93	0.957	0.188	---	0.77
153	12.75	0.93	0.957	0.187	---	0.77
154	12.83	0.97	0.992	0.186	---	0.81
155	12.92	0.97	0.992	0.185	---	0.81
156	13.00	0.97	0.992	0.184	---	0.81
157	13.08	1.13	1.163	0.183	---	0.98
158	13.17	1.13	1.163	0.183	---	0.98
159	13.25	1.13	1.163	0.182	---	0.98
160	13.33	1.13	1.163	0.181	---	0.98
161	13.42	1.13	1.163	0.180	---	0.98
162	13.50	1.13	1.163	0.179	---	0.98
163	13.58	0.77	0.786	0.178	---	0.61
164	13.67	0.77	0.786	0.177	---	0.61
165	13.75	0.77	0.786	0.176	---	0.61
166	13.83	0.77	0.786	0.175	---	0.61
167	13.92	0.77	0.786	0.174	---	0.61
168	14.00	0.77	0.786	0.173	---	0.61
169	14.08	0.90	0.923	0.173	---	0.75
170	14.17	0.90	0.923	0.172	---	0.75
171	14.25	0.90	0.923	0.171	---	0.75
172	14.33	0.87	0.889	0.170	---	0.72
173	14.42	0.87	0.889	0.169	---	0.72
174	14.50	0.87	0.889	0.168	---	0.72
175	14.58	0.87	0.889	0.167	---	0.72
176	14.67	0.87	0.889	0.166	---	0.72
177	14.75	0.87	0.889	0.166	---	0.72
178	14.83	0.83	0.855	0.165	---	0.69
179	14.92	0.83	0.855	0.164	---	0.69
180	15.00	0.83	0.855	0.163	---	0.69
181	15.08	0.80	0.821	0.162	---	0.66
182	15.17	0.80	0.821	0.161	---	0.66
183	15.25	0.80	0.821	0.161	---	0.66
184	15.33	0.77	0.786	0.160	---	0.63
185	15.42	0.77	0.786	0.159	---	0.63
186	15.50	0.77	0.786	0.158	---	0.63
187	15.58	0.63	0.650	0.157	---	0.49
188	15.67	0.63	0.650	0.157	---	0.49
189	15.75	0.63	0.650	0.156	---	0.49
190	15.83	0.63	0.650	0.155	---	0.49
191	15.92	0.63	0.650	0.154	---	0.50
192	16.00	0.63	0.650	0.153	---	0.50
193	16.08	0.13	0.137	0.153	0.076	0.06
194	16.17	0.13	0.137	0.152	0.076	0.06
195	16.25	0.13	0.137	0.151	0.076	0.06
196	16.33	0.13	0.137	0.150	0.076	0.06
197	16.42	0.13	0.137	0.149	0.076	0.06
198	16.50	0.13	0.137	0.149	0.076	0.06
199	16.58	0.10	0.103	0.148	0.057	0.05
200	16.67	0.10	0.103	0.147	0.057	0.05
201	16.75	0.10	0.103	0.146	0.057	0.05
202	16.83	0.10	0.103	0.146	0.057	0.05
203	16.92	0.10	0.103	0.145	0.057	0.05
204	17.00	0.10	0.103	0.144	0.057	0.05
205	17.08	0.17	0.171	0.144	---	0.03
206	17.17	0.17	0.171	0.143	---	0.03
207	17.25	0.17	0.171	0.142	---	0.03
208	17.33	0.17	0.171	0.141	---	0.03
209	17.42	0.17	0.171	0.141	---	0.03
210	17.50	0.17	0.171	0.140	---	0.03
211	17.58	0.17	0.171	0.139	---	0.03
212	17.67	0.17	0.171	0.139	---	0.03
213	17.75	0.17	0.171	0.138	---	0.03
214	17.83	0.13	0.137	0.137	0.076	0.06
215	17.92	0.13	0.137	0.136	---	0.00
216	18.00	0.13	0.137	0.136	---	0.00
217	18.08	0.13	0.137	0.135	---	0.00
218	18.17	0.13	0.137	0.134	---	0.00
219	18.25	0.13	0.137	0.134	---	0.00

220	18.33	0.13	0.137	0.133	---	0.00
221	18.42	0.13	0.137	0.133	---	0.00
222	18.50	0.13	0.137	0.132	---	0.00
223	18.58	0.10	0.103	0.131	0.057	0.05
224	18.67	0.10	0.103	0.131	0.057	0.05
225	18.75	0.10	0.103	0.130	0.057	0.05
226	18.83	0.07	0.068	0.129	0.038	0.03
227	18.92	0.07	0.068	0.129	0.038	0.03
228	19.00	0.07	0.068	0.128	0.038	0.03
229	19.08	0.10	0.103	0.128	0.057	0.05
230	19.17	0.10	0.103	0.127	0.057	0.05
231	19.25	0.10	0.103	0.126	0.057	0.05
232	19.33	0.13	0.137	0.126	---	0.01
233	19.42	0.13	0.137	0.125	---	0.01
234	19.50	0.13	0.137	0.125	---	0.01
235	19.58	0.10	0.103	0.124	0.057	0.05
236	19.67	0.10	0.103	0.123	0.057	0.05
237	19.75	0.10	0.103	0.123	0.057	0.05
238	19.83	0.07	0.068	0.122	0.038	0.03
239	19.92	0.07	0.068	0.122	0.038	0.03
240	20.00	0.07	0.068	0.121	0.038	0.03
241	20.08	0.10	0.103	0.121	0.057	0.05
242	20.17	0.10	0.103	0.120	0.057	0.05
243	20.25	0.10	0.103	0.120	0.057	0.05
244	20.33	0.10	0.103	0.119	0.057	0.05
245	20.42	0.10	0.103	0.119	0.057	0.05
246	20.50	0.10	0.103	0.118	0.057	0.05
247	20.58	0.10	0.103	0.118	0.057	0.05
248	20.67	0.10	0.103	0.117	0.057	0.05
249	20.75	0.10	0.103	0.117	0.057	0.05
250	20.83	0.07	0.068	0.116	0.038	0.03
251	20.92	0.07	0.068	0.116	0.038	0.03
252	21.00	0.07	0.068	0.115	0.038	0.03
253	21.08	0.10	0.103	0.115	0.057	0.05
254	21.17	0.10	0.103	0.114	0.057	0.05
255	21.25	0.10	0.103	0.114	0.057	0.05
256	21.33	0.07	0.068	0.113	0.038	0.03
257	21.42	0.07	0.068	0.113	0.038	0.03
258	21.50	0.07	0.068	0.113	0.038	0.03
259	21.58	0.10	0.103	0.112	0.057	0.05
260	21.67	0.10	0.103	0.112	0.057	0.05
261	21.75	0.10	0.103	0.111	0.057	0.05
262	21.83	0.07	0.068	0.111	0.038	0.03
263	21.92	0.07	0.068	0.111	0.038	0.03
264	22.00	0.07	0.068	0.110	0.038	0.03
265	22.08	0.10	0.103	0.110	0.057	0.05
266	22.17	0.10	0.103	0.110	0.057	0.05
267	22.25	0.10	0.103	0.109	0.057	0.05
268	22.33	0.07	0.068	0.109	0.038	0.03
269	22.42	0.07	0.068	0.109	0.038	0.03
270	22.50	0.07	0.068	0.108	0.038	0.03
271	22.58	0.07	0.068	0.108	0.038	0.03
272	22.67	0.07	0.068	0.108	0.038	0.03
273	22.75	0.07	0.068	0.107	0.038	0.03
274	22.83	0.07	0.068	0.107	0.038	0.03
275	22.92	0.07	0.068	0.107	0.038	0.03
276	23.00	0.07	0.068	0.106	0.038	0.03
277	23.08	0.07	0.068	0.106	0.038	0.03
278	23.17	0.07	0.068	0.106	0.038	0.03
279	23.25	0.07	0.068	0.106	0.038	0.03
280	23.33	0.07	0.068	0.106	0.038	0.03
281	23.42	0.07	0.068	0.105	0.038	0.03
282	23.50	0.07	0.068	0.105	0.038	0.03
283	23.58	0.07	0.068	0.105	0.038	0.03
284	23.67	0.07	0.068	0.105	0.038	0.03
285	23.75	0.07	0.068	0.105	0.038	0.03
286	23.83	0.07	0.068	0.105	0.038	0.03
287	23.92	0.07	0.068	0.104	0.038	0.03
288	24.00	0.07	0.068	0.104	0.038	0.03

```
   Sum =     100.0                                    Sum =    64.0
      Flood volume = Effective rainfall      5.33(In)
       times area      80.2(Ac.)/[(In)/(Ft.)] =      35.7(Ac.Ft)
      Total soil loss =      3.21(In)
      Total soil loss =    21.483(Ac.Ft)
      Total rainfall =      8.55(In)
      Flood volume =     1552956.6 Cubic Feet
      Total soil loss =      935780.8 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     78.378(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       20.0      40.0      60.0      80.0
-------------------------------------------------------------------------
  0+ 5       0.0020      0.29  Q         |         |         |         |
  0+10       0.0111      1.32  Q         |         |         |         |
  0+15       0.0239      1.85  Q         |         |         |         |
  0+20       0.0391      2.21  VQ        |         |         |         |
  0+25       0.0587      2.85  VQ        |         |         |         |
  0+30       0.0808      3.20  VQ        |         |         |         |
  0+35       0.1040      3.37  VQ        |         |         |         |
  0+40       0.1279      3.47  VQ        |         |         |         |
  0+45       0.1523      3.55  VQ        |         |         |         |
  0+50       0.1781      3.74  VQ        |         |         |         |
  0+55       0.2077      4.30  V Q       |         |         |         |
  1+ 0       0.2392      4.58  V Q       |         |         |         |
  1+ 5       0.2706      4.55  V Q       |         |         |         |
  1+10       0.2989      4.11  V Q       |         |         |         |
  1+15       0.3257      3.89  VQ        |         |         |         |
  1+20       0.3519      3.81  VQ        |         |         |         |
  1+25       0.3778      3.77  VQ        |         |         |         |
  1+30       0.4036      3.74  VQ        |         |         |         |
  1+35       0.4292      3.72  VQ        |         |         |         |
  1+40       0.4548      3.71  VQ        |         |         |         |
  1+45       0.4802      3.70  VQ        |         |         |         |
  1+50       0.5066      3.83  VQ        |         |         |         |
  1+55       0.5365      4.34  V Q       |         |         |         |
  2+ 0       0.5682      4.60  V Q       |         |         |         |
  2+ 5       0.6006      4.71  V Q       |         |         |         |
  2+10       0.6335      4.77  V Q       |         |         |         |
  2+15       0.6666      4.81  V Q       |         |         |         |
  2+20       0.7000      4.84  V Q       |         |         |         |
  2+25       0.7335      4.86  V Q       |         |         |         |
  2+30       0.7671      4.88  V Q       |         |         |         |
  2+35       0.8017      5.03  V Q       |         |         |         |
  2+40       0.8400      5.56  V Q       |         |         |         |
  2+45       0.8801      5.83  V Q       |         |         |         |
  2+50       0.9210      5.93  |VQ       |         |         |         |
  2+55       0.9623      6.00  |VQ       |         |         |         |
  3+ 0       1.0039      6.04  |V Q      |         |         |         |
  3+ 5       1.0457      6.07  |V Q      |         |         |         |
  3+10       1.0876      6.09  |V Q      |         |         |         |
  3+15       1.1296      6.10  |V Q      |         |         |         |
  3+20       1.1718      6.11  |V Q      |         |         |         |
  3+25       1.2139      6.13  |V Q      |         |         |         |
  3+30       1.2561      6.13  |V Q      |         |         |         |
  3+35       1.2983      6.13  |V Q      |         |         |         |
  3+40       1.3405      6.13  |V Q      |         |         |         |
  3+45       1.3827      6.13  |V Q      |         |         |         |
  3+50       1.4258      6.27  |V Q      |         |         |         |
  3+55       1.4726      6.79  |V Q      |         |         |         |
  4+ 0       1.5211      7.05  |V Q      |         |         |         |
  4+ 5       1.5704      7.16  |V Q      |         |         |         |
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4+10       1.6202      7.22  |V Q      |         |         |         |
4+15       1.6702      7.26  |V Q      |         |         |         |
4+20       1.7214      7.44  |V Q      |         |         |         |
4+25       1.7763      7.97  |V Q      |         |         |         |
4+30       1.8332      8.26  | V Q     |         |         |         |
4+35       1.8908      8.37  | V Q     |         |         |         |
4+40       1.9490      8.45  | V Q     |         |         |         |
4+45       2.0075      8.49  | V Q     |         |         |         |
4+50       2.0671      8.66  | V Q     |         |         |         |
4+55       2.1305      9.20  | V Q     |         |         |         |
5+ 0       2.1958      9.48  | V Q     |         |         |         |
5+ 5       2.2599      9.31  | V Q     |         |         |         |
5+10       2.3174      8.35  | V Q     |         |         |         |
5+15       2.3715      7.86  | VQ      |         |         |         |
5+20       2.4254      7.82  | VQ      |         |         |         |
5+25       2.4821      8.23  | V Q     |         |         |         |
5+30       2.5401      8.43  | V Q     |         |         |         |
5+35       2.5996      8.63  | V Q     |         |         |         |
5+40       2.6628      9.18  | V Q     |         |         |         |
5+45       2.7279      9.46  |  VQ     |         |         |         |
5+50       2.7939      9.57  |  VQ     |         |         |         |
5+55       2.8602      9.64  |  VQ     |         |         |         |
6+ 0       2.9270      9.69  |  VQ     |         |         |         |
6+ 5       2.9882      8.90  |  VQ     |         |         |         |
6+10       3.0291      5.94  | QV      |         |         |         |
6+15       3.0599      4.47  | QV      |         |         |         |
6+20       3.0871      3.94  |Q V      |         |         |         |
6+25       3.1123      3.66  |Q V      |         |         |         |
6+30       3.1365      3.51  |Q V      |         |         |         |
6+35       3.1623      3.76  |Q V      |         |         |         |
6+40       3.1961      4.90  | QV      |         |         |         |
6+45       3.2339      5.50  | QV      |         |         |         |
6+50       3.2737      5.78  | QV      |         |         |         |
6+55       3.3147      5.95  | QV      |         |         |         |
7+ 0       3.3570      6.14  |  Q      |         |         |         |
7+ 5       3.4005      6.30  |  Q      |         |         |         |
7+10       3.4449      6.45  |  Q      |         |         |         |
7+15       3.4902      6.58  |  Q      |         |         |         |
7+20       3.5385      7.02  |  Q      |         |         |         |
7+25       3.5958      8.31  |   Q     |         |         |         |
7+30       3.6578      9.01  |   Q     |         |         |         |
7+35       3.7244      9.66  |   Q     |         |         |         |
7+40       3.8006     11.07  |   VQ    |         |         |         |
7+45       3.8823     11.86  |   VQ    |         |         |         |
7+50       3.9690     12.58  |   V Q   |         |         |         |
7+55       4.0656     14.04  |   V  Q  |         |         |         |
8+ 0       4.1679     14.86  |   V  Q  |         |         |         |
8+ 5       4.2776     15.93  |   V  Q  |         |         |         |
8+10       4.4056     18.57  |   V    Q|         |         |         |
8+15       4.5433     19.99  |    V   Q|         |         |         |
8+20       4.6855     20.65  |    V    Q         |         |         |
8+25       4.8309     21.11  |    V    Q         |         |         |
8+30       4.9784     21.42  |    V    Q         |         |         |
8+35       5.1299     21.99  |    V    Q         |         |         |
8+40       5.2908     23.37  |    V    |Q        |         |         |
8+45       5.4570     24.13  |     V   | Q       |         |         |
8+50       5.6280     24.83  |     V   | Q       |         |         |
8+55       5.8091     26.29  |     V   |  Q      |         |         |
9+ 0       5.9955     27.07  |     V   |  Q      |         |         |
9+ 5       6.1891     28.11  |     V   |   Q     |         |         |
9+10       6.4008     30.73  |      V  |    Q    |         |         |
9+15       6.6222     32.15  |      V  |     Q   |         |         |
9+20       6.8503     33.13  |      V  |     Q   |         |         |
9+25       7.0896     34.75  |      V  |      Q  |         |         |
9+30       7.3352     35.66  |       V |      Q  |         |         |
9+35       7.5863     36.46  |       V |       Q |         |         |
9+40       7.8479     37.99  |       V |       Q |         |         |
9+45       8.1154     38.83  |        V|        Q|         |         |
9+50       8.3881     39.60  |        V|        Q|         |         |
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15+40	32.0761	45.21	|	|	| Q	|	V	|
15+45	32.3706	42.75	|	|	|Q	|	V	|
15+50	32.6583	41.77	|	|	Q	|	V	|
15+55	32.9419	41.19	|	|	Q	|	V	|
16+ 0	33.2232	40.84	|	|	Q	|	V	|
16+ 5	33.4743	36.47	|	|	Q |	|	V	|
16+10	33.6218	21.41	|	Q	|	|	V	|
16+15	33.7158	13.65	|	Q |	|	|	V	|
16+20	33.7882	10.52	|	Q |	|	|	V	|
16+25	33.8473	8.58	|	Q |	|	|	V	|
16+30	33.8982	7.39	|	Q |	|	|	V	|
16+35	33.9423	6.42	|	Q |	|	|	V	|
16+40	33.9788	5.29	|	Q |	|	|	V	|
16+45	34.0104	4.59	|	Q |	|	|	V	|
16+50	34.0393	4.20	|	Q |	|	|	V	|
16+55	34.0655	3.80	|	Q |	|	|	V	|
17+ 0	34.0914	3.76	|	Q |	|	|	V	|
17+ 5	34.1159	3.56	|	Q |	|	|	V	|
17+10	34.1361	2.93	|	Q |	|	|	V	|
17+15	34.1543	2.63	|	Q |	|	|	V	|
17+20	34.1718	2.54	|	Q |	|	|	V	|
17+25	34.1890	2.50	|	Q |	|	|	V	|
17+30	34.2063	2.51	|	Q |	|	|	V	|
17+35	34.2237	2.53	|	Q |	|	|	V	|
17+40	34.2413	2.55	|	Q |	|	|	V	|
17+45	34.2591	2.59	|	Q |	|	|	V	|
17+50	34.2790	2.89	|	Q |	|	|	V	|
17+55	34.3015	3.27	|	Q |	|	|	V	|
18+ 0	34.3133	1.71	|	Q |	|	|	V	|
18+ 5	34.3194	0.88	|	Q |	|	|	V	|
18+10	34.3236	0.62	|	Q |	|	|	V	|
18+15	34.3270	0.49	|	Q |	|	|	V	|
18+20	34.3300	0.43	|	Q |	|	|	V	|
18+25	34.3328	0.40	|	Q |	|	|	V	|
18+30	34.3355	0.40	|	Q |	|	|	V	|
18+35	34.3410	0.79	|	Q |	|	|	V	|
18+40	34.3559	2.18	|	Q |	|	|	V	|
18+45	34.3756	2.85	|	Q |	|	|	V	|
18+50	34.3963	3.00	|	Q |	|	|	V	|
18+55	34.4146	2.66	|	Q |	|	|	V	|
19+ 0	34.4319	2.51	|	Q |	|	|	V	|
19+ 5	34.4500	2.63	|	Q |	|	|	V	|
19+10	34.4716	3.14	|	Q |	|	|	V	|
19+15	34.4951	3.41	|	Q |	|	|	V	|
19+20	34.5170	3.18	|	Q |	|	|	V	|
19+25	34.5314	2.09	|	Q |	|	|	V	|
19+30	34.5419	1.54	|	Q |	|	|	V	|
19+35	34.5534	1.66	|	Q |	|	|	V	|
19+40	34.5718	2.67	|	Q |	|	|	V	|
19+45	34.5937	3.18	|	Q |	|	|	V	|
19+50	34.6159	3.22	|	Q |	|	|	V	|
19+55	34.6352	2.81	|	Q |	|	|	V	|
20+ 0	34.6532	2.60	|	Q |	|	|	V	|
20+ 5	34.6716	2.68	|	Q |	|	|	V	|
20+10	34.6934	3.16	|	Q |	|	|	V	|
20+15	34.7169	3.42	|	Q |	|	|	V	|
20+20	34.7411	3.52	|	Q |	|	|	V	|
20+25	34.7658	3.58	|	Q |	|	|	V	|
20+30	34.7907	3.61	|	Q |	|	|	V	|
20+35	34.8156	3.63	|	Q |	|	|	V	|
20+40	34.8407	3.64	|	Q |	|	|	V	|
20+45	34.8659	3.65	|	Q |	|	|	V	|
20+50	34.8901	3.52	|	Q |	|	|	V	|
20+55	34.9109	3.01	|	Q |	|	|	V	|
21+ 0	34.9298	2.75	|	Q |	|	|	V	|
21+ 5	34.9490	2.79	|	Q |	|	|	V	|
21+10	34.9713	3.24	|	Q |	|	|	V	|
21+15	34.9951	3.46	|	Q |	|	|	V	|
21+20	35.0185	3.40	|	Q |	|	|	V	|

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   21+25      35.0387      2.92  |Q        |         |         |        V|
   21+30      35.0571      2.68  |Q        |         |         |        V|
   21+35      35.0760      2.74  |Q        |         |         |        V|
   21+40      35.0981      3.20  |Q        |         |         |        V|
   21+45      35.1218      3.44  |Q        |         |         |        V|
   21+50      35.1451      3.38  |Q        |         |         |        V|
   21+55      35.1652      2.92  |Q        |         |         |        V|
   22+ 0      35.1837      2.68  |Q        |         |         |        V|
   22+ 5      35.2026      2.74  |Q        |         |         |        V|
   22+10      35.2246      3.20  |Q        |         |         |        V|
   22+15      35.2483      3.44  |Q        |         |         |        V|
   22+20      35.2716      3.38  |Q        |         |         |        V|
   22+25      35.2918      2.92  |Q        |         |         |        V|
   22+30      35.3102      2.68  |Q        |         |         |        V|
   22+35      35.3281      2.60  |Q        |         |         |        V|
   22+40      35.3456      2.54  |Q        |         |         |        V|
   22+45      35.3630      2.52  |Q        |         |         |        V|
   22+50      35.3801      2.50  |Q        |         |         |        V|
   22+55      35.3973      2.49  |Q        |         |         |        V|
   23+ 0      35.4143      2.47  |Q        |         |         |        V|
   23+ 5      35.4312      2.46  |Q        |         |         |        V|
   23+10      35.4481      2.45  |Q        |         |         |        V|
   23+15      35.4650      2.45  |Q        |         |         |        V|
   23+20      35.4819      2.45  |Q        |         |         |        V|
   23+25      35.4987      2.45  |Q        |         |         |        V|
   23+30      35.5156      2.45  |Q        |         |         |        V|
   23+35      35.5325      2.45  |Q        |         |         |        V|
   23+40      35.5494      2.45  |Q        |         |         |        V|
   23+45      35.5662      2.45  |Q        |         |         |        V|
   23+50      35.5831      2.45  |Q        |         |         |        V|
   23+55      35.6000      2.45  |Q        |         |         |        V|
   24+ 0      35.6169      2.45  |Q        |         |         |        V|
   24+ 5      35.6317      2.16  |Q        |         |         |        V|
   24+10      35.6395      1.13  Q         |         |         |        V|
   24+15      35.6436      0.60  Q         |         |         |        V|
   24+20      35.6463      0.38  Q         |         |         |        V|
   24+25      35.6480      0.26  Q         |         |         |        V|
   24+30      35.6492      0.17  Q         |         |         |        V|
   24+35      35.6500      0.12  Q         |         |         |        V|
   24+40      35.6505      0.07  Q         |         |         |        V|
   24+45      35.6508      0.04  Q         |         |         |        V|
   24+50      35.6510      0.02  Q         |         |         |         V
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U n i t H y d r o g r a p h A n a l y s i s

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Study date 01/26/24 File: A5P24100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6062

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

THE TRAILS PROJECT
Proposed Condition Watershed A5
100-Year 24-Hour Storm
L.Johnson, 1/26/2024

Drainage Area = 269.60(Ac.) = 0.421 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 269.60(Ac.) = 0.421 Sq. Mi.
Length along longest watercourse = 12158.00(Ft.)
Length along longest watercourse measured to centroid = 5865.00(Ft.)
Length along longest watercourse = 2.303 Mi.
Length along longest watercourse measured to centroid = 1.111 Mi.
Difference in elevation = 541.50(Ft.)
Slope along watercourse = 235.1637 Ft./Mi.
Average Manning's 'N' = 0.017
Lag time = 0.207 Hr.
Lag time = 12.39 Min.
25% of lag time = 3.10 Min.
40% of lag time = 4.96 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
269.60	2.76	744.10

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
269.60	8.55	2305.08

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.760(In)
Area Averaged 100-Year Rainfall = 8.550(In)

Point rain (area averaged) = 8.550(In)
Areal adjustment factor = 99.95 %
Adjusted average point rain = 8.545(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

7.225	56.00	0.500
2.906	68.00	0.000
17.598	77.00	0.400
112.492	69.00	0.500
1.756	69.00	0.150
15.784	75.00	0.000
3.363	69.00	0.900
8.502	82.00	0.400
80.838	75.00	0.500
17.101	84.00	0.000
2.035	75.00	0.900

Total Area Entered = 269.60(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.500	0.281	0.027	0.008
68.0	68.0	0.384	0.000	0.384	0.011	0.004
77.0	77.0	0.279	0.400	0.179	0.065	0.012
69.0	69.0	0.373	0.500	0.205	0.417	0.086
69.0	69.0	0.373	0.150	0.322	0.007	0.002
75.0	75.0	0.303	0.000	0.303	0.059	0.018
69.0	69.0	0.373	0.900	0.071	0.012	0.001
82.0	82.0	0.221	0.400	0.142	0.032	0.004
75.0	75.0	0.303	0.500	0.167	0.300	0.050
84.0	84.0	0.198	0.000	0.198	0.063	0.013
75.0	75.0	0.303	0.900	0.058	0.008	0.000
					Sum (F) =	0.197

Area averaged mean soil loss (F) (In/Hr) = 0.197
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.556

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	40.340	4.412	11.988
2	0.167	80.679	18.156	49.330
3	0.250	121.019	26.933	73.178
4	0.333	161.358	17.278	46.947
5	0.417	201.698	8.430	22.904
6	0.500	242.037	5.344	14.519
7	0.583	282.377	4.002	10.873
8	0.667	322.717	3.053	8.294
9	0.750	363.056	2.433	6.610
10	0.833	403.396	1.921	5.219
11	0.917	443.735	1.494	4.059
12	1.000	484.075	1.262	3.429
13	1.083	524.414	1.152	3.130
14	1.167	564.754	0.902	2.450
15	1.250	605.094	0.757	2.058
16	1.333	645.433	0.626	1.702
17	1.417	685.773	0.501	1.362
18	1.500	726.112	0.404	1.099
19	1.583	766.452	0.403	1.096
20	1.667	806.791	0.537	1.460
			Sum = 100.000	Sum= 271.706

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.068	0.349	0.038	0.03

2	0.17	0.07	0.068	0.348	0.038	0.03
3	0.25	0.07	0.068	0.347	0.038	0.03
4	0.33	0.10	0.103	0.345	0.057	0.05
5	0.42	0.10	0.103	0.344	0.057	0.05
6	0.50	0.10	0.103	0.343	0.057	0.05
7	0.58	0.10	0.103	0.341	0.057	0.05
8	0.67	0.10	0.103	0.340	0.057	0.05
9	0.75	0.10	0.103	0.339	0.057	0.05
10	0.83	0.13	0.137	0.337	0.076	0.06
11	0.92	0.13	0.137	0.336	0.076	0.06
12	1.00	0.13	0.137	0.335	0.076	0.06
13	1.08	0.10	0.103	0.333	0.057	0.05
14	1.17	0.10	0.103	0.332	0.057	0.05
15	1.25	0.10	0.103	0.331	0.057	0.05
16	1.33	0.10	0.103	0.329	0.057	0.05
17	1.42	0.10	0.103	0.328	0.057	0.05
18	1.50	0.10	0.103	0.327	0.057	0.05
19	1.58	0.10	0.103	0.325	0.057	0.05
20	1.67	0.10	0.103	0.324	0.057	0.05
21	1.75	0.10	0.103	0.323	0.057	0.05
22	1.83	0.13	0.137	0.322	0.076	0.06
23	1.92	0.13	0.137	0.320	0.076	0.06
24	2.00	0.13	0.137	0.319	0.076	0.06
25	2.08	0.13	0.137	0.318	0.076	0.06
26	2.17	0.13	0.137	0.316	0.076	0.06
27	2.25	0.13	0.137	0.315	0.076	0.06
28	2.33	0.13	0.137	0.314	0.076	0.06
29	2.42	0.13	0.137	0.313	0.076	0.06
30	2.50	0.13	0.137	0.311	0.076	0.06
31	2.58	0.17	0.171	0.310	0.095	0.08
32	2.67	0.17	0.171	0.309	0.095	0.08
33	2.75	0.17	0.171	0.307	0.095	0.08
34	2.83	0.17	0.171	0.306	0.095	0.08
35	2.92	0.17	0.171	0.305	0.095	0.08
36	3.00	0.17	0.171	0.304	0.095	0.08
37	3.08	0.17	0.171	0.302	0.095	0.08
38	3.17	0.17	0.171	0.301	0.095	0.08
39	3.25	0.17	0.171	0.300	0.095	0.08
40	3.33	0.17	0.171	0.299	0.095	0.08
41	3.42	0.17	0.171	0.297	0.095	0.08
42	3.50	0.17	0.171	0.296	0.095	0.08
43	3.58	0.17	0.171	0.295	0.095	0.08
44	3.67	0.17	0.171	0.294	0.095	0.08
45	3.75	0.17	0.171	0.292	0.095	0.08
46	3.83	0.20	0.205	0.291	0.114	0.09
47	3.92	0.20	0.205	0.290	0.114	0.09
48	4.00	0.20	0.205	0.289	0.114	0.09
49	4.08	0.20	0.205	0.287	0.114	0.09
50	4.17	0.20	0.205	0.286	0.114	0.09
51	4.25	0.20	0.205	0.285	0.114	0.09
52	4.33	0.23	0.239	0.284	0.133	0.11
53	4.42	0.23	0.239	0.283	0.133	0.11
54	4.50	0.23	0.239	0.281	0.133	0.11
55	4.58	0.23	0.239	0.280	0.133	0.11
56	4.67	0.23	0.239	0.279	0.133	0.11
57	4.75	0.23	0.239	0.278	0.133	0.11
58	4.83	0.27	0.273	0.277	0.152	0.12
59	4.92	0.27	0.273	0.275	0.152	0.12
60	5.00	0.27	0.273	0.274	0.152	0.12
61	5.08	0.20	0.205	0.273	0.114	0.09
62	5.17	0.20	0.205	0.272	0.114	0.09
63	5.25	0.20	0.205	0.271	0.114	0.09
64	5.33	0.23	0.239	0.269	0.133	0.11
65	5.42	0.23	0.239	0.268	0.133	0.11
66	5.50	0.23	0.239	0.267	0.133	0.11
67	5.58	0.27	0.273	0.266	---	0.01
68	5.67	0.27	0.273	0.265	---	0.01
69	5.75	0.27	0.273	0.264	---	0.01
70	5.83	0.27	0.273	0.262	---	0.01

71	5.92	0.27	0.273	0.261	---	0.01
72	6.00	0.27	0.273	0.260	---	0.01
73	6.08	0.30	0.308	0.259	---	0.05
74	6.17	0.30	0.308	0.258	---	0.05
75	6.25	0.30	0.308	0.257	---	0.05
76	6.33	0.30	0.308	0.256	---	0.05
77	6.42	0.30	0.308	0.254	---	0.05
78	6.50	0.30	0.308	0.253	---	0.05
79	6.58	0.33	0.342	0.252	---	0.09
80	6.67	0.33	0.342	0.251	---	0.09
81	6.75	0.33	0.342	0.250	---	0.09
82	6.83	0.33	0.342	0.249	---	0.09
83	6.92	0.33	0.342	0.248	---	0.09
84	7.00	0.33	0.342	0.246	---	0.10
85	7.08	0.33	0.342	0.245	---	0.10
86	7.17	0.33	0.342	0.244	---	0.10
87	7.25	0.33	0.342	0.243	---	0.10
88	7.33	0.37	0.376	0.242	---	0.13
89	7.42	0.37	0.376	0.241	---	0.14
90	7.50	0.37	0.376	0.240	---	0.14
91	7.58	0.40	0.410	0.239	---	0.17
92	7.67	0.40	0.410	0.238	---	0.17
93	7.75	0.40	0.410	0.236	---	0.17
94	7.83	0.43	0.444	0.235	---	0.21
95	7.92	0.43	0.444	0.234	---	0.21
96	8.00	0.43	0.444	0.233	---	0.21
97	8.08	0.50	0.513	0.232	---	0.28
98	8.17	0.50	0.513	0.231	---	0.28
99	8.25	0.50	0.513	0.230	---	0.28
100	8.33	0.50	0.513	0.229	---	0.28
101	8.42	0.50	0.513	0.228	---	0.28
102	8.50	0.50	0.513	0.227	---	0.29
103	8.58	0.53	0.547	0.226	---	0.32
104	8.67	0.53	0.547	0.225	---	0.32
105	8.75	0.53	0.547	0.224	---	0.32
106	8.83	0.57	0.581	0.223	---	0.36
107	8.92	0.57	0.581	0.221	---	0.36
108	9.00	0.57	0.581	0.220	---	0.36
109	9.08	0.63	0.649	0.219	---	0.43
110	9.17	0.63	0.649	0.218	---	0.43
111	9.25	0.63	0.649	0.217	---	0.43
112	9.33	0.67	0.684	0.216	---	0.47
113	9.42	0.67	0.684	0.215	---	0.47
114	9.50	0.67	0.684	0.214	---	0.47
115	9.58	0.70	0.718	0.213	---	0.50
116	9.67	0.70	0.718	0.212	---	0.51
117	9.75	0.70	0.718	0.211	---	0.51
118	9.83	0.73	0.752	0.210	---	0.54
119	9.92	0.73	0.752	0.209	---	0.54
120	10.00	0.73	0.752	0.208	---	0.54
121	10.08	0.50	0.513	0.207	---	0.31
122	10.17	0.50	0.513	0.206	---	0.31
123	10.25	0.50	0.513	0.205	---	0.31
124	10.33	0.50	0.513	0.204	---	0.31
125	10.42	0.50	0.513	0.203	---	0.31
126	10.50	0.50	0.513	0.202	---	0.31
127	10.58	0.67	0.684	0.201	---	0.48
128	10.67	0.67	0.684	0.200	---	0.48
129	10.75	0.67	0.684	0.199	---	0.48
130	10.83	0.67	0.684	0.198	---	0.49
131	10.92	0.67	0.684	0.197	---	0.49
132	11.00	0.67	0.684	0.196	---	0.49
133	11.08	0.63	0.649	0.195	---	0.45
134	11.17	0.63	0.649	0.194	---	0.46
135	11.25	0.63	0.649	0.193	---	0.46
136	11.33	0.63	0.649	0.192	---	0.46
137	11.42	0.63	0.649	0.191	---	0.46
138	11.50	0.63	0.649	0.191	---	0.46
139	11.58	0.57	0.581	0.190	---	0.39

140	11.67	0.57	0.581	0.189	---	0.39
141	11.75	0.57	0.581	0.188	---	0.39
142	11.83	0.60	0.615	0.187	---	0.43
143	11.92	0.60	0.615	0.186	---	0.43
144	12.00	0.60	0.615	0.185	---	0.43
145	12.08	0.83	0.855	0.184	---	0.67
146	12.17	0.83	0.855	0.183	---	0.67
147	12.25	0.83	0.855	0.182	---	0.67
148	12.33	0.87	0.889	0.181	---	0.71
149	12.42	0.87	0.889	0.180	---	0.71
150	12.50	0.87	0.889	0.179	---	0.71
151	12.58	0.93	0.957	0.178	---	0.78
152	12.67	0.93	0.957	0.178	---	0.78
153	12.75	0.93	0.957	0.177	---	0.78
154	12.83	0.97	0.991	0.176	---	0.82
155	12.92	0.97	0.991	0.175	---	0.82
156	13.00	0.97	0.991	0.174	---	0.82
157	13.08	1.13	1.162	0.173	---	0.99
158	13.17	1.13	1.162	0.172	---	0.99
159	13.25	1.13	1.162	0.171	---	0.99
160	13.33	1.13	1.162	0.171	---	0.99
161	13.42	1.13	1.162	0.170	---	0.99
162	13.50	1.13	1.162	0.169	---	0.99
163	13.58	0.77	0.786	0.168	---	0.62
164	13.67	0.77	0.786	0.167	---	0.62
165	13.75	0.77	0.786	0.166	---	0.62
166	13.83	0.77	0.786	0.165	---	0.62
167	13.92	0.77	0.786	0.165	---	0.62
168	14.00	0.77	0.786	0.164	---	0.62
169	14.08	0.90	0.923	0.163	---	0.76
170	14.17	0.90	0.923	0.162	---	0.76
171	14.25	0.90	0.923	0.161	---	0.76
172	14.33	0.87	0.889	0.160	---	0.73
173	14.42	0.87	0.889	0.160	---	0.73
174	14.50	0.87	0.889	0.159	---	0.73
175	14.58	0.87	0.889	0.158	---	0.73
176	14.67	0.87	0.889	0.157	---	0.73
177	14.75	0.87	0.889	0.156	---	0.73
178	14.83	0.83	0.855	0.156	---	0.70
179	14.92	0.83	0.855	0.155	---	0.70
180	15.00	0.83	0.855	0.154	---	0.70
181	15.08	0.80	0.820	0.153	---	0.67
182	15.17	0.80	0.820	0.152	---	0.67
183	15.25	0.80	0.820	0.152	---	0.67
184	15.33	0.77	0.786	0.151	---	0.64
185	15.42	0.77	0.786	0.150	---	0.64
186	15.50	0.77	0.786	0.149	---	0.64
187	15.58	0.63	0.649	0.148	---	0.50
188	15.67	0.63	0.649	0.148	---	0.50
189	15.75	0.63	0.649	0.147	---	0.50
190	15.83	0.63	0.649	0.146	---	0.50
191	15.92	0.63	0.649	0.145	---	0.50
192	16.00	0.63	0.649	0.145	---	0.50
193	16.08	0.13	0.137	0.144	0.076	0.06
194	16.17	0.13	0.137	0.143	0.076	0.06
195	16.25	0.13	0.137	0.143	0.076	0.06
196	16.33	0.13	0.137	0.142	0.076	0.06
197	16.42	0.13	0.137	0.141	0.076	0.06
198	16.50	0.13	0.137	0.140	0.076	0.06
199	16.58	0.10	0.103	0.140	0.057	0.05
200	16.67	0.10	0.103	0.139	0.057	0.05
201	16.75	0.10	0.103	0.138	0.057	0.05
202	16.83	0.10	0.103	0.138	0.057	0.05
203	16.92	0.10	0.103	0.137	0.057	0.05
204	17.00	0.10	0.103	0.136	0.057	0.05
205	17.08	0.17	0.171	0.135	---	0.04
206	17.17	0.17	0.171	0.135	---	0.04
207	17.25	0.17	0.171	0.134	---	0.04
208	17.33	0.17	0.171	0.133	---	0.04

209	17.42	0.17	0.171	0.133	---	0.04
210	17.50	0.17	0.171	0.132	---	0.04
211	17.58	0.17	0.171	0.131	---	0.04
212	17.67	0.17	0.171	0.131	---	0.04
213	17.75	0.17	0.171	0.130	---	0.04
214	17.83	0.13	0.137	0.129	---	0.01
215	17.92	0.13	0.137	0.129	---	0.01
216	18.00	0.13	0.137	0.128	---	0.01
217	18.08	0.13	0.137	0.128	---	0.01
218	18.17	0.13	0.137	0.127	---	0.01
219	18.25	0.13	0.137	0.126	---	0.01
220	18.33	0.13	0.137	0.126	---	0.01
221	18.42	0.13	0.137	0.125	---	0.01
222	18.50	0.13	0.137	0.124	---	0.01
223	18.58	0.10	0.103	0.124	0.057	0.05
224	18.67	0.10	0.103	0.123	0.057	0.05
225	18.75	0.10	0.103	0.123	0.057	0.05
226	18.83	0.07	0.068	0.122	0.038	0.03
227	18.92	0.07	0.068	0.122	0.038	0.03
228	19.00	0.07	0.068	0.121	0.038	0.03
229	19.08	0.10	0.103	0.120	0.057	0.05
230	19.17	0.10	0.103	0.120	0.057	0.05
231	19.25	0.10	0.103	0.119	0.057	0.05
232	19.33	0.13	0.137	0.119	---	0.02
233	19.42	0.13	0.137	0.118	---	0.02
234	19.50	0.13	0.137	0.118	---	0.02
235	19.58	0.10	0.103	0.117	0.057	0.05
236	19.67	0.10	0.103	0.117	0.057	0.05
237	19.75	0.10	0.103	0.116	0.057	0.05
238	19.83	0.07	0.068	0.115	0.038	0.03
239	19.92	0.07	0.068	0.115	0.038	0.03
240	20.00	0.07	0.068	0.114	0.038	0.03
241	20.08	0.10	0.103	0.114	0.057	0.05
242	20.17	0.10	0.103	0.113	0.057	0.05
243	20.25	0.10	0.103	0.113	0.057	0.05
244	20.33	0.10	0.103	0.112	0.057	0.05
245	20.42	0.10	0.103	0.112	0.057	0.05
246	20.50	0.10	0.103	0.111	0.057	0.05
247	20.58	0.10	0.103	0.111	0.057	0.05
248	20.67	0.10	0.103	0.111	0.057	0.05
249	20.75	0.10	0.103	0.110	0.057	0.05
250	20.83	0.07	0.068	0.110	0.038	0.03
251	20.92	0.07	0.068	0.109	0.038	0.03
252	21.00	0.07	0.068	0.109	0.038	0.03
253	21.08	0.10	0.103	0.108	0.057	0.05
254	21.17	0.10	0.103	0.108	0.057	0.05
255	21.25	0.10	0.103	0.107	0.057	0.05
256	21.33	0.07	0.068	0.107	0.038	0.03
257	21.42	0.07	0.068	0.107	0.038	0.03
258	21.50	0.07	0.068	0.106	0.038	0.03
259	21.58	0.10	0.103	0.106	0.057	0.05
260	21.67	0.10	0.103	0.106	0.057	0.05
261	21.75	0.10	0.103	0.105	0.057	0.05
262	21.83	0.07	0.068	0.105	0.038	0.03
263	21.92	0.07	0.068	0.104	0.038	0.03
264	22.00	0.07	0.068	0.104	0.038	0.03
265	22.08	0.10	0.103	0.104	0.057	0.05
266	22.17	0.10	0.103	0.103	0.057	0.05
267	22.25	0.10	0.103	0.103	0.057	0.05
268	22.33	0.07	0.068	0.103	0.038	0.03
269	22.42	0.07	0.068	0.102	0.038	0.03
270	22.50	0.07	0.068	0.102	0.038	0.03
271	22.58	0.07	0.068	0.102	0.038	0.03
272	22.67	0.07	0.068	0.102	0.038	0.03
273	22.75	0.07	0.068	0.101	0.038	0.03
274	22.83	0.07	0.068	0.101	0.038	0.03
275	22.92	0.07	0.068	0.101	0.038	0.03
276	23.00	0.07	0.068	0.100	0.038	0.03
277	23.08	0.07	0.068	0.100	0.038	0.03

278	23.17	0.07	0.068	0.100	0.038	0.03
279	23.25	0.07	0.068	0.100	0.038	0.03
280	23.33	0.07	0.068	0.100	0.038	0.03
281	23.42	0.07	0.068	0.099	0.038	0.03
282	23.50	0.07	0.068	0.099	0.038	0.03
283	23.58	0.07	0.068	0.099	0.038	0.03
284	23.67	0.07	0.068	0.099	0.038	0.03
285	23.75	0.07	0.068	0.099	0.038	0.03
286	23.83	0.07	0.068	0.099	0.038	0.03
287	23.92	0.07	0.068	0.099	0.038	0.03
288	24.00	0.07	0.068	0.099	0.038	0.03
Sum =		100.0			Sum =	64.8

Flood volume = Effective rainfall 5.40(In)
times area 269.6(Ac.)/[(In)/(Ft.)] = 121.4(Ac.Ft)
Total soil loss = 3.14(In)
Total soil loss = 70.583(Ac.Ft)
Total rainfall = 8.55(In)
Flood volume = 5288418.5 Cubic Feet
Total soil loss = 3074615.9 Cubic Feet

Peak flow rate of this hydrograph = 257.380(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	75.0	150.0	225.0	300.0
0+ 5	0.0025	0.36	Q	|	|	|	|
0+10	0.0153	1.86	Q	|	|	|	|
0+15	0.0435	4.08	Q	|	|	|	|
0+20	0.0827	5.69	Q	|	|	|	|
0+25	0.1318	7.14	Q	|	|	|	|
0+30	0.1917	8.69	VQ	|	|	|	|
0+35	0.2587	9.73	VQ	|	|	|	|
0+40	0.3298	10.33	VQ	|	|	|	|
0+45	0.4039	10.75	VQ	|	|	|	|
0+50	0.4814	11.26	VQ	|	|	|	|
0+55	0.5659	12.26	VQ	|	|	|	|
1+ 0	0.6593	13.57	VQ	|	|	|	|
1+ 5	0.7577	14.28	VQ	|	|	|	|
1+10	0.8542	14.01	VQ	|	|	|	|
1+15	0.9453	13.24	VQ	|	|	|	|
1+20	1.0334	12.79	VQ	|	|	|	|
1+25	1.1205	12.64	VQ	|	|	|	|
1+30	1.2072	12.59	VQ	|	|	|	|
1+35	1.2937	12.56	VQ	|	|	|	|
1+40	1.3802	12.56	VQ	|	|	|	|
1+45	1.4665	12.53	VQ	|	|	|	|
1+50	1.5540	12.70	VQ	|	|	|	|
1+55	1.6466	13.45	VQ	|	|	|	|
2+ 0	1.7467	14.54	VQ	|	|	|	|
2+ 5	1.8515	15.23	V Q	|	|	|	|
2+10	1.9587	15.56	V Q	|	|	|	|
2+15	2.0673	15.76	V Q	|	|	|	|
2+20	2.1769	15.92	V Q	|	|	|	|
2+25	2.2874	16.05	V Q	|	|	|	|
2+30	2.3985	16.13	V Q	|	|	|	|
2+35	2.5113	16.38	V Q	|	|	|	|
2+40	2.6295	17.16	V Q	|	|	|	|
2+45	2.7557	18.33	V Q	|	|	|	|
2+50	2.8872	19.09	V Q	|	|	|	|
2+55	3.0213	19.47	V Q	|	|	|	|
3+ 0	3.1571	19.72	|VQ	|	|	|	|
3+ 5	3.2943	19.92	|VQ	|	|	|	|
3+10	3.4325	20.06	|VQ	|	|	|	|

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3+15       3.5714     20.18  |VQ       |         |         |         |
3+20       3.7111     20.27  |VQ       |         |         |         |
3+25       3.8513     20.36  |VQ       |         |         |         |
3+30       3.9919     20.41  |VQ       |         |         |         |
3+35       4.1328     20.46  |VQ       |         |         |         |
3+40       4.2739     20.50  |VQ       |         |         |         |
3+45       4.4153     20.53  |VQ       |         |         |         |
3+50       4.5581     20.73  |VQ       |         |         |         |
3+55       4.7062     21.50  |VQ       |         |         |         |
4+ 0       4.8620     22.63  |V Q      |         |         |         |
4+ 5       5.0229     23.36  |V Q      |         |         |         |
4+10       5.1864     23.73  |V Q      |         |         |         |
4+15       5.3513     23.95  |V Q      |         |         |         |
4+20       5.5187     24.30  |V Q      |         |         |         |
4+25       5.6921     25.17  |V Q      |         |         |         |
4+30       5.8738     26.39  |V Q      |         |         |         |
4+35       6.0610     27.18  |V Q      |         |         |         |
4+40       6.2510     27.59  | VQ      |         |         |         |
4+45       6.4428     27.86  | VQ      |         |         |         |
4+50       6.6374     28.25  | VQ      |         |         |         |
4+55       6.8383     29.17  | VQ      |         |         |         |
5+ 0       7.0477     30.41  | V Q     |         |         |         |
5+ 5       7.2603     30.86  | V Q     |         |         |         |
5+10       7.4655     29.80  | VQ      |         |         |         |
5+15       7.6574     27.86  | VQ      |         |         |         |
5+20       7.8423     26.85  | VQ      |         |         |         |
5+25       8.0288     27.09  | VQ      |         |         |         |
5+30       8.2209     27.89  | VQ      |         |         |         |
5+35       8.4082     27.19  | VQ      |         |         |         |
5+40       8.5632     22.51  | VQ      |         |         |         |
5+45       8.6696     15.44  | Q       |         |         |         |
5+50       8.7456     11.03  |QV       |         |         |         |
5+55       8.8079      9.05  |QV       |         |         |         |
6+ 0       8.8621      7.88  |QV       |         |         |         |
6+ 5       8.9136      7.48  Q V       |         |         |         |
6+10       8.9730      8.62  |QV       |         |         |         |
6+15       9.0470     10.75  |QV       |         |         |         |
6+20       9.1306     12.14  |Q V      |         |         |         |
6+25       9.2190     12.83  |Q V      |         |         |         |
6+30       9.3104     13.27  |Q V      |         |         |         |
6+35       9.4070     14.03  |Q V      |         |         |         |
6+40       9.5175     16.04  | QV      |         |         |         |
6+45       9.6475     18.88  | QV      |         |         |         |
6+50       9.7908     20.81  | QV      |         |         |         |
6+55       9.9418     21.93  | QV      |         |         |         |
7+ 0      10.0984     22.74  |  Q      |         |         |         |
7+ 5      10.2597     23.41  |  Q      |         |         |         |
7+10      10.4245     23.94  |  Q      |         |         |         |
7+15      10.5935     24.54  |  Q      |         |         |         |
7+20      10.7691     25.49  |  Q      |         |         |         |
7+25      10.9597     27.67  |  Q      |         |         |         |
7+30      11.1706     30.63  |  VQ     |         |         |         |
7+35      11.3985     33.09  |  VQ     |         |         |         |
7+40      11.6465     36.00  |  VQ     |         |         |         |
7+45      11.9176     39.37  |  V Q    |         |         |         |
7+50      12.2076     42.11  |   VQ    |         |         |         |
7+55      12.5190     45.21  |   V Q   |         |         |         |
8+ 0      12.8550     48.78  |   V Q   |         |         |         |
8+ 5      13.2137     52.09  |   V Q   |         |         |         |
8+10      13.6063     57.01  |   V  Q  |         |         |         |
8+15      14.0413     63.15  |   V   Q |         |         |         |
8+20      14.5049     67.32  |   V   Q |         |         |         |
8+25      14.9848     69.68  |   V    Q|         |         |         |
8+30      15.4764     71.38  |    V   Q|         |         |         |
8+35      15.9804     73.17  |    V   Q|         |         |         |
8+40      16.5038     75.99  |    V    Q         |         |         |
8+45      17.0510     79.46  |    V    Q         |         |         |
8+50      17.6180     82.33  |    V    Q         |         |         |
8+55      18.2071     85.54  |    V    |Q        |         |         |
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9+ 0	18.8213	89.17	V	Q			
9+ 5	19.4588	92.57	V	Q			
9+10	20.1307	97.56	V	Q			
9+15	20.8452	103.75	V	Q			
9+20	21.5915	108.36	V	Q			
9+25	22.3660	112.46	V	Q			
9+30	23.1695	116.66	V	Q			
9+35	23.9964	120.06	V	Q			
9+40	24.8483	123.70	V	Q			
9+45	25.7273	127.62	V	Q			
9+50	26.6282	130.81	V	Q			
9+55	27.5528	134.25	V	Q			
10+ 0	28.5039	138.10	V	Q			
10+ 5	29.4541	137.97	V	Q			
10+10	30.3351	127.91	V	Q			
10+15	31.1042	111.68	V	Q			
10+20	31.8035	101.53	V	Q			
10+25	32.4713	96.97	V	Q			
10+30	33.1204	94.25	V	Q			
10+35	33.7705	94.39	V	Q			
10+40	34.4694	101.48	V	Q			
10+45	35.2470	112.91	V	Q			
10+50	36.0746	120.16	V	Q			
10+55	36.9254	123.55	V	Q			
11+ 0	37.7904	125.59	V	Q			
11+ 5	38.6626	126.65	V	Q			
11+10	39.5314	126.15	V	Q			
11+15	40.3895	124.59	V	Q			
11+20	41.2419	123.77	V	Q			
11+25	42.0936	123.67	V	Q			
11+30	42.9460	123.76	V	Q			
11+35	43.7937	123.10	V	Q			
11+40	44.6186	119.77	V	Q			
11+45	45.4116	115.15	V	Q			
11+50	46.1879	112.72	V	Q			
11+55	46.9675	113.19	V	Q			
12+ 0	47.7596	115.03	V	Q			
12+ 5	48.5798	119.09	V	Q			
12+10	49.4857	131.54	V	Q			
12+15	50.5139	149.28	V	Q			
12+20	51.6236	161.14	V	Q			
12+25	52.7843	168.52	V	Q			
12+30	53.9874	174.70	V	Q			
12+35	55.2265	179.91	V	Q			
12+40	56.5090	186.22	V	Q			
12+45	57.8418	193.53	V	Q			
12+50	59.2124	199.01	V	Q			
12+55	60.6157	203.75	V	Q			
13+ 0	62.0519	208.53	V	Q			
13+ 5	63.5263	214.09	V	Q			
13+10	65.0744	224.79	V	Q			
13+15	66.7214	239.14	V	Q			
13+20	68.4341	248.69	V	Q			
13+25	70.1825	253.87	V	Q			
13+30	71.9551	257.38	V	Q			
13+35	73.7160	255.68	V	Q			
13+40	75.3653	239.48	V	Q			
13+45	76.8364	213.61	V	Q			
13+50	78.1955	197.34	V	Q			
13+55	79.5032	189.88	V	Q			
14+ 0	80.7799	185.38	V	Q			
14+ 5	82.0459	183.83	V	Q			
14+10	83.3424	188.25	V	Q			
14+15	84.6950	196.39	V	Q			
14+20	86.0793	201.00	V	Q			
14+25	87.4665	201.43	V	Q			
14+30	88.8442	200.03	V	Q			
14+35	90.2157	199.15	V	Q			
14+40	91.5866	199.05	V	Q			

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14+45      92.9565    198.91  |         |         |     Q   V         |
14+50      94.3231    198.42  |         |         |     Q   |V        |
14+55      95.6779    196.72  |         |         |     Q   |V        |
15+ 0      97.0158    194.26  |         |         |    Q    |V        |
15+ 5      98.3402    192.30  |         |         |    Q    | V       |
15+10      99.6467    189.70  |         |         |    Q    | V       |
15+15     100.9351    187.08  |         |         |   Q     |  V      |
15+20     102.2094    185.03  |         |         |   Q     |  V      |
15+25     103.4670    182.60  |         |         |   Q     |   V     |
15+30     104.7044    179.66  |         |         |  Q      |   V     |
15+35     105.9177    176.17  |         |         |  Q      |   V     |
15+40     107.0787    168.58  |         |         | Q       |    V    |
15+45     108.1662    157.90  |         |         |Q        |    V    |
15+50     109.2061    151.00  |         |         Q         |    V    |
15+55     110.2220    147.51  |         |        Q|         |     V   |
16+ 0     111.2229    145.32  |         |        Q|         |     V   |
16+ 5     112.1758    138.36  |         |       Q |         |     V   |
16+10     112.9691    115.20  |         |    Q    |         |      V  |
16+15     113.5316     81.66  |         Q         |         |      V  |
16+20     113.9445     59.96  |      Q  |         |         |      V  |
16+25     114.2826     49.10  |     Q   |         |         |      V  |
16+30     114.5727     42.11  |    Q    |         |         |      V  |
16+35     114.8248     36.61  |   Q     |         |         |      V  |
16+40     115.0435     31.77  |   Q     |         |         |      V  |
16+45     115.2324     27.42  |  Q      |         |         |      V  |
16+50     115.3986     24.13  |  Q      |         |         |       V |
16+55     115.5485     21.76  | Q       |         |         |       V |
17+ 0     115.6854     19.88  | Q       |         |         |       V |
17+ 5     115.8098     18.06  | Q       |         |         |       V |
17+10     115.9211     16.16  | Q       |         |         |       V |
17+15     116.0207     14.46  |Q        |         |         |       V |
17+20     116.1119     13.25  |Q        |         |         |       V |
17+25     116.1978     12.48  |Q        |         |         |       V |
17+30     116.2800     11.93  |Q        |         |         |       V |
17+35     116.3587     11.43  |Q        |         |         |       V |
17+40     116.4332     10.82  |Q        |         |         |       V |
17+45     116.5082     10.88  |Q        |         |         |       V |
17+50     116.5808     10.55  |Q        |         |         |       V |
17+55     116.6426      8.97  |Q        |         |         |       V |
18+ 0     116.6879      6.58  Q         |         |         |       V |
18+ 5     116.7229      5.09  Q         |         |         |       V |
18+10     116.7534      4.43  Q         |         |         |       V |
18+15     116.7815      4.08  Q         |         |         |       V |
18+20     116.8080      3.86  Q         |         |         |       V |
18+25     116.8337      3.73  Q         |         |         |       V |
18+30     116.8589      3.66  Q         |         |         |       V |
18+35     116.8866      4.03  Q         |         |         |       V |
18+40     116.9255      5.64  Q         |         |         |       V |
18+45     116.9809      8.05  |Q        |         |         |       V |
18+50     117.0455      9.38  |Q        |         |         |       V |
18+55     117.1099      9.35  |Q        |         |         |       V |
19+ 0     117.1697      8.68  |Q        |         |         |       V |
19+ 5     117.2281      8.48  |Q        |         |         |       V |
19+10     117.2910      9.13  |Q        |         |         |       V |
19+15     117.3615     10.22  |Q        |         |         |       V |
19+20     117.4344     10.59  |Q        |         |         |       V |
19+25     117.5003      9.56  |Q        |         |         |       V |
19+30     117.5542      7.83  |Q        |         |         |       V |
19+35     117.6032      7.12  Q         |         |         |       V |
19+40     117.6583      8.01  |Q        |         |         |       V |
19+45     117.7251      9.70  |Q        |         |         |       V |
19+50     117.7979     10.57  |Q        |         |         |       V |
19+55     117.8687     10.28  |Q        |         |         |       V |
20+ 0     117.9337      9.44  |Q        |         |         |       V |
20+ 5     117.9965      9.12  |Q        |         |         |       V |
20+10     118.0633      9.70  |Q        |         |         |       V |
20+15     118.1370     10.69  |Q        |         |         |       V |
20+20     118.2148     11.30  |Q        |         |         |       V |
20+25     118.2945     11.57  |Q        |         |         |       V |
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   20+30     118.3754     11.74  |Q        |         |         |        V|
   20+35     118.4572     11.88  |Q        |         |         |        V|
   20+40     118.5398     12.00  |Q        |         |         |        V|
   20+45     118.6230     12.07  |Q        |         |         |        V|
   20+50     118.7052     11.94  |Q        |         |         |        V|
   20+55     118.7824     11.21  |Q        |         |         |        V|
   21+ 0     118.8523     10.15  |Q        |         |         |        V|
   21+ 5     118.9189      9.67  |Q        |         |         |        V|
   21+10     118.9887     10.13  |Q        |         |         |        V|
   21+15     119.0646     11.03  |Q        |         |         |        V|
   21+20     119.1432     11.41  |Q        |         |         |        V|
   21+25     119.2181     10.88  |Q        |         |         |        V|
   21+30     119.2864      9.90  |Q        |         |         |        V|
   21+35     119.3516      9.48  |Q        |         |         |        V|
   21+40     119.4202      9.96  |Q        |         |         |        V|
   21+45     119.4953     10.90  |Q        |         |         |        V|
   21+50     119.5732     11.30  |Q        |         |         |        V|
   21+55     119.6475     10.80  |Q        |         |         |        V|
   22+ 0     119.7152      9.83  |Q        |         |         |        V|
   22+ 5     119.7800      9.40  |Q        |         |         |        V|
   22+10     119.8481      9.89  |Q        |         |         |        V|
   22+15     119.9227     10.84  |Q        |         |         |        V|
   22+20     120.0002     11.25  |Q        |         |         |        V|
   22+25     120.0742     10.74  |Q        |         |         |        V|
   22+30     120.1416      9.79  |Q        |         |         |        V|
   22+35     120.2049      9.20  |Q        |         |         |        V|
   22+40     120.2666      8.96  |Q        |         |         |        V|
   22+45     120.3272      8.80  |Q        |         |         |        V|
   22+50     120.3869      8.67  |Q        |         |         |        V|
   22+55     120.4460      8.57  |Q        |         |         |        V|
   23+ 0     120.5046      8.51  |Q        |         |         |        V|
   23+ 5     120.5629      8.47  |Q        |         |         |        V|
   23+10     120.6210      8.44  |Q        |         |         |        V|
   23+15     120.6789      8.41  |Q        |         |         |        V|
   23+20     120.7366      8.37  |Q        |         |         |        V|
   23+25     120.7939      8.33  |Q        |         |         |        V|
   23+30     120.8512      8.31  |Q        |         |         |        V|
   23+35     120.9084      8.31  |Q        |         |         |        V|
   23+40     120.9656      8.31  |Q        |         |         |        V|
   23+45     121.0227      8.29  |Q        |         |         |        V|
   23+50     121.0797      8.27  |Q        |         |         |        V|
   23+55     121.1365      8.25  |Q        |         |         |        V|
   24+ 0     121.1933      8.25  |Q        |         |         |        V|
   24+ 5     121.2476      7.89  |Q        |         |         |        V|
   24+10     121.2917      6.39  Q         |         |         |        V|
   24+15     121.3203      4.17  Q         |         |         |        V|
   24+20     121.3392      2.74  Q         |         |         |        V|
   24+25     121.3533      2.05  Q         |         |         |        V|
   24+30     121.3644      1.60  Q         |         |         |        V|
   24+35     121.3731      1.27  Q         |         |         |        V|
   24+40     121.3802      1.02  Q         |         |         |        V|
   24+45     121.3859      0.82  Q         |         |         |        V|
   24+50     121.3904      0.66  Q         |         |         |        V|
   24+55     121.3941      0.54  Q         |         |         |        V|
   25+ 0     121.3971      0.44  Q         |         |         |        V|
   25+ 5     121.3995      0.34  Q         |         |         |        V|
   25+10     121.4013      0.27  Q         |         |         |        V|
   25+15     121.4027      0.20  Q         |         |         |        V|
   25+20     121.4038      0.15  Q         |         |         |        V|
   25+25     121.4045      0.11  Q         |         |         |        V|
   25+30     121.4051      0.08  Q         |         |         |        V|
   25+35     121.4054      0.04  Q         |         |         |         V
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FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 01/26/24

THE TRAILS PROJECT: Proposed Condition - No Detention Routing
100-Year 24-Hour Storm
L.Johnson, 1/26/2024

Program License Serial Number 6062

********** HYDROGRAPH INFORMATION **********

From study/file name: A5P24100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 307
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 257.380 (CFS)
Total volume = 121.405 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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++
Process from Point/Station 2.000 to Point/Station 3.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****
_____
********** HYDROGRAPH INFORMATION **********

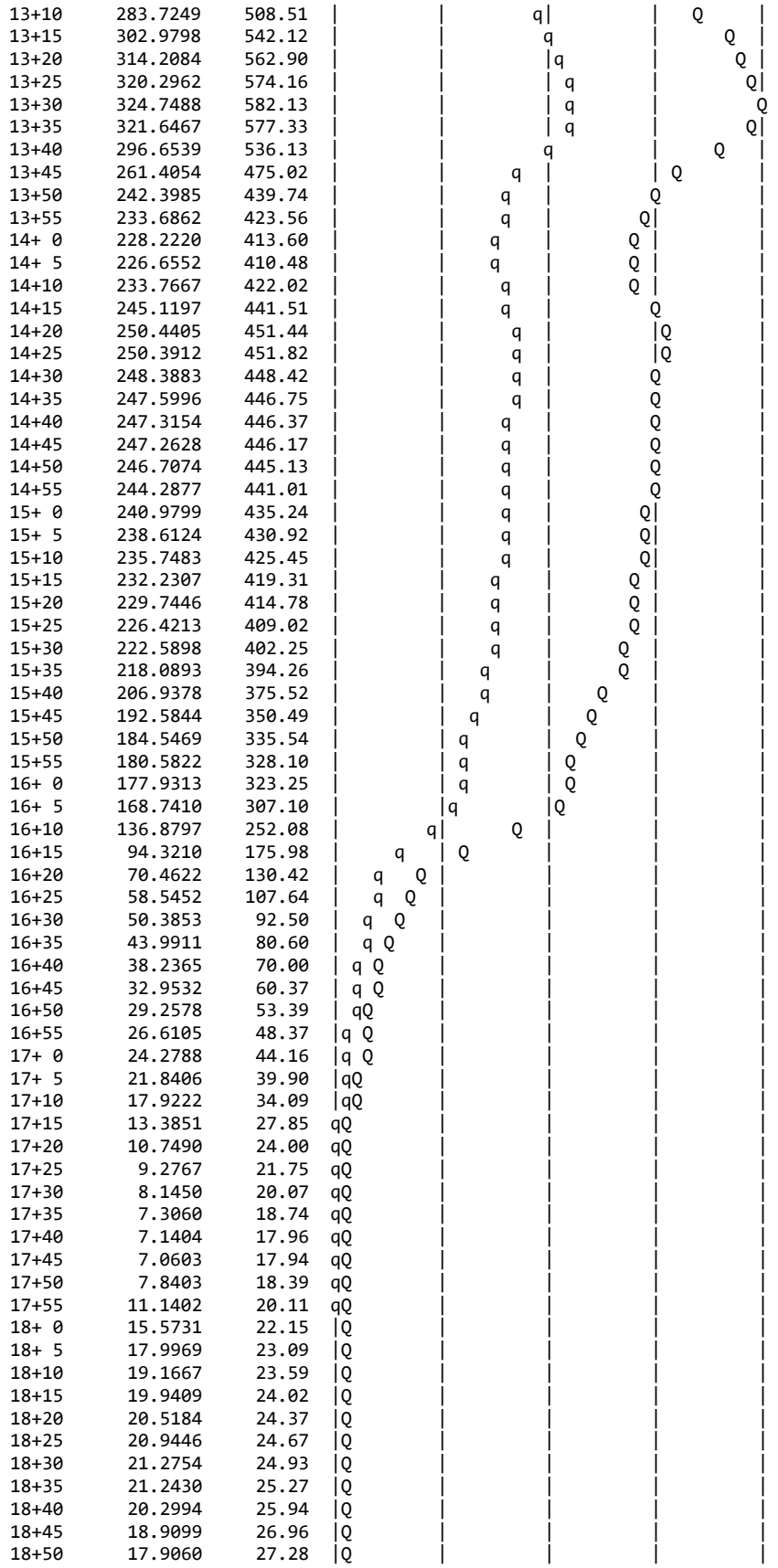
From study/file name: A1P24100.rte
++
P R I N T O F S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Add q(CFS)	Tot. Q	0	145.5	291.1	436.6	582.1
0+ 5	0.5632	0.93	Q				
0+10	2.9210	4.78	Q				
0+15	6.1251	10.21	Q				
0+20	8.1820	13.87	Q				
0+25	10.2273	17.36	qQ				
0+30	12.4091	21.10	qQ				
0+35	13.7293	23.46	qQ				
0+40	14.4856	24.82	qQ				
0+45	15.0344	25.79	|Q				
0+50	15.7294	26.99	|Q				
0+55	17.2265	29.48	|qQ				
1+ 0	19.1011	32.67	|qQ				
1+ 5	19.9172	34.19	|qQ				
1+10	19.3420	33.35	|qQ				
1+15	18.1760	31.41	|qQ				
1+20	17.6178	30.41	|qQ				
1+25	17.4417	30.09	|qQ				
1+30	17.3680	29.96	|qQ				
1+35	17.3205	29.88	|qQ				

1+40	17.2620	29.83	|qQ	|	|	|	|
1+45	17.2288	29.76	|qQ	|	|	|	|
1+50	17.4883	30.19	|qQ	|	|	|	|
1+55	18.6348	32.08	|qQ	|	|	|	|
2+ 0	20.2027	34.74	|qQ	|	|	|	|
2+ 5	21.0634	36.29	|qQ	|	|	|	|
2+10	21.4753	37.03	|qQ	|	|	|	|
2+15	21.7525	37.52	|qQ	|	|	|	|
2+20	21.9608	37.88	|qQ	|	|	|	|
2+25	22.0976	38.14	|qQ	|	|	|	|
2+30	22.2023	38.33	|qQ	|	|	|	|
2+35	22.5618	38.94	|qQ	|	|	|	|
2+40	23.8190	40.98	|qQ	|	|	|	|
2+45	25.4926	43.82	|q Q	|	|	|	|
2+50	26.4360	45.52	|q Q	|	|	|	|
2+55	26.9152	46.39	|q Q	|	|	|	|
3+ 0	27.2425	46.97	|q Q	|	|	|	|
3+ 5	27.4875	47.40	|q Q	|	|	|	|
3+10	27.6738	47.74	|q Q	|	|	|	|
3+15	27.8279	48.01	|q Q	|	|	|	|
3+20	27.9472	48.22	|q Q	|	|	|	|
3+25	28.0256	48.38	|q Q	|	|	|	|
3+30	28.0971	48.51	|q Q	|	|	|	|
3+35	28.1528	48.61	|q Q	|	|	|	|
3+40	28.1989	48.69	|q Q	|	|	|	|
3+45	28.2362	48.76	|q Q	|	|	|	|
3+50	28.5466	49.28	|q Q	|	|	|	|
3+55	29.7501	51.25	| qQ	|	|	|	|
4+ 0	31.3769	54.01	| qQ	|	|	|	|
4+ 5	32.2853	55.65	| qQ	|	|	|	|
4+10	32.7185	56.45	| qQ	|	|	|	|
4+15	33.0084	56.96	| qQ	|	|	|	|
4+20	33.5063	57.81	| qQ	|	|	|	|
4+25	34.8467	60.02	| q Q	|	|	|	|
4+30	36.5782	62.96	| q Q	|	|	|	|
4+35	37.5644	64.74	| q Q	|	|	|	|
4+40	38.0760	65.66	| q Q	|	|	|	|
4+45	38.4374	66.30	| q Q	|	|	|	|
4+50	38.9910	67.25	| q Q	|	|	|	|
4+55	40.3775	69.54	| q Q	|	|	|	|
5+ 0	42.1463	72.56	| q Q	|	|	|	|
5+ 5	42.5980	73.46	| q Q	|	|	|	|
5+10	40.7766	70.57	| q Q	|	|	|	|
5+15	37.9586	65.82	| q Q	|	|	|	|
5+20	36.7576	63.61	| q Q	|	|	|	|
5+25	37.2777	64.36	| q Q	|	|	|	|
5+30	38.4668	66.36	| q Q	|	|	|	|
5+35	39.3308	66.52	| q Q	|	|	|	|
5+40	40.7228	63.23	| q Q	|	|	|	|
5+45	42.4521	57.90	| qQ	|	|	|	|
5+50	43.4354	54.47	| qQ	|	|	|	|
5+55	43.9195	52.97	| Q	|	|	|	|
6+ 0	44.2331	52.11	| Q	|	|	|	|
6+ 5	42.3097	49.79	| qQ	|	|	|	|
6+10	33.4829	42.10	| Q	|	|	|	|
6+15	21.4935	32.25	|qQ	|	|	|	|
6+20	15.0718	27.21	|Q	|	|	|	|
6+25	12.1591	24.98	qQ	|	|	|	|
6+30	10.3633	23.64	qQ	|	|	|	|
6+35	9.7342	23.77	qQ	|	|	|	|
6+40	11.4695	27.51	qQ	|	|	|	|
6+45	14.3510	33.23	q Q	|	|	|	|
6+50	15.9525	36.77	|qQ	|	|	|	|
6+55	16.7279	38.65	|qQ	|	|	|	|
7+ 0	17.2573	39.99	|qQ	|	|	|	|
7+ 5	17.7526	41.16	|qQ	|	|	|	|
7+10	18.1891	42.13	|qQ	|	|	|	|
7+15	18.6264	43.17	|qQ	|	|	|	|
7+20	19.6630	45.16	|q Q	|	|	|	|

7+25	22.5895	50.26	q Q			
7+30	26.3990	57.03	q Q			
7+35	29.2897	62.38	q Q			
7+40	33.2569	69.26	q Q			
7+45	37.7974	77.17	q Q			
7+50	41.2455	83.36	q Q			
7+55	45.5061	90.72	q Q			
8+ 0	50.2904	99.07	q Q			
8+ 5	54.5232	106.61	q Q			
8+10	61.3913	118.40	q Q			
8+15	69.6651	132.82	q Q			
8+20	74.6557	141.97	q Q			
8+25	77.5401	147.22	q Q			
8+30	79.7151	151.10	q Q			
8+35	82.0562	155.23	q Q			
8+40	85.9934	161.98	q Q			
8+45	90.6571	170.12	q Q			
8+50	94.2113	176.54	q Q			
8+55	98.5439	184.09	q Q			
9+ 0	103.4209	192.59	q Q			
9+ 5	107.7266	200.29	q Q			
9+10	114.6606	212.22	q Q			
9+15	122.9782	226.73	q Q			
9+20	128.5975	236.96	q Q			
9+25	133.9712	246.44	q Q			
9+30	139.5505	256.21	q Q			
9+35	143.7836	263.85	q Q			
9+40	148.5706	272.28	q Q			
9+45	153.7804	281.40	q Q			
9+50	157.7333	288.55	q Q			
9+55	162.3924	296.65	q Q			
10+ 0	167.5279	305.63	q Q			
10+ 5	166.6567	304.63	q Q			
10+10	151.2628	279.17	q Q			
10+15	129.1683	240.85	q Q			
10+20	117.3672	218.90	q Q			
10+25	112.0647	209.03	q Q			
10+30	108.7856	203.04	q Q			
10+35	109.4457	203.84	q Q			
10+40	120.2609	221.74	q Q			
10+45	136.0013	248.91	q Q			
10+50	144.5705	264.73	q Q			
10+55	148.5504	272.10	q Q			
11+ 0	151.0936	276.68	q Q			
11+ 5	152.4667	279.11	q Q			
11+10	151.4496	277.60	q Q			
11+15	149.3227	273.91	q Q			
11+20	148.5002	272.27	q Q			
11+25	148.4410	272.11	q Q			
11+30	148.6117	272.37	q Q			
11+35	147.6356	270.73	q Q			
11+40	143.1765	262.95	q Q			
11+45	136.8990	252.05	q Q			
11+50	134.2178	246.94	q Q			
11+55	135.3622	248.55	q Q			
12+ 0	138.0235	253.05	q Q			
12+ 5	143.6493	262.74	q Q			
12+10	161.6503	293.19	q Q			
12+15	185.7770	335.06	q Q			
12+20	199.8973	361.04	q Q			
12+25	209.1552	377.68	q Q			
12+30	217.1436	391.85	q Q			
12+35	223.7288	403.64	q Q			
12+40	232.3823	418.60	q Q			
12+45	242.0700	435.60	q Q			
12+50	248.7146	447.72	q Q			
12+55	254.9143	458.67	q Q			
13+ 0	261.2141	469.75	q Q			
13+ 5	268.3690	482.46	q Q			



13+10	283.7249	508.51	
13+15	302.9798	542.12	
13+20	314.2084	562.90	
13+25	320.2962	574.16	
13+30	324.7488	582.13	
13+35	321.6467	577.33	
13+40	296.6539	536.13	
13+45	261.4054	475.02	
13+50	242.3985	439.74	
13+55	233.6862	423.56	
14+ 0	228.2220	413.60	
14+ 5	226.6552	410.48	
14+10	233.7667	422.02	
14+15	245.1197	441.51	
14+20	250.4405	451.44	
14+25	250.3912	451.82	
14+30	248.3883	448.42	
14+35	247.5996	446.75	
14+40	247.3154	446.37	
14+45	247.2628	446.17	
14+50	246.7074	445.13	
14+55	244.2877	441.01	
15+ 0	240.9799	435.24	
15+ 5	238.6124	430.92	
15+10	235.7483	425.45	
15+15	232.2307	419.31	
15+20	229.7446	414.78	
15+25	226.4213	409.02	
15+30	222.5898	402.25	
15+35	218.0893	394.26	
15+40	206.9378	375.52	
15+45	192.5844	350.49	
15+50	184.5469	335.54	
15+55	180.5822	328.10	
16+ 0	177.9313	323.25	
16+ 5	168.7410	307.10	
16+10	136.8797	252.08	
16+15	94.3210	175.98	
16+20	70.4622	130.42	
16+25	58.5452	107.64	
16+30	50.3853	92.50	
16+35	43.9911	80.60	
16+40	38.2365	70.00	
16+45	32.9532	60.37	
16+50	29.2578	53.39	
16+55	26.6105	48.37	
17+ 0	24.2788	44.16	
17+ 5	21.8406	39.90	
17+10	17.9222	34.09	
17+15	13.3851	27.85	
17+20	10.7490	24.00	
17+25	9.2767	21.75	
17+30	8.1450	20.07	
17+35	7.3060	18.74	
17+40	7.1404	17.96	
17+45	7.0603	17.94	
17+50	7.8403	18.39	
17+55	11.1402	20.11	
18+ 0	15.5731	22.15	
18+ 5	17.9969	23.09	
18+10	19.1667	23.59	
18+15	19.9409	24.02	
18+20	20.5184	24.37	
18+25	20.9446	24.67	
18+30	21.2754	24.93	
18+35	21.2430	25.27	
18+40	20.2994	25.94	
18+45	18.9099	26.96	
18+50	17.9060	27.28	

18+55	16.4299	25.78	|Q	|	|	|	|
19+ 0	14.6477	23.33	|Q	|	|	|	|
19+ 5	13.9095	22.39	qQ	|	|	|	|
19+10	14.5653	23.70	|Q	|	|	|	|
19+15	15.8185	26.04	|Q	|	|	|	|
19+20	16.7312	27.32	|Q	|	|	|	|
19+25	18.1034	27.66	|Q	|	|	|	|
19+30	19.7943	27.62	|Q	|	|	|	|
19+35	20.4624	27.58	|Q	|	|	|	|
19+40	19.7539	27.76	|Q	|	|	|	|
19+45	18.4622	28.16	|Q	|	|	|	|
19+50	17.5233	28.09	|Q	|	|	|	|
19+55	16.0804	26.36	|Q	|	|	|	|
20+ 0	14.3274	23.77	qQ	|	|	|	|
20+ 5	13.6099	22.73	qQ	|	|	|	|
20+10	14.2937	23.99	qQ	|	|	|	|
20+15	15.5606	26.25	|Q	|	|	|	|
20+20	16.1972	27.50	|Q	|	|	|	|
20+25	16.4612	28.03	|Q	|	|	|	|
20+30	16.6122	28.35	|Q	|	|	|	|
20+35	16.7236	28.61	|Q	|	|	|	|
20+40	16.7855	28.78	|Q	|	|	|	|
20+45	16.8308	28.90	|Q	|	|	|	|
20+50	16.5839	28.52	|Q	|	|	|	|
20+55	15.4127	26.62	|Q	|	|	|	|
21+ 0	13.8201	23.97	qQ	|	|	|	|
21+ 5	13.2204	22.89	qQ	|	|	|	|
21+10	13.9873	24.12	qQ	|	|	|	|
21+15	15.3122	26.35	|Q	|	|	|	|
21+20	15.7099	27.12	|Q	|	|	|	|
21+25	14.8274	25.71	|Q	|	|	|	|
21+30	13.4105	23.32	qQ	|	|	|	|
21+35	12.9429	22.42	qQ	|	|	|	|
21+40	13.7718	23.74	qQ	|	|	|	|
21+45	15.1419	26.05	|Q	|	|	|	|
21+50	15.5744	26.88	|Q	|	|	|	|
21+55	14.6996	25.50	|Q	|	|	|	|
22+ 0	13.2921	23.12	qQ	|	|	|	|
22+ 5	12.8308	22.24	qQ	|	|	|	|
22+10	13.6809	23.57	qQ	|	|	|	|
22+15	15.0637	25.90	|Q	|	|	|	|
22+20	15.5043	26.75	|Q	|	|	|	|
22+25	14.6542	25.40	|Q	|	|	|	|
22+30	13.2714	23.06	qQ	|	|	|	|
22+35	12.5492	21.75	qQ	|	|	|	|
22+40	12.2205	21.18	qQ	|	|	|	|
22+45	12.0012	20.80	qQ	|	|	|	|
22+50	11.8357	20.51	qQ	|	|	|	|
22+55	11.7312	20.30	qQ	|	|	|	|
23+ 0	11.6607	20.17	qQ	|	|	|	|
23+ 5	11.6098	20.08	qQ	|	|	|	|
23+10	11.5528	20.00	qQ	|	|	|	|
23+15	11.4939	19.90	qQ	|	|	|	|
23+20	11.4462	19.81	qQ	|	|	|	|
23+25	11.4249	19.75	qQ	|	|	|	|
23+30	11.4122	19.73	qQ	|	|	|	|
23+35	11.4042	19.71	qQ	|	|	|	|
23+40	11.3795	19.69	qQ	|	|	|	|
23+45	11.3548	19.65	qQ	|	|	|	|
23+50	11.3340	19.61	qQ	|	|	|	|
23+55	11.3340	19.59	qQ	|	|	|	|
24+ 0	11.3340	19.59	qQ	|	|	|	|
24+ 5	10.7708	18.66	qQ	|	|	|	|
24+10	8.4131	14.80	qQ	|	|	|	|
24+15	5.2090	9.38	Q	|	|	|	|
24+20	3.4336	6.17	Q	|	|	|	|
24+25	2.5672	4.61	Q	|	|	|	|
24+30	1.9875	3.59	Q	|	|	|	|
24+35	1.5549	2.83	Q	|	|	|	|

```
   24+40       1.2318      2.25  Q         |         |         |         |
   24+45       0.9729      1.79  Q         |         |         |         |
   24+50       0.7758      1.44  Q         |         |         |         |
   24+55       0.6191      1.16  Q         |         |         |         |
   25+ 0       0.4760      0.91  Q         |         |         |         |
   25+ 5       0.3645      0.71  Q         |         |         |         |
   25+10       0.2725      0.54  Q         |         |         |         |
   25+15       0.1978      0.40  Q         |         |         |         |
   25+20       0.1403      0.29  Q         |         |         |         |
   25+25       0.0909      0.20  Q         |         |         |         |
   25+30       0.0414      0.12  Q         |         |         |         |
   25+35       0.0000      0.04  Q         |         |         |         |
-------------------------------------------------------------------------
       ****************************HYDROGRAPH DATA****************************
                    Number of intervals =   307
                    Time interval =    5.0 (Min.)
                    Maximum/Peak flow rate =      582.129 (CFS)
                    Total volume =     272.665 (Ac.Ft)
             Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
             Peak (CFS)      0.000     0.000     0.000     0.000     0.000
             Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
       *************************************************************************

       -------------------------------------------------------------------


       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
       Process from Point/Station        3.000 to Point/Station        4.000
       **** STREAM ROUTING SCS CONVEX METHOD ****
       _____________________________________________________________________
       HYDROGRAPH STREAM ROUTING DATA:
       Length of stream =   1465.00 (Ft.)
       Elevation difference =   30.70 (Ft.)
       Slope of channel =  0.020956 (Vert/Horiz)
       Channel type - Pipe


       Pipe length  =  1465.00(Ft.)   Elevation difference =  30.70(Ft.)
       Manning's N = 0.013   No. of pipes = 1
       Pipe evaluation using mean flow rate of hydrograph
       Required pipe flow  =   194.549(CFS)
       Given pipe size =     96.00(In.)
       Calculated individual pipe flow  =   194.549(CFS)
       Normal flow depth in pipe =   24.89(In.)
       Flow top width inside pipe =   84.14(In.)
       Critical Depth =    3.49(Ft.)
       Pipe flow velocity =     18.79(Ft/s)
       Travel time through pipe =    1.30 min.


       Pipe length  =  1465.00(Ft.)   Elevation difference =  30.70(Ft.)
       Manning's N = 0.013   No. of pipes = 1
       Pipe evaluation using maximum flow rate of hydrograph
       Required pipe flow  =   582.129(CFS)
       Given pipe size =     96.00(In.)
       Calculated individual pipe flow  =   582.129(CFS)
       Normal flow depth in pipe =   44.63(In.)
       Flow top width inside pipe =   95.76(In.)
       Critical Depth =    6.14(Ft.)
       Pipe flow velocity =     25.44(Ft/s)
       Travel time through pipe =    0.96 min.


       ********************** SCS CONVEX CHANNEL ROUTING ********************
       Convex method of stream routing  data items:
       Using equation: Outflow =
       O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
                 where c* = 1 - (1-c)^e and dt = c(length)/velocity
```

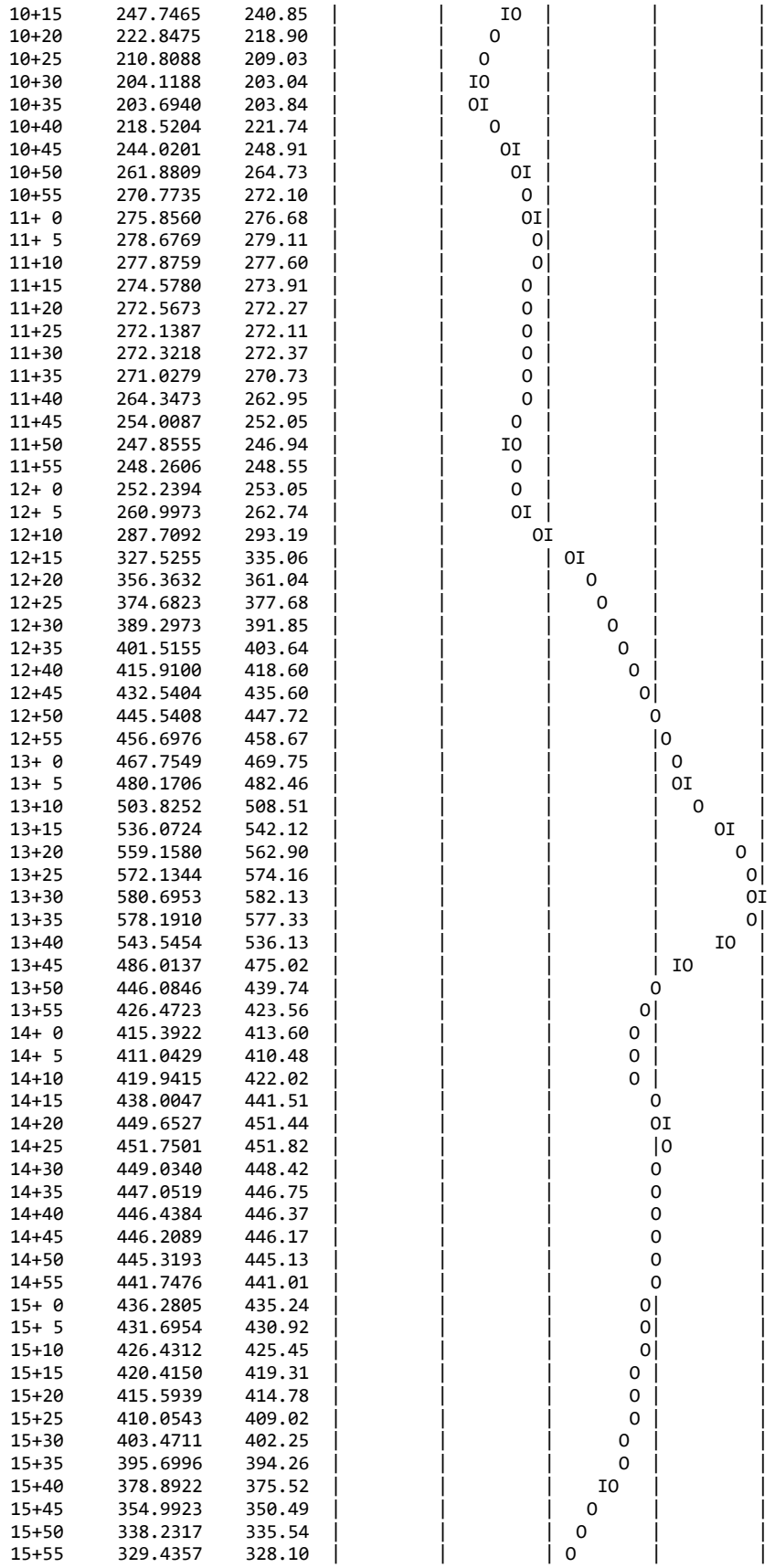
```
              c(v/v+1.7) =   0.9374   Travel time =   0.96 (min.)
            dt*(unit time interval) =   5.00(min.),  e=   4.0387
            dt(routing time-step) =   0.90 (min.),   c* =   1.0000

      Output hydrograph delayed by 0  unit time increments


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                      P R I N T  O F  S T O R M
                   R u n o f f     H y d r o g r a p h
      ----------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals (CFS)

      ----------------------------------------------------------------------
Time(h+m) Out = O(CFS) In = I  0      145.5     291.1     436.6     582.1
----------------------------------------------------------------------------
  0+ 5       0.7604      0.93  O         |         |         |         |
  0+10       4.0893      4.78  O         |         |         |         |
  0+15       9.2332     10.21  O         |         |         |         |
  0+20      13.2149     13.87  O         |         |         |         |
  0+25      16.7363     17.36  |O        |         |         |         |
  0+30      20.4263     21.10  |O        |         |         |         |
  0+35      23.0362     23.46  |O        |         |         |         |
  0+40      24.5734     24.82  |O        |         |         |         |
  0+45      25.6129     25.79  |O        |         |         |         |
  0+50      26.7720     26.99  |O        |         |         |         |
  0+55      29.0345     29.48  |OI       |         |         |         |
  1+ 0      32.0997     32.67  | O       |         |         |         |
  1+ 5      33.9212     34.19  | O       |         |         |         |
  1+10      33.5057     33.35  | O       |         |         |         |
  1+15      31.7619     31.41  | O       |         |         |         |
  1+20      30.5868     30.41  | O       |         |         |         |
  1+25      30.1437     30.09  | O       |         |         |         |
  1+30      29.9804     29.96  | O       |         |         |         |
  1+35      29.8962     29.88  | O       |         |         |         |
  1+40      29.8354     29.83  | O       |         |         |         |
  1+45      29.7719     29.76  | O       |         |         |         |
  1+50      30.1100     30.19  | O       |         |         |         |
  1+55      31.7394     32.08  | O       |         |         |         |
  2+ 0      34.2600     34.74  | O       |         |         |         |
  2+ 5      36.0109     36.29  | O       |         |         |         |
  2+10      36.8995     37.03  | O       |         |         |         |
  2+15      37.4295     37.52  | O       |         |         |         |
  2+20      37.8150     37.88  | O       |         |         |         |
  2+25      38.0973     38.14  | O       |         |         |         |
  2+30      38.2993     38.33  | O       |         |         |         |
  2+35      38.8286     38.94  | O       |         |         |         |
  2+40      40.6150     40.98  | O       |         |         |         |
  2+45      43.3095     43.82  | OI      |         |         |         |
  2+50      45.2172     45.52  |  O      |         |         |         |
  2+55      46.2325     46.39  |  O      |         |         |         |
  3+ 0      46.8627     46.97  |  O      |         |         |         |
  3+ 5      47.3244     47.40  |  O      |         |         |         |
  3+10      47.6759     47.74  |  O      |         |         |         |
  3+15      47.9582     48.01  |  O      |         |         |         |
  3+20      48.1834     48.22  |  O      |         |         |         |
  3+25      48.3551     48.38  |  O      |         |         |         |
  3+30      48.4857     48.51  |  O      |         |         |         |
  3+35      48.5926     48.61  |  O      |         |         |         |
  3+40      48.6794     48.69  |  O      |         |         |         |
  3+45      48.7507     48.76  |  O      |         |         |         |
  3+50      49.1880     49.28  |  O      |         |         |         |
  3+55      50.8995     51.25  |  O      |         |         |         |
  4+ 0      53.5136     54.01  |  O      |         |         |         |
  4+ 5      55.3524     55.65  |  O      |         |         |         |
  4+10      56.3057     56.45  |  O      |         |         |         |
  4+15      56.8688     56.96  |  O      |         |         |         |
  4+20      57.6536     57.81  |  O      |         |         |         |
  4+25      59.6224     60.02  |   O     |         |         |         |
```

4+30	62.4345	62.96	| O |	|	|	|	|
4+35	64.4224	64.74	| O |	|	|	|	|
4+40	65.4977	65.66	| O |	|	|	|	|
4+45	66.1833	66.30	| O |	|	|	|	|
4+50	67.0750	67.25	| O |	|	|	|	|
4+55	69.1307	69.54	| O |	|	|	|	|
5+ 0	72.0141	72.56	| O |	|	|	|	|
5+ 5	73.2986	73.46	| O |	|	|	|	|
5+10	71.0920	70.57	| O |	|	|	|	|
5+15	66.6759	65.82	| O |	|	|	|	|
5+20	64.0043	63.61	| O |	|	|	|	|
5+25	64.2279	64.36	| O |	|	|	|	|
5+30	65.9972	66.36	| O |	|	|	|	|
5+35	66.4929	66.52	| O |	|	|	|	|
5+40	63.8264	63.23	| O |	|	|	|	|
5+45	58.8565	57.90	| IO |	|	|	|	|
5+50	55.0864	54.47	| O |	|	|	|	|
5+55	53.2361	52.97	| O |	|	|	|	|
6+ 0	52.2642	52.11	| O |	|	|	|	|
6+ 5	50.2054	49.79	| O |	|	|	|	|
6+10	43.4856	42.10	| O |	|	|	|	|
6+15	34.0189	32.25	| O |	|	|	|	|
6+20	28.1148	27.21	|O |	|	|	|	|
6+25	25.3845	24.98	|O |	|	|	|	|
6+30	23.8788	23.64	|O |	|	|	|	|
6+35	23.7440	23.77	|O |	|	|	|	|
6+40	26.8335	27.51	|O |	|	|	|	|
6+45	32.2002	33.23	| O |	|	|	|	|
6+50	36.1299	36.77	| O |	|	|	|	|
6+55	38.3147	38.65	| O |	|	|	|	|
7+ 0	39.7522	39.99	| O |	|	|	|	|
7+ 5	40.9529	41.16	| O |	|	|	|	|
7+10	41.9545	42.13	| O |	|	|	|	|
7+15	42.9805	43.17	| O |	|	|	|	|
7+20	44.7980	45.16	| O |	|	|	|	|
7+25	49.3407	50.26	| O |	|	|	|	|
7+30	55.8111	57.03	| O |	|	|	|	|
7+35	61.4193	62.38	| O |	|	|	|	|
7+40	68.0188	69.26	| O |	|	|	|	|
7+45	75.7430	77.17	| O |	|	|	|	|
7+50	82.2457	83.36	| O |	|	|	|	|
7+55	89.3962	90.72	| O |	|	|	|	|
8+ 0	97.5644	99.07	| O |	|	|	|	|
8+ 5	105.2523	106.61	| O |	|	|	|	|
8+10	116.2820	118.40	| OI |	|	|	|	|
8+15	130.2254	132.82	| OI|	|	|	|	|
8+20	140.3261	141.97	| O|	|	|	|	|
8+25	146.2798	147.22	| O |	|	|	|	|
8+30	150.4025	151.10	| O |	|	|	|	|
8+35	154.4875	155.23	| O |	|	|	|	|
8+40	160.7683	161.98	| |O |	|	|	|	|
8+45	168.6540	170.12	| |O |	|	|	|	|
8+50	175.3820	176.54	| | O |	|	|	|	|
8+55	182.7285	184.09	| | O |	|	|	|	|
9+ 0	191.0633	192.59	| | O |	|	|	|	|
9+ 5	198.9086	200.29	| | O |	|	|	|	|
9+10	210.0740	212.22	| | O |	|	|	|	|
9+15	224.1185	226.73	| | O |	|	|	|	|
9+20	235.1180	236.96	| | O |	|	|	|	|
9+25	244.7302	246.44	| | O |	|	|	|	|
9+30	254.4528	256.21	| | O |	|	|	|	|
9+35	262.4732	263.85	| | O |	|	|	|	|
9+40	270.7589	272.28	| | O |	|	|	|	|
9+45	279.7619	281.40	| | O|	|	|	|	|
9+50	287.2614	288.55	| | O|	|	|	|	|
9+55	295.1890	296.65	| | O |	|	|	|	|
10+ 0	304.0114	305.63	| | OI |	|	|	|	|
10+ 5	304.8086	304.63	| | O |	|	|	|	|
10+10	283.7519	279.17	| | O|	|	|	|	|



16+ 0	324.1231	323.25	|	|	| O	|	|
16+ 5	310.0067	307.10	|	|	|O	|	|
16+10	261.9790	252.08	|	|	IO |	|	|
16+15	189.6761	175.98	|	| IO	|	|	|
16+20	138.6190	130.42	|	IO|	|	|	|
16+25	111.7420	107.64	|	O |	|	|	|
16+30	95.2219	92.50	|	O |	|	|	|
16+35	82.7385	80.60	|	O |	|	|	|
16+40	71.9093	70.00	|	O |	|	|	|
16+45	62.1061	60.37	|	O |	|	|	|
16+50	54.6488	53.39	|	O |	|	|	|
16+55	49.2750	48.37	|	O |	|	|	|
17+ 0	44.9149	44.16	|	O |	|	|	|
17+ 5	40.6662	39.90	|	O |	|	|	|
17+10	35.1324	34.09	|	O |	|	|	|
17+15	28.9682	27.85	|O	|	|	|	|
17+20	24.6893	24.00	|O	|	|	|	|
17+25	22.1567	21.75	|O	|	|	|	|
17+30	20.3766	20.07	|O	|	|	|	|
17+35	18.9799	18.74	|O	|	|	|	|
17+40	18.0988	17.96	|O	|	|	|	|
17+45	17.9417	17.94	|O	|	|	|	|
17+50	18.3096	18.39	|O	|	|	|	|
17+55	19.7975	20.11	|O	|	|	|	|
18+ 0	21.7825	22.15	|O	|	|	|	|
18+ 5	22.9184	23.09	|O	|	|	|	|
18+10	23.5026	23.59	|O	|	|	|	|
18+15	23.9420	24.02	|O	|	|	|	|
18+20	24.3108	24.37	|O	|	|	|	|
18+25	24.6181	24.67	|O	|	|	|	|
18+30	24.8856	24.93	|O	|	|	|	|
18+35	25.2087	25.27	|O	|	|	|	|
18+40	25.8221	25.94	|O	|	|	|	|
18+45	26.7752	26.96	|O	|	|	|	|
18+50	27.2250	27.28	|O	|	|	|	|
18+55	26.0498	25.78	|O	|	|	|	|
19+ 0	23.7721	23.33	|O	|	|	|	|
19+ 5	22.5616	22.39	|O	|	|	|	|
19+10	23.4649	23.70	|O	|	|	|	|
19+15	25.6218	26.04	|O	|	|	|	|
19+20	27.0937	27.32	|O	|	|	|	|
19+25	27.6035	27.66	|O	|	|	|	|
19+30	27.6286	27.62	|O	|	|	|	|
19+35	27.5861	27.58	|O	|	|	|	|
19+40	27.7270	27.76	|O	|	|	|	|
19+45	28.0876	28.16	|O	|	|	|	|
19+50	28.1033	28.09	|O	|	|	|	|
19+55	26.6727	26.36	|O	|	|	|	|
20+ 0	24.2349	23.77	|O	|	|	|	|
20+ 5	22.9174	22.73	|O	|	|	|	|
20+10	23.7673	23.99	|O	|	|	|	|
20+15	25.8460	26.25	|O	|	|	|	|
20+20	27.2767	27.50	|O	|	|	|	|
20+25	27.9343	28.03	|O	|	|	|	|
20+30	28.2956	28.35	|O	|	|	|	|
20+35	28.5609	28.61	|O	|	|	|	|
20+40	28.7520	28.78	|O	|	|	|	|
20+45	28.8818	28.90	|O	|	|	|	|
20+50	28.5908	28.52	|O	|	|	|	|
20+55	26.9651	26.62	|O	|	|	|	|
21+ 0	24.4482	23.97	|O	|	|	|	|
21+ 5	23.0859	22.89	|O	|	|	|	|
21+10	23.8949	24.12	|O	|	|	|	|
21+15	25.9438	26.35	|O	|	|	|	|
21+20	26.9788	27.12	|O	|	|	|	|
21+25	25.9605	25.71	|O	|	|	|	|
21+30	23.7456	23.32	|O	|	|	|	|
21+35	22.5806	22.42	|O	|	|	|	|
21+40	23.4991	23.74	|O	|	|	|	|

```
   21+45      25.6296     26.05  |O        |         |         |         |
   21+50      26.7257     26.88  |O        |         |         |         |
   21+55      25.7453     25.50  |O        |         |         |         |
   22+ 0      23.5476     23.12  |O        |         |         |         |
   22+ 5      22.3943     22.24  |O        |         |         |         |
   22+10      23.3277     23.57  |O        |         |         |         |
   22+15      25.4833     25.90  |O        |         |         |         |
   22+20      26.5985     26.75  |O        |         |         |         |
   22+25      25.6402     25.40  |O        |         |         |         |
   22+30      23.4806     23.06  |O        |         |         |         |
   22+35      21.9852     21.75  |O        |         |         |         |
   22+40      21.2790     21.18  |O        |         |         |         |
   22+45      20.8667     20.80  |O        |         |         |         |
   22+50      20.5614     20.51  |O        |         |         |         |
   22+55      20.3391     20.30  |O        |         |         |         |
   23+ 0      20.1924     20.17  |O        |         |         |         |
   23+ 5      20.0931     20.08  |O        |         |         |         |
   23+10      20.0110     20.00  |O        |         |         |         |
   23+15      19.9175     19.90  |O        |         |         |         |
   23+20      19.8296     19.81  |O        |         |         |         |
   23+25      19.7649     19.75  |O        |         |         |         |
   23+30      19.7318     19.73  |O        |         |         |         |
   23+35      19.7128     19.71  |O        |         |         |         |
   23+40      19.6907     19.69  |O        |         |         |         |
   23+45      19.6525     19.65  |O        |         |         |         |
   23+50      19.6145     19.61  |O        |         |         |         |
   23+55      19.5896     19.59  |O        |         |         |         |
   24+ 0      19.5856     19.59  |O        |         |         |         |
   24+ 5      18.8251     18.66  |O        |         |         |         |
   24+10      15.4962     14.80  |O        |         |         |         |
   24+15      10.3524      9.38  O         |         |         |         |
   24+20       6.7509      6.17  O         |         |         |         |
   24+25       4.8940      4.61  O         |         |         |         |
   24+30       3.7759      3.59  O         |         |         |         |
   24+35       2.9667      2.83  O         |         |         |         |
   24+40       2.3579      2.25  O         |         |         |         |
   24+45       1.8775      1.79  O         |         |         |         |
   24+50       1.5032      1.44  O         |         |         |         |
   24+55       1.2096      1.16  O         |         |         |         |
   25+ 0       0.9565      0.91  O         |         |         |         |
   25+ 5       0.7426      0.71  O         |         |         |         |
   25+10       0.5690      0.54  O         |         |         |         |
   25+15       0.4265      0.40  O         |         |         |         |
   25+20       0.3123      0.29  O         |         |         |         |
   25+25       0.2182      0.20  O         |         |         |         |
   25+30       0.1339      0.12  O         |         |         |         |
   25+35       0.0578      0.04  O         |         |         |         |
   25+40       0.0080      0.00  O         |         |         |         |
   25+45       0.0000      0.00  O         |         |         |         |
--------------------------------------------------------------------
       ****************************HYDROGRAPH DATA****************************
                     Number of intervals =   309
                     Time interval =    5.0 (Min.)
                     Maximum/Peak flow rate =      580.695 (CFS)
                     Total volume =     272.665 (Ac.Ft)
              Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
              Peak (CFS)      0.000     0.000     0.000     0.000     0.000
              Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
       ***********************************************************************

       ---------------------------------------------------------------------


       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
       Process from Point/Station        3.000 to Point/Station        4.000
       **** ADD/COMBINE/RECOVER HYDROGRAPHS ****

       ____________________________________________________________________
       ********************* HYDROGRAPH INFORMATION **********************
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From study/file name: A4P24100.rte

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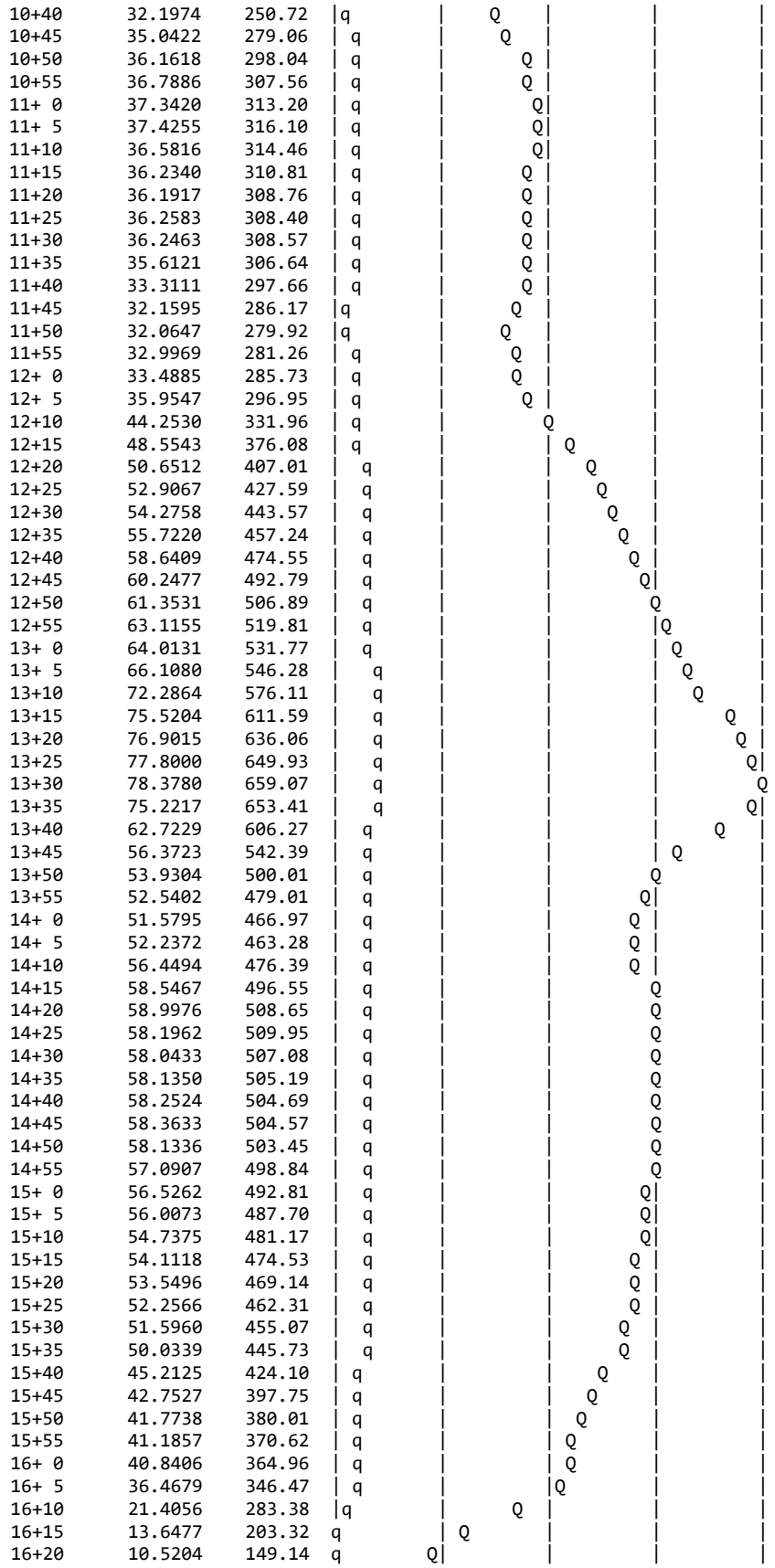
P R I N T O F S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Add q(CFS)	Tot. Q	0	164.8	329.5	494.3	659.1
0+ 5	0.2883	1.05	Q				
0+10	1.3224	5.41	Q				
0+15	1.8534	11.09	Q				
0+20	2.2093	15.42	Q				
0+25	2.8547	19.59	qQ				
0+30	3.2034	23.63	qQ				
0+35	3.3670	26.40	qQ				
0+40	3.4737	28.05	qQ				
0+45	3.5452	29.16	qQ				
0+50	3.7384	30.51	qQ				
0+55	4.2997	33.33	q Q				
1+ 0	4.5802	36.68	q Q				
1+ 5	4.5521	38.47	q Q				
1+10	4.1106	37.62	q Q				
1+15	3.8867	35.65	q Q				
1+20	3.8096	34.40	q Q				
1+25	3.7668	33.91	q Q				
1+30	3.7401	33.72	q Q				
1+35	3.7214	33.62	q Q				
1+40	3.7116	33.55	q Q				
1+45	3.6966	33.47	q Q				
1+50	3.8306	33.94	q Q				
1+55	4.3362	36.08	q Q				
2+ 0	4.6017	38.86	q Q				
2+ 5	4.7076	40.72	q Q				
2+10	4.7718	41.67	q Q				
2+15	4.8134	42.24	q Q				
2+20	4.8422	42.66	q Q				
2+25	4.8635	42.96	q Q				
2+30	4.8785	43.18	q Q				
2+35	5.0327	43.86	q Q				
2+40	5.5612	46.18	q Q				
2+45	5.8268	49.14	q Q				
2+50	5.9327	51.15	q Q				
2+55	5.9968	52.23	q Q				
3+ 0	6.0384	52.90	q Q				
3+ 5	6.0672	53.39	q Q				
3+10	6.0885	53.76	q Q				
3+15	6.1035	54.06	q Q				
3+20	6.1136	54.30	q Q				
3+25	6.1251	54.48	q Q				
3+30	6.1251	54.61	q Q				
3+35	6.1251	54.72	q Q				
3+40	6.1251	54.80	q Q				
3+45	6.1251	54.88	q Q				
3+50	6.2692	55.46	q Q				
3+55	6.7862	57.69	q Q				
4+ 0	7.0518	60.57	q Q				
4+ 5	7.1577	62.51	q Q				
4+10	7.2218	63.53	q Q				
4+15	7.2634	64.13	q Q				
4+20	7.4364	65.09	q Q				
4+25	7.9747	67.60	q Q				
4+30	8.2552	70.69	q Q				
4+35	8.3712	72.79	q Q				
4+40	8.4468	73.94	q Q				
4+45	8.4884	74.67	q Q				
4+50	8.6614	75.74	q Q				

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 4+55       9.1997     78.33  q   Q     |          |          |          |
 5+ 0       9.4802     81.49  q   Q     |          |          |          |
 5+ 5       9.3080     82.61  q    Q    |          |          |          |
 5+10       8.3494     79.44  q   Q     |          |          |          |
 5+15       7.8600     74.54  q   Q     |          |          |          |
 5+20       7.8212     71.83  q   Q     |          |          |          |
 5+25       8.2313     72.46  q   Q     |          |          |          |
 5+30       8.4285     74.43  q   Q     |          |          |          |
 5+35       8.6310     75.12  q   Q     |          |          |          |
 5+40       9.1811     73.01  q   Q     |          |          |          |
 5+45       9.4583     68.31  q   Q     |          |          |          |
 5+50       9.5728     64.66  q  Q      |          |          |          |
 5+55       9.6353     62.87  q  Q      |          |          |          |
 6+ 0       9.6919     61.96  q  Q      |          |          |          |
 6+ 5       8.8950     59.10  q  Q      |          |          |          |
 6+10       5.9411     49.43  q Q       |          |          |          |
 6+15       4.4696     38.49  q Q       |          |          |          |
 6+20       3.9402     32.05  qQ        |          |          |          |
 6+25       3.6626     29.05  qQ        |          |          |          |
 6+30       3.5091     27.39  qQ        |          |          |          |
 6+35       3.7583     27.50  qQ        |          |          |          |
 6+40       4.8951     31.73  qQ        |          |          |          |
 6+45       5.5021     37.70  q Q       |          |          |          |
 6+50       5.7780     41.91  q Q       |          |          |          |
 6+55       5.9524     44.27  q Q       |          |          |          |
 7+ 0       6.1431     45.90  q Q       |          |          |          |
 7+ 5       6.3046     47.26  q Q       |          |          |          |
 7+10       6.4489     48.40  q Q       |          |          |          |
 7+15       6.5786     49.56  q  Q      |          |          |          |
 7+20       7.0225     51.82  q  Q      |          |          |          |
 7+25       8.3109     57.65  q  Q      |          |          |          |
 7+30       9.0055     64.82  q  Q      |          |          |          |
 7+35       9.6648     71.08  q   Q     |          |          |          |
 7+40      11.0714     79.09  q   Q     |          |          |          |
 7+45      11.8591     87.60  q    Q    |          |          |          |
 7+50      12.5827     94.83  q    Q    |          |          |          |
 7+55      14.0365    103.43  q     Q   |          |          |          |
 8+ 0      14.8572    112.42  q     Q   |          |          |          |
 8+ 5      15.9282    121.18  q      Q  |          |          |          |
 8+10      18.5743    134.86  |q      Q |          |          |          |
 8+15      19.9936    150.22  |q       Q|          |          |          |
 8+20      20.6521    160.98  |q       Q|          |          |          |
 8+25      21.1078    167.39  |q        Q          |          |          |
 8+30      21.4215    171.82  |q        Q          |          |          |
 8+35      21.9916    176.48  |q        Q          |          |          |
 8+40      23.3722    184.14  |q        |Q         |          |          |
 8+45      24.1304    192.78  |q        |Q         |          |          |
 8+50      24.8314    200.21  |q        | Q        |          |          |
 8+55      26.2856    209.01  |q        | Q        |          |          |
 9+ 0      27.0693    218.13  |q        |  Q       |          |          |
 9+ 5      28.1143    227.02  |q        |  Q       |          |          |
 9+10      30.7313    240.81  |q        |   Q      |          |          |
 9+15      32.1473    256.27  |q        |    Q     |          |          |
 9+20      33.1280    268.25  | q       |     Q    |          |          |
 9+25      34.7476    279.48  | q       |     Q    |          |          |
 9+30      35.6574    290.11  | q       |      Q   |          |          |
 9+35      36.4633    298.94  | q       |       Q  |          |          |
 9+40      37.9853    308.74  | q       |       Q  |          |          |
 9+45      38.8342    318.60  | q       |        Q |          |          |
 9+50      39.5969    326.86  | q       |        Q |          |          |
 9+55      41.0960    336.28  | q       |         Q|          |          |
10+ 0      41.9102    345.92  | q       |         Q|          |          |
10+ 5      40.0464    344.85  | q       |         Q|          |          |
10+10      32.1815    315.93  |q        |        Q |          |          |
10+15      28.1997    275.95  |q        |     Q    |          |          |
10+20      26.7004    249.55  |q        |    Q     |          |          |
10+25      25.8466    236.66  |q        |   Q      |          |          |
10+30      25.3082    229.43  |q        |  Q       |          |          |
10+35      26.5873    230.28  |q        |  Q       |          |          |
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16+25	8.5789	120.32	q Q	|	|	|	|
16+30	7.3863	102.61	q Q	|	|	|	|
16+35	6.4157	89.15	q Q	|	|	|	|
16+40	5.2883	77.20	q Q	|	|	|	|
16+45	4.5931	66.70	q Q	|	|	|	|
16+50	4.1968	58.85	q Q	|	|	|	|
16+55	3.8033	53.08	q Q	|	|	|	|
17+ 0	3.7617	48.68	q Q	|	|	|	|
17+ 5	3.5618	44.23	q Q	|	|	|	|
17+10	2.9335	38.07	q Q	|	|	|	|
17+15	2.6349	31.60	qQ	|	|	|	|
17+20	2.5431	27.23	qQ	|	|	|	|
17+25	2.5042	24.66	qQ	|	|	|	|
17+30	2.5063	22.88	qQ	|	|	|	|
17+35	2.5252	21.51	qQ	|	|	|	|
17+40	2.5541	20.65	qQ	|	|	|	|
17+45	2.5911	20.53	qQ	|	|	|	|
17+50	2.8892	21.20	qQ	|	|	|	|
17+55	3.2651	23.06	qQ	|	|	|	|
18+ 0	1.7083	23.49	qQ	|	|	|	|
18+ 5	0.8815	23.80	qQ	|	|	|	|
18+10	0.6231	24.13	qQ	|	|	|	|
18+15	0.4926	24.43	qQ	|	|	|	|
18+20	0.4298	24.74	qQ	|	|	|	|
18+25	0.4046	25.02	qQ	|	|	|	|
18+30	0.3983	25.28	qQ	|	|	|	|
18+35	0.7881	26.00	qQ	|	|	|	|
18+40	2.1760	28.00	qQ	|	|	|	|
18+45	2.8535	29.63	qQ	|	|	|	|
18+50	3.0011	30.23	qQ	|	|	|	|
18+55	2.6613	28.71	qQ	|	|	|	|
19+ 0	2.5109	26.28	qQ	|	|	|	|
19+ 5	2.6288	25.19	qQ	|	|	|	|
19+10	3.1403	26.61	qQ	|	|	|	|
19+15	3.4052	29.03	qQ	|	|	|	|
19+20	3.1823	30.28	qQ	|	|	|	|
19+25	2.0866	29.69	qQ	|	|	|	|
19+30	1.5353	29.16	qQ	|	|	|	|
19+35	1.6598	29.25	qQ	|	|	|	|
19+40	2.6733	30.40	qQ	|	|	|	|
19+45	3.1832	31.27	qQ	|	|	|	|
19+50	3.2202	31.32	qQ	|	|	|	|
19+55	2.8097	29.48	qQ	|	|	|	|
20+ 0	2.6034	26.84	qQ	|	|	|	|
20+ 5	2.6834	25.60	qQ	|	|	|	|
20+10	3.1580	26.93	qQ	|	|	|	|
20+15	3.4156	29.26	qQ	|	|	|	|
20+20	3.5153	30.79	qQ	|	|	|	|
20+25	3.5833	31.52	qQ	|	|	|	|
20+30	3.6099	31.91	qQ	|	|	|	|
20+35	3.6287	32.19	qQ	|	|	|	|
20+40	3.6385	32.39	qQ	|	|	|	|
20+45	3.6535	32.54	qQ	|	|	|	|
20+50	3.5195	32.11	qQ	|	|	|	|
20+55	3.0138	29.98	qQ	|	|	|	|
21+ 0	2.7483	27.20	qQ	|	|	|	|
21+ 5	2.7866	25.87	qQ	|	|	|	|
21+10	3.2395	27.13	qQ	|	|	|	|
21+15	3.4634	29.41	qQ	|	|	|	|
21+20	3.3963	30.38	qQ	|	|	|	|
21+25	2.9221	28.88	qQ	|	|	|	|
21+30	2.6832	26.43	qQ	|	|	|	|
21+35	2.7402	25.32	qQ	|	|	|	|
21+40	3.2029	26.70	qQ	|	|	|	|
21+45	3.4418	29.07	qQ	|	|	|	|
21+50	3.3849	30.11	qQ	|	|	|	|
21+55	2.9221	28.67	qQ	|	|	|	|
22+ 0	2.6832	26.23	qQ	|	|	|	|
22+ 5	2.7402	25.13	qQ	|	|	|	|

22+10	3.2029	26.53	qQ	|	|	|	|
22+15	3.4418	28.93	qQ	|	|	|	|
22+20	3.3849	29.98	qQ	|	|	|	|
22+25	2.9221	28.56	qQ	|	|	|	|
22+30	2.6832	26.16	qQ	|	|	|	|
22+35	2.5961	24.58	qQ	|	|	|	|
22+40	2.5418	23.82	qQ	|	|	|	|
22+45	2.5151	23.38	qQ	|	|	|	|
22+50	2.4964	23.06	qQ	|	|	|	|
22+55	2.4866	22.83	qQ	|	|	|	|
23+ 0	2.4716	22.66	qQ	|	|	|	|
23+ 5	2.4615	22.55	qQ	|	|	|	|
23+10	2.4500	22.46	qQ	|	|	|	|
23+15	2.4500	22.37	qQ	|	|	|	|
23+20	2.4500	22.28	qQ	|	|	|	|
23+25	2.4500	22.21	qQ	|	|	|	|
23+30	2.4500	22.18	qQ	|	|	|	|
23+35	2.4500	22.16	qQ	|	|	|	|
23+40	2.4500	22.14	qQ	|	|	|	|
23+45	2.4500	22.10	qQ	|	|	|	|
23+50	2.4500	22.06	qQ	|	|	|	|
23+55	2.4500	22.04	qQ	|	|	|	|
24+ 0	2.4500	22.04	qQ	|	|	|	|
24+ 5	2.1618	20.99	qQ	|	|	|	|
24+10	1.1277	16.62	qQ	|	|	|	|
24+15	0.5966	10.95	Q	|	|	|	|
24+20	0.3848	7.14	Q	|	|	|	|
24+25	0.2566	5.15	Q	|	|	|	|
24+30	0.1733	3.95	Q	|	|	|	|
24+35	0.1157	3.08	Q	|	|	|	|
24+40	0.0731	2.43	Q	|	|	|	|
24+45	0.0431	1.92	Q	|	|	|	|
24+50	0.0229	1.53	Q	|	|	|	|
24+55	0.0000	1.21	Q	|	|	|	|
25+ 0	0.0000	0.96	Q	|	|	|	|
25+ 5	0.0000	0.74	Q	|	|	|	|
25+10	0.0000	0.57	Q	|	|	|	|
25+15	0.0000	0.43	Q	|	|	|	|
25+20	0.0000	0.31	Q	|	|	|	|
25+25	0.0000	0.22	Q	|	|	|	|
25+30	0.0000	0.13	Q	|	|	|	|
25+35	0.0000	0.06	Q	|	|	|	|
25+40	0.0000	0.01	Q	|	|	|	|
25+45	0.0000	0.00	Q	|	|	|	|

**********HYDROGRAPH DATA**********

Number of intervals = 309
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 659.073 (CFS)
Total volume = 308.316 (Ac.Ft)

Status of hydrographs being held in storage

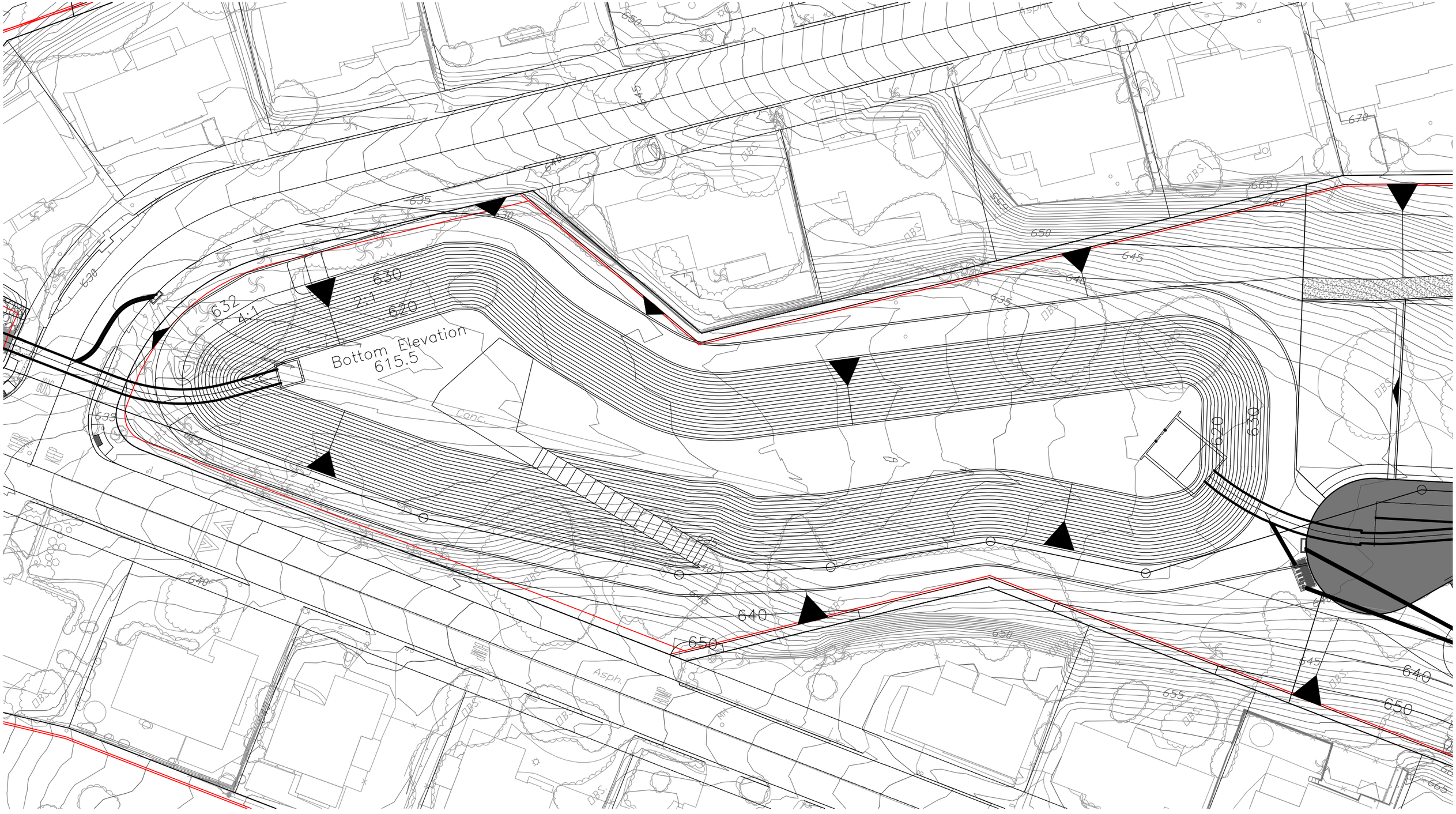
	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

Appendix

D

PA3 DETENTION BASIN STAGE-STORAGE-OUTFLOW CALCULATIONS, AND SPILLWAY CALCULATIONS


Bottom Elevation
615.5
2:1
4:1
630
620
632
635
640
645
650
655
660
665
670
Asph.
Conc.
DBS
SSD

Date: 05/02/2024

PA3 Basin : Stage Storage Outflow Table								
Elev	Incremental	Cumulative Depth	Area	Avg Area	Incremential Volume	Cumulative Vol	Cumulative Vol	Outflow
(ft)	(ft)	(ft)	(ft^2)	(ft^2)	(ft^3)	(ft^3)	(ac-ft)	(cfs)
615.5	-	0.0	24830.5			0.0	0.00	0.00
				25432.7				
616.0	0.5	0.5	26034.9		12716.3	12716.3	0.29	17.510
				27240.8				
617.0	1.0	1.5	28446.7		27240.8	39957.1	0.92	52.530
				29658.8				
618.0	1.0	2.5	30871.0		29658.8	69616.0	1.60	87.550
				32095.7				
619.0	1.0	3.5	33320.4		32095.7	101711.7	2.33	122.570
				34545.8				
620.0	1.0	4.5	35771.2		34545.8	136257.5	3.13	150.12
				37018.3				
621.0	1.0	5.5	38265.3		37018.3	173275.8	3.98	173.34
				39525.3				
622.0	1.0	6.5	40785.2		39525.3	212801.1	4.89	193.80
				42057.4				
623.0	1.0	7.5	43329.6		42057.4	254858.5	5.85	212.30
				44614.3				
624.0	1.0	8.5	45899.1		44614.3	299472.8	6.87	229.31
				47196.4				
625.0	1.0	9.5	48493.7		47196.4	346669.2	7.96	245.14
				49803.5				
626.0	1.0	10.5	51113.4		49803.5	396472.7	9.10	260.01
				52435.8				
627.0	1.0	11.5	53758.2		52435.8	448908.5	10.31	274.07
				55093.2				
628.0	1.0	12.5	56428.1		55093.2	504001.7	11.57	287.45
				57775.8				
629.0	1.0	13.5	59123.5		57775.8	561777.5	12.90	300.23
				60483.7				
630.0	1.0	14.5	61843.8		60483.7	622261.2	14.29	312.49
				63216.3				
631.0	1.0	15.5	64588.8		63216.3	685477.5	15.74	324.29
				66002.7				
632.0	1.0	16.5	67416.5		66002.7	751480.2	17.25	353.67

File Path: R:/1511/Prelim/Reports/Hydro/New Calculations 1-19-2024/PA3 Detention Basin05-02-2024.xlsx

6.0' W x 3.0' H Box Culvert Outlet for PA3 Detention Basin 3-29-2019, Updated on 4-4-2019

Elev	Basin Depth	Width	Height	Centroid	Area	Cd	2g	Hw[(1)]	h	Q[(2)]
(NAD88)	(ft)	(ft)	(ft)	(ft)	(sqft)			(ft)	(ft)	(cfs)
615.5	0	6.0	3.0	1.5	18	0.6	64.4	0	n/a	0
616	0.5	6.0	3.0	1.5	18	0.6	64.4	0.5	n/a	17.51
617	1.5	6.0	3.0	1.5	18	0.6	64.4	1.5	n/a	52.53
618	2.5	6.0	3.0	1.5	18	0.6	64.4	2.5	n/a	87.55
619	3.5	6.0	3.0	1.5	18	0.6	64.4	3.5	2	122.57
620	4.5	6.0	3.0	1.5	18	0.6	64.4	4.5	3	150.12
621	5.5	6.0	3.0	1.5	18	0.6	64.4	5.5	4	173.34
622	6.5	6.0	3.0	1.5	18	0.6	64.4	6.5	5	193.80
623	7.5	6.0	3.0	1.5	18	0.6	64.4	7.5	6	212.30
624	8.5	6.0	3.0	1.5	18	0.6	64.4	8.5	7	229.31
625	9.5	6.0	3.0	1.5	18	0.6	64.4	9.5	8	245.14
626	10.5	6.0	3.0	1.5	18	0.6	64.4	10.5	9	260.01
627	11.5	6.0	3.0	1.5	18	0.6	64.4	11.5	10	274.07
628	12.5	6.0	3.0	1.5	18	0.6	64.4	12.5	11	287.45
629	13.5	6.0	3.0	1.5	18	0.6	64.4	13.5	12	300.23
630	14.5	6.0	3.0	1.5	18	0.6	64.4	14.5	13	312.49
631	15.5	6.0	3.0	1.5	18	0.6	64.4	15.5	14	324.29
632	16.5	6.0	3.0	1.5	18	0.6	64.4	16.5	15	335.67

(1) For Hw less than 3.5', Q = (122.57/3.5) X Hw

(2) $Q = C_d A(2gh)^{1/2}$

PA3 Basin: Trapezoidal Spillway Calculations

Basin	Crest Elevation	Spillway Length (L)	Side Slope (Z)	Weir Coefficient (C)	Head (H)	Q_{Rect}(1)	Q_{Tri}(2)	$Q_{Spillway}$(3)
(ID)	(ft)	(ft)	(horiz/vert)	-	(ft)	(cfs)	(cfs)	(cfs)
1	632.0	86	10	3.0	1.3	384.6	23.3	431.3

(1) $Q_{Rect} = CLH^{3/2}$ (rectangular portion of the trapezoidal spillway)

(2) $Q_{Tri} = (2/5)CZH^{5/2}$ (triangle wedge spillway discharge for one side)

(3) $Q_{Spillway} = Q_{Rect} + 2Q_{Tri}$

Appendix

E

PROPOSED CONDITION DETENTION ROUTING

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 05/02/24

County Club Creek and North Tributary at 91 Freeway Culvert
The Trails Proposed Condition
100-Year 3-Hour Storm Routing
L.Johnson/05/02/2024

Program License Serial Number 6062

********** HYDROGRAPH INFORMATION **********

From study/file name: A5P3100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 55
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 431.190 (CFS)
Total volume = 41.882 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****
_____

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 55
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.500	0.290	17.510	0.230	0.350
1.500	0.920	52.530	0.739	1.101
2.500	1.600	87.550	1.299	1.901
3.500	2.330	122.570	1.908	2.752
4.500	3.130	150.120	2.613	3.647
5.500	3.980	173.340	3.383	4.577
6.500	4.890	193.800	4.223	5.557
7.500	5.850	212.300	5.119	6.581
8.500	6.870	229.310	6.080	7.660
9.500	7.960	245.140	7.116	8.804
10.500	9.100	260.010	8.205	9.995
11.500	10.310	274.070	9.366	11.254

12.500	11.570	287.450	10.580	12.560
13.500	12.900	300.230	11.866	13.934
14.500	14.290	312.490	13.214	15.366
15.500	15.740	324.290	14.623	16.857
16.500	17.250	353.670	16.032	18.468

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 107.8 215.60 323.39 431.19	Depth (Ft.)
0.083	2.22	0.38	0.006	O | | | |	0.01
0.167	11.33	2.58	0.043	O | | | |	0.07
0.250	24.15	7.80	0.129	OI | | | |	0.22
0.333	31.33	14.66	0.243	|OI | | | |	0.42
0.417	37.06	21.13	0.355	|OI | | | |	0.60
0.500	46.64	27.79	0.475	| OI | | | |	0.79
0.583	56.11	35.37	0.611	| O I | | | |	1.01
0.667	62.64	43.08	0.750	| OI | | | |	1.23
0.750	66.97	50.06	0.876	| OI | | | |	1.43
0.833	72.00	56.07	0.989	| OI | | | |	1.60
0.917	72.74	60.98	1.084	| OI | | | |	1.74
1.000	71.24	64.30	1.148	| OI | | | |	1.84
1.083	75.57	67.04	1.202	| OI | | | |	1.91
1.167	86.56	71.27	1.284	| OI | | | |	2.03
1.250	98.52	77.68	1.408	| O I| | | |	2.22
1.333	105.17	84.96	1.550	| OI| | | |	2.43
1.417	108.34	91.29	1.678	| O I | | |	2.61
1.500	115.77	97.18	1.801	| OI | | |	2.77
1.583	128.37	104.24	1.948	| O|I | | |	2.98
1.667	135.92	112.15	2.113	| O I | | |	3.20
1.750	141.65	119.70	2.270	| O I | | |	3.42
1.833	155.42	126.54	2.445	| |O I | | |	3.64
1.917	169.54	134.16	2.667	| |O I | | |	3.92
2.000	173.70	142.10	2.897	| O I | | |	4.21
2.083	174.46	148.88	3.094	| OI | | |	4.46
2.167	181.79	154.14	3.277	| O I | | |	4.67
2.250	205.03	160.90	3.525	| O I| | |	4.96
2.333	237.89	171.31	3.906	| O |I | |	5.41
2.417	262.03	182.95	4.407	| O | I | |	5.97
2.500	299.29	196.56	5.033	| O | I | |	6.65
2.583	371.20	213.63	5.930	| O| | I |	7.58
2.667	430.25	233.38	7.150	| |O | I|	8.76
2.750	431.19	251.49	8.447	| | O | I	9.93
2.833	354.18	263.25	9.379	| | O | I |	10.73
2.917	254.45	266.41	9.651	| | IO | |	10.96
3.000	191.49	263.07	9.363	| I | O | |	10.72
3.083	149.72	255.48	8.752	| I | O | |	10.20
3.167	110.35	244.64	7.926	| I | O | |	9.47
3.250	80.57	230.43	6.947	| I | |O | |	8.57
3.333	61.86	213.30	5.910	| I | O| | |	7.56
3.417	49.29	193.81	4.891	| I | O | | |	6.50
3.500	39.94	172.18	3.938	| I | O | | |	5.45
3.583	32.89	148.54	3.084	| I | O | | |	4.44
3.667	26.94	123.39	2.354	|I |O | | |	3.53
3.750	22.02	95.62	1.768	|I O| | | |	2.73
3.833	17.77	73.31	1.323	|I O | | | |	2.09
3.917	13.88	55.99	0.987	|I O | | | |	1.60
4.000	11.69	42.34	0.737	I O | | | |	1.21
4.083	8.93	32.05	0.552	I O | | | |	0.92
4.167	6.52	24.23	0.411	IO | | | |	0.69
4.250	3.62	18.07	0.300	IO | | | |	0.52
4.333	1.40	12.76	0.211	O | | | |	0.36
4.417	0.93	8.77	0.145	O | | | |	0.25
4.500	0.57	6.01	0.100	O | | | |	0.17
4.583	0.11	4.06	0.067	O | | | |	0.12
4.667	0.00	2.68	0.044	O | | | |	0.08

```
4.750    0.00    1.76      0.029  O       |       |       |       |     0.05
4.833    0.00    1.15      0.019  O       |       |       |       |     0.03
4.917    0.00    0.76      0.013  O       |       |       |       |     0.02
5.000    0.00    0.50      0.008  O       |       |       |       |     0.01
5.083    0.00    0.32      0.005  O       |       |       |       |     0.01
5.167    0.00    0.21      0.004  O       |       |       |       |     0.01
5.250    0.00    0.14      0.002  O       |       |       |       |     0.00
5.333    0.00    0.09      0.002  O       |       |       |       |     0.00
5.417    0.00    0.06      0.001  O       |       |       |       |     0.00
5.500    0.00    0.04      0.001  O       |       |       |       |     0.00
5.583    0.00    0.03      0.000  O       |       |       |       |     0.00

      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =    67
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =      266.410 (CFS)
                  Total volume =      41.881 (Ac.Ft)
           Status of hydrographs being held in storage
                     Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
           Peak (CFS)      0.000     0.000     0.000     0.000     0.000
           Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ************************************************************************

      ------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station        2.000 to Point/Station        3.000
      **** ADD/COMBINE/RECOVER HYDROGRAPHS ****
      ______________________________________________________________________
      ********************* HYDROGRAPH INFORMATION **********************

                  From study/file name: A1P3100.rte
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    P R I N T  O F  S T O R M
                  R u n o f f     H y d r o g r a p h
      ----------------------------------------------------------------------
               Hydrograph in   5   Minute intervals (CFS)

      ----------------------------------------------------------------------
Time(h+m) Add q(CFS)  Tot. Q   0      200.3     400.5     600.8     801.1
----------------------------------------------------------------------------
  0+ 5       2.6501      3.03  Q         |         |         |         |
  0+10      13.7434     16.32  Q         |         |         |         |
  0+15      27.7942     35.59  |Q        |         |         |         |
  0+20      33.9068     48.57  |qQ       |         |         |         |
  0+25      40.7336     61.86  | qQ      |         |         |         |
  0+30      53.4295     81.22  | q Q     |         |         |         |
  0+35      65.2476    100.62  |  q Q    |         |         |         |
  0+40      72.7141    115.80  |  q Q    |         |         |         |
  0+45      77.7907    127.85  |  q  Q   |         |         |         |
  0+50      84.4319    140.50  |   q  Q  |         |         |         |
  0+55      84.0146    144.99  |   q  Q  |         |         |         |
  1+ 0      81.6587    145.95  |   q  Q  |         |         |         |
  1+ 5      88.3087    155.35  |   q  Q  |         |         |         |
  1+10     103.7193    174.98  |    q  Q |         |         |         |
  1+15     119.2000    196.88  |    q   Q|         |         |         |
  1+20     126.6649    211.62  |     q   Q         |         |         |
  1+25     130.1015    221.39  |     q   |Q        |         |         |
  1+30     140.8807    238.06  |      q  |Q        |         |         |
  1+35     158.2614    262.50  |      q  |  Q      |         |         |
  1+40     166.1393    278.29  |       q |  Q      |         |         |
  1+45     173.5557    293.26  |       q |   Q     |         |         |
  1+50     193.6298    320.17  |        q|    Q    |         |         |
  1+55     211.4262    345.59  |         q      Q  |         |         |
  2+ 0     214.6948    356.80  |         q      Q  |         |         |
  2+ 5     215.2779    364.16  |         q       Q |         |         |
  2+10     226.1598    380.30  |         |q      Q |         |         |
  2+15     259.3540    420.25  |         | q       Q         |         |
```

```
    2+20     304.3437    475.66  |          |    q     |  Q       |          |
    2+25     332.5116    515.46  |          |     q    |    Q     |          |
    2+30     385.4287    581.99  |          |        q |        Q |          |
    2+35     486.1909    699.82  |          |          |   q      |   Q      |
    2+40     559.3293    792.71  |          |          |      q   |        Q |
    2+45     549.5592    801.05  |          |          |      q   |          Q
    2+50     433.3920    696.64  |          |          |q         |   Q      |
    2+55     301.0206    567.43  |          |    q     |        Q |          |
    3+ 0     226.4662    489.53  |          |q         |   Q      |          |
    3+ 5     176.0683    431.55  |        q |          |Q         |          |
    3+10     127.4952    372.14  |      q   |        Q |          |          |
    3+15      91.8873    322.32  |    q     |      Q   |          |          |
    3+20      70.3079    283.61  |  q       |    Q     |          |          |
    3+25      55.4630    249.28  | q        | Q        |          |          |
    3+30      44.7538    216.94  | q        Q          |          |          |
    3+35      36.2501    184.79  |q        Q|          |          |          |
    3+40      28.9118    152.30  |q     Q   |          |          |          |
    3+45      22.7714    118.39  |q   Q     |          |          |          |
    3+50      17.7984     91.11  q   Q      |          |          |          |
    3+55      14.2909     70.28  q  Q       |          |          |          |
    4+ 0      10.5621     52.90  q Q        |          |          |          |
    4+ 5       7.1055     39.15  qQ         |          |          |          |
    4+10       3.6579     27.89  qQ         |          |          |          |
    4+15       1.5219     19.60  Q          |          |          |          |
    4+20       0.9683     13.72  Q          |          |          |          |
    4+25       0.5107      9.28  Q          |          |          |          |
    4+30       0.1067      6.11  Q          |          |          |          |
    4+35       0.0000      4.06  Q          |          |          |          |
    4+40       0.0000      2.68  Q          |          |          |          |
    4+45       0.0000      1.76  Q          |          |          |          |
    4+50       0.0000      1.15  Q          |          |          |          |
    4+55       0.0000      0.76  Q          |          |          |          |
    5+ 0       0.0000      0.50  Q          |          |          |          |
    5+ 5       0.0000      0.32  Q          |          |          |          |
    5+10       0.0000      0.21  Q          |          |          |          |
    5+15       0.0000      0.14  Q          |          |          |          |
    5+20       0.0000      0.09  Q          |          |          |          |
    5+25       0.0000      0.06  Q          |          |          |          |
    5+30       0.0000      0.04  Q          |          |          |          |
    5+35       0.0000      0.03  Q          |          |          |          |
--------------------------------------------------------------------------
        ****************************HYDROGRAPH DATA****************************
                    Number of intervals =    67
                    Time interval =    5.0 (Min.)
                    Maximum/Peak flow rate =      801.051 (CFS)
                    Total volume =      93.219 (Ac.Ft)
              Status of hydrographs being held in storage
                         Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
              Peak (CFS)      0.000     0.000     0.000     0.000     0.000
              Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
        ***********************************************************************

        ---------------------------------------------------------------------


        +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
        Process from Point/Station        3.000 to Point/Station        4.000
        **** STREAM ROUTING SCS CONVEX METHOD ****
        _____________________________________________________________________________
        HYDROGRAPH STREAM ROUTING DATA:
        Length of stream =   1465.00 (Ft.)
        Elevation difference =   30.70 (Ft.)
        Slope of channel =  0.020956 (Vert/Horiz)
        Channel type - Pipe


        Pipe length  =  1465.00(Ft.)   Elevation difference =  30.70(Ft.)
        Manning's N = 0.013   No. of pipes = 1
        Pipe evaluation using mean flow rate of hydrograph
```

Required pipe flow = 305.237(CFS)
Given pipe size = 96.00(In.)
Calculated individual pipe flow = 305.237(CFS)
Normal flow depth in pipe = 31.41(In.)
Flow top width inside pipe = 90.08(In.)
Critical Depth = 4.42(Ft.)
Pipe flow velocity = 21.37(Ft/s)
Travel time through pipe = 1.14 min.

Pipe length = 1465.00(Ft.) Elevation difference = 30.70(Ft.)
Manning's N = 0.013 No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow = 801.051(CFS)
Given pipe size = 96.00(In.)
Calculated individual pipe flow = 801.051(CFS)
Normal flow depth in pipe = 54.00(In.)
Flow top width inside pipe = 95.25(In.)
Critical Depth = 7.05(Ft.)
Pipe flow velocity = 27.53(Ft/s)
Travel time through pipe = 0.89 min.

********** SCS CONVEX CHANNEL ROUTING **********
Convex method of stream routing data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
where c* = 1 - (1-c)^e and dt = c(length)/velocity
c(v/v+1.7) = 0.9418 Travel time = 0.89 (min.)
dt*(unit time interval) = 5.00(min.), e= 4.3241
dt(routing time-step) = 0.84 (min.), c* = 1.0000

Output hydrograph delayed by 0 unit time increments

++
P R I N T O F S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Out = O(CFS)	In = I	0	200.3	400.5	600.8	801.1
0+ 5	2.5250	3.03	O				
0+10	14.1042	16.32	O				
0+15	32.3748	35.59	O				
0+20	46.4031	48.57	O				
0+25	59.6431	61.86	OI				
0+30	77.9850	81.22	OI				
0+35	97.3758	100.62	OI				
0+40	113.2619	115.80	O				
0+45	125.8406	127.85	O				
0+50	138.3877	140.50	OI				
0+55	144.2427	144.99	O				
1+ 0	145.7941	145.95	O				
1+ 5	153.7796	155.35	O				
1+10	171.7045	174.98	O				
1+15	193.2188	196.88	O				
1+20	209.1587	211.62	O				
1+25	219.7597	221.39	OI				
1+30	235.2746	238.06	O				
1+35	258.4150	262.50	OI				
1+40	275.6513	278.29	O				
1+45	290.7576	293.26	O				
1+50	315.6728	320.17	O				
1+55	341.3391	345.59	O				
2+ 0	354.9237	356.80	O				
2+ 5	362.9296	364.16	O				

```
    2+10     377.6071    380.30  |         |       O |         |         |
    2+15     413.5776    420.25  |         |         O         |         |
    2+20     466.3998    475.66  |         |         |  O      |         |
    2+25     508.8100    515.46  |         |         |    O    |         |
    2+30     570.8770    581.99  |         |         |       OI|         |
    2+35     680.1359    699.82  |         |         |         |  OI     |
    2+40     777.1911    792.71  |         |         |         |       OI|
    2+45     799.6572    801.05  |         |         |         |        OI
    2+50     714.0844    696.64  |         |         |         |   IO    |
    2+55     589.0165    567.43  |         |         |         IO|         |
    3+ 0     502.5469    489.53  |         |         |    IO   |         |
    3+ 5     441.2325    431.55  |         |         |IO       |         |
    3+10     382.0636    372.14  |         |       IO|         |         |
    3+15     330.6434    322.32  |         |     O   |         |         |
    3+20     290.0732    283.61  |         |   O     |         |         |
    3+25     255.0109    249.28  |         | O       |         |         |
    3+30     222.3383    216.94  |         IO        |         |         |
    3+35     190.1570    184.79  |        O|         |         |         |
    3+40     157.7249    152.30  |      O  |         |         |         |
    3+45     124.0525    118.39  |    IO   |         |         |         |
    3+50      95.6646     91.11  |   O     |         |         |         |
    3+55      73.7614     70.28  |  O      |         |         |         |
    4+ 0      55.8043     52.90  | O       |         |         |         |
    4+ 5      41.4486     39.15  |IO       |         |         |         |
    4+10      29.7699     27.89  |O        |         |         |         |
    4+15      20.9807     19.60  IO        |         |         |         |
    4+20      14.7055     13.72  O         |         |         |         |
    4+25      10.0210      9.28  O         |         |         |         |
    4+30       6.6432      6.11  O         |         |         |         |
    4+35       4.4011      4.06  O         |         |         |         |
    4+40       2.9104      2.68  O         |         |         |         |
    4+45       1.9117      1.76  O         |         |         |         |
    4+50       1.2536      1.15  O         |         |         |         |
    4+55       0.8220      0.76  O         |         |         |         |
    5+ 0       0.5390      0.50  O         |         |         |         |
    5+ 5       0.3535      0.32  O         |         |         |         |
    5+10       0.2318      0.21  O         |         |         |         |
    5+15       0.1520      0.14  O         |         |         |         |
    5+20       0.0997      0.09  O         |         |         |         |
    5+25       0.0654      0.06  O         |         |         |         |
    5+30       0.0429      0.04  O         |         |         |         |
    5+35       0.0281      0.03  O         |         |         |         |
    5+40       0.0043      0.00  O         |         |         |         |
    5+45       0.0000      0.00  O         |         |         |         |
--------------------------------------------------------------------------
      ****************************HYDROGRAPH DATA****************************
                    Number of intervals =    69
                    Time interval =    5.0 (Min.)
                    Maximum/Peak flow rate =      799.657 (CFS)
                    Total volume =      93.219 (Ac.Ft)
             Status of hydrographs being held in storage
                       Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
             Peak (CFS)      0.000     0.000     0.000     0.000     0.000
             Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
      ************************************************************************

      ------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station        3.000 to Point/Station        4.000
      **** ADD/COMBINE/RECOVER HYDROGRAPHS ****
      ________________________________________________________________________
      ********************* HYDROGRAPH INFORMATION **********************

                    From study/file name: A4P3100.rte
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                      P R I N T  O F  S T O R M
                   R u n o f f     H y d r o g r a p h
```

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Add q(CFS)	Tot. Q	0	231.2	462.4	693.6	924.8
0+ 5	1.6484	4.17	Q				
0+10	7.5620	21.67	Q				
0+15	10.0396	42.41	qQ				
0+20	10.3629	56.77	q Q				
0+25	14.0787	73.72	q Q				
0+30	17.0433	95.03	q Q				
0+35	20.1166	117.49	q Q				
0+40	20.0711	133.33	q Q				
0+45	22.5338	148.37	q Q				
0+50	23.2542	161.64	|q Q				
0+55	21.2477	165.49	q Q				
1+ 0	21.6405	167.43	q Q				
1+ 5	24.8965	178.68	|q Q				
1+10	29.9916	201.70	|q Q				
1+15	32.4409	225.66	|q Q				
1+20	32.9601	242.12	|q Q				
1+25	33.2151	252.97	|q Q				
1+30	38.9389	274.21	|q Q				
1+35	42.0598	300.47	|q Q				
1+40	41.5645	317.22	|q Q				
1+45	45.6745	336.43	|q Q				
1+50	52.6832	368.36	| q Q				
1+55	53.8743	395.21	| q Q				
2+ 0	52.7267	407.65	| q Q				
2+ 5	53.5655	416.50	| q Q				
2+10	58.1309	435.74	| q Q				
2+15	72.2383	485.82	| q Q				
2+20	82.0905	548.49	| q Q				
2+25	82.8296	591.64	| q Q				
2+30	112.7971	683.67	| q Q				
2+35	136.2650	816.40	| q Q				
2+40	147.5988	924.79	| q Q				
2+45	123.0850	922.74	| q Q				
2+50	76.5420	790.63	| q Q				
2+55	52.9400	641.96	| q Q				
3+ 0	41.0669	543.61	|q Q				
3+ 5	26.4925	467.72	|q Q				
3+10	15.7298	397.79	q Q				
3+15	10.4678	341.11	q Q				
3+20	6.7939	296.87	q Q				
3+25	4.3309	259.34	q Q				
3+30	2.3210	224.66	q Q				
3+35	0.9266	191.08	q Q				
3+40	0.5331	158.26	q Q				
3+45	0.2942	124.35	q Q				
3+50	0.0590	95.72	q Q				
3+55	0.0000	73.76	q Q				
4+ 0	0.0000	55.80	q Q				
4+ 5	0.0000	41.45	qQ				
4+10	0.0000	29.77	qQ				
4+15	0.0000	20.98	Q				
4+20	0.0000	14.71	Q				
4+25	0.0000	10.02	Q				
4+30	0.0000	6.64	Q				
4+35	0.0000	4.40	Q				
4+40	0.0000	2.91	Q				
4+45	0.0000	1.91	Q				
4+50	0.0000	1.25	Q				
4+55	0.0000	0.82	Q				
5+ 0	0.0000	0.54	Q				
5+ 5	0.0000	0.35	Q				
5+10	0.0000	0.23	Q				
5+15	0.0000	0.15	Q				

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    5+20       0.0000      0.10  Q         |         |         |         |
    5+25       0.0000      0.07  Q         |         |         |         |
    5+30       0.0000      0.04  Q         |         |         |         |
    5+35       0.0000      0.03  Q         |         |         |         |
    5+40       0.0000      0.00  Q         |         |         |         |
    5+45       0.0000      0.00  Q         |         |         |         |
-------------------------------------------------------------------------
       ***************************HYDROGRAPH DATA****************************
                     Number of intervals =    69
                     Time interval =    5.0 (Min.)
                     Maximum/Peak flow rate =      924.790 (CFS)
                     Total volume =     105.462 (Ac.Ft)
              Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
              Peak (CFS)      0.000     0.000     0.000     0.000     0.000
              Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
       *************************************************************************

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FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 05/02/24

County Club Creek and North Tributary at 91 Freeway Culvert
The Trails Proposed Condition
100-Year 6-Hour Storm Routing
L.Johnson, 05/02/2024

Program License Serial Number 6062

********** HYDROGRAPH INFORMATION **********

From study/file name: A5P6100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 91
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 420.032 (CFS)
Total volume = 53.635 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****
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User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 91
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.500	0.290	17.510	0.230	0.350
1.500	0.920	52.530	0.739	1.101
2.500	1.600	87.550	1.299	1.901
3.500	2.330	122.570	1.908	2.752
4.500	3.130	150.120	2.613	3.647
5.500	3.980	173.340	3.383	4.577
6.500	4.890	193.800	4.223	5.557
7.500	5.850	212.300	5.119	6.581
8.500	6.870	229.310	6.080	7.660
9.500	7.960	245.140	7.116	8.804
10.500	9.100	260.010	8.205	9.995
11.500	10.310	274.070	9.366	11.254

12.500	11.570	287.450	10.580	12.560
13.500	12.900	300.230	11.866	13.934
14.500	14.290	312.490	13.214	15.366
15.500	15.740	324.290	14.623	16.857
16.500	17.250	353.670	16.032	18.468

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 105.0 210.02 315.02 420.03	Depth (Ft.)
0.083	0.19	0.03	0.001	O	0.00
0.167	1.48	0.31	0.005	O	0.01
0.250	4.73	1.27	0.021	O	0.04
0.333	8.58	3.12	0.052	O	0.09
0.417	10.94	5.41	0.090	O	0.15
0.500	12.66	7.61	0.126	O	0.22
0.583	15.55	9.85	0.163	OI	0.28
0.667	19.26	12.45	0.206	OI	0.36
0.750	21.71	15.21	0.252	|O	0.43
0.833	23.05	17.67	0.293	|O	0.50
0.917	23.96	19.55	0.327	|O	0.56
1.000	25.16	21.16	0.356	|O	0.60
1.083	27.81	22.87	0.386	|OI	0.65
1.167	31.38	25.03	0.425	|OI	0.71
1.250	33.73	27.45	0.469	| O	0.78
1.333	35.00	29.67	0.509	| O	0.85
1.417	35.86	31.52	0.542	| O	0.90
1.500	36.53	33.02	0.569	| O	0.94
1.583	37.05	34.23	0.591	| O	0.98
1.667	37.49	35.21	0.608	| O	1.01
1.750	37.84	36.00	0.623	| O	1.03
1.833	38.07	36.63	0.634	| O	1.05
1.917	38.27	37.12	0.643	| O	1.06
2.000	38.96	37.60	0.651	| O	1.07
2.083	40.71	38.32	0.664	| OI	1.09
2.167	42.33	39.35	0.683	| OI	1.12
2.250	43.38	40.48	0.703	| O	1.16
2.333	45.53	41.76	0.726	| O	1.19
2.417	47.22	43.24	0.753	| O	1.23
2.500	48.09	44.66	0.778	| O	1.28
2.583	48.66	45.85	0.800	| O	1.31
2.667	49.05	46.82	0.817	| O	1.34
2.750	49.86	47.67	0.832	| O	1.36
2.833	52.19	48.74	0.852	| O	1.39
2.917	55.50	50.38	0.881	| OI	1.44
3.000	57.66	52.37	0.917	| OI	1.50
3.083	58.75	54.14	0.951	| O	1.55
3.167	60.00	55.72	0.982	| O	1.59
3.250	62.65	57.41	1.015	| O	1.64
3.333	66.19	59.52	1.056	| OI	1.70
3.417	69.05	61.96	1.103	| OI	1.77
3.500	72.91	64.68	1.156	| OI	1.85
3.583	79.49	68.15	1.223	| OI	1.95
3.667	87.30	72.74	1.312	| OI	2.08
3.750	94.45	78.21	1.419	| O I	2.23
3.833	100.53	84.02	1.531	| OI	2.40
3.917	106.52	89.76	1.646	| O I	2.56
4.000	112.30	95.33	1.762	| OI	2.72
4.083	118.21	100.98	1.880	| O|I	2.88
4.167	124.47	106.75	2.000	| OI	3.05
4.250	132.46	112.91	2.129	| O I	3.22
4.333	141.85	119.79	2.272	| |OI	3.42
4.417	151.82	126.22	2.436	| |O I	3.63
4.500	161.65	132.69	2.624	| | O I	3.87
4.583	170.16	139.74	2.828	| | O I	4.12
4.667	177.86	147.00	3.039	| | O I	4.39

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4.750  186.86  153.67      3.260  |       |  O  I |       |       |     4.65
4.833  196.44  160.20      3.499  |       |   O I |       |       |     4.93
4.917  204.91  167.16      3.754  |       |   O  I|       |       |     5.23
5.000  212.62  174.16      4.016  |       |    O  I       |       |     5.54
5.083  223.66  180.48      4.297  |       |    O  |I      |       |     5.85
5.167  244.22  188.16      4.639  |       |     O | I     |       |     6.22
5.250  276.66  197.91      5.103  |       |      O|    I  |       |     6.72
5.333  313.17  209.99      5.730  |       |      O|      I|       |     7.37
5.417  348.51  223.41      6.516  |       |       |O      | I     |     8.15
5.500  388.71  237.96      7.466  |       |       | O     |    I  |     9.05
5.583  420.03  252.97      8.560  |       |       |  O    |       I    10.03
5.667  385.28  265.23      9.549  |       |       |   O   |    I  |    10.87
5.750  277.67  270.32      9.988  |       |       |   OI  |       |    11.23
5.833  183.30  267.26      9.724  |       |    I  |   O   |       |    11.02
5.917  128.63  258.54      8.987  |       |I      |  O    |       |    10.40
6.000   98.20  246.06      8.031  |      I|       | O     |       |     9.56
6.083   79.09  231.17      6.998  |     I |       |O      |       |     8.62
6.167   63.34  214.06      5.955  |   I   |       O       |       |     7.60
6.250   49.57  194.70      4.937  |  I    |     O |       |       |     6.55
6.333   39.36  173.23      3.976  | I     |    O  |       |       |     5.50
6.417   32.15  149.46      3.111  | I     |  O    |       |       |     4.48
6.500   26.49  123.99      2.371  | I     |O      |       |       |     3.55
6.583   21.36   96.10      1.778  |I     O|       |       |       |     2.74
6.667   17.34   73.51      1.327  |I   O  |       |       |       |     2.10
6.750   13.86   56.06      0.989  |I  O   |       |       |       |     1.60
6.833   10.81   42.25      0.735  I  O    |       |       |       |     1.21
6.917    8.32   31.75      0.546  I O     |       |       |       |     0.91
7.000    6.35   23.90      0.405  IO      |       |       |       |     0.68
7.083    4.38   17.94      0.298  IO      |       |       |       |     0.51
7.167    1.36   12.79      0.212  O       |       |       |       |     0.37
7.250    0.49    8.70      0.144  O       |       |       |       |     0.25
7.333    0.22    5.83      0.097  O       |       |       |       |     0.17
7.417    0.13    3.88      0.064  O       |       |       |       |     0.11
7.500    0.12    2.59      0.043  O       |       |       |       |     0.07
7.583    0.06    1.73      0.029  O       |       |       |       |     0.05
7.667    0.00    1.14      0.019  O       |       |       |       |     0.03
7.750    0.00    0.75      0.012  O       |       |       |       |     0.02
7.833    0.00    0.49      0.008  O       |       |       |       |     0.01
7.917    0.00    0.32      0.005  O       |       |       |       |     0.01
8.000    0.00    0.21      0.003  O       |       |       |       |     0.01
8.083    0.00    0.14      0.002  O       |       |       |       |     0.00
8.167    0.00    0.09      0.002  O       |       |       |       |     0.00
8.250    0.00    0.06      0.001  O       |       |       |       |     0.00
8.333    0.00    0.04      0.001  O       |       |       |       |     0.00
8.417    0.00    0.03      0.000  O       |       |       |       |     0.00

**************************HYDROGRAPH DATA**************************
               Number of intervals =   101
               Time interval =    5.0 (Min.)
               Maximum/Peak flow rate =      270.324 (CFS)
               Total volume =      53.634 (Ac.Ft)
       Status of hydrographs being held in storage
                  Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
       Peak (CFS)      0.000     0.000     0.000     0.000     0.000
       Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
*******************************************************************************

-------------------------------------------------------------------


+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        2.000 to Point/Station        3.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****
_______________________________________________________________________________
******************** HYDROGRAPH INFORMATION **********************

               From study/file name: A1P6100.rte
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                 P R I N T  O F  S T O R M
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R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Add q(CFS)	Tot. Q	0 198.8 397.5 596.3 795.1
0+ 5	1.7530	1.79	Q
0+10	7.7830	8.09	Q
0+15	12.2792	13.55	Q
0+20	10.3623	13.49	Q
0+25	8.9353	14.35	Q
0+30	9.4701	17.08	Q
0+35	12.5791	22.42	qQ
0+40	16.8058	29.25	qQ
0+45	19.2024	34.42	qQ
0+50	20.3571	38.03	|Q
0+55	21.1518	40.70	|qQ
1+ 0	22.5463	43.70	|qQ
1+ 5	26.0964	48.96	|qQ
1+10	30.6911	55.72	|qQ
1+15	33.3112	60.76	|q Q
1+20	34.6658	64.34	|q Q
1+25	35.6395	67.16	|q Q
1+30	36.3960	69.42	|q Q
1+35	36.9576	71.19	|q Q
1+40	37.3014	72.51	|q Q
1+45	37.6371	73.63	|q Q
1+50	37.9090	74.54	|q Q
1+55	38.1629	75.29	|q Q
2+ 0	39.1074	76.71	|q Q
2+ 5	41.5953	79.92	| q Q
2+10	43.5530	82.90	| q Q
2+15	44.8538	85.33	| q Q
2+20	47.9460	89.70	| q Q
2+25	49.9745	93.22	| q Q
2+30	50.9776	95.64	| q Q
2+35	51.5979	97.45	| q Q
2+40	52.0837	98.90	| q Q
2+45	53.1711	100.84	| q Q
2+50	56.5687	105.31	| q Q
2+55	61.0363	111.42	| q Q
3+ 0	63.5427	115.92	| q Q
3+ 5	64.8484	118.99	| q Q
3+10	66.4800	122.20	| q Q
3+15	70.2584	127.67	| q Q
3+20	74.9982	134.52	| q Q
3+25	78.4996	140.46	| q Q
3+30	83.8090	148.49	| q Q
3+35	92.8688	161.02	| q Q
3+40	103.3590	176.10	| q Q
3+45	112.3846	190.59	| q Q
3+50	120.2054	204.22	| q Q
3+55	128.0101	217.77	| q Q
4+ 0	135.5045	230.83	| q Q
4+ 5	143.2075	244.19	| q | Q
4+10	151.4054	258.16	| q | Q
4+15	162.1805	275.09	| q | Q
4+20	174.5444	294.33	| q | Q
4+25	187.6363	313.86	| q | Q
4+30	200.4283	333.12	| q Q
4+35	211.1962	350.93	| q Q
4+40	221.0925	368.09	| q Q
4+45	233.0089	386.68	| q Q
4+50	245.5641	405.77	| q Q
4+55	256.2519	423.42	| q | Q
5+ 0	266.0926	440.25	| q | Q
5+ 5	280.9816	461.46	| q | Q
5+10	309.6356	497.80	| q | Q

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    5+15     354.2437    552.16  |          |      q  |      Q  |          |
    5+20     402.2667    612.25  |          |         q         Q          |
    5+25     448.1116    671.52  |          |          | q        |  Q       |
    5+30     501.6592    739.62  |          |          |    q     |      Q   |
    5+35     542.0846    795.05  |          |          |       q  |          Q
    5+40     481.3702    746.60  |          |          |   q      |      Q   |
    5+45     327.3447    597.67  |          |     q    |          Q          |
    5+50     211.3525    478.61  |          |   q      |   Q      |          |
    5+55     152.7590    411.30  |       q  |          Q          |          |
    6+ 0     121.6960    367.76  |      q   |        Q |          |          |
    6+ 5      96.5072    327.68  |    q     |      Q   |          |          |
    6+10      74.8092    288.87  |  q       |    Q     |          |          |
    6+15      57.0524    251.75  | q        | Q        |          |          |
    6+20      44.8871    218.11  | q        Q          |          |          |
    6+25      36.3049    185.77  |q        Q|          |          |          |
    6+30      28.8436    152.83  |q      Q  |          |          |          |
    6+35      22.9008    119.00  |q   Q     |          |          |          |
    6+40      17.8588     91.37  q   Q      |          |          |          |
    6+45      13.6166     69.68  q  Q       |          |          |          |
    6+50      10.2784     52.53  q Q        |          |          |          |
    6+55       7.4631     39.21  qQ         |          |          |          |
    7+ 0       4.4741     28.38  qQ         |          |          |          |
    7+ 5       1.4495     19.39  Q          |          |          |          |
    7+10       0.5898     13.38  Q          |          |          |          |
    7+15       0.3505      9.05  Q          |          |          |          |
    7+20       0.2828      6.11  Q          |          |          |          |
    7+25       0.1389      4.02  Q          |          |          |          |
    7+30       0.0516      2.64  Q          |          |          |          |
    7+35       0.0000      1.73  Q          |          |          |          |
    7+40       0.0000      1.14  Q          |          |          |          |
    7+45       0.0000      0.75  Q          |          |          |          |
    7+50       0.0000      0.49  Q          |          |          |          |
    7+55       0.0000      0.32  Q          |          |          |          |
    8+ 0       0.0000      0.21  Q          |          |          |          |
    8+ 5       0.0000      0.14  Q          |          |          |          |
    8+10       0.0000      0.09  Q          |          |          |          |
    8+15       0.0000      0.06  Q          |          |          |          |
    8+20       0.0000      0.04  Q          |          |          |          |
    8+25       0.0000      0.03  Q          |          |          |          |
--------------------------------------------------------------------------
        ****************************HYDROGRAPH DATA****************************
                    Number of intervals =   101
                    Time interval =    5.0 (Min.)
                    Maximum/Peak flow rate =      795.054 (CFS)
                    Total volume =     117.954 (Ac.Ft)
            Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
        ************************************************************************

        ------------------------------------------------------------------


        ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
        Process from Point/Station        3.000 to Point/Station        4.000
        **** STREAM ROUTING SCS CONVEX METHOD ****
        ________________________________________________________________________
        HYDROGRAPH STREAM ROUTING DATA:
        Length of stream =   1465.00 (Ft.)
        Elevation difference =   30.70 (Ft.)
        Slope of channel =  0.020956 (Vert/Horiz)
        Channel type - Pipe


        Pipe length  =  1465.00(Ft.)   Elevation difference =  30.70(Ft.)
        Manning's N = 0.013   No. of pipes = 1
        Pipe evaluation using mean flow rate of hydrograph
        Required pipe flow  =   209.498(CFS)
```

Given pipe size = 96.00(In.)
Calculated individual pipe flow = 209.498(CFS)
Normal flow depth in pipe = 25.85(In.)
Flow top width inside pipe = 85.17(In.)
Critical Depth = 3.63(Ft.)
Pipe flow velocity = 19.20(Ft/s)
Travel time through pipe = 1.27 min.

Pipe length = 1465.00(Ft.) Elevation difference = 30.70(Ft.)
Manning's N = 0.013 No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow = 795.054(CFS)
Given pipe size = 96.00(In.)
Calculated individual pipe flow = 795.054(CFS)
Normal flow depth in pipe = 53.72(In.)
Flow top width inside pipe = 95.32(In.)
Critical Depth = 7.03(Ft.)
Pipe flow velocity = 27.48(Ft/s)
Travel time through pipe = 0.89 min.

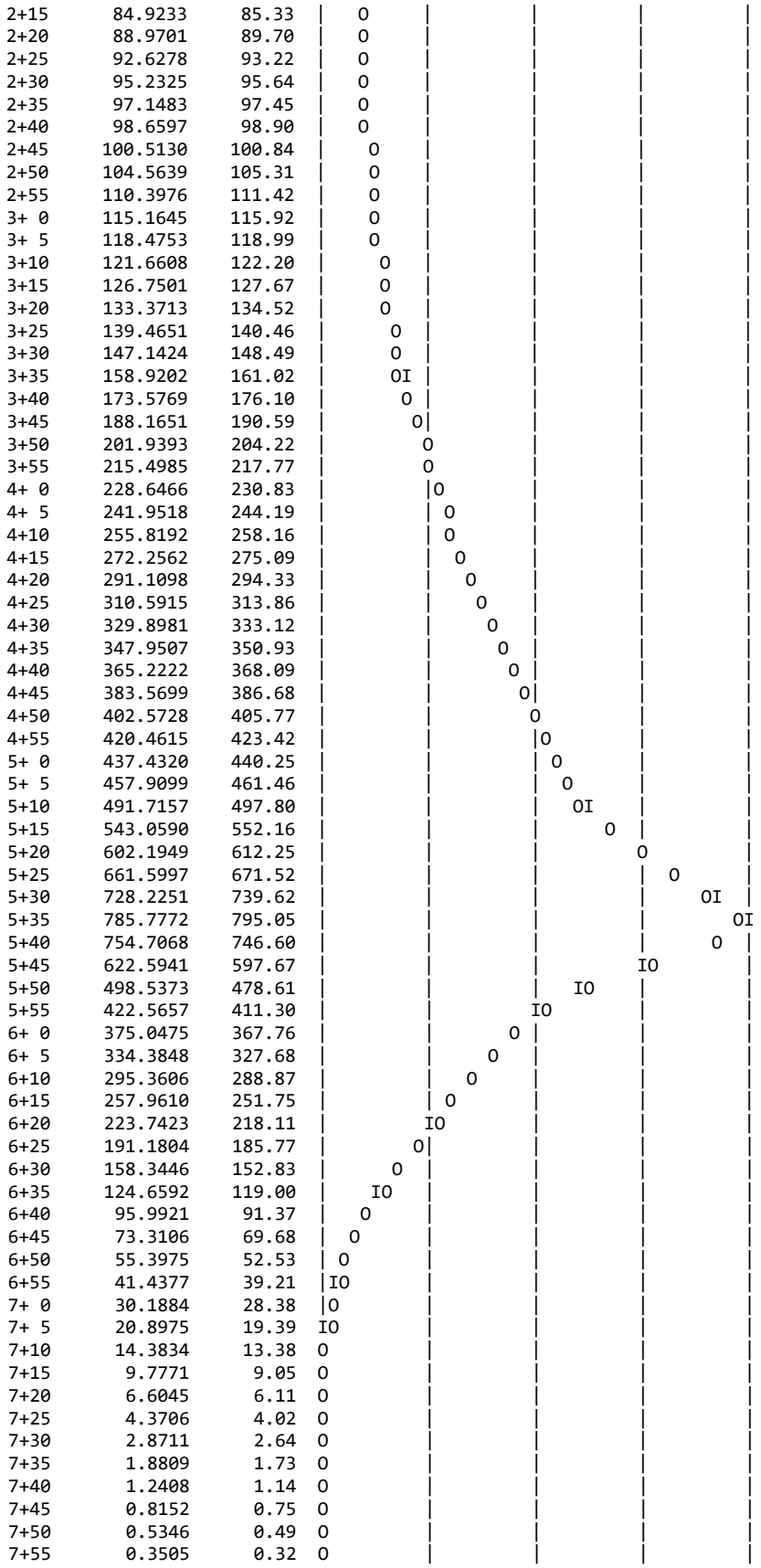
********** SCS CONVEX CHANNEL ROUTING **********
Convex method of stream routing data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
where c* = 1 - (1-c)^e and dt = c(length)/velocity
c(v/v+1.7) = 0.9417 Travel time = 0.89 (min.)
dt*(unit time interval) = 5.00(min.), e= 4.3168
dt(routing time-step) = 0.84 (min.), c* = 1.0000

Output hydrograph delayed by 0 unit time increments

++
P R I N T O F S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Out = O(CFS)	In = I	0	198.8	397.5	596.3	795.1
0+ 5	1.4867	1.79	O				
0+10	7.0355	8.09	O				
0+15	12.6355	13.55	O				
0+20	13.4970	13.49	O				
0+25	14.2015	14.35	O				
0+30	16.6224	17.08	O				
0+35	21.5300	22.42	|O				
0+40	28.1100	29.25	|O				
0+45	33.5527	34.42	|O				
0+50	37.4238	38.03	|O				
0+55	40.2508	40.70	| O				
1+ 0	43.1996	43.70	| O				
1+ 5	48.0834	48.96	| O				
1+10	54.5887	55.72	| O				
1+15	59.9148	60.76	| O				
1+20	63.7370	64.34	| O				
1+25	66.6866	67.16	| O				
1+30	69.0388	69.42	| O				
1+35	70.8921	71.19	| O				
1+40	72.2874	72.51	| O				
1+45	73.4455	73.63	| O				
1+50	74.3854	74.54	| O				
1+55	75.1609	75.29	| O				
2+ 0	76.4713	76.71	| O				
2+ 5	79.3788	79.92	| OI				
2+10	82.4019	82.90	| O				



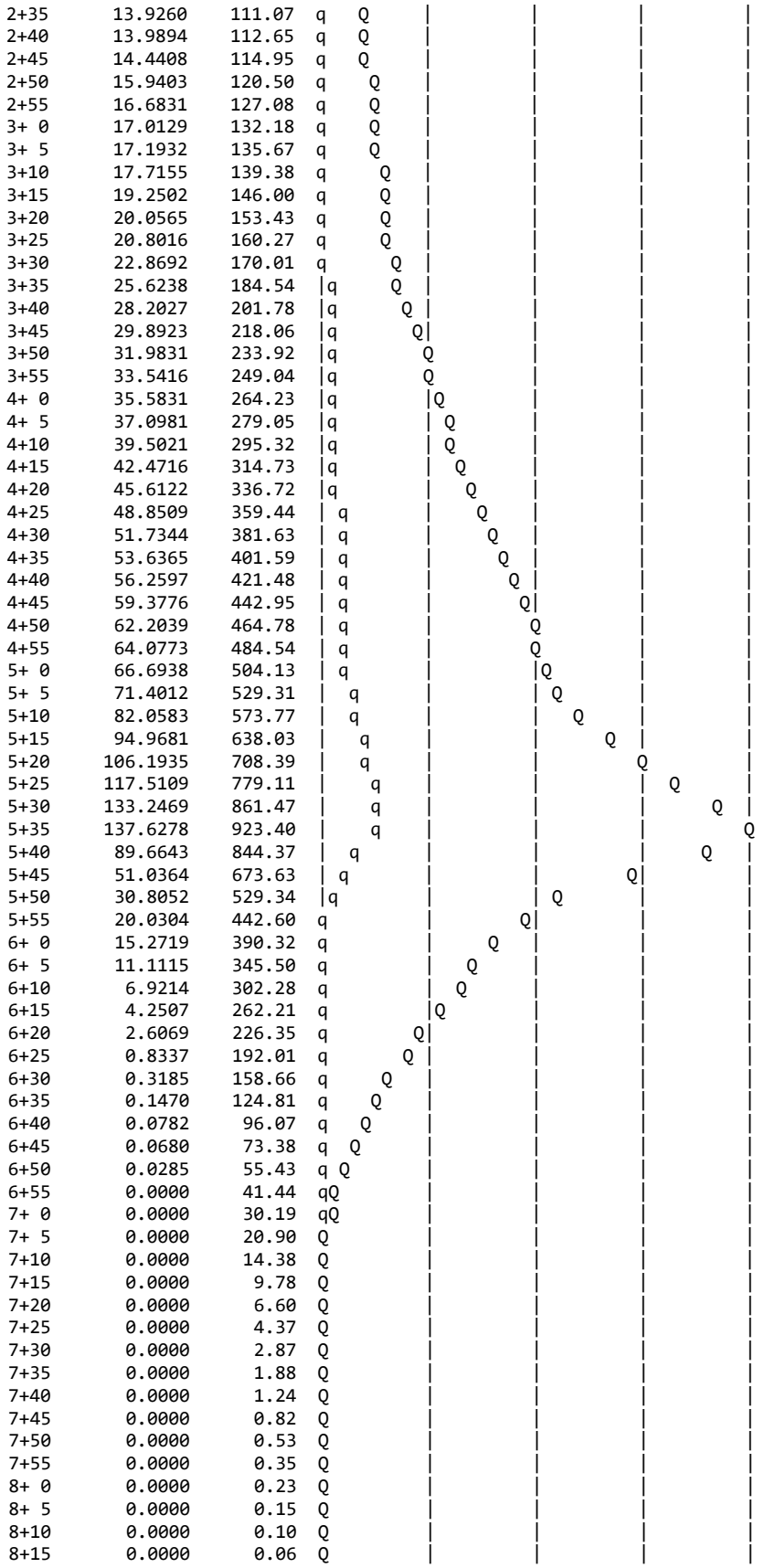
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    8+ 0       0.2299      0.21  O         |         |         |         |
    8+ 5       0.1507      0.14  O         |         |         |         |
    8+10       0.0988      0.09  O         |         |         |         |
    8+15       0.0648      0.06  O         |         |         |         |
    8+20       0.0425      0.04  O         |         |         |         |
    8+25       0.0279      0.03  O         |         |         |         |
    8+30       0.0043      0.00  O         |         |         |         |
    8+35       0.0000      0.00  O         |         |         |         |
--------------------------------------------------------------------------
       ****************************HYDROGRAPH DATA****************************
                      Number of intervals =   103
                      Time interval =    5.0 (Min.)
                      Maximum/Peak flow rate =      785.777 (CFS)
                      Total volume =     117.954 (Ac.Ft)
              Status of hydrographs being held in storage
                         Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
              Peak (CFS)      0.000     0.000     0.000     0.000     0.000
              Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
       ************************************************************************

       ------------------------------------------------------------------


       ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
       Process from Point/Station        3.000 to Point/Station        4.000
       **** ADD/COMBINE/RECOVER HYDROGRAPHS ****
       ______________________________________________________________________
       ******************** HYDROGRAPH INFORMATION **********************

                      From study/file name: A4P6100.rte
       ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                        P R I N T  O F  S T O R M
                     R u n o f f     H y d r o g r a p h
       ----------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals (CFS)

       ----------------------------------------------------------------------
  Time(h+m) Add q(CFS)  Tot. Q   0      230.9     461.7     692.6     923.4
  ------------------------------------------------------------------------
    0+ 5       0.0393       1.53  Q         |         |         |         |
    0+10       0.5853       7.62  Q         |         |         |         |
    0+15       2.1113      14.75  Q         |         |         |         |
    0+20       2.8867      16.38  Q         |         |         |         |
    0+25       3.2018      17.40  Q         |         |         |         |
    0+30       3.7987      20.42  Q         |         |         |         |
    0+35       5.3772      26.91  qQ        |         |         |         |
    0+40       6.2106      34.32  qQ        |         |         |         |
    0+45       6.5722      40.12  qQ        |         |         |         |
    0+50       6.7974      44.22  qQ        |         |         |         |
    0+55       6.9459      47.20  q Q       |         |         |         |
    1+ 0       7.4644      50.66  q Q       |         |         |         |
    1+ 5       8.9779      57.06  q Q       |         |         |         |
    1+10       9.7665      64.36  q Q       |         |         |         |
    1+15      10.0927      70.01  q  Q      |         |         |         |
    1+20      10.3052      74.04  q  Q      |         |         |         |
    1+25      10.4222      77.11  q  Q      |         |         |         |
    1+30      10.5032      79.54  q  Q      |         |         |         |
    1+35      10.5631      81.46  q  Q      |         |         |         |
    1+40      10.6052      82.89  q  Q      |         |         |         |
    1+45      10.6336      84.08  q  Q      |         |         |         |
    1+50      10.6658      85.05  q  Q      |         |         |         |
    1+55      10.6658      85.83  q  Q      |         |         |         |
    2+ 0      11.0710      87.54  q  Q      |         |         |         |
    2+ 5      12.1195      91.50  q  Q      |         |         |         |
    2+10      11.8175      94.22  q   Q     |         |         |         |
    2+15      12.8224      97.75  q   Q     |         |         |         |
    2+20      13.4515     102.42  q   Q     |         |         |         |
    2+25      13.6859     106.31  q   Q     |         |         |         |
    2+30      13.8303     109.06  q   Q     |         |         |         |
```



```
    8+20       0.0000      0.04  Q         |         |         |         |
    8+25       0.0000      0.03  Q         |         |         |         |
    8+30       0.0000      0.00  Q         |         |         |         |
    8+35       0.0000      0.00  Q         |         |         |         |
-------------------------------------------------------------------------
        ***************************HYDROGRAPH DATA**************************
                      Number of intervals =   103
                      Time interval =    5.0 (Min.)
                      Maximum/Peak flow rate =      923.405 (CFS)
                      Total volume =     133.466 (Ac.Ft)
                Status of hydrographs being held in storage
                           Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
                Peak (CFS)      0.000     0.000     0.000     0.000     0.000
                Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
        *************************************************************************

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FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 05/02/24

County Club Creek and North Tributary at 91 Freeway Culvert
The Trails Proposed Condition
100-Year 24-Hour Storm Routing
L.Johnson, 05/02/2024

Program License Serial Number 6062

********** HYDROGRAPH INFORMATION **********

From study/file name: A5P24100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 307
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 257.380 (CFS)
Total volume = 121.405 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****
_____

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 307
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.500	0.290	17.510	0.230	0.350
1.500	0.920	52.530	0.739	1.101
2.500	1.600	87.550	1.299	1.901
3.500	2.330	122.570	1.908	2.752
4.500	3.130	150.120	2.613	3.647
5.500	3.980	173.340	3.383	4.577
6.500	4.890	193.800	4.223	5.557
7.500	5.850	212.300	5.119	6.581
8.500	6.870	229.310	6.080	7.660
9.500	7.960	245.140	7.116	8.804
10.500	9.100	260.010	8.205	9.995
11.500	10.310	274.070	9.366	11.254

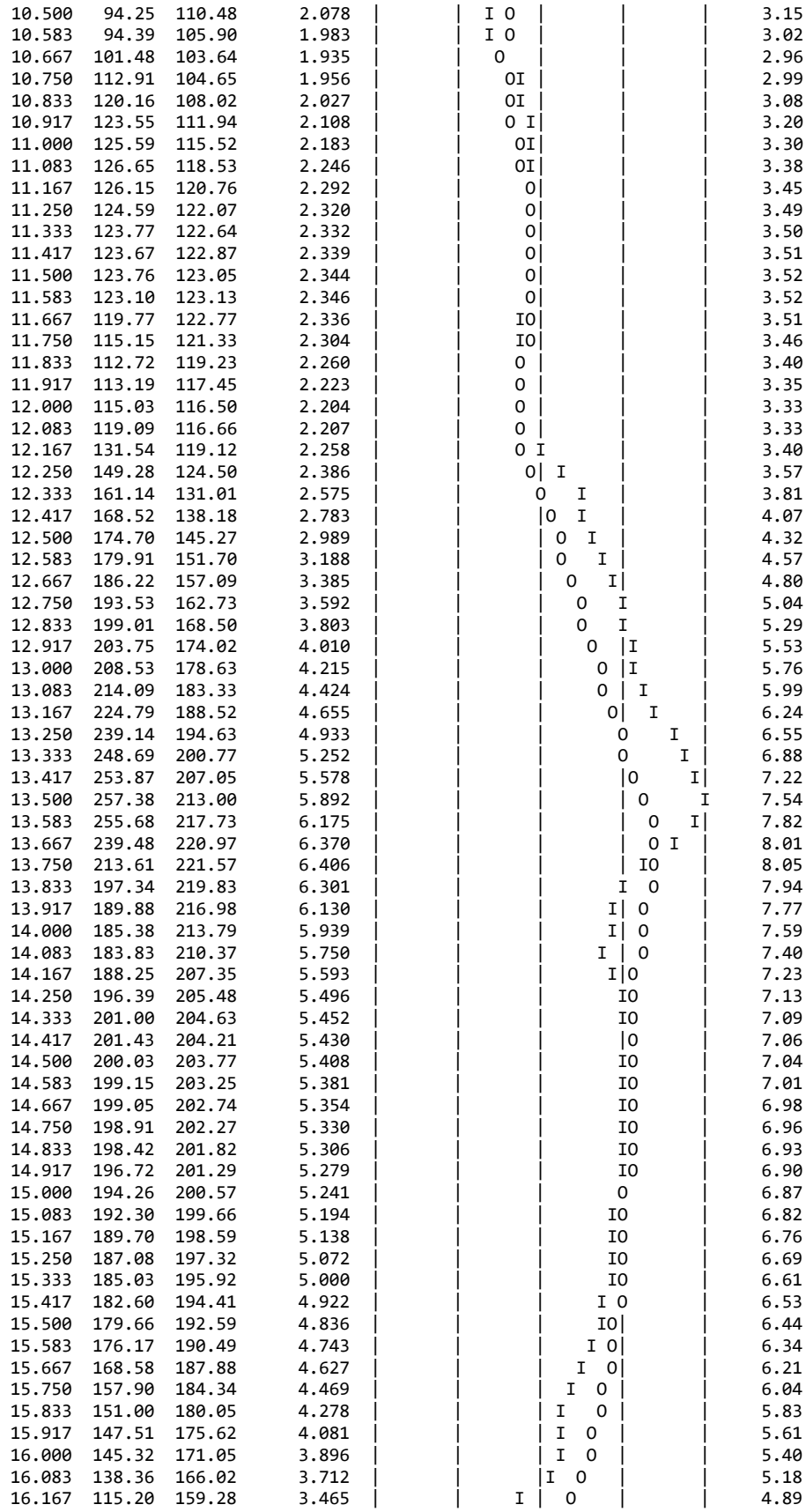
12.500	11.570	287.450	10.580	12.560
13.500	12.900	300.230	11.866	13.934
14.500	14.290	312.490	13.214	15.366
15.500	15.740	324.290	14.623	16.857
16.500	17.250	353.670	16.032	18.468

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 64.3 128.69 193.04 257.38	Depth (Ft.)
0.083	0.36	0.06	0.001	O	0.00
0.167	1.86	0.42	0.007	O	0.01
0.250	4.08	1.30	0.022	O	0.04
0.333	5.69	2.54	0.042	O	0.07
0.417	7.14	3.87	0.064	O	0.11
0.500	8.69	5.26	0.087	OI	0.15
0.583	9.73	6.62	0.110	OI	0.19
0.667	10.33	7.80	0.129	OI	0.22
0.750	10.75	8.74	0.145	O	0.25
0.833	11.26	9.52	0.158	O	0.27
0.917	12.26	10.29	0.170	O	0.29
1.000	13.57	11.19	0.185	O	0.32
1.083	14.28	12.13	0.201	O	0.35
1.167	14.01	12.83	0.212	O	0.37
1.250	13.24	13.10	0.217	O	0.37
1.333	12.79	13.07	0.216	O	0.37
1.417	12.64	12.95	0.214	O	0.37
1.500	12.59	12.83	0.213	O	0.37
1.583	12.56	12.75	0.211	O	0.36
1.667	12.56	12.68	0.210	O	0.36
1.750	12.53	12.64	0.209	O	0.36
1.833	12.70	12.63	0.209	O	0.36
1.917	13.45	12.78	0.212	O	0.36
2.000	14.54	13.20	0.219	O	0.38
2.083	15.23	13.78	0.228	O	0.39
2.167	15.56	14.33	0.237	O	0.41
2.250	15.76	14.79	0.245	O	0.42
2.333	15.92	15.15	0.251	O	0.43
2.417	16.05	15.44	0.256	O	0.44
2.500	16.13	15.66	0.259	OI	0.45
2.583	16.38	15.87	0.263	OI	0.45
2.667	17.16	16.18	0.268	O	0.46
2.750	18.33	16.72	0.277	O	0.48
2.833	19.09	17.40	0.288	O	0.50
2.917	19.47	18.01	0.299	O	0.51
3.000	19.72	18.52	0.308	O	0.53
3.083	19.92	18.94	0.316	O	0.54
3.167	20.06	19.28	0.322	O	0.55
3.250	20.18	19.55	0.327	O	0.56
3.333	20.27	19.77	0.331	O	0.56
3.417	20.36	19.94	0.334	O	0.57
3.500	20.41	20.08	0.336	O	0.57
3.583	20.46	20.20	0.338	O	0.58
3.667	20.50	20.29	0.340	O	0.58
3.750	20.53	20.36	0.341	O	0.58
3.833	20.73	20.45	0.343	O	0.58
3.917	21.50	20.66	0.347	O	0.59
4.000	22.63	21.11	0.355	O	0.60
4.083	23.36	21.72	0.366	O	0.62
4.167	23.73	22.31	0.376	O	0.64
4.250	23.95	22.80	0.385	O	0.65
4.333	24.30	23.23	0.393	OI	0.66
4.417	25.17	23.71	0.402	OI	0.68
4.500	26.39	24.38	0.414	O	0.70
4.583	27.18	25.15	0.427	O	0.72
4.667	27.59	25.87	0.440	O	0.74

4.750	27.86	26.46	0.451	| O |	|	|	|	0.76
4.833	28.25	26.98	0.460	| O |	|	|	|	0.77
4.917	29.17	27.53	0.470	| O |	|	|	|	0.79
5.000	30.41	28.26	0.483	| O |	|	|	|	0.81
5.083	30.86	29.02	0.497	| O |	|	|	|	0.83
5.167	29.80	29.44	0.505	| O |	|	|	|	0.84
5.250	27.86	29.25	0.501	| O |	|	|	|	0.84
5.333	26.85	28.64	0.490	| O |	|	|	|	0.82
5.417	27.09	28.10	0.481	| O |	|	|	|	0.80
5.500	27.89	27.90	0.477	| O |	|	|	|	0.80
5.583	27.19	27.79	0.475	| O |	|	|	|	0.79
5.667	22.51	26.84	0.458	| IO |	|	|	|	0.77
5.750	15.44	24.32	0.412	|I O |	|	|	|	0.69
5.833	11.03	20.76	0.348	|IO |	|	|	|	0.59
5.917	9.05	17.30	0.287	|IO |	|	|	|	0.49
6.000	7.88	14.26	0.236	IO |	|	|	|	0.41
6.083	7.48	11.99	0.199	IO |	|	|	|	0.34
6.167	8.62	10.63	0.176	|O |	|	|	|	0.30
6.250	10.75	10.31	0.171	|O |	|	|	|	0.29
6.333	12.14	10.70	0.177	|O |	|	|	|	0.31
6.417	12.83	11.31	0.187	|O |	|	|	|	0.32
6.500	13.27	11.91	0.197	|O |	|	|	|	0.34
6.583	14.03	12.51	0.207	|O |	|	|	|	0.36
6.667	16.04	13.38	0.222	|O |	|	|	|	0.38
6.750	18.88	14.78	0.245	|OI |	|	|	|	0.42
6.833	20.81	16.53	0.274	| O |	|	|	|	0.47
6.917	21.93	18.15	0.301	| O |	|	|	|	0.52
7.000	22.74	19.49	0.326	| O |	|	|	|	0.56
7.083	23.41	20.64	0.346	| O |	|	|	|	0.59
7.167	23.94	21.62	0.364	| O |	|	|	|	0.62
7.250	24.54	22.46	0.379	| OI |	|	|	|	0.64
7.333	25.49	23.28	0.394	| OI |	|	|	|	0.66
7.417	27.67	24.34	0.413	| O |	|	|	|	0.70
7.500	30.63	25.89	0.441	| O |	|	|	|	0.74
7.583	33.09	27.81	0.475	| OI |	|	|	|	0.79
7.667	36.00	29.97	0.514	| OI |	|	|	|	0.86
7.750	39.37	32.45	0.559	| O |	|	|	|	0.93
7.833	42.11	35.11	0.607	| OI |	|	|	|	1.00
7.917	45.21	37.86	0.656	| OI |	|	|	|	1.08
8.000	48.78	40.80	0.709	| OI |	|	|	|	1.16
8.083	52.09	43.89	0.765	| OI |	|	|	|	1.25
8.167	57.01	47.32	0.826	| O I|	|	|	|	1.35
8.250	63.15	51.42	0.900	| OI|	|	|	|	1.47
8.333	67.32	55.65	0.981	| O I	|	|	|	1.59
8.417	69.68	59.52	1.056	| OI	|	|	|	1.70
8.500	71.38	62.84	1.120	| OI	|	|	|	1.79
8.583	73.17	65.68	1.175	| OI	|	|	|	1.88
8.667	75.99	68.36	1.227	| OI	|	|	|	1.95
8.750	79.46	71.18	1.282	| OI	|	|	|	2.03
8.833	82.33	74.11	1.339	| |OI	|	|	|	2.12
8.917	85.54	77.07	1.396	| |OI	|	|	|	2.20
9.000	89.17	80.17	1.457	| |O I	|	|	|	2.29
9.083	92.57	83.39	1.519	| | OI	|	|	|	2.38
9.167	97.56	86.91	1.588	| | O I	|	|	|	2.48
9.250	103.75	90.84	1.669	| | OI	|	|	|	2.59
9.333	108.36	95.16	1.759	| | O I	|	|	|	2.72
9.417	112.46	99.48	1.849	| | OI	|	|	|	2.84
9.500	116.66	103.76	1.938	| | O I |	|	|	2.96
9.583	120.06	107.90	2.024	| | OI |	|	|	3.08
9.667	123.70	111.86	2.107	| | O I|	|	|	3.19
9.750	127.62	115.78	2.188	| | OI|	|	|	3.31
9.833	130.81	119.59	2.268	| | O I	|	|	3.41
9.917	134.25	123.09	2.345	| | OI	|	|	3.52
10.000	138.10	125.86	2.426	| | O|I	|	|	3.62
10.083	137.97	128.44	2.501	| | O|I	|	|	3.71
10.167	127.91	129.40	2.528	| | IO	|	|	3.75
10.250	111.68	127.36	2.469	| | I O|	|	|	3.67
10.333	101.53	122.96	2.341	| | I O|	|	|	3.51
10.417	96.97	116.37	2.201	| | I O |	|	|	3.32



16.250	81.66	148.51	3.083	|	I |	O |	|	4.44
16.333	59.96	132.03	2.605	| I |	O |	|	3.84
16.417	49.10	113.25	2.136	| I |	O |	|	3.23
16.500	42.11	94.07	1.736	| I |	O |	|	2.69
16.583	36.61	77.99	1.414	| I |	O |	|	2.23
16.667	31.77	64.80	1.158	| I |	O |	|	1.85
16.750	27.42	54.19	0.952	| I |	O |	|	1.55
16.833	24.13	45.17	0.788	| I |	O |	|	1.29
16.917	21.76	38.03	0.659	| I |	O |	|	1.09
17.000	19.88	32.50	0.560	| I |	O |	|	0.93
17.083	18.06	28.15	0.481	| I |	O |	|	0.80
17.167	16.16	24.60	0.418	| I |	O |	|	0.70
17.250	14.46	21.62	0.364	| I |	O |	|	0.62
17.333	13.25	19.12	0.319	| I |	O |	|	0.55
17.417	12.48	17.08	0.283	| I |	O |	|	0.49
17.500	11.93	15.40	0.255	| I |	O |	|	0.44
17.583	11.43	14.12	0.234	| I |	O |	|	0.40
17.667	10.82	13.09	0.217	| I |	O |	|	0.37
17.750	10.88	12.32	0.204	| I |	O |	|	0.35
17.833	10.55	11.77	0.195	| I |	O |	|	0.34
17.917	8.97	11.07	0.183	| I |	O |	|	0.32
18.000	6.58	9.94	0.165	| I |	O |	|	0.28
18.083	5.09	8.52	0.141	| I |	O |	|	0.24
18.167	4.43	7.23	0.120	| I |	O |	|	0.21
18.250	4.08	6.20	0.103	| I |	O |	|	0.18
18.333	3.86	5.43	0.090	| I |	O |	|	0.16
18.417	3.73	4.87	0.081	| I |	O |	|	0.14
18.500	3.66	4.46	0.074	| I |	O |	|	0.13
18.583	4.03	4.25	0.070	| I |	O |	|	0.12
18.667	5.64	4.45	0.074	| I |	O |	|	0.13
18.750	8.05	5.28	0.087	| I |	O |	|	0.15
18.833	9.38	6.46	0.107	| I |	O |	|	0.18
18.917	9.35	7.46	0.124	| I |	O |	|	0.21
19.000	8.68	8.00	0.132	| I |	O |	|	0.23
19.083	8.48	8.20	0.136	| I |	O |	|	0.23
19.167	9.13	8.41	0.139	| I |	O |	|	0.24
19.250	10.22	8.85	0.147	| I |	O |	|	0.25
19.333	10.59	9.38	0.155	| I |	O |	|	0.27
19.417	9.56	9.62	0.159	| I |	O |	|	0.27
19.500	7.83	9.30	0.154	| I |	O |	|	0.27
19.583	7.12	8.67	0.144	| I |	O |	|	0.25
19.667	8.01	8.29	0.137	| I |	O |	|	0.24
19.750	9.70	8.48	0.140	| I |	O |	|	0.24
19.833	10.57	9.05	0.150	| I |	O |	|	0.26
19.917	10.28	9.52	0.158	| I |	O |	|	0.27
20.000	9.44	9.64	0.160	| I |	O |	|	0.28
20.083	9.12	9.52	0.158	| I |	O |	|	0.27
20.167	9.70	9.48	0.157	| I |	O |	|	0.27
20.250	10.69	9.73	0.161	| I |	O |	|	0.28
20.333	11.30	10.16	0.168	| I |	O |	|	0.29
20.417	11.57	10.60	0.176	| I |	O |	|	0.30
20.500	11.74	10.96	0.182	| I |	O |	|	0.31
20.583	11.88	11.26	0.186	| I |	O |	|	0.32
20.667	12.00	11.49	0.190	| I |	O |	|	0.33
20.750	12.07	11.68	0.193	| I |	O |	|	0.33
20.833	11.94	11.79	0.195	| I |	O |	|	0.34
20.917	11.21	11.72	0.194	| I |	O |	|	0.33
21.000	10.15	11.36	0.188	| I |	O |	|	0.32
21.083	9.67	10.86	0.180	| I |	O |	|	0.31
21.167	10.13	10.53	0.174	| I |	O |	|	0.30
21.250	11.03	10.55	0.175	| I |	O |	|	0.30
21.333	11.41	10.78	0.179	| I |	O |	|	0.31
21.417	10.88	10.90	0.181	| I |	O |	|	0.31
21.500	9.90	10.73	0.178	| I |	O |	|	0.31
21.583	9.48	10.37	0.172	| I |	O |	|	0.30
21.667	9.96	10.15	0.168	| I |	O |	|	0.29
21.750	10.90	10.25	0.170	| I |	O |	|	0.29
21.833	11.30	10.54	0.175	| I |	O |	|	0.30
21.917	10.80	10.72	0.177	| I |	O |	|	0.31

22.000	9.83	10.58	0.175	|O	|	|	|	|	0.30
22.083	9.40	10.25	0.170	|O	|	|	|	|	0.29
22.167	9.89	10.04	0.166	|O	|	|	|	|	0.29
22.250	10.84	10.15	0.168	|O	|	|	|	|	0.29
22.333	11.25	10.46	0.173	|O	|	|	|	|	0.30
22.417	10.74	10.64	0.176	|O	|	|	|	|	0.30
22.500	9.79	10.51	0.174	|O	|	|	|	|	0.30
22.583	9.20	10.16	0.168	|O	|	|	|	|	0.29
22.667	8.96	9.79	0.162	|O	|	|	|	|	0.28
22.750	8.80	9.47	0.157	|O	|	|	|	|	0.27
22.833	8.67	9.22	0.153	|O	|	|	|	|	0.26
22.917	8.57	9.01	0.149	|O	|	|	|	|	0.26
23.000	8.51	8.85	0.147	|O	|	|	|	|	0.25
23.083	8.47	8.73	0.145	|O	|	|	|	|	0.25
23.167	8.44	8.63	0.143	|O	|	|	|	|	0.25
23.250	8.41	8.56	0.142	|O	|	|	|	|	0.24
23.333	8.37	8.50	0.141	|O	|	|	|	|	0.24
23.417	8.33	8.45	0.140	|O	|	|	|	|	0.24
23.500	8.31	8.41	0.139	|O	|	|	|	|	0.24
23.583	8.31	8.37	0.139	|O	|	|	|	|	0.24
23.667	8.31	8.35	0.138	|O	|	|	|	|	0.24
23.750	8.29	8.33	0.138	|O	|	|	|	|	0.24
23.833	8.27	8.31	0.138	|O	|	|	|	|	0.24
23.917	8.25	8.30	0.137	|O	|	|	|	|	0.24
24.000	8.25	8.28	0.137	|O	|	|	|	|	0.24
24.083	7.89	8.21	0.136	IO	|	|	|	|	0.23
24.167	6.39	7.84	0.130	O	|	|	|	|	0.22
24.250	4.17	6.96	0.115	O	|	|	|	|	0.20
24.333	2.74	5.75	0.095	O	|	|	|	|	0.16
24.417	2.05	4.60	0.076	O	|	|	|	|	0.13
24.500	1.60	3.64	0.060	O	|	|	|	|	0.10
24.583	1.27	2.88	0.048	O	|	|	|	|	0.08
24.667	1.02	2.29	0.038	O	|	|	|	|	0.07
24.750	0.82	1.82	0.030	O	|	|	|	|	0.05
24.833	0.66	1.45	0.024	O	|	|	|	|	0.04
24.917	0.54	1.16	0.019	O	|	|	|	|	0.03
25.000	0.44	0.93	0.015	O	|	|	|	|	0.03
25.083	0.34	0.74	0.012	O	|	|	|	|	0.02
25.167	0.27	0.59	0.010	O	|	|	|	|	0.02
25.250	0.20	0.47	0.008	O	|	|	|	|	0.01
25.333	0.15	0.37	0.006	O	|	|	|	|	0.01
25.417	0.11	0.29	0.005	O	|	|	|	|	0.01
25.500	0.08	0.22	0.004	O	|	|	|	|	0.01
25.583	0.04	0.17	0.003	O	|	|	|	|	0.00
25.667	0.00	0.12	0.002	O	|	|	|	|	0.00
25.750	0.00	0.08	0.001	O	|	|	|	|	0.00
25.833	0.00	0.05	0.001	O	|	|	|	|	0.00
25.917	0.00	0.03	0.001	O	|	|	|	|	0.00

**********HYDROGRAPH DATA**********

Number of intervals = 311
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 221.574 (CFS)
Total volume = 121.405 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 2.000 to Point/Station 3.000

**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

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********** HYDROGRAPH INFORMATION **********

From study/file name: A1P24100.rte

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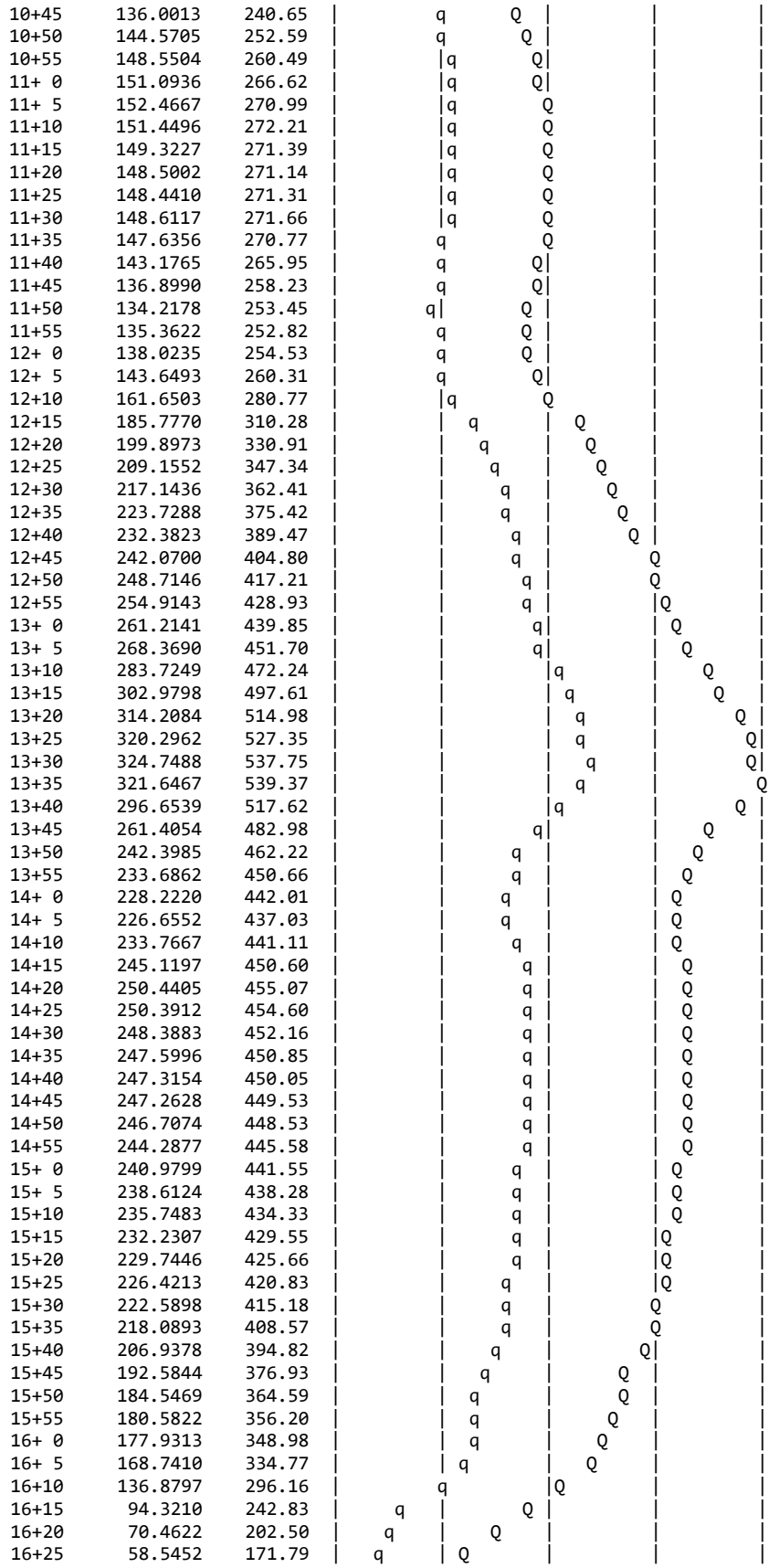
P R I N T O F S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Add q(CFS)	Tot. Q	0	134.8	269.7	404.5	539.4
0+ 5	0.5632	0.63	Q				
0+10	2.9210	3.35	Q				
0+15	6.1251	7.43	Q				
0+20	8.1820	10.72	Q				
0+25	10.2273	14.10	qQ				
0+30	12.4091	17.67	qQ				
0+35	13.7293	20.35	|Q				
0+40	14.4856	22.28	|Q				
0+45	15.0344	23.78	|Q				
0+50	15.7294	25.25	|Q				
0+55	17.2265	27.52	|qQ				
1+ 0	19.1011	30.30	|qQ				
1+ 5	19.9172	32.05	|qQ				
1+10	19.3420	32.17	|qQ				
1+15	18.1760	31.28	|qQ				
1+20	17.6178	30.69	|qQ				
1+25	17.4417	30.39	|qQ				
1+30	17.3680	30.20	|qQ				
1+35	17.3205	30.07	|qQ				
1+40	17.2620	29.94	|qQ				
1+45	17.2288	29.86	|qQ				
1+50	17.4883	30.12	|qQ				
1+55	18.6348	31.42	|qQ				
2+ 0	20.2027	33.40	|qQ				
2+ 5	21.0634	34.84	|qQ				
2+10	21.4753	35.81	|qQ				
2+15	21.7525	36.54	|qQ				
2+20	21.9608	37.11	|qQ				
2+25	22.0976	37.54	|qQ				
2+30	22.2023	37.86	|qQ				
2+35	22.5618	38.43	|qQ				
2+40	23.8190	40.00	|qQ				
2+45	25.4926	42.21	|q Q				
2+50	26.4360	43.84	|q Q				
2+55	26.9152	44.93	|q Q				
3+ 0	27.2425	45.76	| qQ				
3+ 5	27.4875	46.43	| qQ				
3+10	27.6738	46.95	| qQ				
3+15	27.8279	47.38	| qQ				
3+20	27.9472	47.71	| qQ				
3+25	28.0256	47.97	| qQ				
3+30	28.0971	48.18	| qQ				
3+35	28.1528	48.35	| qQ				
3+40	28.1989	48.49	| qQ				
3+45	28.2362	48.60	| qQ				
3+50	28.5466	48.99	| qQ				
3+55	29.7501	50.41	| qQ				
4+ 0	31.3769	52.49	| qQ				
4+ 5	32.2853	54.00	| q Q				
4+10	32.7185	55.03	| q Q				
4+15	33.0084	55.81	| q Q				
4+20	33.5063	56.73	| q Q				
4+25	34.8467	58.56	| q Q				
4+30	36.5782	60.95	| q Q				
4+35	37.5644	62.71	| q Q				
4+40	38.0760	63.94	| q Q				
4+45	38.4374	64.90	| q Q				
4+50	38.9910	65.97	| q Q				
4+55	40.3775	67.91	| q Q				

5+ 0	42.1463	70.40	| q Q |	|	|	|
5+ 5	42.5980	71.62	| q Q |	|	|	|
5+10	40.7766	70.22	| q Q |	|	|	|
5+15	37.9586	67.20	| q Q |	|	|	|
5+20	36.7576	65.40	| q Q |	|	|	|
5+25	37.2777	65.38	| q Q |	|	|	|
5+30	38.4668	66.37	| q Q |	|	|	|
5+35	39.3308	67.12	| q Q |	|	|	|
5+40	40.7228	67.57	| q Q |	|	|	|
5+45	42.4521	66.77	| qQ |	|	|	|
5+50	43.4354	64.19	| qQ |	|	|	|
5+55	43.9195	61.22	| qQ |	|	|	|
6+ 0	44.2331	58.49	| qQ |	|	|	|
6+ 5	42.3097	54.30	| qQ |	|	|	|
6+10	33.4829	44.12	| qQ |	|	|	|
6+15	21.4935	31.80	|qQ |	|	|	|
6+20	15.0718	25.77	|Q |	|	|	|
6+25	12.1591	23.47	qQ |	|	|	|
6+30	10.3633	22.27	qQ |	|	|	|
6+35	9.7342	22.24	qQ |	|	|	|
6+40	11.4695	24.85	qQ |	|	|	|
6+45	14.3510	29.13	|qQ |	|	|	|
6+50	15.9525	32.48	|qQ |	|	|	|
6+55	16.7279	34.88	|qQ |	|	|	|
7+ 0	17.2573	36.75	|qQ |	|	|	|
7+ 5	17.7526	38.40	|qQ |	|	|	|
7+10	18.1891	39.81	|qQ |	|	|	|
7+15	18.6264	41.09	|q Q |	|	|	|
7+20	19.6630	42.94	|q Q |	|	|	|
7+25	22.5895	46.93	|q Q |	|	|	|
7+30	26.3990	52.29	|q Q |	|	|	|
7+35	29.2897	57.10	| q Q |	|	|	|
7+40	33.2569	63.23	| q Q |	|	|	|
7+45	37.7974	70.25	| q Q |	|	|	|
7+50	41.2455	76.36	| q Q |	|	|	|
7+55	45.5061	83.37	| q Q |	|	|	|
8+ 0	50.2904	91.09	| q Q |	|	|	|
8+ 5	54.5232	98.42	| q Q |	|	|	|
8+10	61.3913	108.71	| q Q |	|	|	|
8+15	69.6651	121.08	| q Q |	|	|	|
8+20	74.6557	130.31	| q Q|	|	|	|
8+25	77.5401	137.06	| q Q	|	|	|
8+30	79.7151	142.55	| q Q	|	|	|
8+35	82.0562	147.74	| q Q	|	|	|
8+40	85.9934	154.36	| q |Q	|	|	|
8+45	90.6571	161.84	| q | Q	|	|	|
8+50	94.2113	168.32	| q | Q	|	|	|
8+55	98.5439	175.61	| q | Q	|	|	|
9+ 0	103.4209	183.59	| q | Q	|	|	|
9+ 5	107.7266	191.12	| q | Q	|	|	|
9+10	114.6606	201.57	| q | Q	|	|	|
9+15	122.9782	213.82	| q| Q	|	|	|
9+20	128.5975	223.75	| q| Q	|	|	|
9+25	133.9712	233.45	| q| Q	|	|	|
9+30	139.5505	243.31	| q Q |	|	|	|
9+35	143.7836	251.68	| q Q |	|	|	|
9+40	148.5706	260.44	| |q Q|	|	|	|
9+45	153.7804	269.56	| |q Q|	|	|	|
9+50	157.7333	277.32	| |q Q	|	|	|
9+55	162.3924	285.48	| | q |Q	|	|	|
10+ 0	167.5279	293.39	| | q |Q	|	|	|
10+ 5	166.6567	295.10	| | q |Q	|	|	|
10+10	151.2628	280.66	| |q Q	|	|	|
10+15	129.1683	256.53	| q| Q|	|	|	|
10+20	117.3672	240.33	| q | Q |	|	|	|
10+25	112.0647	228.43	| q | Q |	|	|	|
10+30	108.7856	219.27	| q | Q |	|	|	|
10+35	109.4457	215.35	| q | Q |	|	|	|
10+40	120.2609	223.90	| q | Q |	|	|	|



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16+30     50.3853    144.45  |  q      Q        |         |         |
16+35     43.9911    121.99  |  q     Q|        |         |         |
16+40     38.2365    103.03  | q    Q  |        |         |         |
16+45     32.9532     87.14  | q   Q   |        |         |         |
16+50     29.2578     74.43  | q  Q    |        |         |         |
16+55     26.6105     64.64  |q  Q     |        |         |         |
17+ 0     24.2788     56.78  |q  Q     |        |         |         |
17+ 5     21.8406     49.99  |q Q      |        |         |         |
17+10     17.9222     42.53  |q Q      |        |         |         |
17+15     13.3851     35.00  q Q       |        |         |         |
17+20     10.7490     29.87  q Q       |        |         |         |
17+25      9.2767     26.36  qQ        |        |         |         |
17+30      8.1450     23.55  qQ        |        |         |         |
17+35      7.3060     21.43  qQ        |        |         |         |
17+40      7.1404     20.23  qQ        |        |         |         |
17+45      7.0603     19.38  qQ        |        |         |         |
17+50      7.8403     19.61  qQ        |        |         |         |
17+55     11.1402     22.22  qQ        |        |         |         |
18+ 0     15.5731     25.51  |Q        |        |         |         |
18+ 5     17.9969     26.52  |Q        |        |         |         |
18+10     19.1667     26.40  |Q        |        |         |         |
18+15     19.9409     26.14  |Q        |        |         |         |
18+20     20.5184     25.95  |Q        |        |         |         |
18+25     20.9446     25.81  |Q        |        |         |         |
18+30     21.2754     25.74  |Q        |        |         |         |
18+35     21.2430     25.49  |Q        |        |         |         |
18+40     20.2994     24.75  |Q        |        |         |         |
18+45     18.9099     24.19  |Q        |        |         |         |
18+50     17.9060     24.36  |Q        |        |         |         |
18+55     16.4299     23.89  |Q        |        |         |         |
19+ 0     14.6477     22.64  |Q        |        |         |         |
19+ 5     13.9095     22.11  |Q        |        |         |         |
19+10     14.5653     22.97  |Q        |        |         |         |
19+15     15.8185     24.66  |Q        |        |         |         |
19+20     16.7312     26.12  |Q        |        |         |         |
19+25     18.1034     27.73  |qQ       |        |         |         |
19+30     19.7943     29.10  |qQ       |        |         |         |
19+35     20.4624     29.13  |qQ       |        |         |         |
19+40     19.7539     28.04  |qQ       |        |         |         |
19+45     18.4622     26.95  |Q        |        |         |         |
19+50     17.5233     26.57  |Q        |        |         |         |
19+55     16.0804     25.60  |Q        |        |         |         |
20+ 0     14.3274     23.97  |Q        |        |         |         |
20+ 5     13.6099     23.13  |Q        |        |         |         |
20+10     14.2937     23.77  |Q        |        |         |         |
20+15     15.5606     25.29  |Q        |        |         |         |
20+20     16.1972     26.36  |Q        |        |         |         |
20+25     16.4612     27.06  |qQ       |        |         |         |
20+30     16.6122     27.58  |qQ       |        |         |         |
20+35     16.7236     27.98  |qQ       |        |         |         |
20+40     16.7855     28.28  |qQ       |        |         |         |
20+45     16.8308     28.51  |qQ       |        |         |         |
20+50     16.5839     28.38  |qQ       |        |         |         |
20+55     15.4127     27.13  |qQ       |        |         |         |
21+ 0     13.8201     25.18  |Q        |        |         |         |
21+ 5     13.2204     24.08  qQ        |        |         |         |
21+10     13.9873     24.52  |Q        |        |         |         |
21+15     15.3122     25.86  |Q        |        |         |         |
21+20     15.7099     26.49  |Q        |        |         |         |
21+25     14.8274     25.73  |Q        |        |         |         |
21+30     13.4105     24.14  qQ        |        |         |         |
21+35     12.9429     23.31  qQ        |        |         |         |
21+40     13.7718     23.92  |Q        |        |         |         |
21+45     15.1419     25.39  |Q        |        |         |         |
21+50     15.5744     26.11  |Q        |        |         |         |
21+55     14.6996     25.42  |Q        |        |         |         |
22+ 0     13.2921     23.87  qQ        |        |         |         |
22+ 5     12.8308     23.08  qQ        |        |         |         |
22+10     13.6809     23.72  |Q        |        |         |         |
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   22+15      15.0637     25.21  |Q        |         |         |         |
   22+20      15.5043     25.96  |Q        |         |         |         |
   22+25      14.6542     25.30  |Q        |         |         |         |
   22+30      13.2714     23.78  qQ        |         |         |         |
   22+35      12.5492     22.71  qQ        |         |         |         |
   22+40      12.2205     22.01  qQ        |         |         |         |
   22+45      12.0012     21.48  qQ        |         |         |         |
   22+50      11.8357     21.06  qQ        |         |         |         |
   22+55      11.7312     20.75  qQ        |         |         |         |
   23+ 0      11.6607     20.51  qQ        |         |         |         |
   23+ 5      11.6098     20.34  qQ        |         |         |         |
   23+10      11.5528     20.19  qQ        |         |         |         |
   23+15      11.4939     20.06  qQ        |         |         |         |
   23+20      11.4462     19.95  qQ        |         |         |         |
   23+25      11.4249     19.87  qQ        |         |         |         |
   23+30      11.4122     19.82  qQ        |         |         |         |
   23+35      11.4042     19.78  qQ        |         |         |         |
   23+40      11.3795     19.73  qQ        |         |         |         |
   23+45      11.3548     19.69  qQ        |         |         |         |
   23+50      11.3340     19.65  qQ        |         |         |         |
   23+55      11.3340     19.63  qQ        |         |         |         |
   24+ 0      11.3340     19.62  qQ        |         |         |         |
   24+ 5      10.7708     18.98  qQ        |         |         |         |
   24+10       8.4131     16.25  qQ        |         |         |         |
   24+15       5.2090     12.17  Q         |         |         |         |
   24+20       3.4336      9.19  Q         |         |         |         |
   24+25       2.5672      7.16  Q         |         |         |         |
   24+30       1.9875      5.63  Q         |         |         |         |
   24+35       1.5549      4.44  Q         |         |         |         |
   24+40       1.2318      3.52  Q         |         |         |         |
   24+45       0.9729      2.79  Q         |         |         |         |
   24+50       0.7758      2.22  Q         |         |         |         |
   24+55       0.6191      1.78  Q         |         |         |         |
   25+ 0       0.4760      1.40  Q         |         |         |         |
   25+ 5       0.3645      1.11  Q         |         |         |         |
   25+10       0.2725      0.86  Q         |         |         |         |
   25+15       0.1978      0.67  Q         |         |         |         |
   25+20       0.1403      0.51  Q         |         |         |         |
   25+25       0.0909      0.38  Q         |         |         |         |
   25+30       0.0414      0.26  Q         |         |         |         |
   25+35       0.0000      0.17  Q         |         |         |         |
   25+40       0.0000      0.12  Q         |         |         |         |
   25+45       0.0000      0.08  Q         |         |         |         |
   25+50       0.0000      0.05  Q         |         |         |         |
   25+55       0.0000      0.03  Q         |         |         |         |
-------------------------------------------------------------------------
       ***************************HYDROGRAPH DATA**************************
                     Number of intervals =   311
                     Time interval =    5.0 (Min.)
                     Maximum/Peak flow rate =      539.372 (CFS)
                     Total volume =     272.665 (Ac.Ft)
              Status of hydrographs being held in storage
                         Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
              Peak (CFS)      0.000     0.000     0.000     0.000     0.000
              Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
       ********************************************************************

       ---------------------------------------------------------------------


       ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
       Process from Point/Station        3.000 to Point/Station        4.000
       **** STREAM ROUTING SCS CONVEX METHOD ****
       ______________________________________________________________________
       HYDROGRAPH STREAM ROUTING DATA:
       Length of stream =   1465.00 (Ft.)
       Elevation difference =   30.70 (Ft.)
       Slope of channel =  0.020956 (Vert/Horiz)
       Channel type - Pipe
```

Pipe length = 1465.00(Ft.) Elevation difference = 30.70(Ft.)
Manning's N = 0.013 No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow = 194.069(CFS)
Given pipe size = 96.00(In.)
Calculated individual pipe flow = 194.069(CFS)
Normal flow depth in pipe = 24.87(In.)
Flow top width inside pipe = 84.12(In.)
Critical Depth = 3.48(Ft.)
Pipe flow velocity = 18.78(Ft/s)
Travel time through pipe = 1.30 min.

Pipe length = 1465.00(Ft.) Elevation difference = 30.70(Ft.)
Manning's N = 0.013 No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow = 539.372(CFS)
Given pipe size = 96.00(In.)
Calculated individual pipe flow = 539.372(CFS)
Normal flow depth in pipe = 42.75(In.)
Flow top width inside pipe = 95.42(In.)
Critical Depth = 5.92(Ft.)
Pipe flow velocity = 24.95(Ft/s)
Travel time through pipe = 0.98 min.

********** SCS CONVEX CHANNEL ROUTING **********
Convex method of stream routing data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
where c* = 1 - (1-c)^e and dt = c(length)/velocity
c(v/v+1.7) = 0.9362 Travel time = 0.98 (min.)
dt*(unit time interval) = 5.00(min.), e= 3.9712
dt(routing time-step) = 0.92 (min.), c* = 1.0000

Output hydrograph delayed by 0 unit time increments

++
P R I N T O F S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Out = O(CFS)	In = I	0	134.8	269.7	404.5	539.4
0+ 5	0.5112	0.63	O				
0+10	2.8469	3.35	O				
0+15	6.6788	7.43	O				
0+20	10.1153	10.72	O				
0+25	13.4793	14.10	OI				
0+30	17.0171	17.67	|O				
0+35	19.8602	20.35	|O				
0+40	21.9277	22.28	|O				
0+45	23.5019	23.78	|O				
0+50	24.9801	25.25	|O				
0+55	27.1020	27.52	| O				
1+ 0	29.7863	30.30	| O				
1+ 5	31.7297	32.05	| O				
1+10	32.1471	32.17	| O				
1+15	31.4407	31.28	| O				
1+20	30.7963	30.69	| O				
1+25	30.4449	30.39	| O				
1+30	30.2368	30.20	| O				
1+35	30.0908	30.07	| O				
1+40	29.9667	29.94	| O				

1+45	29.8793	29.86	O				
1+50	30.0708	30.12	O				
1+55	31.1780	31.42	O				
2+ 0	33.0366	33.40	O				
2+ 5	34.5765	34.84	O				
2+10	35.6310	35.81	O				
2+15	36.4082	36.54	O				
2+20	37.0085	37.11	O				
2+25	37.4585	37.54	O				
2+30	37.8045	37.86	O				
2+35	38.3244	38.43	O				
2+40	39.7086	40.00	O				
2+45	41.8040	42.21	O				
2+50	43.5398	43.84	O				
2+55	44.7284	44.93	O				
3+ 0	45.6115	45.76	O				
3+ 5	46.3055	46.43	O				
3+10	46.8543	46.95	O				
3+15	47.2977	47.38	O				
3+20	47.6513	47.71	O				
3+25	47.9218	47.97	O				
3+30	48.1429	48.18	O				
3+35	48.3193	48.35	O				
3+40	48.4611	48.49	O				
3+45	48.5753	48.60	O				
3+50	48.9201	48.99	O				
3+55	50.1526	50.41	O				
4+ 0	52.1104	52.49	O				
4+ 5	53.7273	54.00	OI				
4+10	54.8380	55.03	O				
4+15	55.6647	55.81	O				
4+20	56.5629	56.73	O				
4+25	58.2235	58.56	O				
4+30	60.5152	60.95	O				
4+35	62.3912	62.71	O				
4+40	63.7176	63.94	O				
4+45	64.7253	64.90	O				
4+50	65.7714	65.97	O				
4+55	67.5544	67.91	O				
5+ 0	69.9471	70.40	O				
5+ 5	71.3973	71.62	O				
5+10	70.4757	70.22	O				
5+15	67.7564	67.20	IO				
5+20	65.7269	65.40	O				
5+25	65.3819	65.38	O				
5+30	66.1890	66.37	O				
5+35	66.9810	67.12	O				
5+40	67.4846	67.57	O				
5+45	66.9149	66.77	O				
5+50	64.6646	64.19	O				
5+55	61.7638	61.22	O				
6+ 0	58.9901	58.49	O				
6+ 5	55.0692	54.30	O				
6+10	45.9839	44.12	O				
6+15	34.0586	31.80	O				
6+20	26.8761	25.77	O				
6+25	23.8930	23.47	O				
6+30	22.4932	22.27	O				
6+35	22.2498	22.24	O				
6+40	24.3717	24.85	O				
6+45	28.3491	29.13	O				
6+50	31.8660	32.48	O				
6+55	34.4369	34.88	O				
7+ 0	36.4064	36.75	O				
7+ 5	38.0940	38.40	O				
7+10	39.5478	39.81	O				
7+15	40.8518	41.09	O				
7+20	42.6041	42.94	O				
7+25	46.2007	46.93	O				

7+30	51.3045	52.29	O			
7+35	56.2147	57.10	O			
7+40	62.1050	63.23	O			
7+45	68.9611	70.25	O			
7+50	75.2397	76.36	O			
7+55	82.0835	83.37	O			
8+ 0	89.6722	91.09	O			
8+ 5	97.0724	98.42	O			
8+10	106.8217	108.71	OI			
8+15	118.8160	121.08	O			
8+20	128.6163	130.31	O			
8+25	135.8240	137.06	O			
8+30	141.5481	142.55	O			
8+35	146.7895	147.74	O			
8+40	153.1449	154.36	O			
8+45	160.4699	161.84	OI			
8+50	167.1331	168.32	O			
8+55	174.2765	175.61	OI			
9+ 0	182.1278	183.59	O			
9+ 5	189.7393	191.12	O			
9+10	199.6540	201.57	O			
9+15	211.5766	213.82	O			
9+20	221.9345	223.75	O			
9+25	231.6766	233.45	O			
9+30	241.5031	243.31	OI			
9+35	250.1485	251.68	O			
9+40	258.8315	260.44	O			
9+45	267.8862	269.56	O			
9+50	275.8992	277.32	O			
9+55	283.9832	285.48	O			
10+ 0	291.9392	293.39	O			
10+ 5	294.7859	295.10	O			
10+10	283.3055	280.66	IO			
10+15	260.9514	256.53	O			
10+20	243.2968	240.33	IO			
10+25	230.6133	228.43	IO			
10+30	220.9485	219.27	O			
10+35	216.0656	215.35	IO			
10+40	222.3354	223.90	O			
10+45	237.5816	240.65	O			
10+50	250.4013	252.59	O			
10+55	259.0436	260.49	O			
11+ 0	265.4931	266.62	O			
11+ 5	270.1906	270.99	O			
11+10	271.9859	272.21	O			
11+15	271.5401	271.39	O			
11+20	271.1880	271.14	O			
11+25	271.2809	271.31	O			
11+30	271.5971	271.66	O			
11+35	270.9293	270.77	O			
11+40	266.8296	265.95	O			
11+45	259.6448	258.23	O			
11+50	254.3275	253.45	O			
11+55	252.9319	252.82	O			
12+ 0	254.2140	254.53	O			
12+ 5	259.2509	260.31	O			
12+10	277.0166	280.77	O			
12+15	304.8696	310.28	OI			
12+20	327.1290	330.91	O			
12+25	344.3276	347.34	O			
12+30	359.6517	362.41	O			
12+35	373.0405	375.42	O			
12+40	386.8981	389.47	O			
12+45	401.9892	404.80	OI			
12+50	414.9353	417.21	O			
12+55	426.7834	428.93	O			
13+ 0	437.8478	439.85	O			
13+ 5	449.5277	451.70	O			
13+10	468.4796	472.24	OI			

13+15	492.9649	497.61	|	|	|	| O |
13+20	511.7943	514.98	|	|	|	| OI |
13+25	525.0826	527.35	|	|	|	| OI|
13+30	535.8408	537.75	|	|	|	| O|
13+35	539.0743	539.37	|	|	|	| OI
13+40	521.6083	517.62	|	|	|	| O |
13+45	489.3285	482.98	|	|	|	| IO |
13+50	466.0279	462.22	|	|	|	| O |
13+55	452.7826	450.66	|	|	|	| O |
14+ 0	443.5974	442.01	|	|	|	| O |
14+ 5	437.9427	437.03	|	|	|	| O |
14+10	440.3640	441.11	|	|	|	| O |
14+15	448.8574	450.60	|	|	|	| O |
14+20	454.2518	455.07	|	|	|	| O |
14+25	454.6845	454.60	|	|	|	| O |
14+30	452.6084	452.16	|	|	|	| O |
14+35	451.0929	450.85	|	|	|	| O |
14+40	450.1990	450.05	|	|	|	| O |
14+45	449.6276	449.53	|	|	|	| O |
14+50	448.7126	448.53	|	|	|	| O |
14+55	446.1204	445.58	|	|	|	| O |
15+ 0	442.2887	441.55	|	|	|	| O |
15+ 5	438.8759	438.28	|	|	|	| O |
15+10	435.0561	434.33	|	|	|	| O |
15+15	430.4243	429.55	|	|	|	|O |
15+20	426.3721	425.66	|	|	|	|O |
15+25	421.7154	420.83	|	|	|	|O |
15+30	416.2194	415.18	|	|	|	O |
15+35	409.7863	408.57	|	|	|	O |
15+40	397.3417	394.82	|	|	|	O|
15+45	380.2059	376.93	|	|	|	IO |
15+50	366.8532	364.59	|	|	|	O |
15+55	357.7405	356.20	|	|	|	O |
16+ 0	350.3022	348.98	|	|	|	O |
16+ 5	337.3702	334.77	|	|	|	IO |
16+10	303.2316	296.16	|	|	|IO |
16+15	252.6026	242.83	|	|	O |
16+20	209.8884	202.50	|	| O |	|
16+25	177.4218	171.79	|	| IO |	|
16+30	149.4653	144.45	|	IO |	|
16+35	126.1034	121.99	|	O| |	|
16+40	106.5068	103.03	|	O |	|
16+45	90.0568	87.14	|	O |	|
16+50	76.7602	74.43	|	O |	|
16+55	66.4354	64.64	|	O |	|
17+ 0	58.2202	56.78	|	O |	|
17+ 5	51.2367	49.99	|	O |	|
17+10	43.8953	42.53	|	O |	|
17+15	36.3827	35.00	|	O |	|
17+20	30.8132	29.87	|	O |	|
17+25	27.0038	26.36	|	IO |	|
17+30	24.0635	23.55	|	O |	|
17+35	21.8166	21.43	|	O |	|
17+40	20.4503	20.23	|	O |	|
17+45	19.5349	19.38	|	O |	|
17+50	19.5648	19.61	|	O |	|
17+55	21.7371	22.22	|	O |	|
18+ 0	24.9068	25.51	|	O |	|
18+ 5	26.3365	26.52	|	O |	|
18+10	26.4182	26.40	|	O |	|
18+15	26.1905	26.14	|	O |	|
18+20	25.9875	25.95	|	O |	|
18+25	25.8385	25.81	|	O |	|
18+30	25.7525	25.74	|	O |	|
18+35	25.5376	25.49	|	O |	|
18+40	24.8864	24.75	|	O |	|
18+45	24.2890	24.19	|	O |	|
18+50	24.3319	24.36	|	O |	|
18+55	23.9759	23.89	|	O |	|

19+ 0	22.8711	22.64	|O	|	|	|	|
19+ 5	22.2053	22.11	|O	|	|	|	|
19+10	22.8146	22.97	|O	|	|	|	|
19+15	24.3545	24.66	|O	|	|	|	|
19+20	25.8493	26.12	|O	|	|	|	|
19+25	27.4308	27.73	| O	|	|	|	|
19+30	28.8459	29.10	| O	|	|	|	|
19+35	29.1278	29.13	| O	|	|	|	|
19+40	28.2436	28.04	| O	|	|	|	|
19+45	27.1466	26.95	|IO	|	|	|	|
19+50	26.6423	26.57	|O	|	|	|	|
19+55	25.7820	25.60	|O	|	|	|	|
20+ 0	24.2672	23.97	|O	|	|	|	|
20+ 5	23.2803	23.13	|O	|	|	|	|
20+10	23.6550	23.77	|O	|	|	|	|
20+15	25.0098	25.29	|O	|	|	|	|
20+20	26.1646	26.36	|O	|	|	|	|
20+25	26.9347	27.06	|OI	|	|	|	|
20+30	27.4827	27.58	| O	|	|	|	|
20+35	27.9061	27.98	| O	|	|	|	|
20+40	28.2229	28.28	| O	|	|	|	|
20+45	28.4672	28.51	| O	|	|	|	|
20+50	28.4000	28.38	| O	|	|	|	|
20+55	27.3578	27.13	| O	|	|	|	|
21+ 0	25.5375	25.18	|O	|	|	|	|
21+ 5	24.2830	24.08	|O	|	|	|	|
21+10	24.4376	24.52	|O	|	|	|	|
21+15	25.6136	25.86	|O	|	|	|	|
21+20	26.3737	26.49	|O	|	|	|	|
21+25	25.8708	25.73	|O	|	|	|	|
21+30	24.4307	24.14	|O	|	|	|	|
21+35	23.4650	23.31	|O	|	|	|	|
21+40	23.8079	23.92	|O	|	|	|	|
21+45	25.1183	25.39	|O	|	|	|	|
21+50	25.9816	26.11	|O	|	|	|	|
21+55	25.5434	25.42	|O	|	|	|	|
22+ 0	24.1524	23.87	|O	|	|	|	|
22+ 5	23.2221	23.08	|O	|	|	|	|
22+10	23.6024	23.72	|O	|	|	|	|
22+15	24.9406	25.21	|O	|	|	|	|
22+20	25.8253	25.96	|O	|	|	|	|
22+25	25.4189	25.30	|O	|	|	|	|
22+30	24.0615	23.78	|O	|	|	|	|
22+35	22.9081	22.71	|O	|	|	|	|
22+40	22.1381	22.01	|O	|	|	|	|
22+45	21.5738	21.48	|O	|	|	|	|
22+50	21.1330	21.06	|O	|	|	|	|
22+55	20.8025	20.75	|O	|	|	|	|
23+ 0	20.5544	20.51	|O	|	|	|	|
23+ 5	20.3677	20.34	|O	|	|	|	|
23+10	20.2128	20.19	|O	|	|	|	|
23+15	20.0789	20.06	|O	|	|	|	|
23+20	19.9671	19.95	|O	|	|	|	|
23+25	19.8871	19.87	|O	|	|	|	|
23+30	19.8276	19.82	|O	|	|	|	|
23+35	19.7841	19.78	|O	|	|	|	|
23+40	19.7378	19.73	|O	|	|	|	|
23+45	19.6946	19.69	|O	|	|	|	|
23+50	19.6558	19.65	|O	|	|	|	|
23+55	19.6342	19.63	|O	|	|	|	|
24+ 0	19.6182	19.62	|O	|	|	|	|
24+ 5	19.0957	18.98	|O	|	|	|	|
24+10	16.7527	16.25	|O	|	|	|	|
24+15	12.9159	12.17	O	|	|	|	|
24+20	9.7319	9.19	O	|	|	|	|
24+25	7.5336	7.16	O	|	|	|	|
24+30	5.9105	5.63	O	|	|	|	|
24+35	4.6569	4.44	O	|	|	|	|
24+40	3.6869	3.52	O	|	|	|	|

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  24+45       2.9232      2.79  O         |         |         |         |
  24+50       2.3267      2.22  O         |         |         |         |
  24+55       1.8572      1.78  O         |         |         |         |
  25+ 0       1.4704      1.40  O         |         |         |         |
  25+ 5       1.1599      1.11  O         |         |         |         |
  25+10       0.9074      0.86  O         |         |         |         |
  25+15       0.7021      0.67  O         |         |         |         |
  25+20       0.5375      0.51  O         |         |         |         |
  25+25       0.4017      0.38  O         |         |         |         |
  25+30       0.2832      0.26  O         |         |         |         |
  25+35       0.1833      0.17  O         |         |         |         |
  25+40       0.1253      0.12  O         |         |         |         |
  25+45       0.0836      0.08  O         |         |         |         |
  25+50       0.0548      0.05  O         |         |         |         |
  25+55       0.0359      0.03  O         |         |         |         |
  26+ 0       0.0060      0.00  O         |         |         |         |
  26+ 5       0.0000      0.00  O         |         |         |         |
--------------------------------------------------------------------------
      ***************************HYDROGRAPH DATA**************************
                  Number of intervals =   313
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =      539.074 (CFS)
                  Total volume =     272.665 (Ac.Ft)
           Status of hydrographs being held in storage
                    Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
           Peak (CFS)      0.000     0.000     0.000     0.000     0.000
           Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
      ********************************************************************

      ------------------------------------------------------------------


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station        3.000 to Point/Station        4.000
      **** ADD/COMBINE/RECOVER HYDROGRAPHS ****
      ____________________________________________________________________
      ******************** HYDROGRAPH INFORMATION **********************

                  From study/file name: A4P24100.rte
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    P R I N T  O F  S T O R M
                  R u n o f f     H y d r o g r a p h
      ------------------------------------------------------------------
               Hydrograph in   5   Minute intervals (CFS)

      ------------------------------------------------------------------
 Time(h+m) Add q(CFS)  Tot. Q   0      153.6     307.1     460.7     614.3
 ------------------------------------------------------------------------
   0+ 5       0.2883      0.80  Q         |         |         |         |
   0+10       1.3224      4.17  Q         |         |         |         |
   0+15       1.8534      8.53  Q         |         |         |         |
   0+20       2.2093     12.32  Q         |         |         |         |
   0+25       2.8547     16.33  qQ        |         |         |         |
   0+30       3.2034     20.22  qQ        |         |         |         |
   0+35       3.3670     23.23  qQ        |         |         |         |
   0+40       3.4737     25.40  qQ        |         |         |         |
   0+45       3.5452     27.05  qQ        |         |         |         |
   0+50       3.7384     28.72  qQ        |         |         |         |
   0+55       4.2997     31.40  q Q       |         |         |         |
   1+ 0       4.5802     34.37  q Q       |         |         |         |
   1+ 5       4.5521     36.28  q Q       |         |         |         |
   1+10       4.1106     36.26  q Q       |         |         |         |
   1+15       3.8867     35.33  q Q       |         |         |         |
   1+20       3.8096     34.61  q Q       |         |         |         |
   1+25       3.7668     34.21  q Q       |         |         |         |
   1+30       3.7401     33.98  q Q       |         |         |         |
   1+35       3.7214     33.81  q Q       |         |         |         |
   1+40       3.7116     33.68  q Q       |         |         |         |
   1+45       3.6966     33.58  q Q       |         |         |         |
```

1+50	3.8306	33.90	q Q	|	|	|	|
1+55	4.3362	35.51	q Q	|	|	|	|
2+ 0	4.6017	37.64	q Q	|	|	|	|
2+ 5	4.7076	39.28	q Q	|	|	|	|
2+10	4.7718	40.40	q Q	|	|	|	|
2+15	4.8134	41.22	q Q	|	|	|	|
2+20	4.8422	41.85	q Q	|	|	|	|
2+25	4.8635	42.32	q Q	|	|	|	|
2+30	4.8785	42.68	q Q	|	|	|	|
2+35	5.0327	43.36	q Q	|	|	|	|
2+40	5.5612	45.27	q Q	|	|	|	|
2+45	5.8268	47.63	q Q	|	|	|	|
2+50	5.9327	49.47	q Q	|	|	|	|
2+55	5.9968	50.73	q Q	|	|	|	|
3+ 0	6.0384	51.65	q Q	|	|	|	|
3+ 5	6.0672	52.37	q Q	|	|	|	|
3+10	6.0885	52.94	q Q	|	|	|	|
3+15	6.1035	53.40	q Q	|	|	|	|
3+20	6.1136	53.76	q Q	|	|	|	|
3+25	6.1251	54.05	q Q	|	|	|	|
3+30	6.1251	54.27	q Q	|	|	|	|
3+35	6.1251	54.44	q Q	|	|	|	|
3+40	6.1251	54.59	q Q	|	|	|	|
3+45	6.1251	54.70	q Q	|	|	|	|
3+50	6.2692	55.19	q Q	|	|	|	|
3+55	6.7862	56.94	q Q	|	|	|	|
4+ 0	7.0518	59.16	q Q	|	|	|	|
4+ 5	7.1577	60.88	q Q	|	|	|	|
4+10	7.2218	62.06	q Q	|	|	|	|
4+15	7.2634	62.93	q Q	|	|	|	|
4+20	7.4364	64.00	q Q	|	|	|	|
4+25	7.9747	66.20	q Q	|	|	|	|
4+30	8.2552	68.77	q Q	|	|	|	|
4+35	8.3712	70.76	q Q	|	|	|	|
4+40	8.4468	72.16	q Q	|	|	|	|
4+45	8.4884	73.21	q Q	|	|	|	|
4+50	8.6614	74.43	q Q	|	|	|	|
4+55	9.1997	76.75	q Q	|	|	|	|
5+ 0	9.4802	79.43	q Q	|	|	|	|
5+ 5	9.3080	80.71	q Q	|	|	|	|
5+10	8.3494	78.83	q Q	|	|	|	|
5+15	7.8600	75.62	q Q	|	|	|	|
5+20	7.8212	73.55	q Q	|	|	|	|
5+25	8.2313	73.61	q Q	|	|	|	|
5+30	8.4285	74.62	q Q	|	|	|	|
5+35	8.6310	75.61	q Q	|	|	|	|
5+40	9.1811	76.67	q Q	|	|	|	|
5+45	9.4583	76.37	q Q	|	|	|	|
5+50	9.5728	74.24	q Q	|	|	|	|
5+55	9.6353	71.40	q Q	|	|	|	|
6+ 0	9.6919	68.68	q Q	|	|	|	|
6+ 5	8.8950	63.96	q Q	|	|	|	|
6+10	5.9411	51.92	q Q	|	|	|	|
6+15	4.4696	38.53	q Q	|	|	|	|
6+20	3.9402	30.82	q Q	|	|	|	|
6+25	3.6626	27.56	qQ	|	|	|	|
6+30	3.5091	26.00	qQ	|	|	|	|
6+35	3.7583	26.01	qQ	|	|	|	|
6+40	4.8951	29.27	qQ	|	|	|	|
6+45	5.5021	33.85	q Q	|	|	|	|
6+50	5.7780	37.64	q Q	|	|	|	|
6+55	5.9524	40.39	q Q	|	|	|	|
7+ 0	6.1431	42.55	q Q	|	|	|	|
7+ 5	6.3046	44.40	q Q	|	|	|	|
7+10	6.4489	46.00	q Q	|	|	|	|
7+15	6.5786	47.43	q Q	|	|	|	|
7+20	7.0225	49.63	q Q	|	|	|	|
7+25	8.3109	54.51	q Q	|	|	|	|
7+30	9.0055	60.31	q Q	|	|	|	|

7+35	9.6648	65.88	q Q	|	|	|	|
7+40	11.0714	73.18	q Q	|	|	|	|
7+45	11.8591	80.82	q Q	|	|	|	|
7+50	12.5827	87.82	q Q	|	|	|	|
7+55	14.0365	96.12	q Q	|	|	|	|
8+ 0	14.8572	104.53	q Q	|	|	|	|
8+ 5	15.9282	113.00	|q Q	|	|	|	|
8+10	18.5743	125.40	|q Q	|	|	|	|
8+15	19.9936	138.81	|q Q|	|	|	|	|
8+20	20.6521	149.27	|q Q|	|	|	|	|
8+25	21.1078	156.93	|q Q	|	|	|	|
8+30	21.4215	162.97	|q Q	|	|	|	|
8+35	21.9916	168.78	|q Q	|	|	|	|
8+40	23.3722	176.52	|q |Q	|	|	|	|
8+45	24.1304	184.60	|q | Q	|	|	|	|
8+50	24.8314	191.96	|q | Q	|	|	|	|
8+55	26.2856	200.56	|q | Q	|	|	|	|
9+ 0	27.0693	209.20	|q | Q	|	|	|	|
9+ 5	28.1143	217.85	|q | Q	|	|	|	|
9+10	30.7313	230.39	| q | Q	|	|	|	|
9+15	32.1473	243.72	| q | Q	|	|	|	|
9+20	33.1280	255.06	| q | Q	|	|	|	|
9+25	34.7476	266.42	| q | Q	|	|	|	|
9+30	35.6574	277.16	| q | Q	|	|	|	|
9+35	36.4633	286.61	| q | Q	|	|	|	|
9+40	37.9853	296.82	| q | Q|	|	|	|	|
9+45	38.8342	306.72	| q | Q|	|	|	|	|
9+50	39.5969	315.50	| q | Q	|	|	|	|
9+55	41.0960	325.08	| q | |Q	|	|	|	|
10+ 0	41.9102	333.85	| q | |Q	|	|	|	|
10+ 5	40.0464	334.83	| q | |Q	|	|	|	|
10+10	32.1815	315.49	| q | Q	|	|	|	|
10+15	28.1997	289.15	|q | Q |	|	|	|	|
10+20	26.7004	270.00	|q | Q |	|	|	|	|
10+25	25.8466	256.46	|q | Q |	|	|	|	|
10+30	25.3082	246.26	|q | Q |	|	|	|	|
10+35	26.5873	242.65	|q | Q |	|	|	|	|
10+40	32.1974	254.53	| q | Q |	|	|	|	|
10+45	35.0422	272.62	| q | Q |	|	|	|	|
10+50	36.1618	286.56	| q | Q |	|	|	|	|
10+55	36.7886	295.83	| q | Q|	|	|	|	|
11+ 0	37.3420	302.84	| q | Q|	|	|	|	|
11+ 5	37.4255	307.62	| q | Q	|	|	|	|
11+10	36.5816	308.57	| q | Q	|	|	|	|
11+15	36.2340	307.77	| q | Q	|	|	|	|
11+20	36.1917	307.38	| q | Q	|	|	|	|
11+25	36.2583	307.54	| q | Q	|	|	|	|
11+30	36.2463	307.84	| q | Q	|	|	|	|
11+35	35.6121	306.54	| q | Q|	|	|	|	|
11+40	33.3111	300.14	| q | Q|	|	|	|	|
11+45	32.1595	291.80	| q | Q|	|	|	|	|
11+50	32.0647	286.39	| q | Q |	|	|	|	|
11+55	32.9969	285.93	| q | Q |	|	|	|	|
12+ 0	33.4885	287.70	| q | Q |	|	|	|	|
12+ 5	35.9547	295.21	| q | Q|	|	|	|	|
12+10	44.2530	321.27	| q | Q	|	|	|	|
12+15	48.5543	353.42	| q | | Q	|	|	|	|
12+20	50.6512	377.78	| q | | Q	|	|	|	|
12+25	52.9067	397.23	| q | | Q	|	|	|	|
12+30	54.2758	413.93	| q | | Q	|	|	|	|
12+35	55.7220	428.76	| q | | Q	|	|	|	|
12+40	58.6409	445.54	| q | | Q|	|	|	|	|
12+45	60.2477	462.24	| q | | Q	|	|	|	|
12+50	61.3531	476.29	| q | | Q	|	|	|	|
12+55	63.1155	489.90	| q | | Q	|	|	|	|
13+ 0	64.0131	501.86	| q | | Q	|	|	|	|
13+ 5	66.1080	515.64	| q | | Q	|	|	|	|
13+10	72.2864	540.77	| q | | Q	|	|	|	|
13+15	75.5204	568.49	| q | | Q	|	|	|	|

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13+20      76.9015    588.70  |    q    |         |         |       Q |
13+25      77.8000    602.88  |    q    |         |         |        Q|
13+30      78.3780    614.22  |    q    |         |         |        Q|
13+35      75.2217    614.30  |   q     |         |         |         Q
13+40      62.7229    584.33  |   q     |         |         |       Q |
13+45      56.3723    545.70  |  q      |         |         |    Q    |
13+50      53.9304    519.96  |  q      |         |         |  Q      |
13+55      52.5402    505.32  |  q      |         |         | Q       |
14+ 0      51.5795    495.18  |  q      |         |         | Q       |
14+ 5      52.2372    490.18  |  q      |         |         |Q        |
14+10      56.4494    496.81  |  q      |         |         | Q       |
14+15      58.5467    507.40  |  q      |         |         |  Q      |
14+20      58.9976    513.25  |  q      |         |         |  Q      |
14+25      58.1962    512.88  |  q      |         |         |  Q      |
14+30      58.0433    510.65  |  q      |         |         |  Q      |
14+35      58.1350    509.23  |  q      |         |         |  Q      |
14+40      58.2524    508.45  |  q      |         |         |  Q      |
14+45      58.3633    507.99  |  q      |         |         |  Q      |
14+50      58.1336    506.85  |  q      |         |         |  Q      |
14+55      57.0907    503.21  |  q      |         |         | Q       |
15+ 0      56.5262    498.81  |  q      |         |         | Q       |
15+ 5      56.0073    494.88  |  q      |         |         | Q       |
15+10      54.7375    489.79  |  q      |         |         |Q        |
15+15      54.1118    484.54  |  q      |         |         |Q        |
15+20      53.5496    479.92  |  q      |         |         |Q        |
15+25      52.2566    473.97  |  q      |         |         Q         |
15+30      51.5960    467.82  |  q      |         |         Q         |
15+35      50.0339    459.82  |  q      |         |        Q|         |
15+40      45.2125    442.55  | q       |         |       Q |         |
15+45      42.7527    422.96  | q       |         |      Q  |         |
15+50      41.7738    408.63  | q       |         |     Q   |         |
15+55      41.1857    398.93  | q       |         |    Q    |         |
16+ 0      40.8406    391.14  | q       |         |    Q    |         |
16+ 5      36.4679    373.84  | q       |         |   Q     |         |
16+10      21.4056    324.64  |q        |         |Q        |         |
16+15      13.6477    266.25  q         |       Q |         |         |
16+20      10.5204    220.41  q         |    Q    |         |         |
16+25       8.5789    186.00  q         | Q       |         |         |
16+30       7.3863    156.85  q        Q|         |         |         |
16+35       6.4157    132.52  q       Q |         |         |         |
16+40       5.2883    111.80  q      Q  |         |         |         |
16+45       4.5931     94.65  q     Q   |         |         |         |
16+50       4.1968     80.96  q    Q    |         |         |         |
16+55       3.8033     70.24  q   Q     |         |         |         |
17+ 0       3.7617     61.98  q   Q     |         |         |         |
17+ 5       3.5618     54.80  q  Q      |         |         |         |
17+10       2.9335     46.83  q  Q      |         |         |         |
17+15       2.6349     39.02  q Q       |         |         |         |
17+20       2.5431     33.36  q Q       |         |         |         |
17+25       2.5042     29.51  qQ        |         |         |         |
17+30       2.5063     26.57  qQ        |         |         |         |
17+35       2.5252     24.34  qQ        |         |         |         |
17+40       2.5541     23.00  qQ        |         |         |         |
17+45       2.5911     22.13  qQ        |         |         |         |
17+50       2.8892     22.45  qQ        |         |         |         |
17+55       3.2651     25.00  qQ        |         |         |         |
18+ 0       1.7083     26.62  qQ        |         |         |         |
18+ 5       0.8815     27.22  qQ        |         |         |         |
18+10       0.6231     27.04  qQ        |         |         |         |
18+15       0.4926     26.68  qQ        |         |         |         |
18+20       0.4298     26.42  qQ        |         |         |         |
18+25       0.4046     26.24  qQ        |         |         |         |
18+30       0.3983     26.15  qQ        |         |         |         |
18+35       0.7881     26.33  qQ        |         |         |         |
18+40       2.1760     27.06  qQ        |         |         |         |
18+45       2.8535     27.14  qQ        |         |         |         |
18+50       3.0011     27.33  qQ        |         |         |         |
18+55       2.6613     26.64  qQ        |         |         |         |
19+ 0       2.5109     25.38  qQ        |         |         |         |
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19+ 5	2.6288	24.83	qQ				
19+10	3.1403	25.95	qQ				
19+15	3.4052	27.76	qQ				
19+20	3.1823	29.03	qQ				
19+25	2.0866	29.52	qQ				
19+30	1.5353	30.38	qQ				
19+35	1.6598	30.79	q Q				
19+40	2.6733	30.92	q Q				
19+45	3.1832	30.33	qQ				
19+50	3.2202	29.86	qQ				
19+55	2.8097	28.59	qQ				
20+ 0	2.6034	26.87	qQ				
20+ 5	2.6834	25.96	qQ				
20+10	3.1580	26.81	qQ				
20+15	3.4156	28.43	qQ				
20+20	3.5153	29.68	qQ				
20+25	3.5833	30.52	qQ				
20+30	3.6099	31.09	q Q				
20+35	3.6287	31.53	q Q				
20+40	3.6385	31.86	q Q				
20+45	3.6535	32.12	q Q				
20+50	3.5195	31.92	q Q				
20+55	3.0138	30.37	qQ				
21+ 0	2.7483	28.29	qQ				
21+ 5	2.7866	27.07	qQ				
21+10	3.2395	27.68	qQ				
21+15	3.4634	29.08	qQ				
21+20	3.3963	29.77	qQ				
21+25	2.9221	28.79	qQ				
21+30	2.6832	27.11	qQ				
21+35	2.7402	26.21	qQ				
21+40	3.2029	27.01	qQ				
21+45	3.4418	28.56	qQ				
21+50	3.3849	29.37	qQ				
21+55	2.9221	28.47	qQ				
22+ 0	2.6832	26.84	qQ				
22+ 5	2.7402	25.96	qQ				
22+10	3.2029	26.81	qQ				
22+15	3.4418	28.38	qQ				
22+20	3.3849	29.21	qQ				
22+25	2.9221	28.34	qQ				
22+30	2.6832	26.74	qQ				
22+35	2.5961	25.50	qQ				
22+40	2.5418	24.68	qQ				
22+45	2.5151	24.09	qQ				
22+50	2.4964	23.63	qQ				
22+55	2.4866	23.29	qQ				
23+ 0	2.4716	23.03	qQ				
23+ 5	2.4615	22.83	qQ				
23+10	2.4500	22.66	qQ				
23+15	2.4500	22.53	qQ				
23+20	2.4500	22.42	qQ				
23+25	2.4500	22.34	qQ				
23+30	2.4500	22.28	qQ				
23+35	2.4500	22.23	qQ				
23+40	2.4500	22.19	qQ				
23+45	2.4500	22.14	qQ				
23+50	2.4500	22.11	qQ				
23+55	2.4500	22.08	qQ				
24+ 0	2.4500	22.07	qQ				
24+ 5	2.1618	21.26	qQ				
24+10	1.1277	17.88	qQ				
24+15	0.5966	13.51	Q				
24+20	0.3848	10.12	Q				
24+25	0.2566	7.79	Q				
24+30	0.1733	6.08	Q				
24+35	0.1157	4.77	Q				
24+40	0.0731	3.76	Q				
24+45	0.0431	2.97	Q				

```
   24+50       0.0229      2.35  Q         |         |         |         |
   24+55       0.0000      1.86  Q         |         |         |         |
   25+ 0       0.0000      1.47  Q         |         |         |         |
   25+ 5       0.0000      1.16  Q         |         |         |         |
   25+10       0.0000      0.91  Q         |         |         |         |
   25+15       0.0000      0.70  Q         |         |         |         |
   25+20       0.0000      0.54  Q         |         |         |         |
   25+25       0.0000      0.40  Q         |         |         |         |
   25+30       0.0000      0.28  Q         |         |         |         |
   25+35       0.0000      0.18  Q         |         |         |         |
   25+40       0.0000      0.13  Q         |         |         |         |
   25+45       0.0000      0.08  Q         |         |         |         |
   25+50       0.0000      0.05  Q         |         |         |         |
   25+55       0.0000      0.04  Q         |         |         |         |
   26+ 0       0.0000      0.01  Q         |         |         |         |
   26+ 5       0.0000      0.00  Q         |         |         |         |
-------------------------------------------------------------------------
       ***************************HYDROGRAPH DATA**************************
                     Number of intervals =   313
                     Time interval =    5.0 (Min.)
                     Maximum/Peak flow rate =      614.296 (CFS)
                     Total volume =     308.316 (Ac.Ft)
              Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
              Peak (CFS)      0.000     0.000     0.000     0.000     0.000
              Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
       *************************************************************************

       -------------------------------------------------------------------
```

Appendix

F

PLANNING AREAS 1 THROUGH 5 CONCEPTUAL PLANS

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37504
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

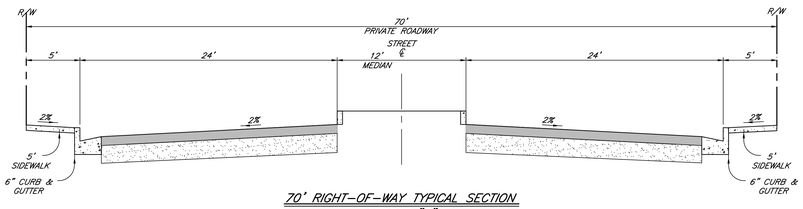
	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT.	FT.
1	2,574	2,574	31	82
2	2,542	2,542	31	82
3	2,542	2,542	31	82
4	2,542	2,542	31	82
5	2,542	2,542	31	82
6	2,542	2,542	31	82
7	2,542	2,542	31	82
8	2,542	2,542	31	82
9	2,542	2,542	31	82
10	2,542	2,542	31	82
11	2,542	2,542	31	82
12	2,542	2,542	31	82
13	2,542	2,542	31	82
14	3,274	3,274	38	82
15	3,268	3,268	39	82
16	2,542	2,542	31	82
17	2,542	2,542	31	82
18	2,542	2,542	31	82
19	2,542	2,542	31	82
20	2,542	2,542	31	82
21	2,542	2,542	31	82
22	2,578	2,578	31	82
23	2,769	2,769	31	85
24	3,067	3,067	31	103
25	2,592	2,592	31	82
26	2,879	2,879	31	83
27	2,542	2,542	31	82
28	2,542	2,542	31	82
29	2,553	2,553	31	82
30	2,575	2,575	31	82
31	2,586	2,586	31	82
32	2,570	2,570	31	82
33	2,542	2,542	31	82
34	2,542	2,542	31	82
35	2,542	2,542	31	82
36	2,542	2,542	31	82
37	2,542	2,542	31	82
38	2,562	2,562	31	82
39	2,522	2,522	31	82
40	2,542	2,542	31	82
41	2,550	2,550	31	82
42	2,566	2,566	31	83
43	2,582	2,582	31	83
44	2,598	2,598	31	44
45	2,613	2,613	31	84
46	2,610	2,610	31	84
47	2,551	2,551	31	82
48	2,542	2,542	31	82
49	2,542	2,542	31	82
50	2,542	2,542	31	82
51	2,542	2,542	31	82
52	2,542	2,542	31	82
53	2,542	2,542	31	82
54	2,542	2,542	31	82
55	2,542	2,542	31	82
56	2,542	2,542	31	82
57	2,542	2,542	31	82
58	2,542	2,542	31	82
59	2,542	2,542	31	82
60	2,542	2,542	31	82
61	2,542	2,542	31	82
62	2,542	2,542	31	82
63	2,541	2,541	31	82
64	2,541	2,541	31	82
65	2,541	2,541	31	82
66	2,538	2,538	31	82
Σ=	170,821	170,821	2,061	5,405
AVG=	2,588	2,588	31	82
MAX=	3,274	3,274	39	103
MIN=	2,522	2,522	31	44

LETTERED LOTS:

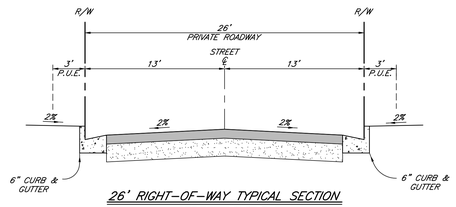
THE TRAILS PA 1 - LETTERED LOTS				
LOT	AREA (SF)	AREA (Acre)	LAND USE	MAINTAINED BY
67	73,942	1.70	OPEN SPACE/TRAIL	H.O.A
68	15,191	0.35	WQMP	C.F.D.
69	41,554	0.95	OPEN SPACE/TRAIL	H.O.A
70	181,708	4.17	OPEN SPACE/TRAIL	H.O.A
71	25,419	0.58	OPEN SPACE/TRAIL	H.O.A
72	30,709	0.70	OPEN SPACE/TRAIL	H.O.A
73	17,890	0.41	OPEN SPACE/TRAIL	H.O.A
74	50,103	1.15	PRIVATE STREETS A & B	H.O.A
75	6,953	0.16	PRIVATE STREETS - ENTRY	H.O.A
TOTAL	443,469	10.18		

STREET LOTS:

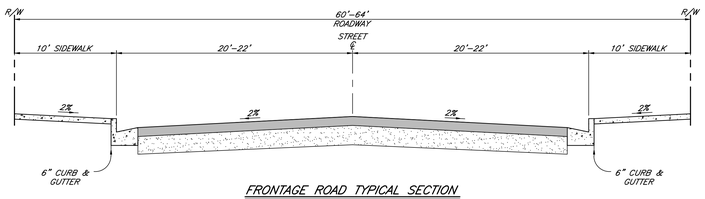
THE TRAILS - PA 1 STREET			
	STREET AREA		CL
STREET	SF	AC	FT
A	50,103	1.15	1,663
B			
C	6,953	0.16	203
TOTAL	57,056	1.31	1,866



70' RIGHT-OF-WAY TYPICAL SECTION
STREET "C"
NOT TO SCALE



26' RIGHT-OF-WAY TYPICAL SECTION
STREET "A" & "B"
NOT TO SCALE



FRONTAGE ROAD TYPICAL SECTION
NOT TO SCALE

LEGEND:

- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (A) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1320 = EXISTING CONTOUR ELEVATION
- 1,320 = PROPOSED SURFACE ELEVATION
- 1378.3 = PROPOSED PAD ELEVATION
- TRAIL
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE

AC	=	ACRES
C&G	=	CURB AND GUTTER
CB	=	CATCH BASIN
CY	=	CUBIC YARDS
CONC.	=	CONCRETE
DWY.	=	DRIVEWAY
D.G.	=	DECOMPOSED GRANITE
ELEV.	=	ELEVATION
ESMT	=	EASEMENT
EVA	=	EMERGENCY VEHICLE ACCESS
EX.	=	EXISTING
FG	=	FINISH GRADE
FL	=	FLOWLINE
FS	=	FINISH SURFACE
GB	=	GRADE BREAK
HP	=	HIGH POINT
INV.	=	INVERT
L	=	LENGTH
LP	=	LOW POINT
MIN.	=	MINIMUM
MWS	=	MODULAR WETLANDS SYSTEM
N.A.P.	=	NOT A PART
PIP	=	PROTECT IN PLACE
PL	=	PROPERTY LINE
PROP.	=	PROPOSED
REM	=	REMOVE
RW	=	RIGHT OF WAY
S	=	SEWER
SD	=	STORM DRAIN
SDMH	=	STORM DRAIN MANHOLE
SMH	=	SEWER MANHOLE
SW	=	SIDEWALK
TC	=	TOP OF CURB
TG	=	TOP OF GRATE
TYP.	=	TYPICAL
W	=	WIDTH
WWM	=	WELDED WIRE MESH
45	=	LOT NUMBER

UTILITY CONTACTS

WATER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

SEWER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

POWER: SOUTHERN CALIFORNIA EDISON CO.
1351 E. FRANCIS
ONTARIO, CA. 91761
(800) 930-8591

GAS: SOUTHERN CALIFORNIA GAS CO.
P.O. BOX 3003
REDLANDS, CA. 92373
(800) 427-2200

PHONE: AT&T
1265 N. VAN BUREN ST., #180
ANAHEIM, CA 92807
(714) 666-5423

CABLE TV: TIME WARNER CABLE
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
(909) 975-3396

GENERAL NOTES

1. PREPARED: FEBRUARY 2024
2. SITE ACREAGE:... 14.03 ACRES GROSS
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN

ADJACENT LAND USE:

NORTH: COMMERCIAL
EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING
PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION
PROPOSED: TRAILS SPECIFIC PLAN

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID G5

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SBCC, "P474", AND "CNPP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS, OR DEEDS AS SHOWN PER THAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

LEGAL DESCRIPTION

PARCEL 1:
LOTS "A" OF TRACT NO. 2585, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 47, PAGES 10 THROUGH 14, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THAT PORTION OF LOT "A" CONVEYED TO JOHN R JAHN AND DOROTHY J. JAHN, HUSBAND AND WIFE, AS JOINT TENANTS, BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781, OFFICIAL RECORDS.

ALSO EXCEPT THE PORTION OF SAID LOT "A" OF TRACT NO. 2585, DESCRIBED AS FOLLOWS:

COMMENCING AT THE MOST SOUTHERLY CORNER OF SAID LOT "A";
THENCE NORTHEASTERLY, ALONG THE EASTERLY LINE OF SAID LOT "A", ON A CURVE, CONCAVE, TO THE SOUTHEAST, HAVING A RADIUS OF 344.00 FEET, THROUGH AN ANGLE OF 09° 51' 00", AN ARC LENGTH OF 93.52 FEET (THE INITIAL RADIAL LINE BEARS NORTH 37° 10' 20" WEST);
THENCE NORTH 62° 40' 40" EAST, ALONG THE EASTERLY LINE OF SAID LOT "A", 66.89 FEET;
THENCE CONTINUING NORTH 62° 40' 40" EAST, ALONG THE EASTERLY LINE OF SAID LOT "A", 64.29 FEET TO THE BEGINNING OF A CURVE, CONCAVE TO THE NORTHWEST, HAVING A RADIUS OF 456.00 FEET; THENCE NORTHEASTERLY ALONG SAID CURVE, THROUGH AN ANGLE OF 17° 11' 20", AN ARC LENGTH OF
136.80 FEET TO THE MOST EASTERLY CORNER OF LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS;

THENCE NORTH 56° 39' 00" WEST, ALONG THE NORTHEASTERLY LINE OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS, 140.00 FEET TO THE TRUE POINT OF BEGINNING;
THENCE NORTH 40° 39' 00" WEST, 155.00 FEET, MORE OR LESS, TO A POINT THAT BEARS NORTH 82° 39' 00" EAST, FROM THE MOST NORTHERLY CORNER OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE SOUTH 82° 39' 00" WEST, 65.00 FEET, MORE OR LESS TO THE MOST NORTHERLY CORNER OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS; THENCE SOUTH 56° 39' 00" EAST, ALONG THE NORTHEASTERLY LINE OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS TO THE TRUE POINT OF BEGINNING.

ALSO EXCEPT THEREFROM ALL OIL, GAS, MINERALS, AND OTHER HYDROCARBON SUBSTANCES IN AND UNDER SAID LANDS.

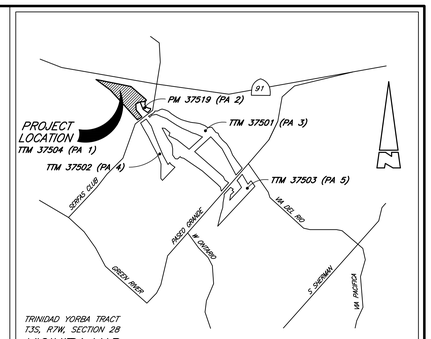
A.P.N. 102-050-024
T.3S, R7W, SECTION 28
TRINIDAD YORBA TRACT

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES

GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
TOTAL	258,521	256,024	2,497 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.



TRINIDAD YORBA TRACT
T3S, R7W, SECTION 28
VICINITY MAP
NOT TO SCALE

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

ASSESSOR'S PARCEL NUMBERS:

102-050-022
102-050-024 (PORTION OF)

PROJECT DENSITY:

TOTAL LOT: 66
TOTAL GROSS ACREAGE: 14.03 ACRES
DENSITY = 66 / 14.03 = 4.70 DU/AC

PRELIMINARY EARTHWORK:

RAW CUT: 19,037 C.Y.
RAW FILL: 109,526 C.Y.
NET: 90,489 C.Y.

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A "□"; NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "△".

2 AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

3 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

5A AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2585, RECORDED MAY 28, 1963 WITH FILING NUMBER 55546 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

9 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 IN BOOK 3440 OFFICIAL RECORDS, PAGE 587 OF RIVERSIDE COUNTY. **TO REMAIN.**

11 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 13, 1963 IN BOOK 3486 OFFICIAL RECORDS, PAGE 481 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED/ABANDONED.**

22 AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 2, 1971 AS INSTRUMENT NO. 72744 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

23 AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED MAY 15, 1964 AS INSTRUMENT NO. 60291 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

26 EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

60A EMINENT DOMAIN FEE ACQUISITION BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

60B PERMANENT WALL FOOTING EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

60C TEMPORARY CONSTRUCTION EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	66
TOTAL NUMBER OF REQUIRED PARKING *	165
NUMBER OF ONE CAR GARAGES	0
NUMBER OF TWO OR THREE CAR GARAGES	66
NUMBER OF ONE CAR DRIVEWAY PARKING	0
NUMBER OF TWO CAR DRIVEWAY PARKING	0
NUMBER ON ON STREET PARALLEL PARKING	0
NUMBER OF ONSITE PARKING STALLS	62
TOTAL NUMBER OF PARKING PROVIDED	194

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER DATE OF LATEST CHANGE TO TTM, MAP	
09/27/24	BY: RS
DATE OF THIS PLOT	
09/27/24	

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37504
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE


PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

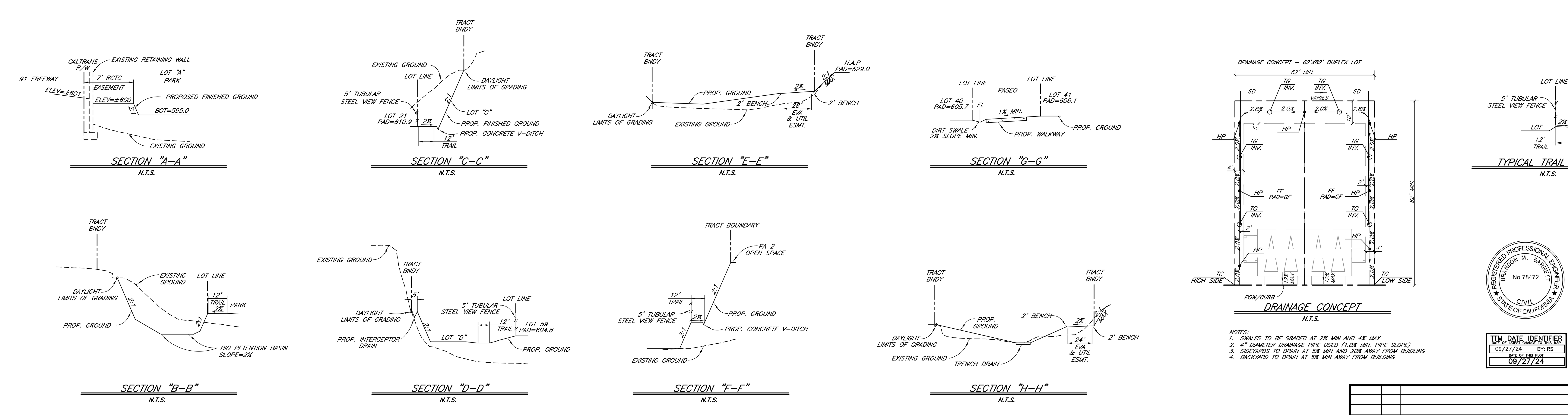
PREPARED BY: KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100, CORONA, CA. 92881-3370 951-734-2130

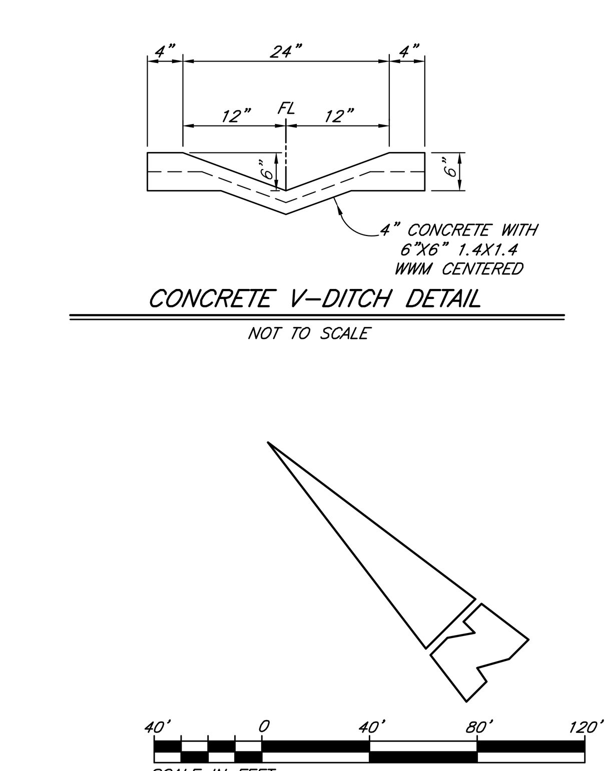
SHEET 1 OF 2 SHEETS

JOB NO. 15.1511 P:\15\1511\PREL\MAPS\TEN\1511 PA 01 TTM 01.dwg 10/22/24 8:24 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37504
IN THE COUNTY OF RIVERSIDE







TENTATIVE TRACT MAP NO. 37504
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS

Date	By	REVISIONS	App'd

SHEET 2 OF 2 SHEETS

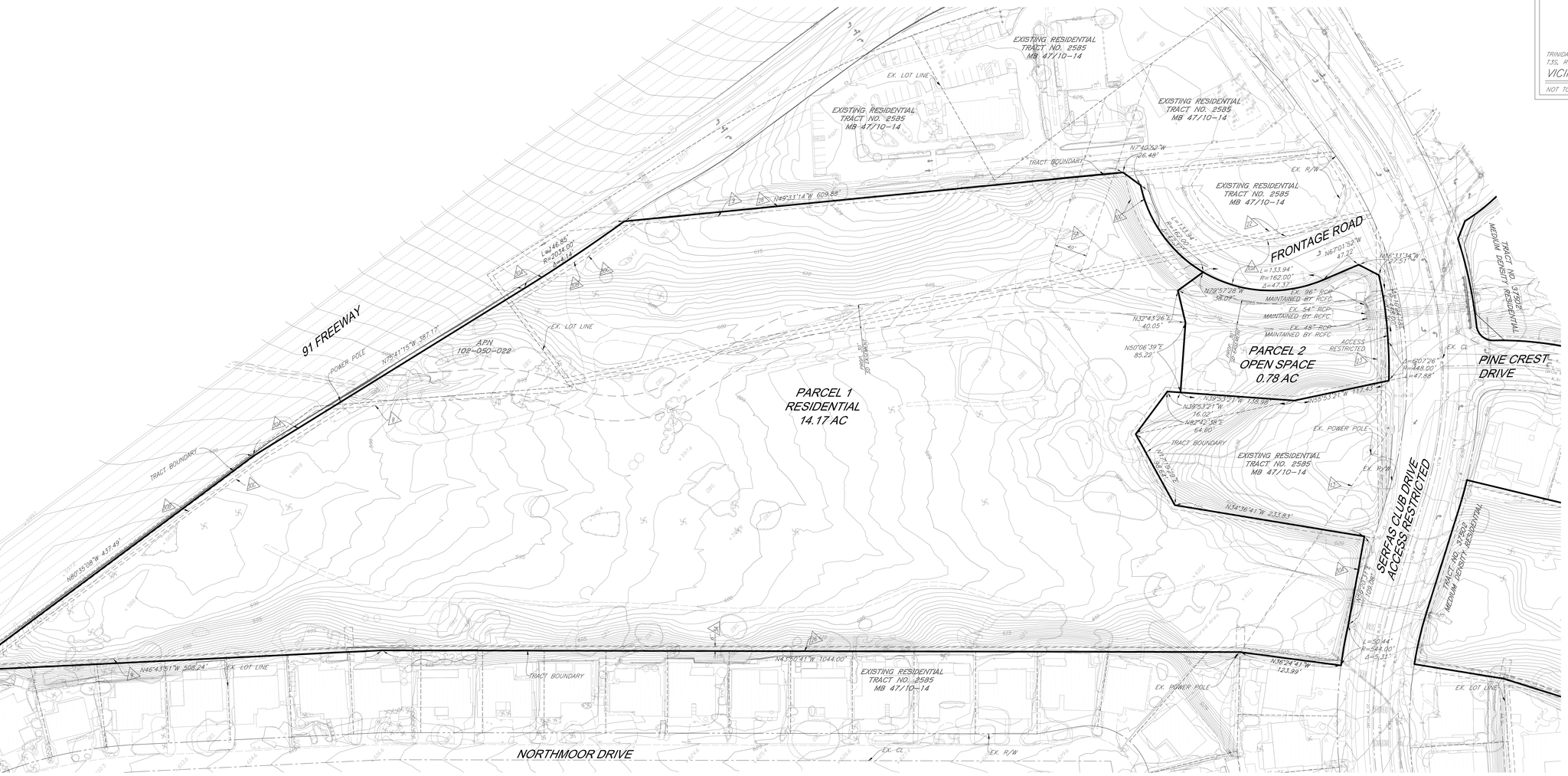
IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

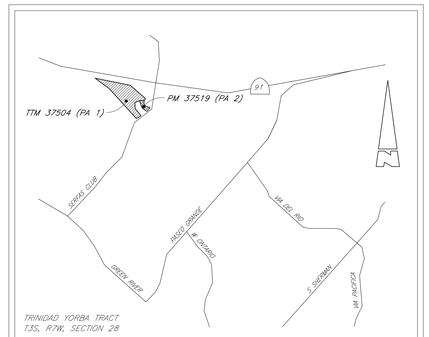
TENTATIVE PARCEL MAP NO. 37519

BEING A SUBDIVISION OF PORTIONS OF THE SOUTHERN HALF OF
SECTION 00 ALL IN TOWNSHIP 3 SOUTH, RANGE 7 WEST, SAN BERNARDINO
BASE AND MERIDIAN

SCHEDULE "J"

FOR FINANCE AND CONVEYANCE PURPOSES





TRINIDAD YORBA TRACT
T.3S, R7W, SECTION 28

VICINITY MAP

NOT TO SCALE

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394–3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904–5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881–3370
(951) 734–2130
CONTACT: BRANDON M. BARNETT, P.L.S.

SURVEYOR:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881–3370
(951) 734–2130
CONTACT: BRANDON M. BARNETT, P.L.S.

ASSESSOR'S PARCEL NUMBERS:

102–050–022
102–050–024

EXISTING / PROPOSED ZONING:

EXISTING: R–1, SINGLE FAMILY DWELLING

PROPOSED: PARCEL 1: TRAIL SPECIFIC PLAN, MEDIUM DENSITY RESIDENTIAL
PARCEL 2: TRAIL SPECIFIC PLAN, OPEN SPACE

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: OPEN SPACE/MDR

ABBREVIATIONS:

AC.	= ACRES	PROP.	= PROPOSED
ELEV.	= ELEVATION	RW.	= RIGHT OF WAY
ESMT.	= EASEMENT	TYP.	= TYPICAL
EX.	= EXISTING	W.	= WIDTH
L.	= LENGTH		
MIN.	= MINIMUM		
P/L	= PROPERTY LINE		

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A "△". NON–PLOTTABLE EASEMENTS ARE INDICATED BY A "□"

2 AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

3 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 782 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

5A AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2585, RECORDED MAY 28, 1963 WITH FILING NUMBER 55546 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

9 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 IN BOOK 3440 OFFICIAL RECORDS, PAGE 587 OF RIVERSIDE COUNTY. **TO REMAIN.**

11 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 13, 1963 IN BOOK 3486 OFFICIAL RECORDS, PAGE 481 OF RIVERSIDE COUNTY.
TO BE QUITCLAIMED/RELOCATED/ABANDONED.

22 AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 2, 1971 AS INSTRUMENT NO. 72744 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

23 AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED MAY 15, 1964 AS INSTRUMENT NO. 60291 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

28A EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE, BLANKET IN NATURE. **TO BE QUITCLAIMED.**

30A EMINENT DOMAIN FEE ACQUISITION BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013–0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

30B PERMANENT WALL FOOTING EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013–0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

30C TEMPORARY CONSTRUCTION EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013–0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

GENERAL NOTES

1. PREPARED: MARCH 2024
2. GROSS AREA: 14.95 ACRES
3. SCHEDULE "J"
4. THOMAS BROS MAP: 2012 RIVERSIDE COUNTY PAGE 742, GRID G5
5. TOPO SOURCE: INLAND AERIAL, SOURCE DATED 08–17–17

GENERAL PLAN

1. THIS TRACT MAP ONLY INCLUDES THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
2. THIS PROJECT IS WITHIN THE CORONA–NORCO UNIFIED SCHOOL DISTRICT.
3. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
4. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
5. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
6. THE HOA WILL FUND THE OPEN SPACE MAINTENANCE AND VALLEY WIDE MAINTENANCE WILL MAINTAIN THE OPEN SPACE

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SBCC, "P474", AND "CNPP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PER THAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

BENCHMARK:

CITY OF CORONA DESIGNATION: C–122

A 2–1/2" BRASS DISK STAMPED "C–122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

LEGAL DESCRIPTION

PARCELS 1 AND 2:
LOTS "A" OF TRACT NO. 2585, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 47, PAGES 10 THROUGH 14, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THAT PORTION OF LOT "A" CONVEYED TO JOHN R JAHN AND DOROTHY J. JAHN, HUSBAND AND WIFE, AS JOINT TENANTS, BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781, OFFICIAL RECORDS.

ALSO EXCEPT THE PORTION OF SAID LOT "A" OF TRACT NO. 2585, DESCRIBED AS FOLLOWS:

COMMENCING AT THE MOST SOUTHERLY CORNER OF SAID LOT "A";
THENCE NORTHEASTERLY, ALONG THE EASTERLY LINE OF SAID LOT "A", ON A CURVE, CONCAVE, TO THE SOUTHEAST, HAVING A RADIUS OF 544.00 FEET, THROUGH AN ANGLE OF 09° 51' 00", AN ARC LENGTH OF 93.52 FEET (THE INITIAL RADIAL LINE BEARS NORTH 37° 10' 20" WEST);
THENCE NORTH 62° 40' 40" EAST, ALONG THE EASTERLY LINE OF SAID LOT "A", 66.89 FEET;
THENCE CONTINUING NORTH 62° 40' 40" EAST, ALONG THE EASTERLY LINE OF SAID LOT "A", 64.29 FEET TO THE BEGINNING OF A CURVE; CONCAVE TO THE NORTHWEST, HAVING A RADIUS OF 456.00 FEET; THENCE NORTHEASTERLY ALONG SAID CURVE, THROUGH AN ANGLE OF 17° 11' 20", AN ARC LENGTH OF 136.80 FEET TO THE MOST EASTERLY CORNER OF LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS;

THENCE NORTH 56° 39' 00" WEST, ALONG THE NORTHEASTERLY LINE OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS, 140.00 FEET TO THE TRUE POINT OF BEGINNING;
THENCE NORTH 40° 39' 00" WEST, 155.00 FEET, MORE OR LESS, TO A POINT THAT BEARS NORTH 82° 39' 00" EAST, FROM THE MOST NORTHERLY CORNER OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE SOUTH 82° 39' 00" WEST, 65.00 FEET, MORE OR LESS TO THE MOST NORTHERLY CORNER OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS; THENCE SOUTH 56° 39' 00" EAST, ALONG THE NORTHEASTERLY LINE OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS TO THE TRUE POINT OF BEGINNING.

ALSO EXCEPT THEREFROM ALL OIL, GAS, MINERALS, AND OTHER HYDROCARBON SUBSTANCES IN AND UNDER SAID LANDS.

A.P.N. 102–050–024
T3S, R7W, SECTION 28
TRINIDAD YORBA TRACT

UTILITY CONTACTS

WATER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736–2321

SEWER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736–2321

POWER: SOUTHERN CALIFORNIA EDISON CO.
1351 E. FRANCIS
ONTARIO, CA. 91761
(800) 930–8591

GAS: SOUTHERN CALIFORNIA GAS CO.
P.O. BOX 3003
REDLANDS, CA. 92373
(800) 427–2200

PHONE: AT&T
1265 N. VAN BUREN ST., #180
ANAHEIM, CA 92807
(714) 666–5423

CABLE TV: TIME WARNER CABLE
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
(909) 975–3396

LEGEND

- EASEMENT LINE
- TRACT BOUNDARY
- PROPOSED LOT LINE
- EXISTING LOT LINE
- EX. R/W
- EX. ℄

PARCEL AREA TABLE

LAND USE DESIGNATION	PARCEL	GROSS AREA (AC)	NET AREA (AC)
MEDIUM DENSITY RESIDENTIAL	PARCEL 1	14.17	14.17
OPEN SPACE	PARCEL 2	0.78	0.78
TOTAL		14.95	14.95

FLOOD ZONE

THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.

50' 0 50' 100' 150'
SCALE IN FEET

TITLE INFORMATION

THE TITLE DESCRIPTION AND EXCEPTION ITEMS SHOWN HEREON WERE TAKEN FROM FIDELITY NATIONAL TITLE COMPANY, ORDER NO. 989–25011674–HH–MAM, DATED APRIL 24, 2023.

NOTE:

THIS MAP IS INTENDED FOR FINANCE AND CONVEYANCE PURPOSES ONLY. A FUTURE SUBDIVISION MAP OR LAND USE ENTITLEMENT OR PERMIT IS NECESSARY TO DEVELOP THIS PROPERTY. THIS MAP DOES NOT REMOVE ANY CONDITIONS OF APPROVAL FOR SEPARATE LAND USE ENTITLEMENTS OR TENTATIVE MAPS OR USE PERMITS APPROVED FOR THIS LAND. TENTATIVE PARCEL MAP NO. 37519 APPROVED FOR THIS PROJECT ON

_____

STATEMENT OF OWNERSHIP

I HEREBY STATE THAT THIS MAP WAS PREPARED UNDER MY SUPERVISION AND THAT THE OWNER OF RECORD HAS KNOWLEDGE OF AND CONSENT TO THE FILING OF THIS MAP.

_____ DATE 03–07–2024
BRANDON BARNETT

PROFESSIONAL LAND SURVEYOR BRANDON M. BARNETT No. 9040 STATE OF CALIFORNIA

MARK	REVISIONS	APPR.	DATE

SCALE: 1" = 50'
DATE: 09/12/2024
DESIGNED: AC
CHECKED: CS

KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100
CORONA, CA. 92881-3370 • 951-734-2130

SHEET 1 OF 1 SHEETS

G:\2021\21-0545\Engineering\Tentative Maps\TTM 37519 (PA 2)\TTM 37519 (PA 2).dwg, 3/26/2024 8:18:1

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37501
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT	FT
1	3,545	3,545	40	89
2	3,928	3,928	45	87
3	3,437	3,437	40	87
4	4,056	3,685	48	84
5	5,547	5,547	70	80
6	2,971	2,971	40	74
7	3,522	3,137	49	73
8	5,224	5,224	70	75
9	5,601	5,601	70	80
10	3,451	3,451	42	82
11	4,297	4,297	55	83
12	6,809	6,809	72	90
13	5,367	5,367	56	94
14	5,373	5,373	56	95
15	3,747	3,747	40	93
16	4,639	4,639	50	92
17	6,959	6,959	82	90
18	6,300	6,300	73	85
19	3,552	3,552	42	84
20	4,364	4,364	53	83
21	5,783	5,783	74	78
22	3,066	3,066	41	73
23	3,599	3,251	50	72
24	2,891	2,891	40	72
25	3,429	3,429	45	75
26	5,225	4,785	53	99
27	5,204	4,784	53	100
28	5,415	5,055	54	100
29	3,400	3,400	49	70
30	3,515	3,058	49	71
31	2,963	2,963	49	78
32	3,878	3,447	50	71
33	5,976	5,363	74	80
34	6,198	5,689	74	83
35	6,067	5,670	75	80
36	3,089	3,089	42	74
37	3,637	3,287	50	72
38	3,020	3,020	42	73
39	3,722	3,344	49	75
40	3,118	3,118	40	78
41	3,736	3,386	48	77
42	3,049	3,049	40	76
43	3,867	3,401	49	77
44	4,956	4,493	63	75
45	4,486	4,173	64	70
46	4,170	3,508	66	64
47	3,779	3,779	65	58
48	4,802	4,802	50	96
49	5,485	4,653	57	97
50	7,246	6,576	76	92
51	6,958	6,181	74	94
52	6,699	6,059	75	88
53	4,482	3,839	53	86
54	3,522	3,437	41	86
55	6,363	5,958	73	87
56	6,370	5,792	75	81
57	4,184	3,648	53	77
58	3,171	3,096	41	77
59	6,235	5,768	76	84
60	6,125	5,166	72	83
61	4,036	3,640	49	81
62	3,199	3,101	40	79
63	3,199	2,780	49	78
64	3,089	3,017	40	77
65	3,691	3,331	48	77
66	3,187	3,133	40	80
67	3,954	3,555	49	82
68	3,471	3,381	41	86
69	4,236	3,586	48	89
70	6,679	5,018	85	89
71	7,662	7,662	76	117
72	5,798	5,114	53	110
73	5,675	5,113	58	98
74	5,454	4,881	53	93
75	5,520	4,957	58	95
76	6,008	5,390	58	105
77	6,139	5,572	53	118
78	6,615	5,972	52	108
79	6,130	5,562	50	123
80	5,501	5,024	50	110
81	4,695	4,695	48	99
82	3,860	3,860	42	91
83	6,195	6,195	74	85
84	6,139	5,832	77	82
85	3,897	3,509	50	76
86	3,178	3,178	41	76
87	3,490	3,490	45	77
88	3,271	3,271	40	82
89	3,974	3,974	45	88
90	3,696	3,696	40	92
91	4,146	4,146	45	92
92	3,564	3,564	40	89
93	5,888	5,888	70	85
94	4,145	3,752	48	85
95	3,679	3,679	40	91
96	4,330	4,330	45	94
97	4,012	4,012	42	93
98	3,826	3,826	65	60
99	5,835	5,221	57	112
100	5,813	5,072	55	104
101	5,696	4,798	51	110
102	6,126	5,107	53	114
103	6,292	5,186	53	116
104	6,379	5,112	54	117
105	6,518	5,192	53	118
106	6,585	5,167	55	119
107	6,177	4,748	53	116
108	6,504	5,001	57	112
109	7,319	5,298	72	106
110	6,881	6,225	65	111
111	5,615	5,177	52	108
112	5,341	4,941	52	103
113	5,203	4,826	52	100
114	5,180	4,830	52	100
115	5,141	4,832	50	101
116	5,653	5,023	54	103
117	5,416	4,831	51	104
118	5,184	4,560	49	104
119	5,291	4,611	50	105
120	5,308	4,630	50	105
121	5,723	4,974	55	102
122	5,639	4,948	55	101
123	5,201	4,550	50	104
124	5,306	4,639	50	105
125	5,293	4,624	50	104
126	5,465	4,847	55	96
127	5,208	4,683	55	93
128	5,568	5,060	59	94
129	6,058	5,459	63	97
130	6,103	5,376	58	108
131	6,917	6,164	60	112
132	5,811	5,114	52	112
133	4,208	4,208	69	60
134	4,455	3,727	72	61
135	4,375	3,723	71	61
136	4,468	3,777	72	62
137	4,243	3,628	66	63
138	4,198	3,583	66	63
139	4,436	3,811	71	62
140	4,597	3,772	72	68
141	5,898	5,248	71	85
142	4,440	3,835	41	91
143	2,788	2,788	33	88
144	3,209	3,209	40	80
145	2,430	2,430	30	80
146	3,460	3,460	41	84
147	2,749	2,749	30	88
148	4,963	4,963	52	96
149	4,680	4,680	46	99
150	4,557	4,557	45	99
151	5,398	4,848	55	98
152	5,400	4,750	50	108
153	5,885	5,122	50	115
154	5,513	4,709	50	104
155	5,295	4,533	56	97
156	5,269	4,544	51	103
157	3,571	2,809	45	92
158	3,902	3,482	40	97
159	3,104	3,104	30	102
160	4,676	3,908	63	91
161	8,917	7,960	72	140
162	6,425	6,198	78	102
163	4,501	4,501	45	100
164	4,658	4,658	49	108
165	3,370	3,370	65	54
TOTAL AREA=	798,585	733,346	8,943	7,069
AVG=	4,840	4,445	54	85
MAX=	8,917	7,960	85	123
MIN=	2,430	2,430	30	58

LETTERED LOTS:

THE TRAILS PA 3 - LETTERED LOTS				
LOT	AREA (SF)	AREA (AC)	LAND USE	MAINTAINED BY
166	12,851	0.30	WQMP	C.F.D.
167	125,694	2.89	DETENTION BASIN	COUNTY
168	62,188	1.43	OPEN SPACE/TRAIL	H.O.A
169	123,259	2.83	OPEN SPACE/TRAIL	H.O.A
170	12,314	0.28	OPEN SPACE/TRAIL	H.O.A
171	16,654	0.38	OPEN SPACE/TRAIL	H.O.A
172	37,162	0.85	OPEN SPACE/TRAIL	H.O.A
173	39,315	0.90	OPEN SPACE/TRAIL	H.O.A
174	50,188	1.15	OPEN SPACE/TRAIL	H.O.A
175	27,356	0.63	OPEN SPACE/PARK	H.O.A
176	21,235	0.49	OPEN SPACE/PARK	H.O.A
177	81,012	1.86	OPEN SPACE/TRAIL	H.O.A
178	30,550	0.70	OPEN SPACE/TRAIL	H.O.A
179	18,192	0.42	WQMP	C.F.D.
180	70,299	1.61	OPEN SPACE/TRAIL	H.O.A
181	156,674	3.60	REC. CENTER	H.O.A
182	231,789	5.32	PRIVATE STREETS	H.O.A
183	6,577	0.15	PRIVATE STREETS - ENTRY	H.O.A
184	4,591	0.11	PRIVATE STREETS - ENTRY	H.O.A
185	13,058	0.30	WQMP	C.F.D.
186	2,655	0.06	WQMP	C.F.D.
187	1,975	0.04	WQMP	C.F.D.
TOTAL	1,148,953	26.38		

STREET LOTS:

THE TRAIL PA 3 - STREET			
	STREET AREAS		CL
STREET	SF	AC	FT
A	121,446	2.79	2,944
B	34,751	0.80	876
C	3,936	0.09	171
D	82,825	1.90	2,047
TOTAL	242,957	5.58	6,038

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	165
TOTAL NUMBER OF REQUIRED PARKING *	413
NUMBER OF ONE CAR GARAGES	5
NUMBER OF TWO OR THREE CAR GARAGES	160
NUMBER OF ONE CAR DRIVEWAY PARKING	165
NUMBER OF TWO CAR DRIVEWAY PARKING	0
NUMBER OF ON STREET PARALLEL PARKING	148
NUMBER OF ONSITE PARKING STALLS	8
TOTAL NUMBER OF PARKING PROVIDED	486

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 19.12 OFF STREET VEHICLE PARKING ARTICLE XVIII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES			
GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
TOTAL	258,521	256,024	2,497 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.

GENERAL NOTES

1. PREPARED: MAY 2024
2. SITE ACREAGE:..... 44.96 ACRES GROSS, 44.84 ACRES NET
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN.
14. THIS PLANNING AREA IS AN AGE RESTRICTED COMMUNITY.

ADJACENT LAND USE:

WEST: MDR MEDIUM DENSITY RESIDENTIAL
EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID H5 H6, AND G5

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS: "SBCC, "P474", AND "CNPP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PERTHAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99998571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

LEGAL DESCRIPTION

PARCEL 1:
LOTS "B", AND "D," OF TRACT NO. 2585, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 42, PAGES 10 THROUGH 14, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THAT PORTION OF LOT "B" OF SAID TRACT NO. 2585, DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHEAST CORNER OF SAID LOT "B"; THENCE SOUTH 15° 31' 50" WEST, ALONG THE EASTERLY LINE OF SAID LOTS "B" AND "J" OF SAID TRACT, A DISTANCE OF 239.17 FEET TO AN ANGLE POINT IN SAID EASTERLY LINE OF SAID LOT "B"; THENCE NORTH 76° 19' 50" WEST, A DISTANCE OF 223.66 FEET, TO AN ANGLE POINT ON THE WESTERLY LINE OF SAID LOT "J";

ALSO EXCEPT THAT PORTION LYING WITHIN THE LAND DESCRIBED IN THE QUITCLAIM DEED TO ROBERT PEASE, A MARRIED MAN, RECORDED APRIL 12, 1972 AS INSTRUMENT NO. 47406, OFFICIAL RECORDS.

ALSO EXCEPT THEREFROM ALL OIL, GAS, MINERALS, AND OTHER HYDROCARBON SUBSTANCES IN AND UNDER SAID LANDS.

APN: 102-050-003 AND 102-112-008
T3S, R7W, SECTION 27

PARCEL 3:
LOT C OF TRACT 2585 AS SHOWN BY MAP ON FILE IN GOOK 47, PAGES 10 TO 14
INCLUSIVE, TOGETHER WITH LOT "E" OF TRACT NO. 2385, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 44, PAGES 39 THROUGH 41, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT ALL OIL, GAS, MINERALS AND OTHER HYDROCARBONS SUBSTANCES IN AND UNDER SAID LANDS.

SAID DESCRIPTION IS PURSUANT TO CERTIFICATE OF PARCEL MERGER NO. 990 RECORDED JANUARY 8, 1997 AS INSTRUMENT NO. 5854 OFFICIAL RECORDS.

APNS: 102-050-004 AND 102-160-003
T3S, R7W, SECTION 27,28, & 33
TRINIDAD YORBA TRACT

UTILITY CONTACTS

WATER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

SEWER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

POWER: SOUTHERN CALIFORNIA EDISON CO.
1351 E. FRANCIS
ONTARIO, CA. 91761
(800) 930-8591

GAS: SOUTHERN CALIFORNIA GAS CO.
P.O. BOX 3003
REDLANDS, CA. 92373
(800) 427-2200

PHONE: AT&T
1265 N. VAN BUREN ST., #180
ANAHEIM, CA 92807
(714) 666-5423

CABLE TV: TIME WARNER CABLE
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
(909) 975-3396

SOLID WASTE PURVEYOR: CITY OF CORONA UTILITIES DEPARTMENT-
SOLID WASTE & RECYCLING DIVISION
755 PUBLIC SAFTEY WAY
CORONA, CA 92878
(951) 736-2234

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

ASSESSOR'S PARCEL NUMBERS:

102-050-021
102-160-003
102-112-008

PROJECT DENSITY:

TOTAL LOT: 225
TOTAL GROSS ACREAGE: 44.96 ACRES
DENSITY = 225 / 44.96 = 5.00 DU/AC
PA 3 - AGE RESTRICTED COMMUNITY

PRELIMINARY EARTHWORK:

RAW CUT: 158,534 C.Y.
RAW FILL: 83,444 C.Y.
NET: 75,090 C.Y.

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A "△". NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□"

[2] AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[3] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[4] A RIGHT OF WAY AND EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR THE RIGHT TO CONSTRUCT, MAINTAIN, OPERATE, INSPECT, REPAIR, REPLACE AND REMOVE ONE LINE POLES, LINES, CABLES, AND CIRCUITS FOR ANY PURPOSES, RECORDED OCTOBER 21, 1955 IN BOOK 1810 OF OFFICIAL RECORDS, PAGE 365 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED AND THE FACILITY IS TO BE ABANDONED.**

[5] AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2385, RECORDED JULY 31, 1962 WITH FILING NUMBER 71787 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[6a] AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2585, RECORDED MAY 28, 1963 WITH FILING NUMBER 55546 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[6] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 7, 1962 IN BOOK 3217 OF OFFICIAL RECORDS, PAGE 161 OF RIVERSIDE COUNTY. TO BE QUITCLAIMED/RELOCATED.

[7] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 21, 1962 AS INSTRUMENT NO. 88686 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[8] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED OCTOBER 19, 1962 IN BOOK 3243 OFFICIAL RECORDS, PAGE 177 OF RIVERSIDE COUNTY. **TO REMAIN.**

[10] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 AS INSTRUMENT NO. 73238 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

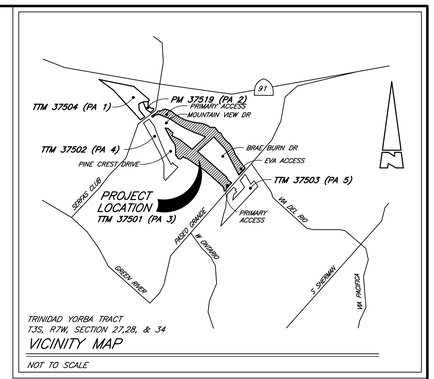
[11] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 AS INSTRUMENT NO. 73246 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[12] A RIGHT OF WAY EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 13, 1963 IN BOOK 3486 OFFICIAL RECORDS, PAGE 53 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[14] AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED NOVEMBER 26, 1963 IN BOOK 3542 OFFICIAL RECORDS, PAGE 373 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED/ABANDONED.**

[26] EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

[XX] TEMPORARY CONSTRUCTION EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**



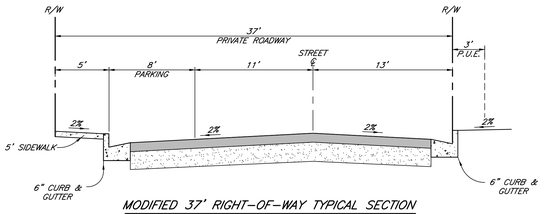
TRINIDAD YORBA TRACT
T3S, R7W, SECTION 27,28, & 34

VICINITY MAP

NOT TO SCALE

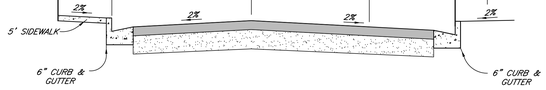
LEGEND:

	PROPOSED WATER	AC.	= ACRES
	PROPOSED SEWER	C&G	= CURB AND GUTTER
	PROPOSED RECLAIMED WATER	CB	= CATCH BASIN
	PROPOSED STORM DRAIN	CY.	= CUBIC YARDS
	LOT LINE	CONC.	= CONCRETE
	EXIST. EASEMENT LINE	DWY.	= DRIVEWAY
	PROPOSED EASEMENT LINE	ELEV.	= ELEVATION
(A)	PROPOSED EASEMENT (SEE EASEMENT NOTES)	ESMT.	= EASEMENT
		EX.	= EXISTING
	RETAINING WALL	FG	= FINISH GRADE
	EXISTING WATER	FL	= FLOWLINE
	EXISTING SEWER	FS	= FINISH SURFACE
	EXISTING RECLAIMED WATER	GB	= GRADE BREAK
	EXISTING STORM DRAIN	INV.	= INVERT
1200	= EXISTING CONTOUR ELEVATION	L	= LENGTH
1200	= PROPOSED SURFACE ELEVATION	MMS	= MODULAR WETLANDS SYSTEM
1,318.3	= PROPOSED PAD ELEVATION	NAP	= NOT A PART
	TOE OF SLOPE	PIP	= PROTECT IN PLACE
	TOP OF SLOPE	PKG	= PARKING
	DAYLIGHT LINE	PL	= PROPERTY LINE
		PROP.	= PROPOSED
		RW	= RIGHT OF WAY
		S	= SEWER
		SD	= STORM DRAIN
		SW	= SIDEWALK
		TC	= TOP OF CURB
		TG	= TOP OF GRATE
		TYP.	= TYPICAL
		W	= WIDTH
		WWM	= WELDED WIRE MESH
		45	= LOT NUMBER



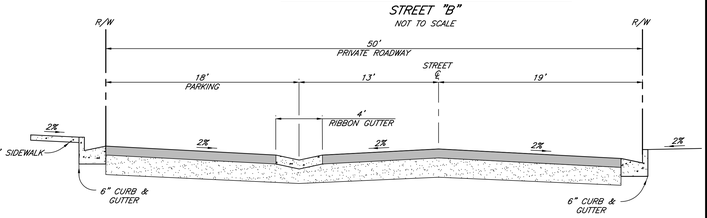
MODIFIED 37' RIGHT-OF-WAY TYPICAL SECTION

STREET "A" AND "D"
NOT TO SCALE



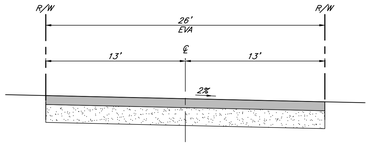
MODIFIED 37' RIGHT-OF-WAY TYPICAL SECTION

STREET "B"
NOT TO SCALE



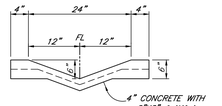
MODIFIED 50' RIGHT-OF-WAY TYPICAL SECTION

STREET "B"
NOT TO SCALE



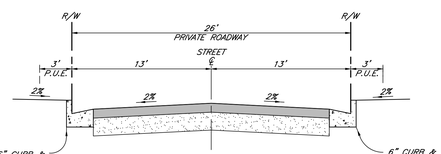
26' TYPICAL SECTION

EVA
NOT TO SCALE



CONCRETE V-DITCH DETAIL

NOT TO SCALE



26' RIGHT-OF-WAY TYPICAL SECTION

STREET "C"
NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF TENTATIVE CHANGE TO MAP: 09/27/24 BY: RS
DATE OF THIS PLOT: 09/27/24

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37501
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

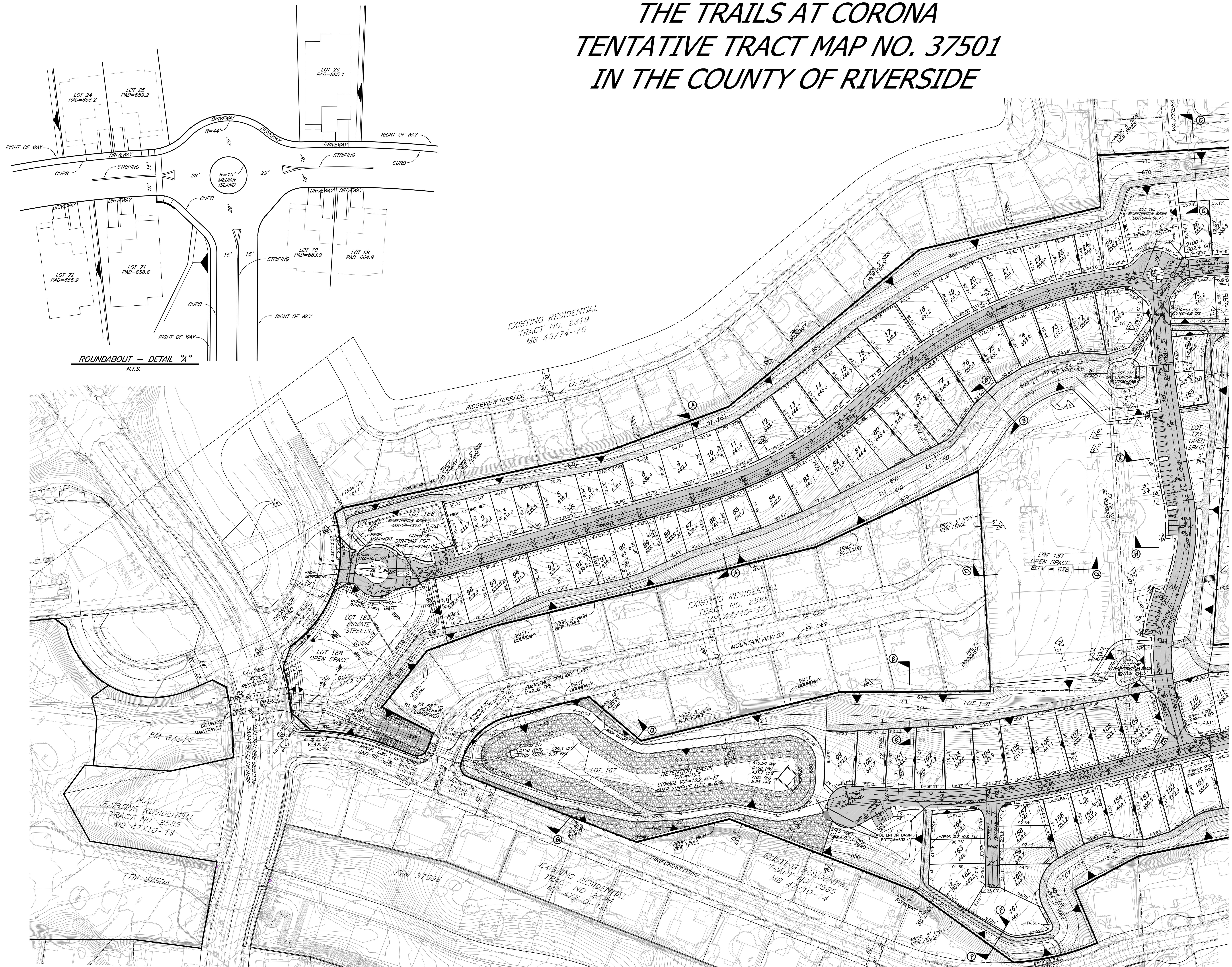
PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

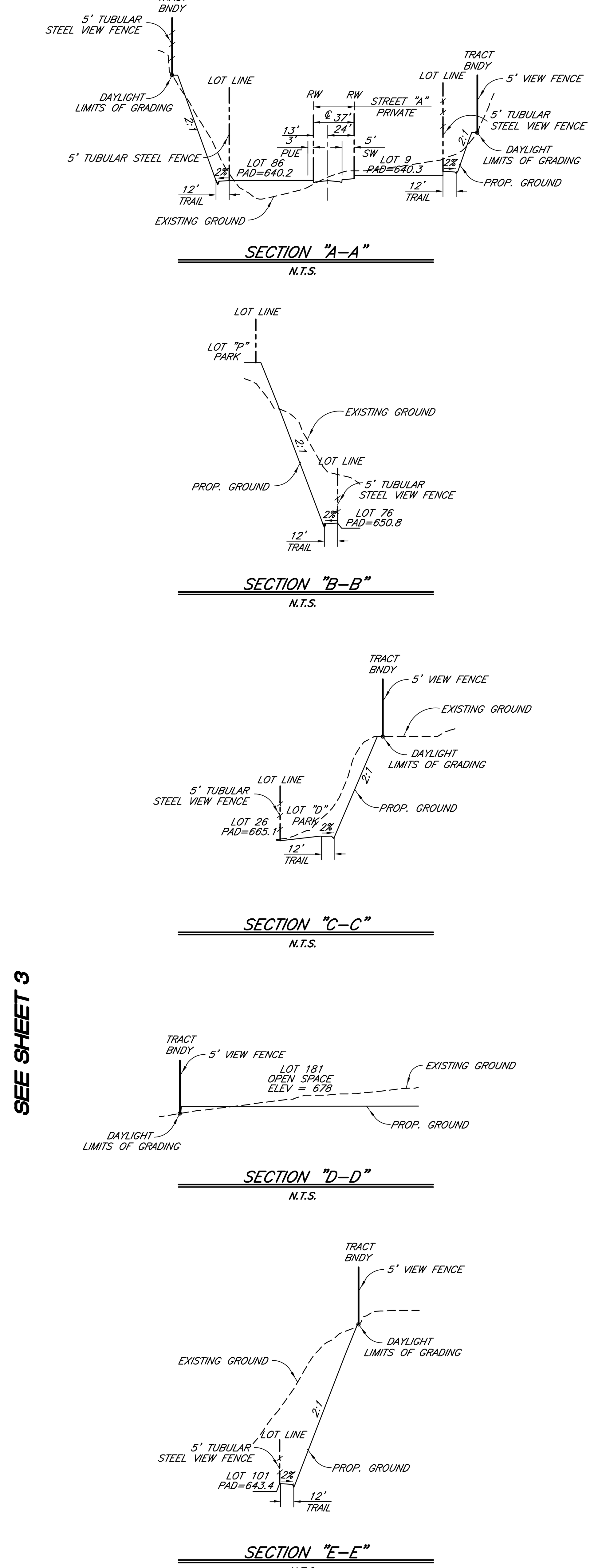
PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

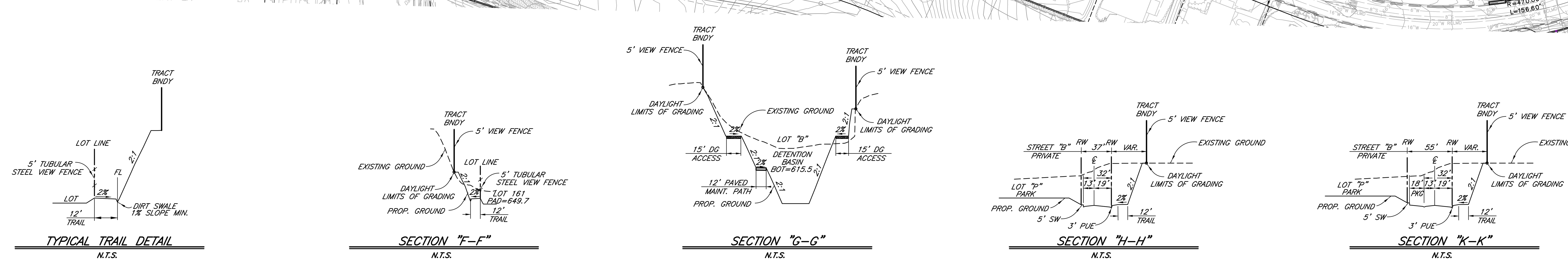
SHEET 1 OF 3 SHEETS

JOB NO. 15.1511.1 R:\15\1511\PRELIM\MAPS\EXH\PA3\1511 PA 03 TTM 01.dwg 10/2/24 8:32 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37501
IN THE COUNTY OF RIVERSIDE







60' 0 60' 120' 180'
SCALE IN FEET

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
09/27/24 BY: RS
09/27/24

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37501
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

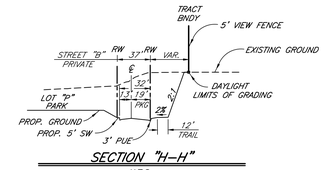
PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

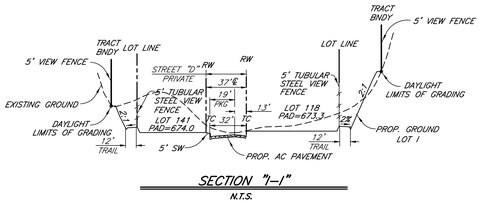
SHEET 2 OF 3 SHEETS

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37501
IN THE COUNTY OF RIVERSIDE

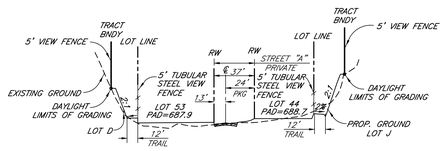




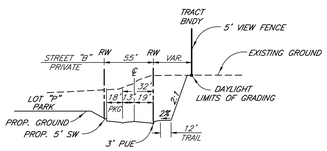
SECTION "H–H"
N.T.S.



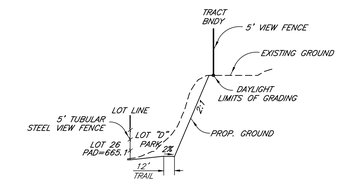
SECTION "I–I"
N.T.S.



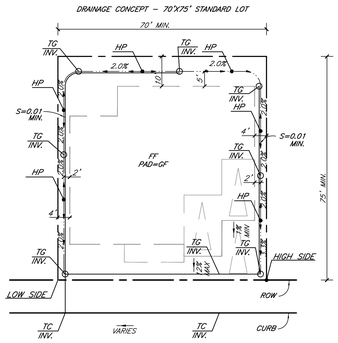
SECTION "J–J"
N.T.S.



SECTION "K–K"
N.T.S.

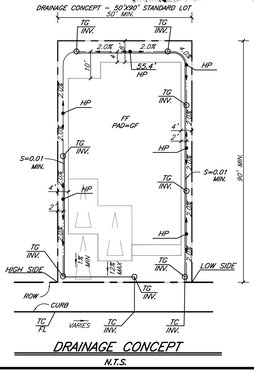


SECTION "C–C"
N.T.S.

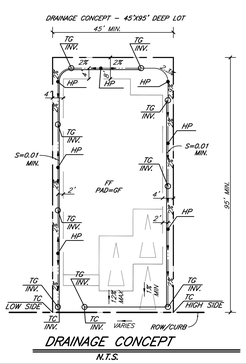


DRAINAGE CONCEPT
N.T.S.

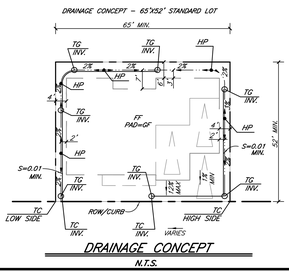
DRAINAGE NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX.
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEYARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUILDING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING



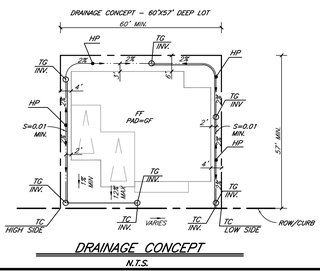
DRAINAGE CONCEPT
N.T.S.



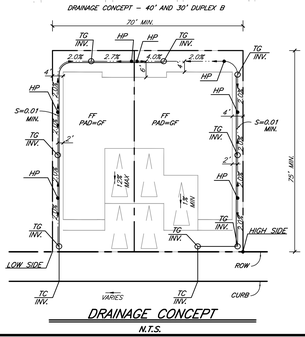
DRAINAGE CONCEPT
N.T.S.



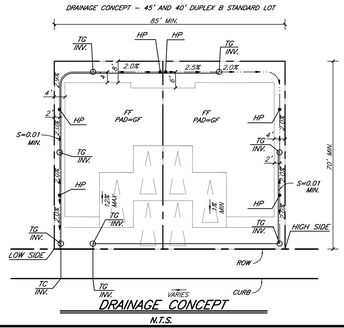
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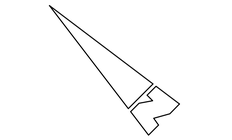
DRAINAGE CONCEPT
N.T.S.



DRAINAGE CONCEPT
N.T.S.



DRAINAGE CONCEPT
N.T.S.



REGISTERED PROFESSIONAL ENGINEER BRANDON M. BARRETT No.78472 CIVIL STATE OF CALIFORNIA

TIM DATE IDENTIFIER
DATE OF LATEST CHANGE TO THIS MAP
09/27/24 BY: RS
DATE OF THIS PLOT
09/27/24

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37501
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100, CORONA, CA. 92881-3310 951-734-2130

SHEET 3 OF 3 SHEETS

JOB NO. 15.1511 P:\15\1511\PRELIM MAPS\TENTATIVE\PA01\1511_PA_03_TTM 03.dwg 10/27/24 8:34 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37502
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT	FT
1	5,097	4,273	60	84
2	5,566	4,891	60	89
3	5,973	4,982	63	96
4	6,581	4,902	63	102
5	6,606	4,731	65	100
6	6,449	4,339	70	91
7	5,547	3,728	70	79
8	5,339	3,648	75	72
9	5,181	3,653	72	72
10	5,302	3,571	70	75
11	5,835	3,499	72	80
12	5,359	3,647	67	79
13	6,083	3,880	73	72
14	7,018	4,931	71	100
15	7,107	6,208	70	100
16	4,259	4,259	48	70
17	3,722	3,722	62	57
18	6,166	4,708	63	94
19	3,738	3,738	55	94
20	5,335	5,335	84	75
21	5,637	4,276	66	85
22	5,790	3,631	66	87
23	5,852	3,620	65	90
24	5,954	3,895	64	92
25	11,795	7,355	121	93
26	5,962	5,560	58	110
27	4,944	4,417	75	65
28	10,114	6,354	92	129
29	6,280	4,212	69	82
30	4,942	3,677	61	81
31	4,938	3,634	67	74
32	5,034	3,752	74	70
33	5,942	4,145	79	77
34	5,813	3,778	75	76
35	5,224	3,596	72	75
36	5,032	3,958	73	69
37	6,465	5,124	91	71
38	6,094	4,073	77	79
39	6,580	3,907	75	88
40	6,403	3,990	67	93
41	6,089	3,791	66	91
42	5,512	4,230	61	83
43	4,700	4,350	70	70
44	4,108	3,912	70	59
45	3,962	3,783	65	60
46	3,969	3,969	60	65
47	4,116	4,116	60	68
Σ=	269,515	201,749	3,272	3,863
AVG=	5,734	4,293	70	82
MAX=	11,795	7,355	121	129
MIN=	3,722	3,499	48	57

LETTERED LOTS:

THE TRAILS PA 4 - LETTERED LOTS				
LOT	AREA (SF)	AREA (AC)	LAND USE	MAINTAINED BY
48	8,454	0.19	WQMP	C.F.D.
49	27,992	0.64	OPEN SPACE/TRAIL	H.O.A
50	3,566	0.08	WQMP	C.F.D.
51	3,484	0.08	WQMP	C.F.D.
52	859	0.02	OPEN SPACE	H.O.A
53	7,287	0.17	OPEN SPACE	H.O.A.
54	430	0.01	H.O.A. SLOPES	H.O.A
55	16,679	0.38	OPEN SPACE/TRAIL	H.O.A
56	75,673	1.74	PRIVATE STREETS	H.O.A
57	5,964	0.14	PRIVATE STREETS - ENTRY	H.O.A
58	3,691	0.08	WQMP	C.F.D.
TOTAL	154,079	3.54		

STREET LOTS:

	STREET AREA		CL
STREET	SF	AC	FT
A	50,687	1.16	1637
B	21,824	0.50	648
Total	72,512	1.66	2285

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES			
GRADING SUMMARY – RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
TOTAL	258,521	256,024	2,497 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.

ADJACENT LAND USE:

WEST: MDR MEDIUM DENSITY RESIDENTIAL
EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID H5, H6, AND G5

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SBCC, 7*474," AND "CVPP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PER THAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

UTILITY CONTACTS

WATER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

SEWER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

POWER: SOUTHERN CALIFORNIA EDISON CO.
1351 E. FRANCIS
ONTARIO, CA. 91761
(800) 930-8591

GAS: SOUTHERN CALIFORNIA GAS CO.
P.O. BOX 3003
REDLANDS, CA. 92373
(800) 427-2200

PHONE: AT&T
1265 N. VAN BUREN ST., #180
ANAHEIM, CA 92807
(714) 666-5423

CABLE TV: TIME WARNER CABLE
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
(909) 975-3396

SOLID WASTE PURVEYOR: CITY OF CORONA UTILITIES DEPARTMENT-
SOLID WASTE & RECYCLING DIVISION
755 PUBLIC SAFTEY WAY
CORONA, CA 92878
(951) 736-2234

LEGAL DESCRIPTION:

LOT "E" OF TRACT NO. 2585, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 47, PAGES 10 THROUGH 14, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE COUNTY.

EXCEPT FROM SAID LOT "E" OF SAID TRACT NO. 2585, THAT PORTION DESCRIBED AS FOLLOWS: BEGINNING AT THE MOST EASTERLY CORNER OF LOT 155 OF SAID TRACT NO. 2585; THENCE SOUTHEASTERLY, ALONG THE NORTHEASTERLY LINE OF SAID LOT "E" ON A CURVE, CONCAVE TO THE NORTHEAST, HAVING A RADIUS OF 530.00 FEET, THROUGH AN ANGLE OF 10° 48' 40", AN ARC LENGTH OF 100.00 FEET; THE INITIAL RADIAL LINE BEARS SOUTH 41° 43' 20" WEST; THENCE SOUTH 30° 54' 40" WEST, A DISTANCE OF 115.00 FEET; THENCE NORTH 57° 13' 25" WEST, A DISTANCE OF 122.47 FEET TO THE MOST SOUTHERLY CORNER OF SAID LOT 155; THENCE NORTH 41° 43' 20" EAST, ALONG THE SOUTHEASTERLY LINE OF SAID LOT 155, A DISTANCE OF 122.59 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPT THAT PORTION LYING WITHIN THE LAND DESCRIBED IN THE QUITCLAIM DEED TO ROBERT PEASE, A MARRIED MAN, RECORDED APRIL 12, 1972 AS INSTRUMENT NO. 47406, OFFICIAL RECORDS.

ASSESSOR'S PARCEL NUMBERS: 102-113-015
GENERAL NOTES
T3S, R7W, SECTION 28 & 33
TRINIDAD YORBA TRACT

1. PREPARED: FEBRUARY 2024
2. SITE ACREAGE:.....10.26 ACRES GROSS, 10.17 ACRES NET
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN
14. THIS PLANNING AREA IS AN AGE RESTRICTED COMMUNITY.

ASSESSOR'S PARCEL NUMBERS:

102-050-008 & 102-113-015

PROJECT DENSITY:

TOTAL LOT: 47
TOTAL GROSS ACREAGE: 10.26 ACRES
DENSITY = 47 / 10.26 = 4.58 DU/AC
PA 4 – AGE RESTRICTED COMMUNITY

PRELIMINARY EARTHWORK:

RAW CUT: 37,997 C.Y.
RAW FILL: 34,575 C.Y.
NET: 3,422 C.Y.

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.
PLOTTABLE EASEMENTS ARE INDICATED BY A "△". NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□"

2 AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

J A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

5A AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2585, RECORDED MAY 28, 1963 WITH FILING NUMBER 55546 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

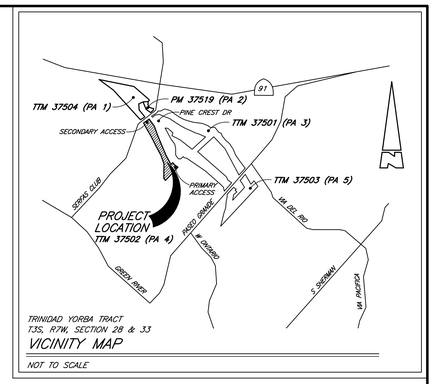
10 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 AS INSTRUMENT NO. 73238 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

28 EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

LEGEND:

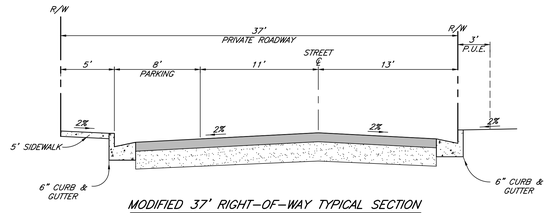
- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (A) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1200 = EXISTING CONTOUR ELEVATION
- 1200 = PROPOSED SURFACE ELEVATION
- 1378.3 = PROPOSED PAD ELEVATION
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE
- TRAIL

AC = ACRES
C&G = CURB AND GUTTER
CB = CATCH BASIN
CY = CUBIC YARDS
CONC = CONCRETE
DWY = DRIVEWAY
ELEV. = ELEVATION
ESMT = EASEMENT
EX = EXISTING
FG = FINISH GRADE
FL = FLOWLINE
FS = FINISH SURFACE
GB = GRADE BREAK
INV. = INVERT
L = LENGTH
MWS = MODULAR WETLANDS SYSTEM
N.A.P. = NOT A PART
P.I.P. = PROTECT IN PLACE
PKG = PARKING
PL = PROPERTY LINE
PROP. = PROPOSED
R/W = RIGHT OF WAY
S = SEWER
SD = STORM DRAIN
SW = SIDEWALK
TC = TOP OF CURB
TG = TOP OF GRATE
TYP. = TYPICAL
W = WIDTH
WWM = WELDED WIRE MESH
#5 = LOT NUMBER

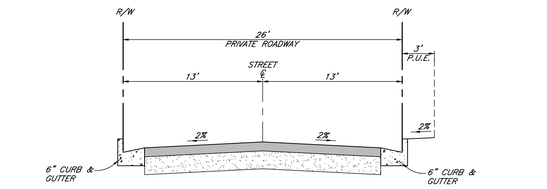


PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	47
TOTAL NUMBER OF REQUIRED PARKING *	118
NUMBER OF ONE CAR GARAGES	0
NUMBER OF TWO OR THREE CAR GARAGES	47
NUMBER OF ZERO CAR DRIVEWAY PARKING	13
NUMBER OF ONE CAR DRIVEWAY PARKING	34
NUMBER OF ON STREET PARALLEL PARKING	38
NUMBER OF ONSITE PARKING STALLS	0
TOTAL NUMBER OF PARKING PROVIDED	166

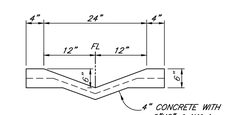
*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT



MODIFIED 37' RIGHT-OF-WAY TYPICAL SECTION
STREET "A" & "B"
NOT TO SCALE



26' RIGHT-OF-WAY TYPICAL SECTION
STREET "B"
NOT TO SCALE



CONCRETE V-DITCH DETAIL
NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DAY of YEAR (Julian) Ex. 001, 365
09/27/24 BY: RS
DAY OF THIS YEAR
09/27/24

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37502
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

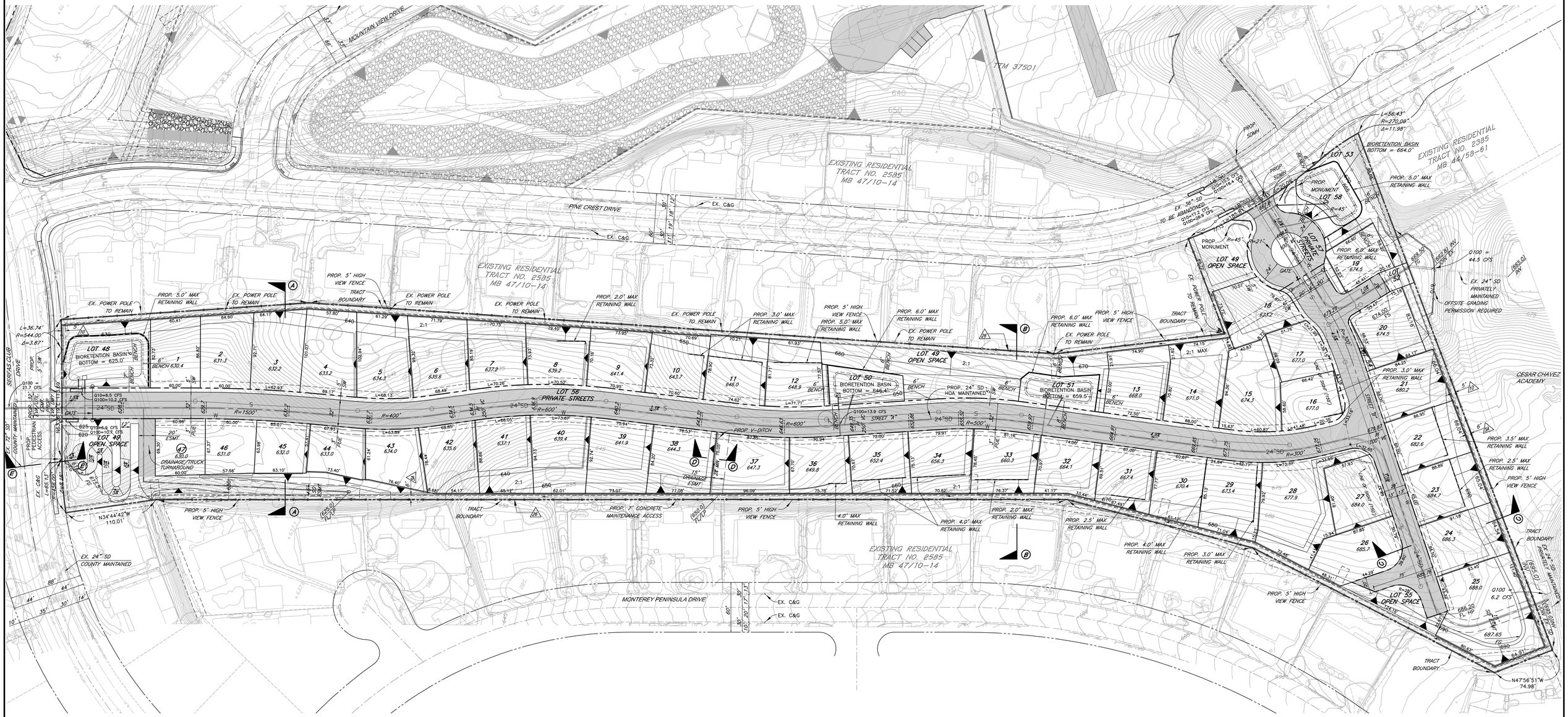
PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
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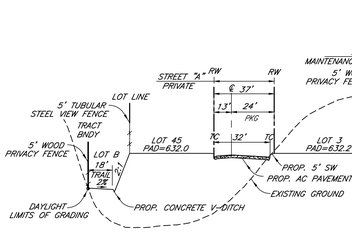
PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

SHEET 1 OF 2 SHEETS

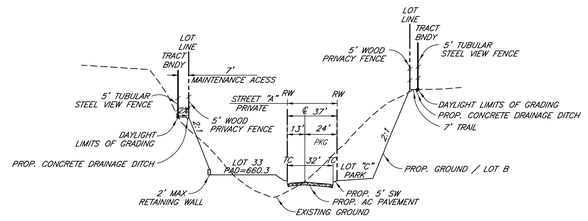
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THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37502
IN THE COUNTY OF RIVERSIDE

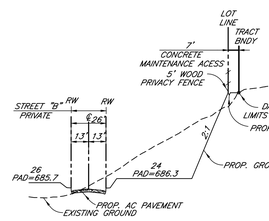




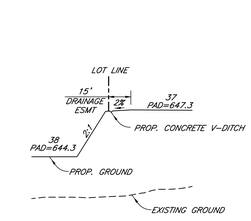
SECTION "A–A"
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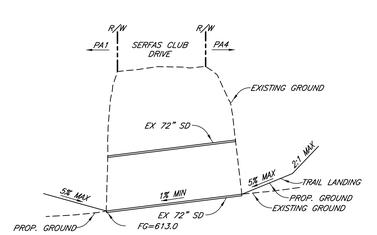
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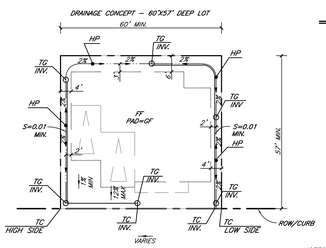
SECTION "C–C"
N.T.S.



SECTION "D–D"
N.T.S.

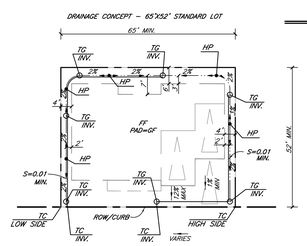


SECTION "E–E"
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.

NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX.
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEYARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUILDING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING



TYPICAL LOT DRAINAGE
N.T.S.

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No. 78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
USE 'A' CASE NUMBER FOR THIS MAP
09/27/24 BY: RS
DATE OF THIS PLOT
09/27/24

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37502
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

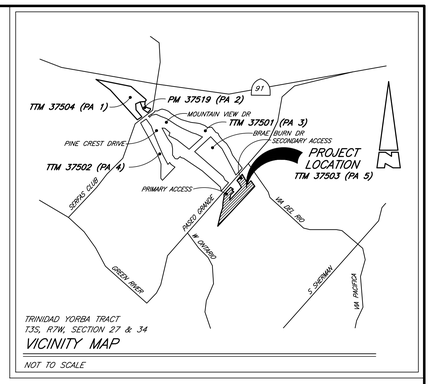
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1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881-3310 951-734-2130

SHEET 2 OF 2 SHEETS

JOB NO. 13.1311 P:\13\1\PRELIM\MAPS\TENTMAP1311 PA 04 TTM 02.dwg 10/22/24 11:15 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37503
IN THE COUNTY OF RIVERSIDE



TRINIDAD YORBA TRACT.
TJS, R7W, SECTION 27 & 34

VICINITY MAP

NOT TO SCALE

NUMBERED LOTS:

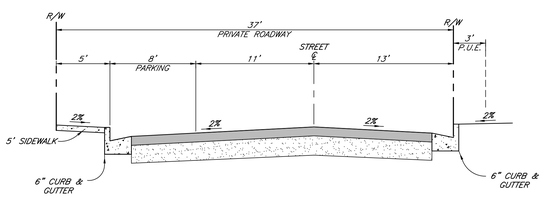
	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT	FT
1	5,850	5,141	78	83
2	5,335	4,780	76	73
3	4,619	3,728	76	63
4	4,851	3,890	84	62
5	4,818	3,989	78	62
6	4,364	3,869	68	60
7	4,621	3,648	76	60
8	4,313	4,002	66	63
9	4,180	3,881	65	63
10	3,878	3,878	60	64
11	11,573	6,917	117	110
12	8,220	5,421	54	148
13	7,563	5,923	45	176
14	5,023	5,023	58	97
15	7,733	5,343	65	105
16	7,538	4,712	68	73
17	7,309	4,436	72	100
18	7,833	4,712	70	111
19	5,371	4,822	88	65
20	6,137	5,511	87	94
21	6,536	5,212	83	75
22	4,632	4,188	60	77
23	4,601	4,287	60	77
24	4,797	4,239	63	76
25	4,926	4,108	65	75
26	4,700	3,600	65	72
27	4,768	3,597	71	67
28	4,564	4,115	71	64
29	8,115	5,206	67	116
30	5,596	5,315	45	126
31	7,536	7,238	47	168
Σ=	181,900	144,729	2,148	2,725
AVG=	5,868	4,669	69	88
MAX=	11,573	7,238	117	176
MIN=	3,878	3,597	45	60

LETTERED LOTS:

THE TRAILS PAS - LETTERED LOTS				
LOT	AREA (SF)	AREA (Acre)	LAND USE	MAINTAINED BY
32	7,275	0.17	WQMP	C.F.D.
33	78,135	1.79	DETENTION BASIN/H.O.A. SLOPE/ PARK	H.O.A.
34	38,797	0.89	OPEN SPACE/SLOPE/TRAILS	H.O.A
35	8,386	0.19	OPEN SPACE/SLOPE/TRAILS	H.O.A
36	30,368	0.70	OPEN SPACE/SLOPE/TRAILS	H.O.A
37	28,768	0.66	OPEN SPACE/SLOPE/TRAILS	H.O.A
38	477	0.01	SLOPE	H.O.A
39	67,406	1.55	PRIVATE STREETS	H.O.A
40	5,911	0.14	PRIVATE STREETS - ENTRY	H.O.A
41	13,588	0.31	OPEN SPACE/SLOPE/TRAILS	H.O.A.
TOTAL	280,029	6.43		

STREET LOTS:

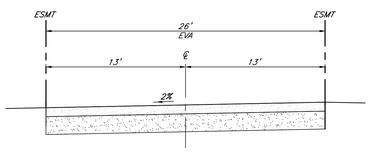
	Street Area		CL
Street	sqft	acre	Ft.
A	33,392	0.77	899
B	39,924	0.92	897
Total	73,316	1.68	1,796



37' RIGHT-OF-WAY TYPICAL SECTION

NOT TO SCALE

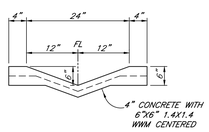
STREET "A", "B"



26' TYPICAL SECTION

EVA

NOT TO SCALE



CONCRETE V-DITCH DETAIL

NOT TO SCALE

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A " △ ". NON-PLOTTABLE EASEMENTS ARE INDICATED BY A " □ "

2 AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

3 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 782 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

4A AN EASEMENT IN FAVOR OF R. A. WATT COMPANY, INC. FOR DRAINAGE FACILITIES AND INCIDENTAL PURPOSES, RECORDED APRIL 2, 1969 AS INSTRUMENT NO. 32422 AND AS INSTRUMENT NO. 32423 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

4B EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

LEGAL DESCRIPTION:

THAT PORTION OF LOT 3 OF TRINIDAD YORBA TRACT, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 2, PAGE 22 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE COUNTY.

EXCEPT THAT PORTION OF SAID LAND CONVEYED TO KENNETH E. GRIFFIN, A MARRIED MAN AND JOHN R. GRIFFIN, A MARRIED MAN, BY DEED RECORDED JUNE 20, 1963 AS INSTRUMENT NO. 64373, OFFICIAL RECORDS.

ALSO EXCEPT THE FOLLOWING DESCRIBED PARCEL:

BEGINNING AT A POINT ON THE SOUTHEASTERLY LINE OF PASEO GRANDE, 66.00 FEET IN WIDTH, AS CONVEYED TO THE COUNTY OF RIVERSIDE, BY DEED RECORDED JANUARY 15, 1962 IN BOOK 3057, PAGE 574 OF OFFICIAL RECORDS, WHICH BEARS SOUTH 42° 02' 10" WEST, ALONG THE SOUTHEASTERLY LINE OF SAID PASEO GRANDE, A DISTANCE OF 397.90 FEET FROM THE SOUTHERLY LINE OF YORBA HEIGHTS, UNIT NO. 1, AS SHOWN BY MAP ON FILE IN BOOK 22, PAGE 5 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE SOUTH 40° 19' 20" EAST, A DISTANCE OF 82.73 FEET;
THENCE SOUTH 35° 57' 50" EAST, A DISTANCE OF 142.00 FEET;
THENCE SOUTH 29° 57' 50" EAST, A DISTANCE OF 151.00 FEET;
THENCE SOUTH 47° 02' 10" WEST, A DISTANCE OF 151.00 FEET;
THENCE SOUTH 43° 12' 10" WEST, A DISTANCE OF 287.00 FEET;
THENCE NORTH 65° 27' 50" WEST, A DISTANCE OF 22.00 FEET;
THENCE NORTH 08° 37' 50" WEST, A DISTANCE OF 125.91 FEET;
THENCE NORTH 43° 12' 10" EAST, A DISTANCE OF 141.74 FEET;
THENCE NORTH 44° 57' 50" WEST, A DISTANCE OF 130.50 FEET;
THENCE NORTH 42° 02' 10" EAST, A DISTANCE OF 45.00 FEET;
THENCE NORTH 47° 57' 50" WEST, A DISTANCE OF 100.00 FEET TO THE SOUTHEASTERLY LINE OF SAID PASEO GRANDE;
THENCE NORTH 42° 02' 10" EAST, ALONG THE SOUTHEASTERLY LINE OF SAID PASEO GRANDE, A DISTANCE OF 258.07 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPT THAT PORTION OF SAID LAND CONVEYED TO REED SPRINKLE, A MARRIED MAN, BY DEED RECORDED JUNE 14, 1965 AS INSTRUMENT NO. 68567, OFFICIAL RECORDS.

A.P.N. 102-192-017, 102-203-007
T.3S, R7W, SECTION 27 & 34

GENERAL NOTES

1. PREPARED: FEBRUARY 2024
2. SITE ACREAGE.....10.60 ACRES GROSS, 9.26 ACRES NET
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN
14. THIS PLANNING AREA IS AN AGE RESTRICTED COMMUNITY.

LEGEND:

- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (4) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1200 = EXISTING CONTOUR ELEVATION
- 1200 = PROPOSED SURFACE ELEVATION
- 1378.3 = PROPOSED PAD ELEVATION
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE
- TRAIL

AC	=	ACRES
C&G	=	CURB AND GUTTER
CB	=	CATCH BASIN
CY	=	CUBIC YARDS
CONC.	=	CONCRETE
DWY.	=	DRIVEWAY
ELEV.	=	ELEVATION
ESMT.	=	EASEMENT
EX.	=	EXISTING
FG	=	FINISH GRADE
FL	=	FLOWLINE
FS	=	FINISH SURFACE
GB	=	GRADE BREAK
INV.	=	INVERT
L	=	LENGTH
MWS	=	MODULAR WETLANDS SYSTEM
NAP	=	NOT A PART
PIP	=	PROJECT IN PLACE
PKG	=	PARKING
PL	=	PROPERTY LINE
PROP.	=	PROPOSED
RW	=	RIGHT OF WAY
S	=	SEWER
SD	=	STORM DRAIN
SW	=	SIDEWALK
TC	=	TOP OF CURB
TG	=	TOP OF GRATE
TYP.	=	TYPICAL
W	=	WIDTH
WWM	=	WELDED WIRE MESH
45	=	LOT NUMBER

ADJACENT LAND USE:

WEST: MDR MEDIUM DENSITY RESIDENTIAL

EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "3RCC, "P474.1" AND "CHPP" HADJ83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PERTHAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID H6 AND J6

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

UTILITY CONTACTS

WATER:	CITY OF CORONA DEPARTMENT OF WATER AND POWER 755 CORPORATION YARD WAY CORONA, CA. 92880 (951) 736-2321
SEWER:	CITY OF CORONA DEPARTMENT OF WATER AND POWER 755 CORPORATION YARD WAY CORONA, CA. 92880 (951) 736-2321
POWER:	SOUTHERN CALIFORNIA EDISON CO. 1351 E. FRANCIS ONTARIO, CA. 91761 (800) 930-8591
GAS:	SOUTHERN CALIFORNIA GAS CO. P.O. BOX 3003 REDLANDS, CA. 92373 (800) 427-2200
PHONE:	AT&T 1265 N. VAN BUREN ST., #180 ANAHEIM, CA 92807 (714) 666-5423
CABLE TV:	TIME WARNER CABLE 1500 AUTO CENTER DRIVE ONTARIO, CA 91761 (909) 975-3396
SOLID WASTE PURVEYOR:	CITY OF CORONA UTILITIES DEPARTMENT- SOLID WASTE & RECYCLING DIVISION 755 PUBLIC SAFTEY WAY CORONA, CA 92878 (951) 736-2234

ASSESSOR'S PARCEL NUMBERS:

102-192-017
102-203-007

PROJECT DENSITY

TOTAL LOT: 31
TOTAL GROSS ACREAGE: 10.60 ACRES
DENSITY = 31 / 10.60 = 2.92 DU/AC
PA 5 - AGE RESTRICTED COMMUNITY

PRELIMINARY EARTHWORK:

RAW CUT: 42,953 C.Y.
RAW FILL: 28,479 C.Y.
NET: 14,474 C.Y.

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES

GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
TOTAL	258,521	256,024	2,497 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNIE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE 227
CORONA DEL MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	31
TOTAL NUMBER OF REQUIRED PARKING *	78
NUMBER OF ONE CAR GARAGES	0
NUMBER OF TWO OR THREE CAR GARAGES	31
NUMBER OF ONE CAR DRIVEWAY PARKING	31
NUMBER OF TWO CAR DRIVEWAY PARKING	0
NUMBER OF ON STREET PARALLEL PARKING	41
NUMBER OF ONSITE PARKING STALLS	0
TOTAL NUMBER OF PARKING PROVIDED	134

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
UNLESS CHANGED BY BOP
09/27/24 BY: RS
DATE OF THIS PLOT
09/27/24

TENTATIVE TRACT MAP NO. 37503
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

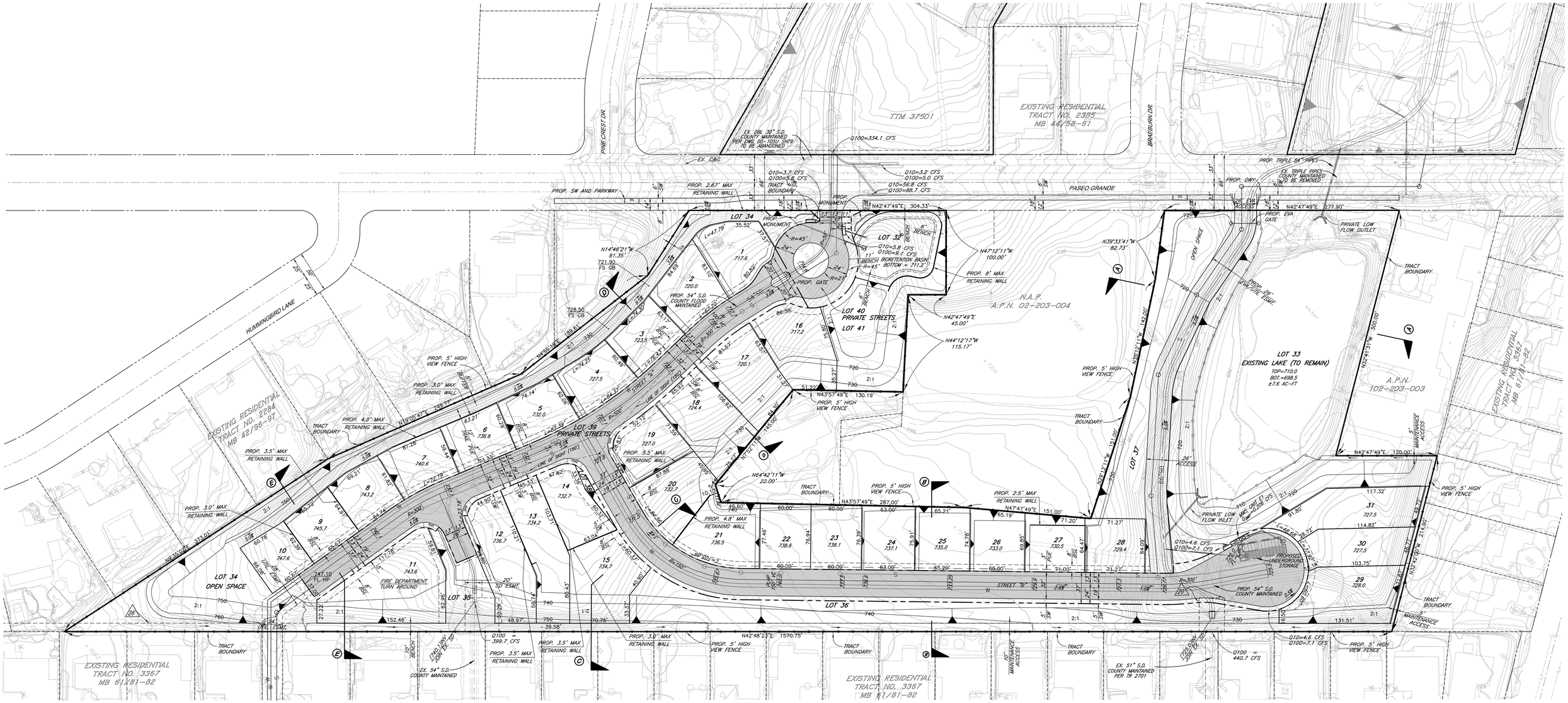
PREPARED BY: KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881-3370 951-734-2130

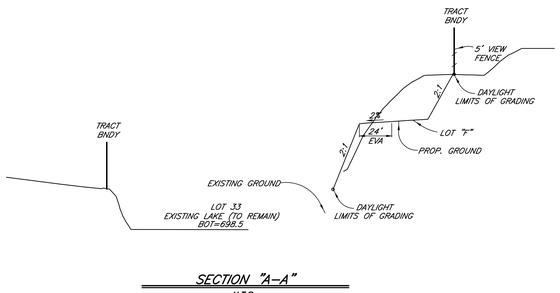
Date	By	REVISIONS	App'd

SHEET 1 OF 2 SHEETS

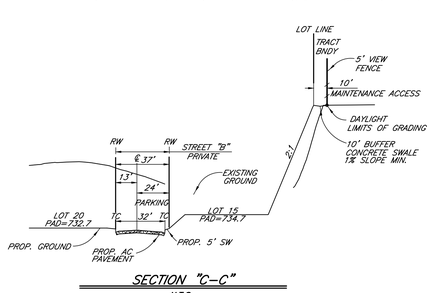
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THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37503
IN THE COUNTY OF RIVERSIDE

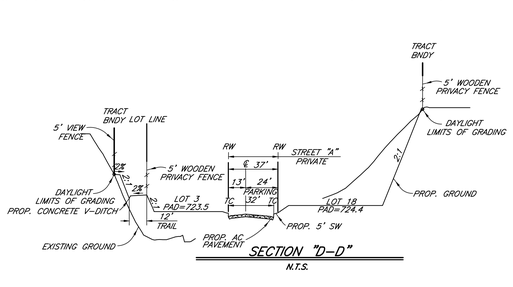




SECTION "A-A"
N.T.S.

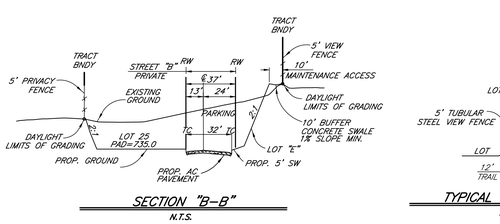


SECTION "C-C"
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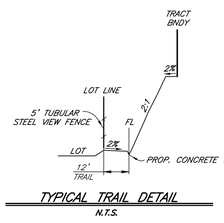


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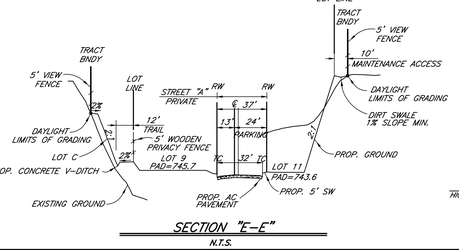
NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX.
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEWARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUILDING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING



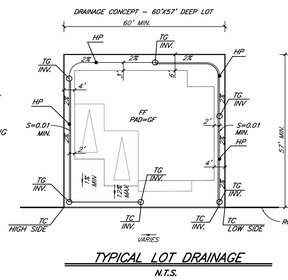
SECTION "B-B"
N.T.S.



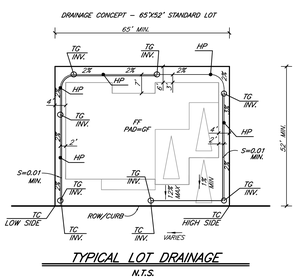
TYPICAL TRAIL DETAIL
N.T.S.



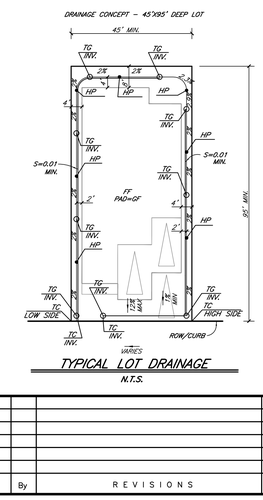
SECTION "E-E"
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.

REGISTERED PROFESSIONAL ENGINEER BRANDON M. BARNETT No.78472 CIVIL STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF MARKET CHANGE TRIGGERING TTM
09/27/24 BY: RS
DATE OF THIS PLOT
09/27/24

40' 0 40' 80' 120'
SCALE IN FEET

TENTATIVE TRACT MAP NO. 37503
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

Date	By	REVISIONS	App'd

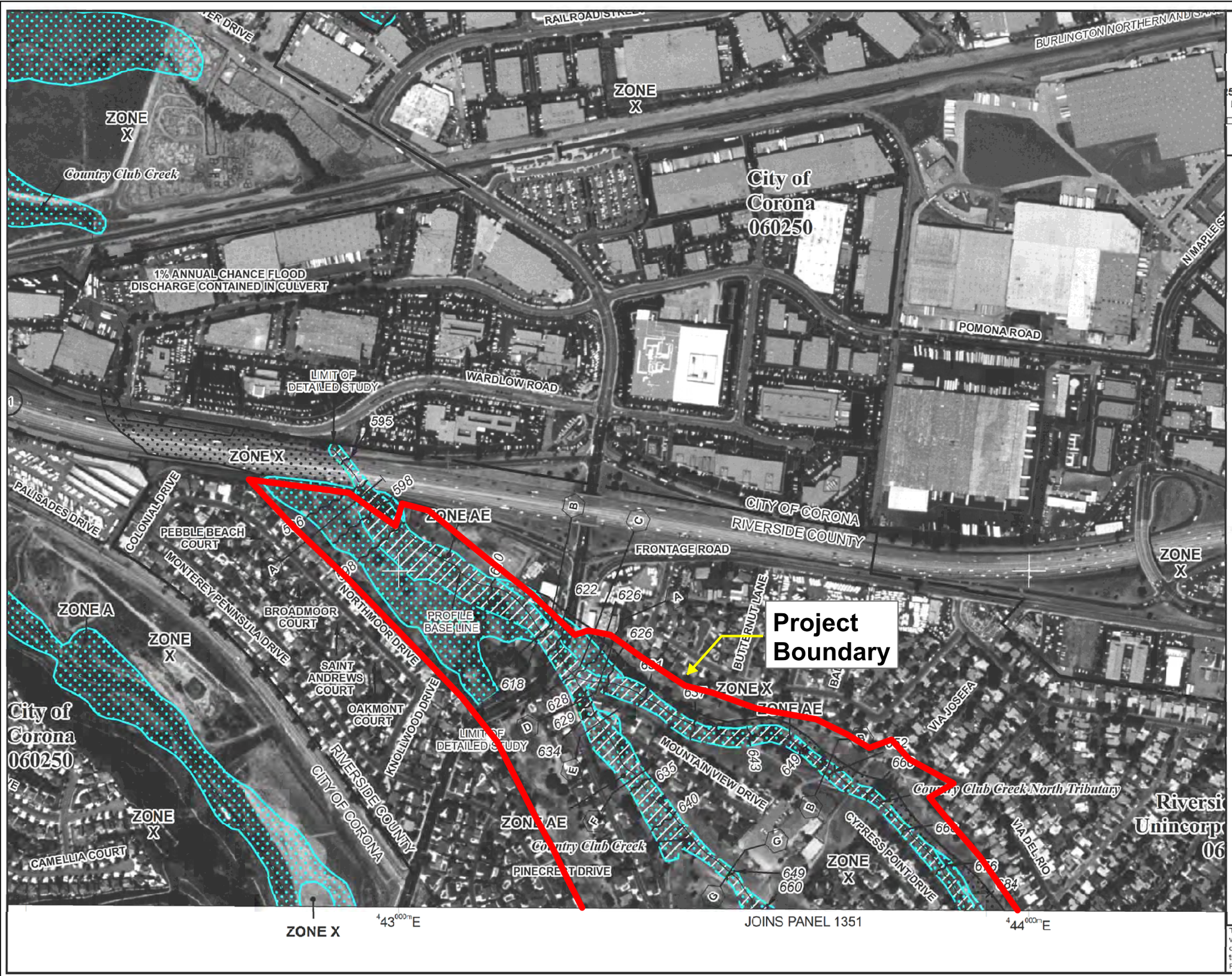
SHEET 2 OF 2 SHEETS

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Appendix

G

FEMA FLOOD INSURANCE RATE MAPS
PANEL NO. 06065C0688G
PANEL NO. 06065C1351G



MAP SCALE 1" = 500'

50 0 500 1000 FEET

METER

NFIP

PANEL 0688G

FIRM

FLOOD INSURANCE RATE MAP

RIVERSIDE COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 688 OF 3805

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CORONA, CITY OF	060250	0688	G
RIVERSIDE COUNTY	060245	0688	G

NATIONAL FLOOD INSURANCE PROGRAM

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER 06065C0688G

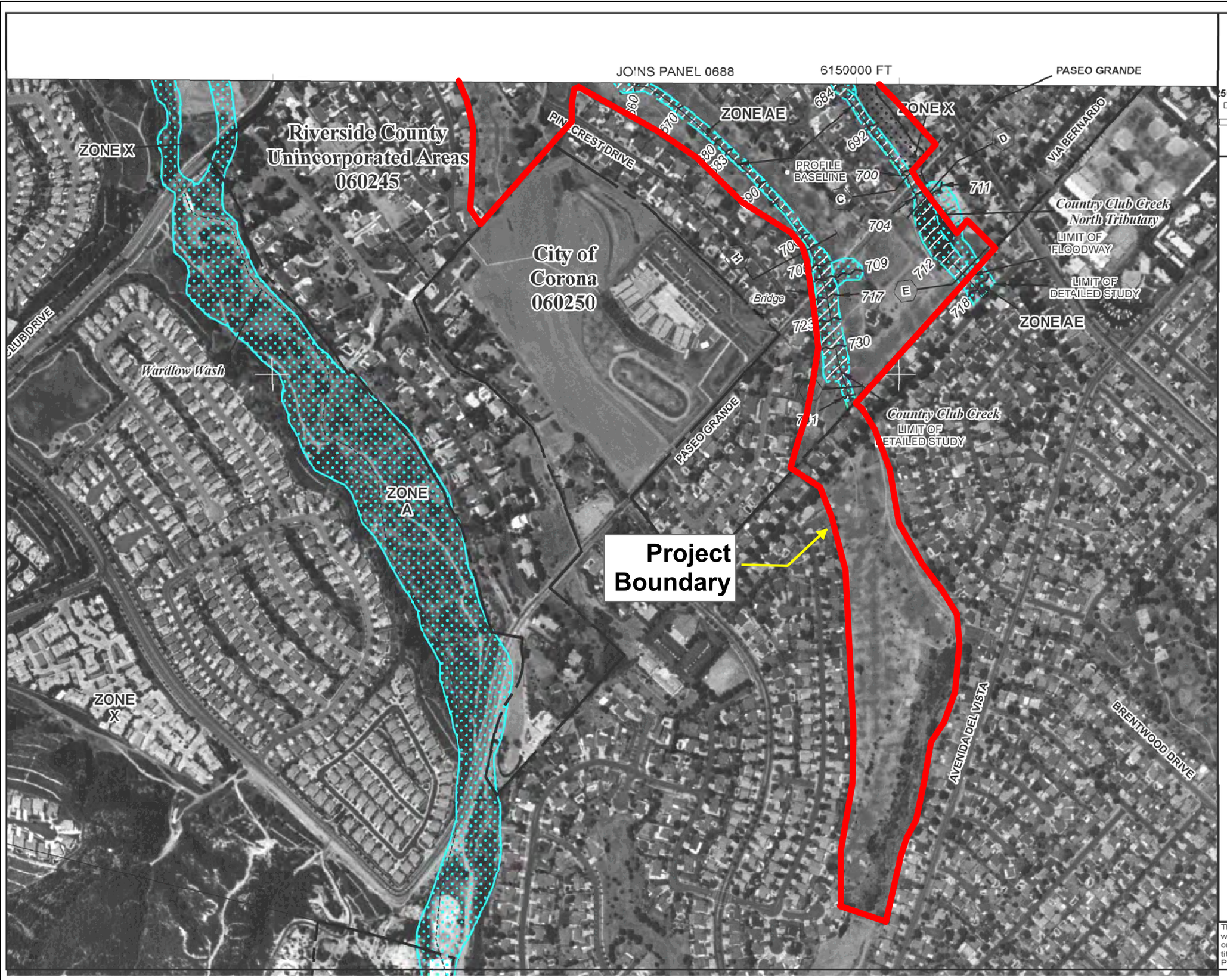
EFFECTIVE DATE AUGUST 28, 2008

Federal Emergency Management Agency

Project Boundary

Exhibit C-1

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



MAP SCALE 1" = 500'

50 0 500 1000

FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1351G

FIRM

FLOOD INSURANCE RATE MAP

RIVERSIDE COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 1351 OF 3805

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CORONA, CITY OF	060250	1351	G
RIVERSIDE COUNTY	060245	1351	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06065C1351G

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

Exhibit C-2

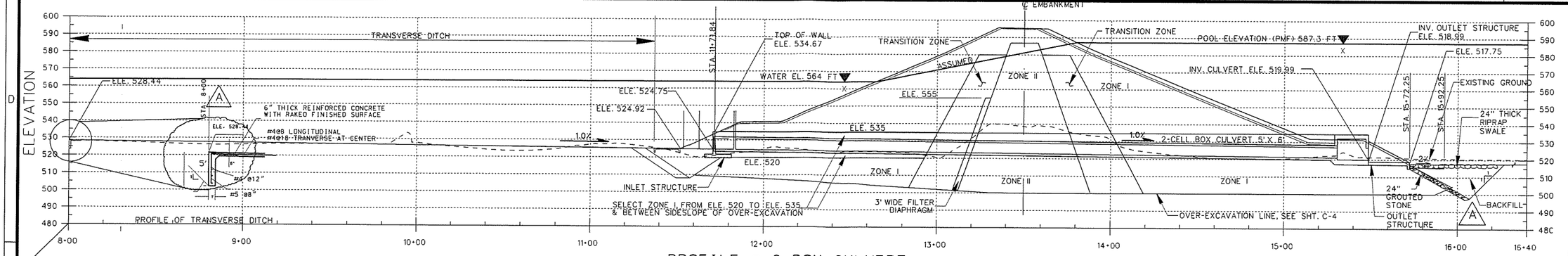
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Appendix

H

SR-91 STORM DRAIN REFERENCE PLANS

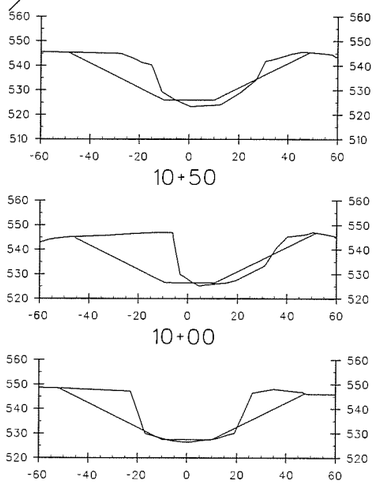
VALUE ENGINEERING PAYS



PROFILE @ ℄ BOX CULVERT

30 15 0 30 60FT

HORZ. & VERT. SCALE: 1"= 30'



NOTES:

1. FOR THE ZONE II MATERIAL PLACED BETWEEN STA. 38+60 AND 39+50, REFER TO SPECIFICATION SECTION 31 00 00 FOR SPECIAL REQUIREMENTS.
2. THE 3' WIDE FILTER DIAPHRAGM CONSISTS OF SELECT ZONE I MATERIAL AND EXTENDS FROM STA. 38+60 TO 39+50.

PLAN

30 15 0 30 60FT

SCALE: 1"= 30'

CULVERT ℄ DATA

P.I.	POB				POE
STATION	8+00.00	10+00.00	10+68.42	11+16.02	17+00.00
NORTHING	627,910.00	627,921.16	627,936.22	627,920.00	628,203.71
EASTING	1,583,817.89	1,583,618.20	1,583,551.46	1,583,505.12	1,582,992.23
RADIUS			100.00	40.00	
DELTA			32°00'34"L	48°14'33"R	
LENGTH			55.87	33.68	
TANGENT					

NO.	DESCRIPTIONS	DATE	APPROVAL
1	AS-BUILTS BY QUARRY HILLS CUTOFF WALL ADDED		

SAFETY PAYS

SANTA ANA RIVER MAINSTEM, CALIFORNIA
PHASE II, PRADO DAM

AUXILIARY EMBANKMENT & FLOODWALL
BOX CULVERT
PLAN, PROFILE, AND DETAILS

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

SUBMITTED BY:
ARTHUR Y. JUNG, P.E.
CHIEF, DESIGN BRANCH

DESIGNED BY: LHD
DRAWN BY: LHD
CHECKED BY: SHV

DISTRICT FILE NO. 373/199 REV "B" | SPEC. NO. W912PL-10-B-0026 | FILE NAME: CULVBOX.DGN

SHEET C-20

PRADO\DIKES\AUXILIARY\LINH

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12 08	Ora Riv	91 91,15	Var		

REGISTERED CIVIL ENGINEER — DATE 12-08-14

BRIAN D. PATSCHULL No. 69431 Exp. 6/30/16 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

URS CORPORATION
2020 EAST FIRST STREET, SUITE 400
SANTA ANA, CA 92705

RIVERSIDE COUNTY TRANSPORTATION COMMISSION
4080 LEMON STREET 3rd FLOOR
RIVERSIDE, CA 92501

NOTES:
1. SEE DD-1 FOR TOP OF GRADE Sta AND OFFSET LOCATIONS.
2. SEE DD-6 FOR GRATED LINE DRAIN DEPTHS.
3. LOCATIONS OF THE EXISTING DRAINAGE FACILITIES ARE APPROXIMATE AND SHOULD BE VERIFIED.



RELEASED FOR CONSTRUCTION
Feb 20, 2015
Atkinson/Walsh JV

217
DRAINAGE PROFILES

SCALE: Horiz 1" = 20'
Vert 1" = 5'

DP-C15

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: RICHARD HART
CALCULATED-DESIGNED BY: BRIAN PATSCHULL
CHECKED BY: MADLEN BENJAMIN
REVISED BY
DATE REVISED

LAST REVISION — DATE PLOTTED => 7/12/2015
00-00-00 TIME PLOTTED => 11:40:41 AM

BORDER LAST REVISED 7/2/2010
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DGN FILE => ...\Segment C\08000001361bC015.dgn
RELATIVE BORDER SCALE IS IN INCHES (0 1 2 3)
UNIT 2238
PROJECT NUMBER & PHASE 08000001361

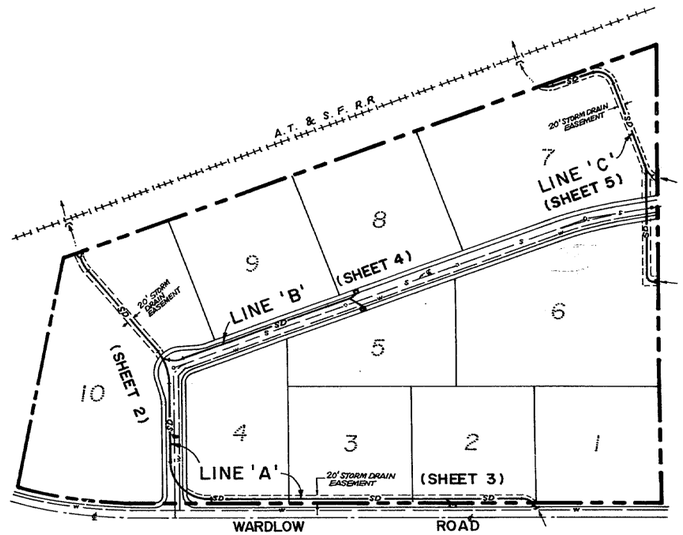
GENERAL NOTES :

1. ALL WORK AND MATERIALS SHALL COMPLY WITH THE SPECIFICATIONS AND STANDARD PLANS OF THE CITY OF CORONA, DEPARTMENT OF COMMUNITY DEVELOPMENT AND PUBLIC WORKS. THESE DRAWINGS AND THE DATA HEREIN ARE MADE PART OF THE SPECIFICATIONS.
2. INSPECTION TO BE CALLED FOR THROUGH THE CITY OF CORONA (736-2281) 24 HOURS PRIOR TO STARTING WORK.
3. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL OBTAIN A PERMIT TO EXCAVATE IN THE CITY STREETS, FROM THE CITY OF CORONA.
4. ALL UTILITY COMPANIES TO BE GIVEN 48 HOURS NOTICE PRIOR TO WORKING AROUND THEIR FACILITIES.
5. TRENCHES SHALL HAVE SHAPED BEDDING.
6. ALL BACKFILL TO BE CERTIFIED BY A SOILS ENGINEER.
7. ALL MATERIALS AND METHODS TO BE SUBJECT TO THE APPROVAL OF THE CITY ENGINEER.
8. BACKFILL MATERIAL TO HAVE A S.E. OF 30 (MIN).
9. BACKFILL TO BE IN 8" LIFTS IF TRENCH BOTTOM AND SIDES HAVE A S.E. OF LESS THAN 20.
10. STOMPING OF BACKFILL PERMITTED IN 3' LIFTS.
11. DURING THE WORKING DAY TRENCHES MAY BE LEFT OPEN ACROSS ONLY ONE ACCESS STREET AT A TIME. NO TRENCH MAY BE LEFT OPEN OVERNIGHT UNLESS AUTHORIZED IN WRITING BY THE CITY ENGINEER.
12. AS-BUILT DRAWINGS TO BE FURNISHED TO THE CITY OF CORONA AFTER COMPLETION OF CONSTRUCTION.
13. IF ANY EXISTING UTILITIES OR ANY OTHER FACILITIES CONFLICT WITH THE PROPOSED IMPROVEMENTS, WORK SHALL STOP AND THE ENGINEER NOTIFIED IMMEDIATELY.
14. ALL UTILITIES SHALL BE INSTALLED, TESTED, AND APPROVED PRIOR TO STREET PAVING.
15. *CAST IN PLACE CONCRETE PIPE FOR STORM DRAIN MUST BE APPROVED PRIOR TO CONSTRUCTION BY THE CITY ENGINEER. SEE PROFILE FOR AS-BUILT CONDITIONS.*

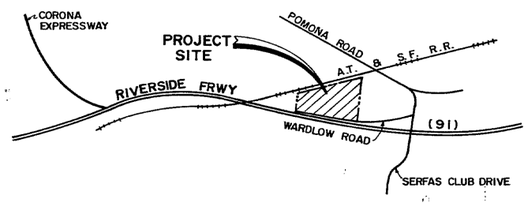
CONSTRUCTION NOTES & ESTIMATED QUANTITIES :

	ITEM	DESCRIPTION	QUANTITY	UNIT
	200	CONSTRUCT CATCH BASIN TYPE "A" PER CITY OF CORONA STD PLAN NO. 201.	3	EA.
*	201	CONSTRUCT 24" R.C.P., D-LOAD AS SHOWN.	131	L.F.
*	202	CONSTRUCT 30" R.C.P., D-LOAD AS SHOWN.	329	L.F.
*	203	CONSTRUCT 36" R.C.P., D-LOAD AS SHOWN.	55	L.F.
*	204	CONSTRUCT 39" R.C.P., D-LOAD AS SHOWN.	496	L.F.
*	205	CONSTRUCT 60" R.C.P., D-LOAD AS SHOWN.	552	L.F.
*	206	CONSTRUCT 96" R.C.P., D-LOAD AS SHOWN.	1,315	L.F.
*	207	CONSTRUCT 120" R.C.P., D-LOAD AS SHOWN.	348	L.F.
	208	CONSTRUCT MANHOLE NO. 2 PER R.C.F.C.& W.C.D. STANDARD DRAWING NO. MH252.	6	EA.
	209	CONSTRUCT JUNCTION STRUCTURE NO. 2 PER R.C.F.C.& W.C.D. STD. DRWG. JS227	1	EA.
	210	CONSTRUCT JUNCTION STRUCTURE NO. 4 PER R.C.F.C.& W.C.D. STD. DRWG. JS229	2	EA.
	211	CONSTRUCT TRANSITION STRUCTURE NO. 1 PER R.C.F.C.& W.C.D. STD DRWG TS301	46	L.F.
	212	CONSTRUCT GROUTED R.I.P RAP.	20	TON
	213	CONSTRUCT HEADWALL AND WINGWALL PER DETAIL. SHEET 6.	4	EA.
	214	CONSTRUCT MANHOLE NO.4 PER R.C.F.C. & W.C.D. STD. DRAWING NO. MH 254.	2	EA.
	215	CONSTRUCT CONCRETE COLLAR PER R.C.F.C. & W.C.D. STD. DRAWING NO. 803.	2	EA.

* SEE GENERAL NOTE 15.



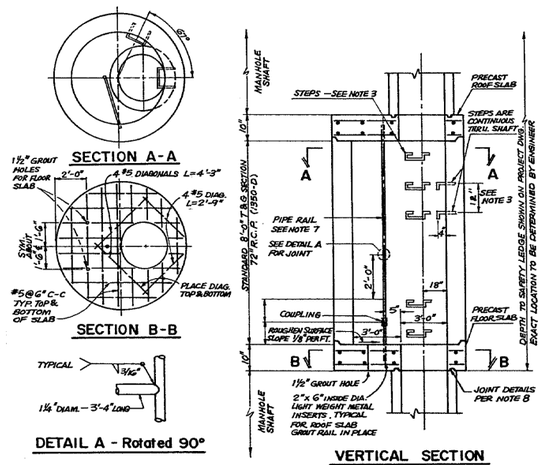
INDEX MAP
NO SCALE



VICINITY MAP
NO SCALE

ENGINEERS NOTICE:

1. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.
2. ALL UNDERGROUND UTILITIES OR STRUCTURE, REPORTED OR FOUND ON PUBLIC RECORDS, ARE INDICATED WITH THEIR APPROXIMATE LOCATION AND EXTENT. THE OWNER, BY ACCEPTING THESE PLANS OR PROCEEDING WITH THE IMPROVEMENTS HEREON, AGREES TO ASSUME LIABILITY AND TO HOLD THE ENGINEER HARMLESS FOR ANY DAMAGES RESULTING FROM THE EXISTENCE OF UNDERGROUND UTILITIES OR STRUCTURES NOT REPORTED OR INDICATED ON PUBLIC RECORDS, OR THOSE CONSTRUCTED AT VARIANCE WITH REPORTED OR RECORD LOCATIONS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES OR STRUCTURES SHOWN AND ANY OTHERS FOUND AT THE SITE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNERS OF ALL UTILITIES STRUCTURES CONCERNED BEFORE STARTING WORK.
3. *CARE SHOULD BE TAKEN TO PREVENT GRADED DITCHES AND SWALES FROM UNDERMINING STREET IMPROVEMENTS. UPON INSPECTION OF THE SITE, THE CITY ENGINEER MAY REQUIRE TEMPORARY GUNITE SWALES, ENTERING OR LEAVING IMPROVEMENTS.*



MANHOLE SHAFT SAFETY LEDGE

M.T.S. (A/1)

NOTES:

1. MANHOLE SHAFT SAFETY LEDGE IS TO BE CONSTRUCTED IN DEEP MANHOLE SHAFTS 20 ft. OR GREATER IN DEPTH.
2. A SAFETY LEDGE SHALL NOT BE USED IF A PRESSURE MANHOLE IS REQUIRED.
3. STEPS SHALL BE ¾" ROUND GALVANIZED STEEL ANCHORED 4" IN THE WALL OF STRUCTURE. STEPS SHALL BE PLACED TO MATCH THE SPACING OF THE MANHOLE SHAFT.
4. CONCRETE SHALL DEVELOP 3000 P.S.i. OR GREATER IN 28 DAYS.
5. REINFORCEMENT SHALL BE PER ASTM A615, GRADE 40. REINFORCING STEEL SHALL TERMINATE 2" CLEAR OF CONCRETE SURFACES UNLESS OTHERWISE SHOWN.
6. GROUT HOLES, PIPE AND FITTINGS SHALL BE PROVIDED IN THE FLOOR SLAB. PRESSURE GROUTING SHALL BE USED TO FILL VOIDS AND TO SECURE UNIFORM BEARING. THE GROUT SHALL BE NEAT CEMENT GROUT AND GROUTING PRESSURES SHALL BE AS DETERMINED IN THE FIELD BY THE ENGINEER.
7. PIPE RAIL SHALL BE FABRICATED OF 1-½" STANDARD GALVANIZED PIPE COMPOSED OF TWO SECTIONS 7.5' & 1.5' IN LENGTH JOINED BY A GALVANIZED COUPLING. THE COUPLING SHALL BE THREADED A MINIMUM OF 2" ON EACH PIPE LENGTH.
8. ROOF AND FLOOR SLABS SHALL BE PRECAST AND KEYED FOR REINFORCED CONCRETE PIPE SECTIONS AS SHOWN. ALL JOINTS SHALL BE FILLED WITH 1-2 MORTAR AND NEATLY POINTED OR WIPED ON THE INSIDE.
9. 72" R.C.P. SHALL BE PROVIDED WITH TWO CIRCULAR CAGES OF REINFORCEMENT.

AS BUILT

Don R. Lindgren — 20953 R.C.E. — 6/6/85 DATE
DON R. LINDGREN

PREPARED BY:
FUSCOE WILLIAMS LINDGREN & SHORT
CIVIL ENGINEERS & LAND SURVEYORS
2101 E. FOURTH ST., SUITE 260
SANTA ANA, CALIFORNIA 92705
(714) 542-3544

Designed by AC | Drawn by AC | Checked by DRL
PLANS PREPARED UNDER SUPERVISION OF Don R. Lindgren
Date 10-14-85 R.C.E. No. 20953

Reference Plans for these Improvements

Date	By	REVISIONS	App'd

BENCH MARK
CITY OF CORONA BM NO. C-83 ELEV 650.606
IN THE SW COR OF INTERSECT OF POMONA RD & MAPLE ST A CHISLED SQ ON TOP OF CURB AT SCR.
Scale

Engineering JM KE
Utilities S.A.M. / D&W
Fire

Approved 10/21/85 By George Thacker R.C.E. No. 21267 Director of Utilities
Approved 10-21-85 By Joseph R. Palencia R.C.E. No. 25267 City Engineer

CITY OF CORONA
IMPROVEMENT PLANS FOR TRACT Nº 20137
STORM DRAIN IMPROVEMENT

Drawing No. 85-148
Sh 1 of 6

BRUNING 44-132

LINE 'A'

SCALE: 1"=40'

NOTE: ENCROACHMENT PERMIT TO BE OBTAINED FROM A.T. & S.F. BEFORE ANY WORK COMMENCES WITHIN RAILROAD R/W

RIP RAP TO BE PLACED PER A.T. & S.F. RAILROAD ENGINEER ON SITE

EXIST. 12'Wx10'H R.C.BOX

EXIST. HEADWALL

SEE SHEET 6 FOR DETAILS

S10°58'31"E

0+84.43 BC BEGIN OUTLET STRUCTURE WINGWALL & ENDWALL

1+05.00 PCC END OUTLET STRUCTURE & BEGIN PIPE

H VARIES, 14' MAX. SEE SHT. 6 FOR DETAILS

EXIST. CONC. DIVERSION WALL

2:1 SLOPE

1+38.15 EC 553.50 ft

120° R.C.P.

S31°09'36"E

10' LOT

20' STORM DRAIN EASEMENT

SEE SHEET 4 LINE 'B'

60" R.C.P. S=0.0100

4+52.70 ℄ INT. PCC

4+52.70 LINE 'A'

0+00.00 LINE 'B'

4+57.87 ℄ M.H. #4

SEE DETAIL A/2

4+14.22 BC

5+20.53 EC

SEE SEWER & WATER IMPROVEMENT PLAN

10

4

SEE SHEET 3 MATCH LINE

8+99.91 EC

STORM DRAIN EASEMENT

96" R.C.P. S09°28'45"W

24" R.C.P.

8+05.30 PCC ℄ INT. J.S. #4

LINE 'A-1'

END PIPE REMOVE EXISTING END WALL & JOIN EXISTING 24" CMP

EXISTING 84" CMP

WARDLOW ROAD

CURVE DATA

	Δ	R	L	T
A	12° 39' 45"	150.00'	33.15'	16.64'
B	14° 41' 56"	150.00'	38.48'	19.35'
C	25° 54' 25"	150.00'	67.83'	34.50'
D	35° 47' 38"	100.00'	62.47'	32.29'
E	54° 12' 22"	100.00'	94.61'	51.18'
F	7° 51' 20"	150.00'	20.57'	10.30'

DETAIL A/2 N.T.S.

0+11.58 BEG. PIPE

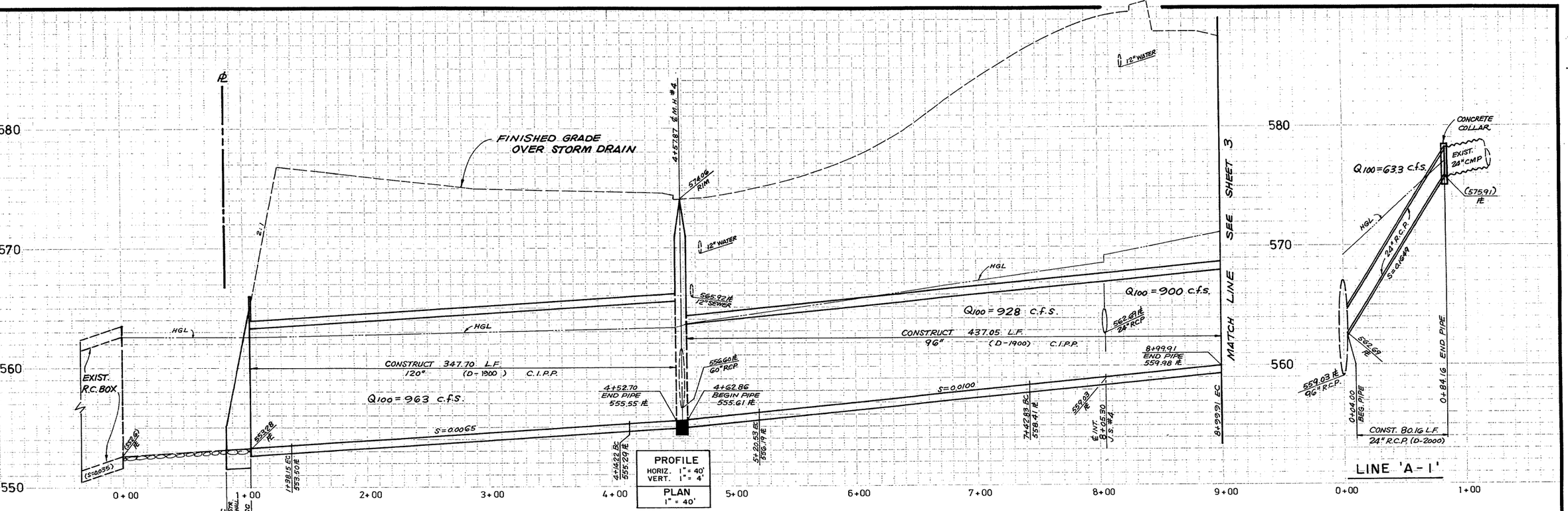
9½" 6.48' 5.02' 12.00' 17" 12.83' 10'-0" 5" 58°27'40" 45° 4+57.78 ℄ M.H. 4+60.83 ℄ SMART 8" 6'-0" 10.83' 11.00' 4+52.70 ℄ INT. 4+62.86 BEG. PIPE 4+52.70 END PIPE

PROFILE

HORIZ. 1" = 40'
VERT. 1" = 4'

PLAN

1" = 40'



AS BUILT

Don R. Lindgren — DON R. LINDGREN — 20953 R.C.E. — 6/4/85 DATE

CONSTRUCTION NOTES:

(201) CONSTRUCT 24" R.C.P., D-LOAD AS SHOWN.
(206) CONSTRUCT 96" R.C.P., D-LOAD AS SHOWN.
(207) CONSTRUCT 120" R.C.P., D-LOAD AS SHOWN.
(210) CONSTRUCT JUNCTION STRUCTURE NO. 4 PER R.C.F.C.& W.C.D. STD. DRWG. JS229 .
(213) CONSTRUCT HEADWALL AND WINGWALL PER DETAIL SHEET 6.
(214) CONSTRUCT MANHOLE NO. 4 PER R.C.F.C. & W.C.D. STD. DRAWING No. MH 254.
(215) CONSTRUCT CONCRETE COLLAR PER R.C.F.C. & W.C.D. STD. DRAWING No. 803.

PREPARED BY:
FUSCOE WILLIAMS LINDGREN & SHORT
CIVIL ENGINEERS & LAND SURVEYORS
2101 E. FOURTH ST., SUITE 260
SANTA ANA, CALIFORNIA 92705
(714) 542-3544

Designed by AC | Drawn by AC | Checked by DRL

PLANS PREPARED UNDER SUPERVISION OF Don R. Lindgren
Date 10-14-83 R.C.E. No. 20953

Reference Plans for these Improvements

Date	By	REVISIONS	Appd

BENCH MARK
CITY OF CORONA BM NO. C-83 ELEV 650.606
IN THE SW COR OF INTERSECT OF POMONA RD & MAPLE ST A CHISLED SQ ON TOP OF CURB AT BCR.
Scale

Engineering JM KE
Utilities S.A.M. / DAW
Fire

Approved 10/21/83 By George Thacker R.C.E. No. 21267 Director of Utilities

Approved 10-21-83 By Joseph R. Palermo R.C.E. No. 25267 City Engineer

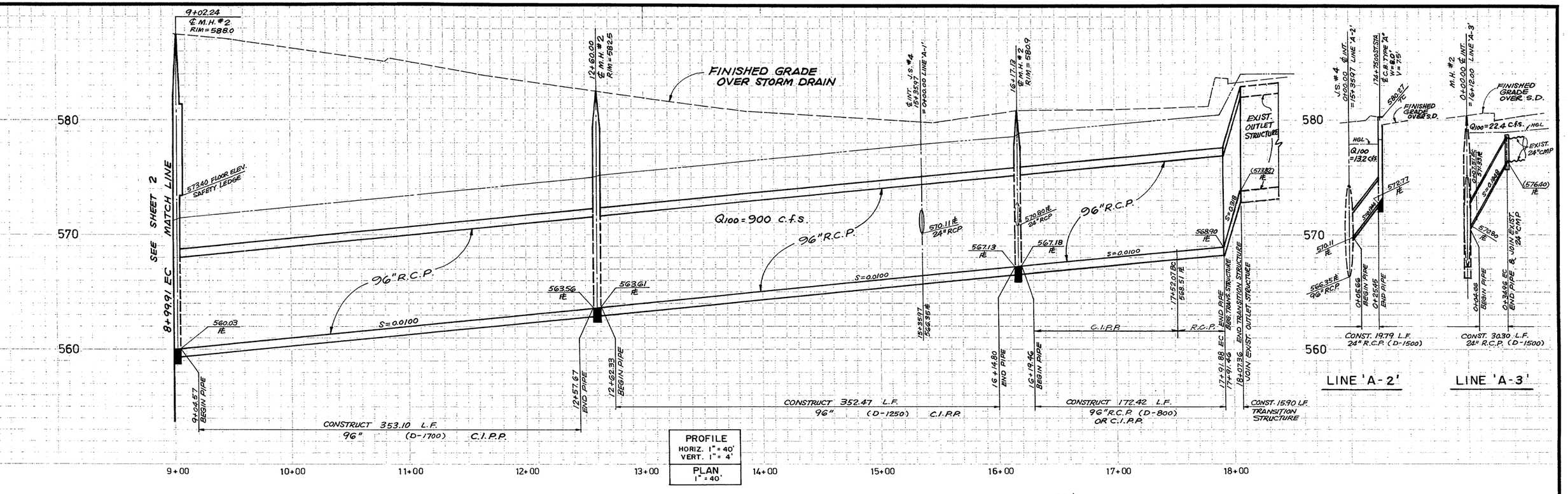
CITY OF CORONA
TRACT Nº 20137
IMPROVEMENT PLANS

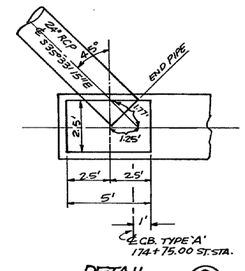
LINES 'A' & 'A-1'
STORM DRAIN IMPROVEMENT

Drawing No. 83-14 B
Sh 2 of 6

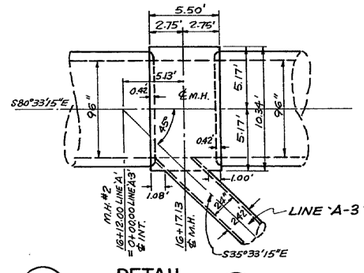
BRUNING 44-133

LINE 'A'





DETAIL C/3 N.T.S.



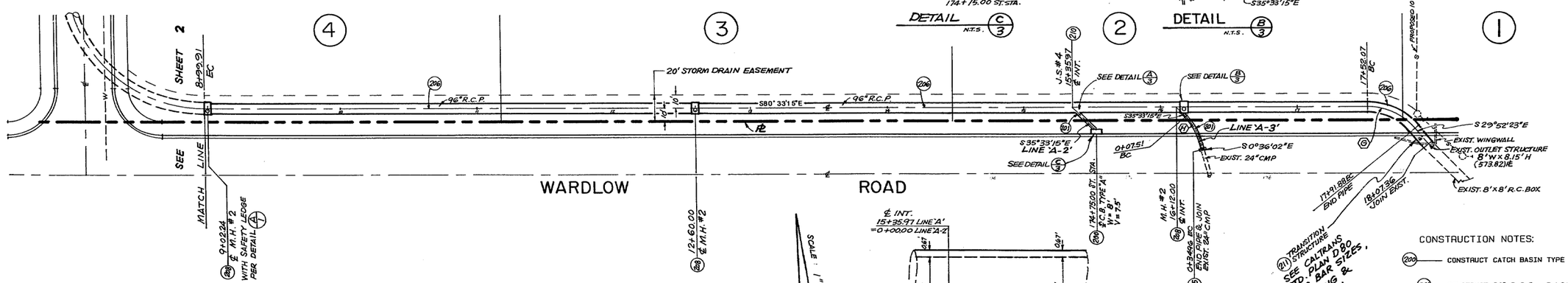
DETAIL B/3 N.T.S.

AS BUILT

Don R. Lindgren — DON R. LINDGREN

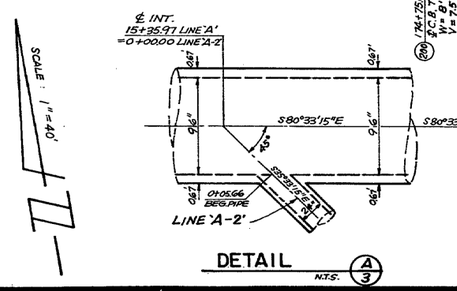
20953 R.C.E.

6/6/85 DATE



CURVE DATA

	Δ	R	L	T
G	50°40'52"	45.00'	39.81'	21.31'
H	34°57'13"	45.00'	27.45'	14.17'



DETAIL A/3 N.T.S.

CONSTRUCTION NOTES:

(200) CONSTRUCT CATCH BASIN TYPE "A" PER CITY OF CORONA STD PLAN NO. 201.

(201) CONSTRUCT 24" R.C.P., D-LOAD AS SHOWN.

(206) CONSTRUCT 96" R.C.P., D-LOAD AS SHOWN.

(208) CONSTRUCT MANHOLE NO. 2 PER R.C.F.C.& W.C.D. STANDARD DRAWING NO. MH252.

(210) CONSTRUCT JUNCTION STRUCTURE NO. 4 PER R.C.F.C.& W.C.D. STD. DRWG. JS229

(211) CONSTRUCT TRANSITION STRUCTURE NO. 1 PER R.C.F.C.& W.C.D. STD DRWG TS301

(215) CONSTRUCT CONCRETE COLLAR PER R.C.F.C. & W.C.D. STD. DRAWING NO. 803.

PREPARED BY:
FUSCOE WILLIAMS LINDGREN & SHORT
CIVIL ENGINEERS & LAND SURVEYORS
2101 E. FOURTH ST., SUITE 260
SANTA ANA, CALIFORNIA 92705
(714) 542-3544

Designed by	Drawn by	Checked by
AC	AC	DRL

PLANS PREPARED UNDER SUPERVISION OF Don R. Lindgren
Date 10-14-83 R.C.E. No. 20953

Reference Plans for these Improvements

Date	By	REVISIONS	App'd

BENCH MARK
CITY OF CORONA BM NO. C-83 ELEV 650.606
IN THE SW COR OF INTERSECT OF POMONA RD & MAPLE ST A CHISLED SQ ON TOP OF CURB AT BCR.
Scale

Engineering JM KE
Utilities S.A.M. / Drwl
Fire

Approved 10/21/83 By George Thacker R.C.E. No. 21267 Director of Utilities

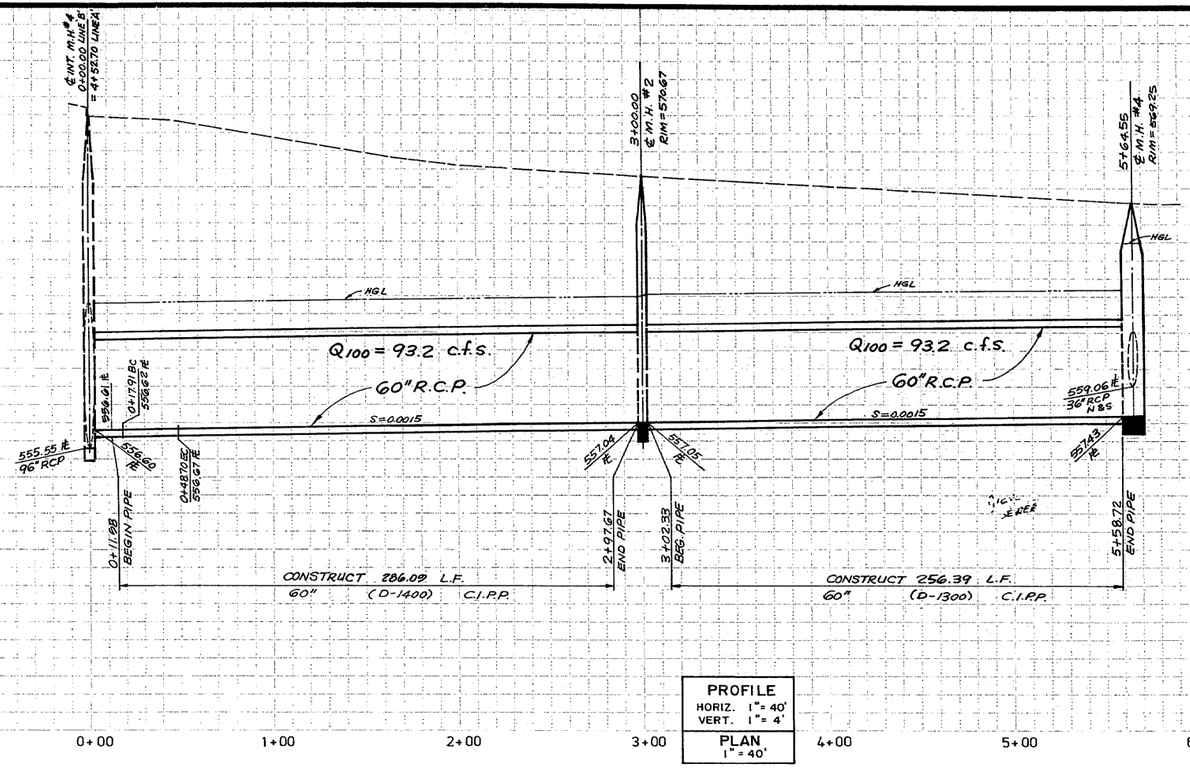
Approved 10-21-83 By Joseph R. Palermo R.C.E. No. 25267 City Engineer

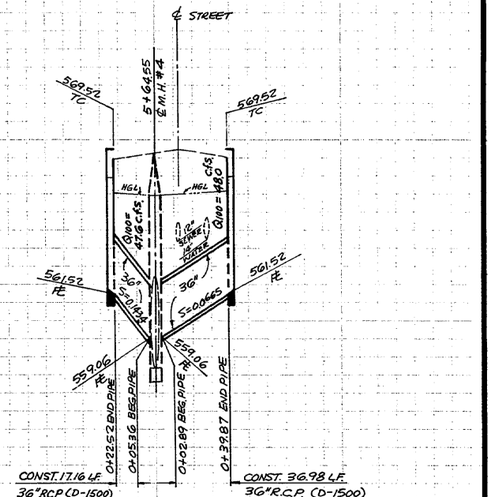
CITY OF CORONA
TRACT Nº 20137
IMPROVEMENT PLANS
LINES 'A', 'A-2' & 'A-3'
STORM DRAIN IMPROVEMENT

Drawing No. 85-14 P
Sh 3 of 6

BRUNING 44-132

LINE 'B'

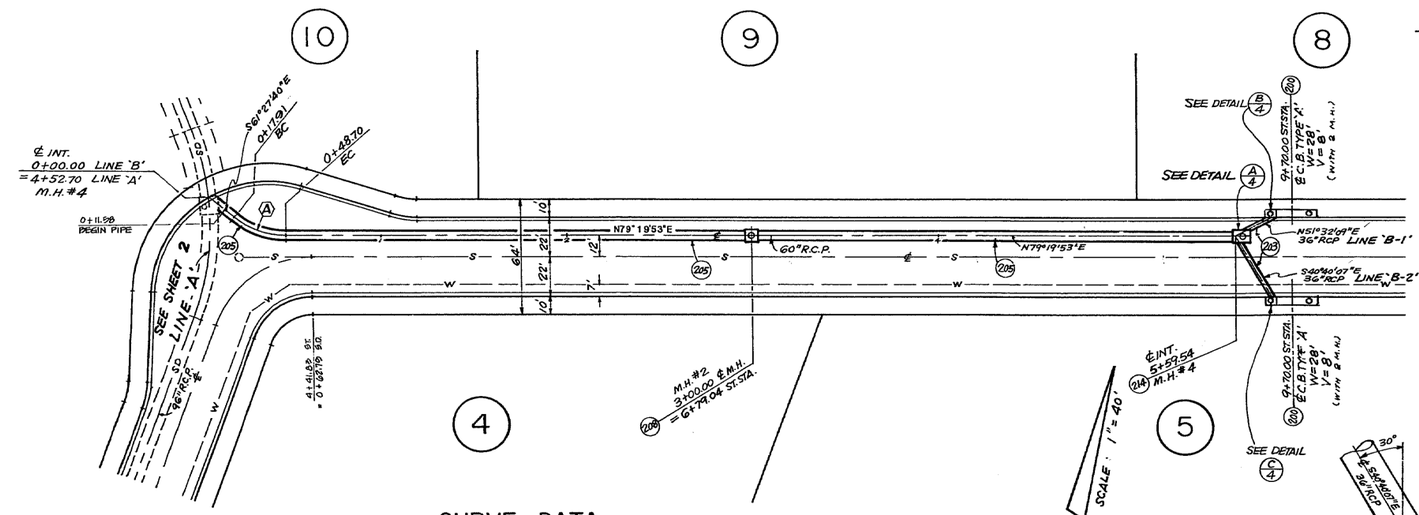




LINE 'B-1' LINE 'B-2'

PROFILE
HORIZ. 1"= 40'
VERT. 1"= 4'

PLAN
1"= 40'

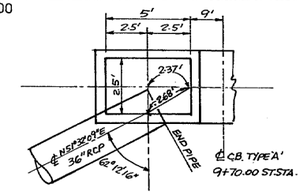


CURVE DATA

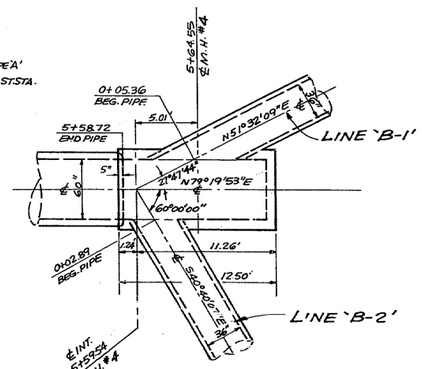
	Δ	R	L	T
A	39°12'26"	45.00'	30.79'	16.03'

AS BUILT

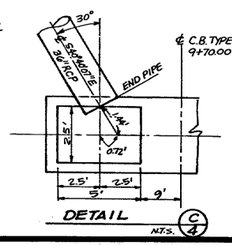
Don R. Lindgren — 20953 R.C.E. — 6/16/88 DATE



DETAIL B/4 N.T.S.



DETAIL A/4 N.T.S.



DETAIL C/4 N.T.S.

CONSTRUCTION NOTES:

200 — CONSTRUCT CATCH BASIN TYPE "A" PER CITY OF CORONA STD PLAN NO. 201.

205 — CONSTRUCT 36" R.C.P., D-LOAD AS SHOWN.

205 — CONSTRUCT 60" R.C.P., D-LOAD AS SHOWN.

208 — CONSTRUCT MANHOLE NO. 2 PER R.C.F.C.& W.C.D. STANDARD DRAWING NO. MH252.

214 — CONSTRUCT MANHOLE NO 4 PER R.C.F.C. & W.C.D. STD. DRAWING NO. MH 254.

PREPARED BY:
FUSCOE WILLIAMS LINDGREN & SHORT
CIVIL ENGINEERS & LAND SURVEYORS
2101 E. FOURTH ST., SUITE 260
SANTA ANA, CALIFORNIA 92705
(714) 542-3544

Designed by	Drawn by	Checked by
A.C.	A.C.	D.R.L.

PLANS PREPARED UNDER SUPERVISION OF Don R. Lindgren
Date 10-14-88 R.C.E. No. 20953

Reference Plans for these Improvements

Date	By	REVISIONS	App'd

BENCH MARK
CITY OF CORONA BM NO. C-83 ELEV 550.606
IN THE SW COR OF INTERSECT OF POMONA RD & MAPLE ST A CHISLED SQ ON TOP OF CURB AT BCR.

Scale

Engineering JM
Utilities S.A.W. / DAW
Fire

Approved 10/21/88 By George Hacker R.C.E. No. 21267 Director of Utilities

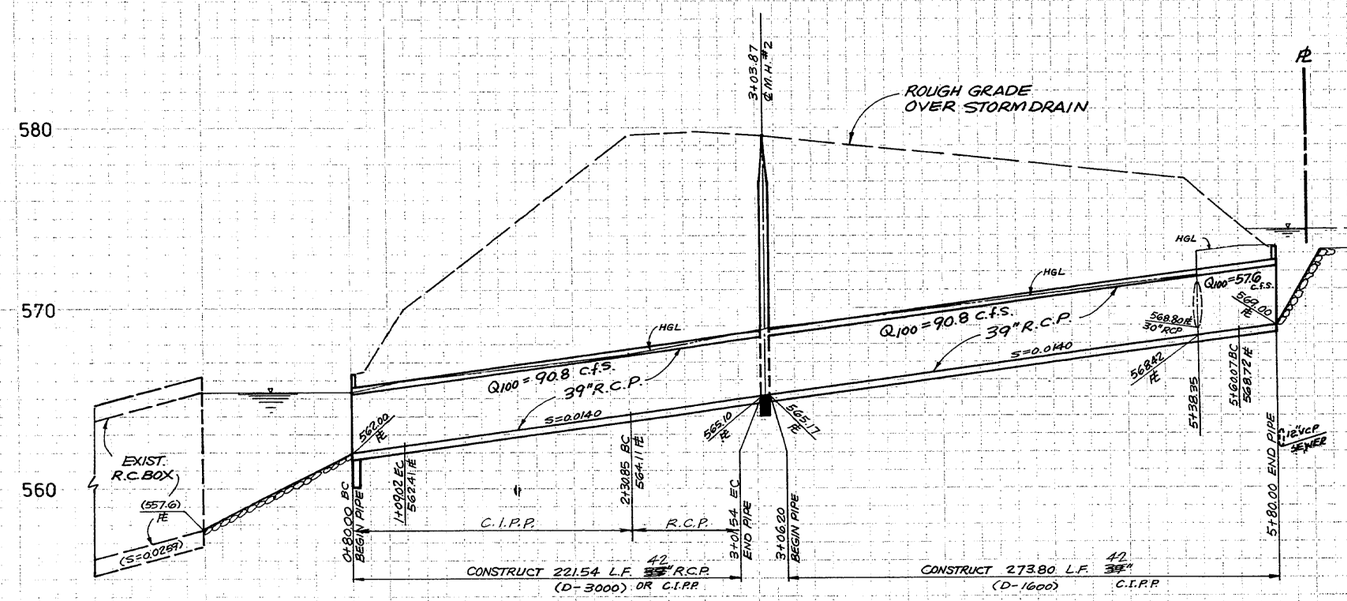
Approved 10-21-88 By Joseph R. Palermo R.C.E. No. 25267 City Engineer

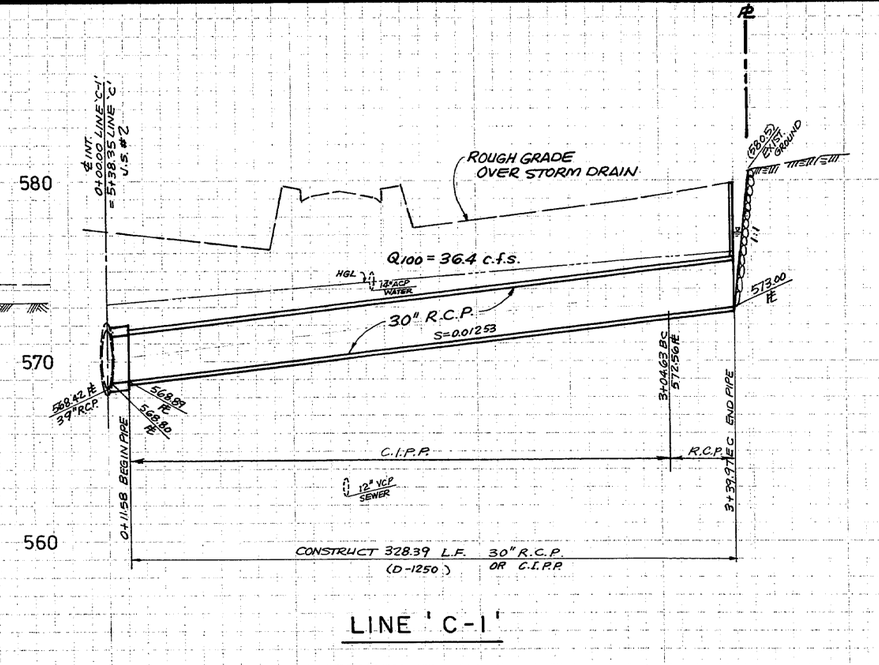
CITY OF CORONA
TRACT Nº 20137
IMPROVEMENT PLANS

LINES 'B', 'B-1' & 'B-2'
STORM DRAIN IMPROVEMENT

Drawing No. 85-14 B
Sh 6 of 6

BRUNING 44-132



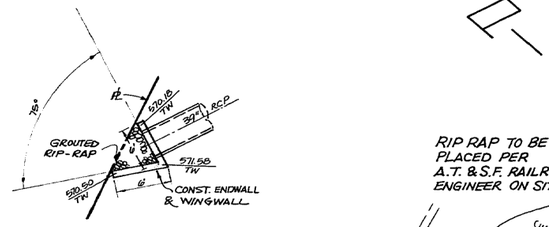


LINE 'C-1'

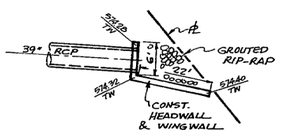
PROFILE
HORIZ. 1"= 40'
VERT. 1"= 4'

PLAN
1" = 40'

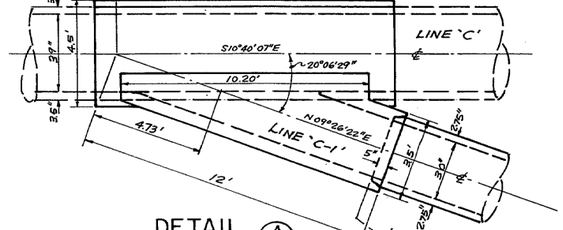
SCALE: 1" = 40'



OUTLET STRUCTURE DETAIL (B/5) N.T.S.
H VARIES, 6' MAX.
SEE SHEET 6 FOR DETAILS



INLET STRUCTURE DETAIL (C/5) N.T.S.
H VARIES + 4' MAX.
SEE SHEET 6, FOR DETAILS



DETAIL (A/5) N.T.S.

RIP RAP TO BE PLACED PER A.T. & S.F. RAILROAD ENGINEER ON SITE

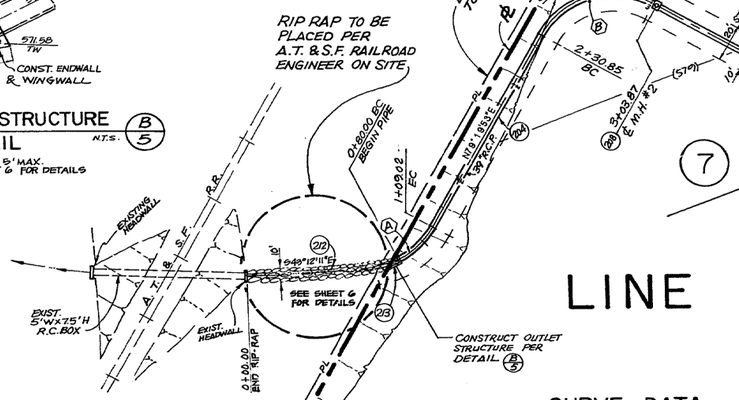
EXISTING FOUR CORNERS PIPELINE TO BE PROTECTED IN PLACE

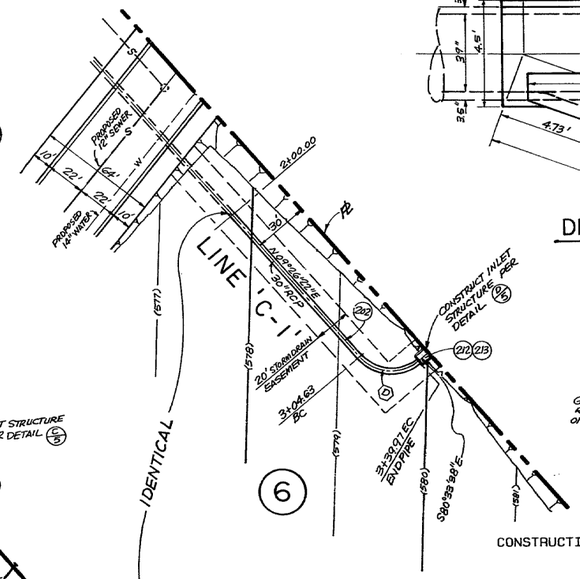
SEE OFF-SITE SEWER IMPROVEMENT PLAN

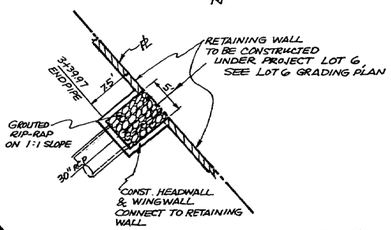
LINE 'C'

LINE 'C-1'

IDENTICAL







INLET STRUCTURE DETAIL (D/5) N.T.S.
H VARIES, 7' MAX.
SEE SHEET 6 FOR DETAILS

CURVE DATA

	Δ	R	L	T
(A)	36°56'58"	45.00'	29.02'	15.03'
(B)	90°00'00"	45.00'	70.69'	45.00'
(C)	25°22'32"	45.00'	19.93'	10.13'
(D)	90°00'00"	22.50'	35.34'	22.50'

NOTE: ENCROACHMENT PERMIT TO BE OBTAINED FROM A.T. & S.F. BEFORE ANY WORK COMMENCES WITHIN RAILROAD R/W

AS BUILT

DON R. LINDGREN — 20953 R.C.E. — 6/6/86 DATE

CONSTRUCTION NOTES:

(202) CONSTRUCT 30" R.C.P., D-LOAD AS SHOWN.
(204) CONSTRUCT 39" R.C.P., D-LOAD AS SHOWN.
(206) CONSTRUCT MANHOLE NO. 2 PER R.C.F.C.& W.C.D. STANDARD DRAWING NO. MH252.
(207) CONSTRUCT JUNCTION STRUCTURE NO. 2 PER R.C.F.C.& W.C.D. STD. DRWG. JS227
(212) CONSTRUCT GROUTED RIPRAP.
(213) CONSTRUCT HEADWALL AND WINGWALL PER DETAIL SHEET 6.

PREPARED BY:
FUSCOE WILLIAMS LINDGREN & SHORT
CIVIL ENGINEERS LAND SURVEYORS
2101 E. FOURTH ST., SUITE 260
SANTA ANA, CALIFORNIA 92705
(714) 542-3544

Designed by AC | Drawn by AC | Checked by DRL

PLANS PREPARED UNDER SUPERVISION OF Don R. Lindgren
Date 10-14-83 R.C.E. No. 20953

Reference Plans for these Improvements

Date	By	REVISIONS	App'd

BENCH MARK
CITY OF CORONA BM NO. C-83 ELEV 650.606
IN THE SW COR OF THE INTERSECT OF POMONA RD MAPLE ST A CHISLED 2Q ON TOP OF CURB AT BCR

Scale

Engineering JM KE
Utilities S.A.M. / DAW
Fire

Approved 10/21/83 By George Thacker R.C.E. No. 21267 Director of Utilities

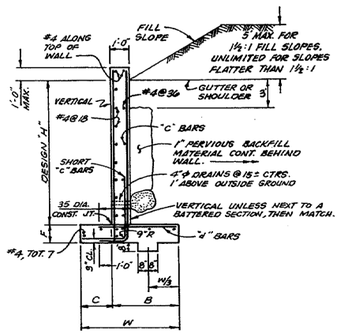
Approved 10-21-83 By Joseph R. Palencia R.C.E. No. 25267 City Engineer

CITY OF CORONA
TRACT Nº 20137
IMPROVEMENT PLANS

LINES 'C' & 'C-1'
STORM DRAIN IMPROVEMENT

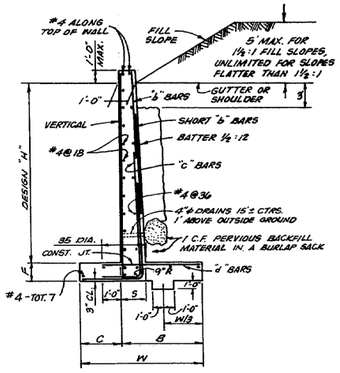
Drawing No. 85-14 B
Sh 5 of 6

BRUNING 44-132



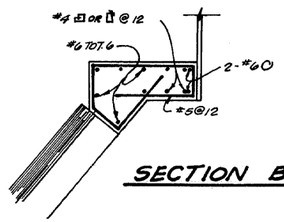
WINGWALL

(213) TYPICAL SECTION H=4' THRU 12'

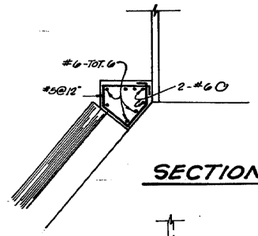


WINGWALL

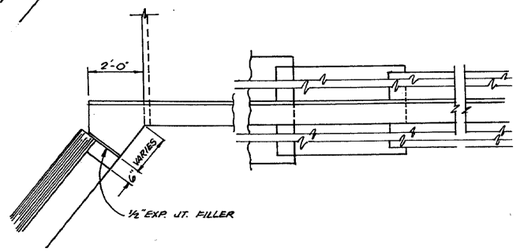
(213) TYPICAL SECTION H=13' THRU 20'



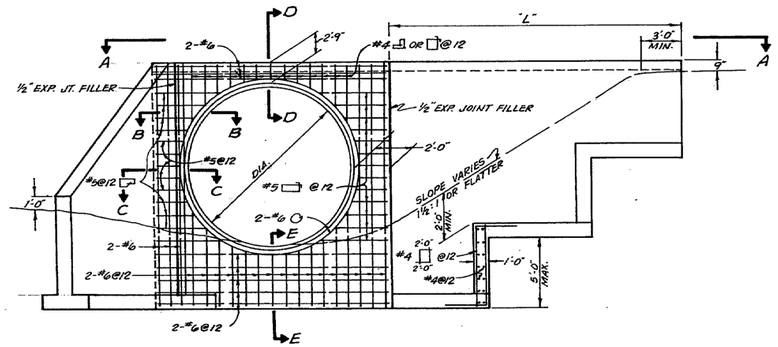
SECTION B-B



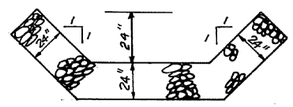
SECTION C-C



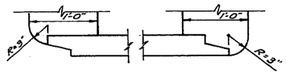
PART PLAN A-A



HEADWALL, ENDWALL DETAIL



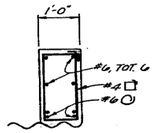
SECTION F-F



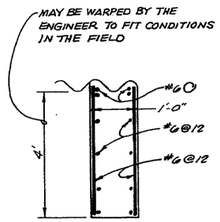
INLET OUTLET

R.C. PIPE DETAILS

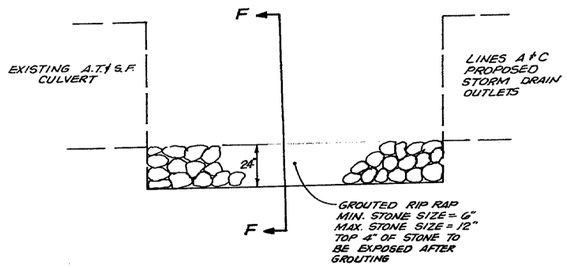
REINFORCED CONCRETE WINGWALLS											
DESIGN "H"	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'
W	3'-2"	3'-8"	4'-2"	4'-8"	5'-2"	5'-8"	6'-2"	6'-8"	7'-2"	7'-8"	8'-0"
C	1'-0"	1'-2"	1'-4"	1'-6"	1'-8"	1'-10"	2'-0"	2'-2"	2'-4"	2'-6"	2'-8"
B	2'-2"	2'-6"	2'-10"	3'-2"	3'-6"	3'-10"	4'-2"	4'-6"	4'-10"	5'-2"	5'-4"
F	← 1'-2" →										
BATTER	← NONE →									½:12	
S	← 1'-0" →									1'-6½"	1'-7"
"b" BARS	← NONE →										#5@15
"c" BARS	#4@24	#4@18	#5@20	#5@14	#5@10	#5@7	#6@7½	#7@8	#7@6	#9@15	#10@15
"d" BARS	#4@24	#4@18	#5@20	#5@14	#5@10	#6@14	#7@15	#8@16	#7@12	#8@15	#9@15
CONC. CY./L.F.	0.32	0.38	0.44	0.49	0.55	0.61	0.67	0.73	0.79	1.02	1.10
REINF. LBS./L.F.	13	16	19	25	30	37	49	62	76	83	90



SECTION D-D



SECTION E-E



TYPICAL GROUTED RIP RAP DETAIL

NOTE: ALL RIPRAP TO BE PLACED PER A.T. & S.F. RAILROAD ENGINEER ON SITE.

AS BUILT

DON R. LINDGREN 20953 R.C.E. 6/6/86 DATE

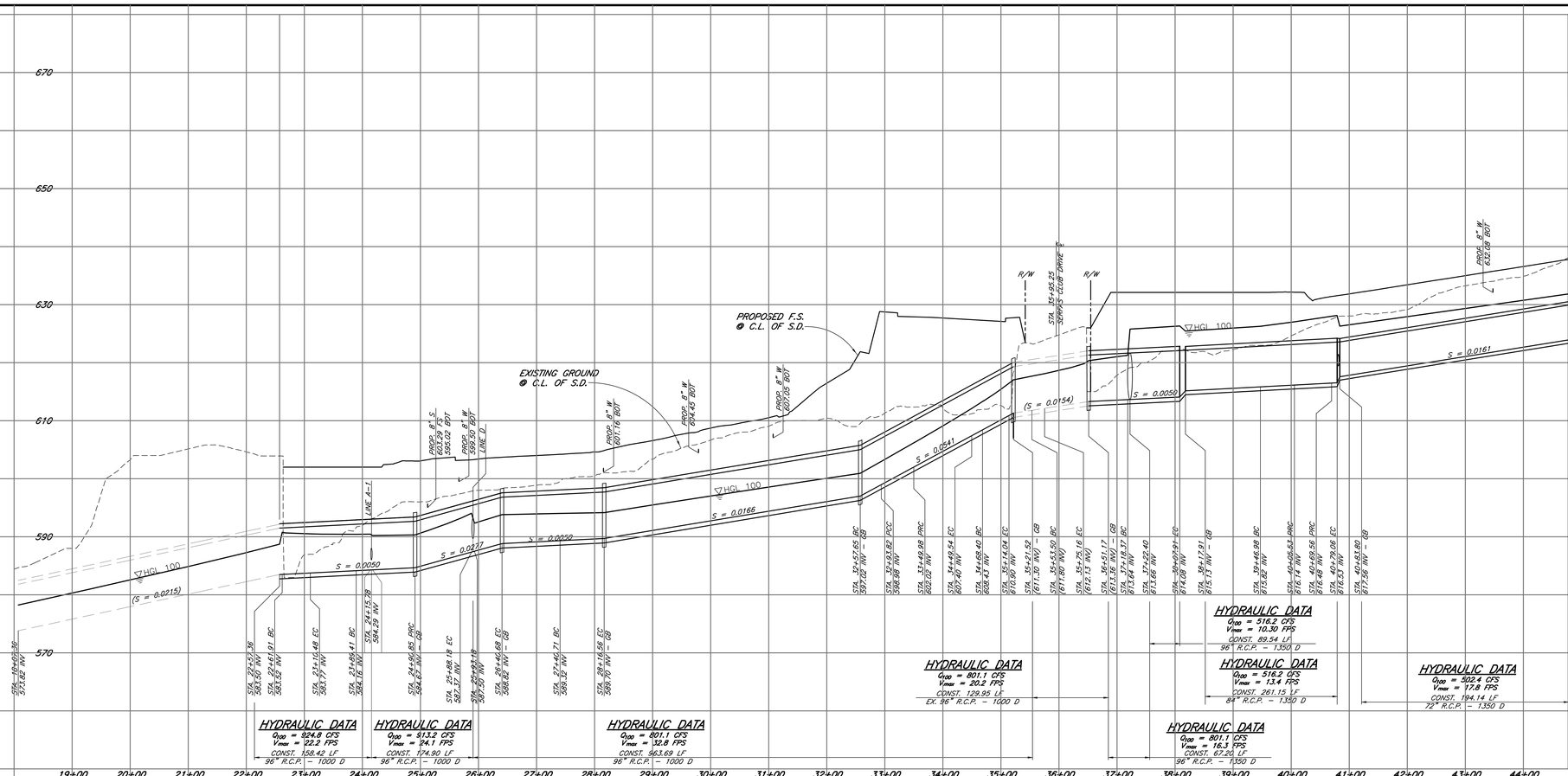
Designed by AC	Drawn by BG	Checked by DRL					BENCH MARK: CITY OF CORONA BM NO. C-83 ELEV. 650.606 IN THE S'LY COR. OF INTERSECTION OF PARKRIDGE RD. & MAPLE ST. A CHISELED SQ. ON TOP OF CURB AT B.C.R.	Engineering JM KE	Approved 10/21/83 By George Thacker R.C.E. No. 21267 Director of Utilities	Approved 10-21-83 By Joseph R. Palermo R.C.E. No. 25267 City Engineer	CITY OF CORONA
PLANS PREPARED UNDER SUPERVISION OF Don R. Lindgren							Scale NOT TO SCALE	Utilities S.A.W. / DAW			TRACT Nº 20137 IMPROVEMENT PLANS STORM DRAIN IMPROVEMENTS
Date 10-14-83 R.C.E. No. 20953	Reference Plans for these Improvements		Date	By	REVISIONS	App'd		Fire			Drawing No. 85-14 B Sh 6 of 6

RUNNING 44-122

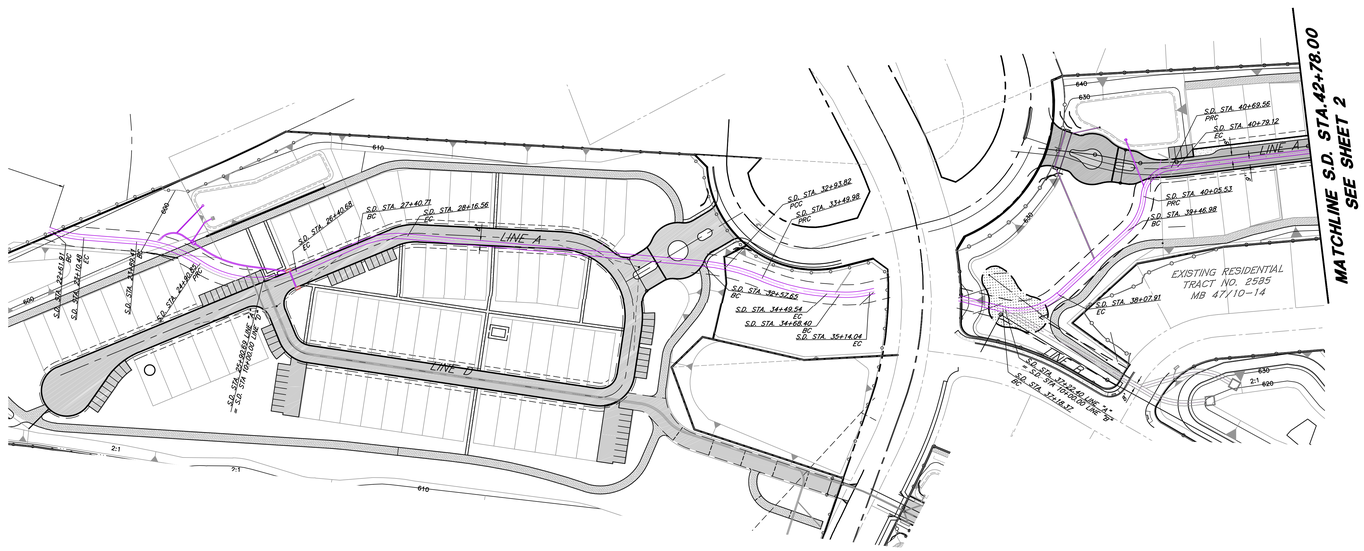
Appendix

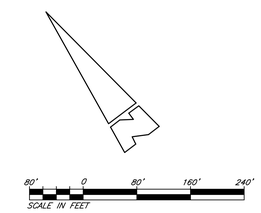
I

STORM DRAIN IMPROVEMENT PLANS



CAUTION
PROFILE SCALE
HORIZ. 1" = 80'
DBL. VERT 1" = 8'





COUNTRY CLUB CREEK STORM DRAIN EXHIBIT

LINE A

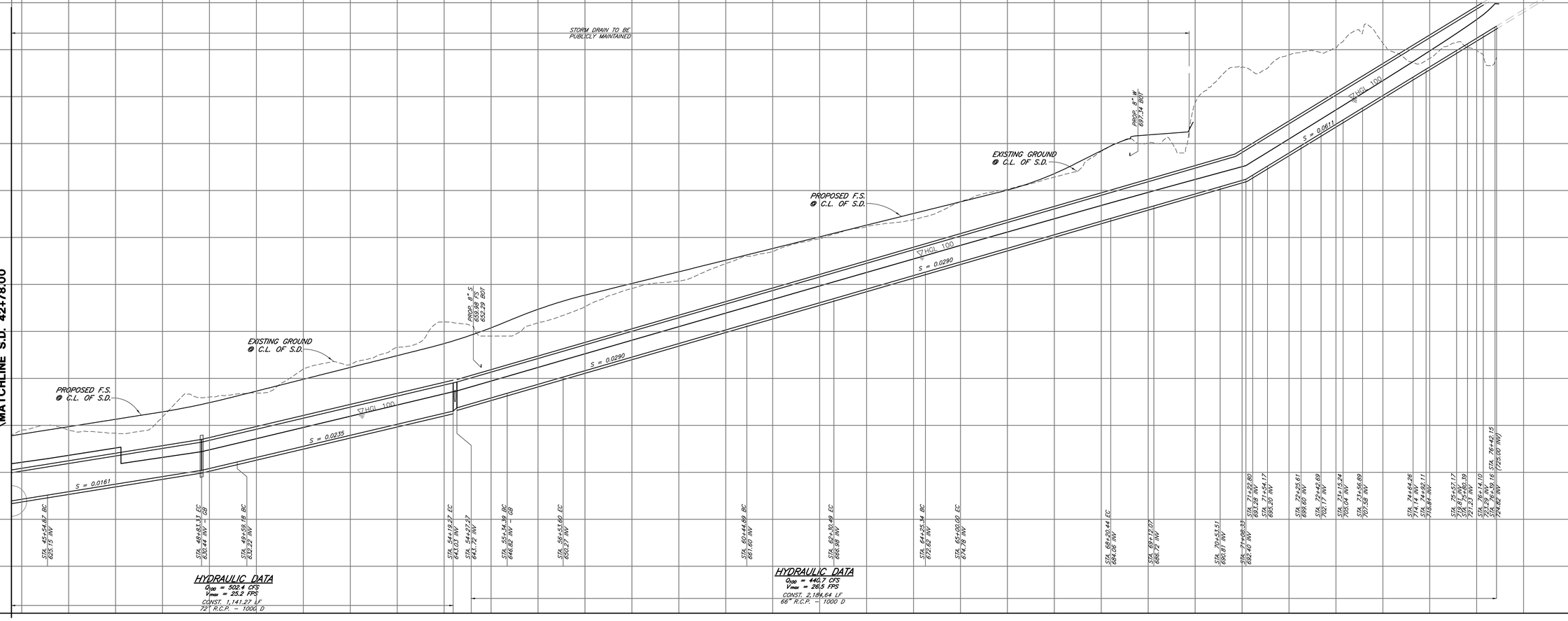
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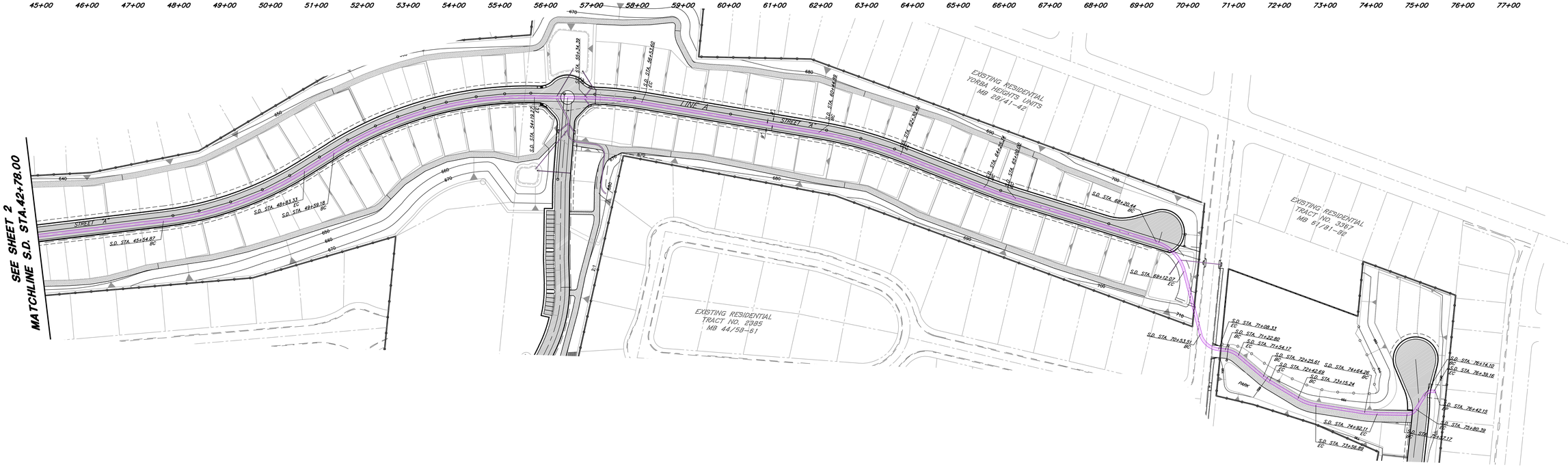
THE TRAILS AT CORONA

COUNTY RIVERSIDE

HYD: CRA	KWC ENGINEERS	SHEET 1 OF 5
DRAFT: CRA	CIVIL ENGINEERING, PLANNING AND CONSTRUCTION MANAGEMENT 1880 COMPTON AVENUE, SUITE 100 ● CORONA, CA. 92881–3370 ● 909–734–2130	
CHECK: MCT		

K:\25_251\11\WRLM\LDP\WRLM HYDRAULICS\251 SD Exhibit.dwg (6/3/2024 4:20 PM) Plotted by: Jeeseo Park





COUNTRY CLUB CREEK STORM DRAIN EXHIBIT

LINE A

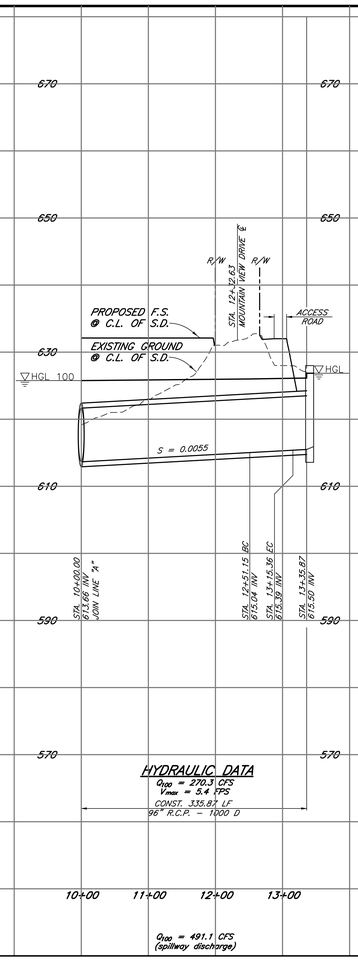
FOR

THE TRAILS AT CORONA

COUNTY RIVERSIDE

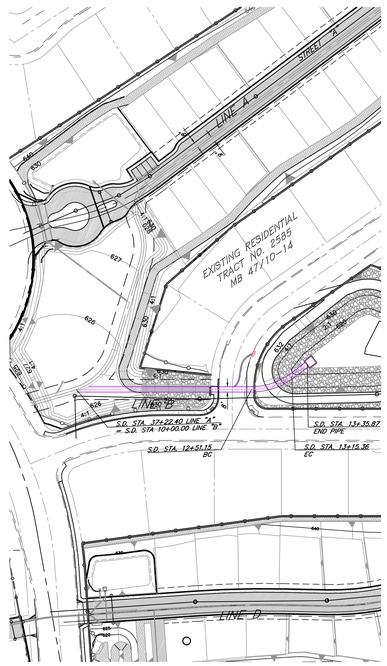
HYD: CRA	KWC ENGINEERS	SHEET 2 OF 5
DRAFT: CRA	CIVIL ENGINEERING, PLANNING AND CONSTRUCTION MANAGEMENT	
CHECK: MCT	1880 COMPTON AVENUE, SUITE 100 ● CORONA, CA. 92881-3370 ● 909-734-2130	

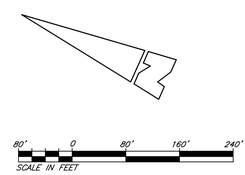
R:\15\1511\PRELIM\EXH\PRELIM HYDRAULICS\1511 3D Exhibit.dwg (10/7/2024 4:44 PM) Plotted by: Calvin Sy



CAUTION

PROFILE SCALE
HORIZ. 1" = 80'
DBL. VERT 1" = 8'





COUNTRY CLUB CREEK
STORM DRAIN EXHIBIT

LINE B

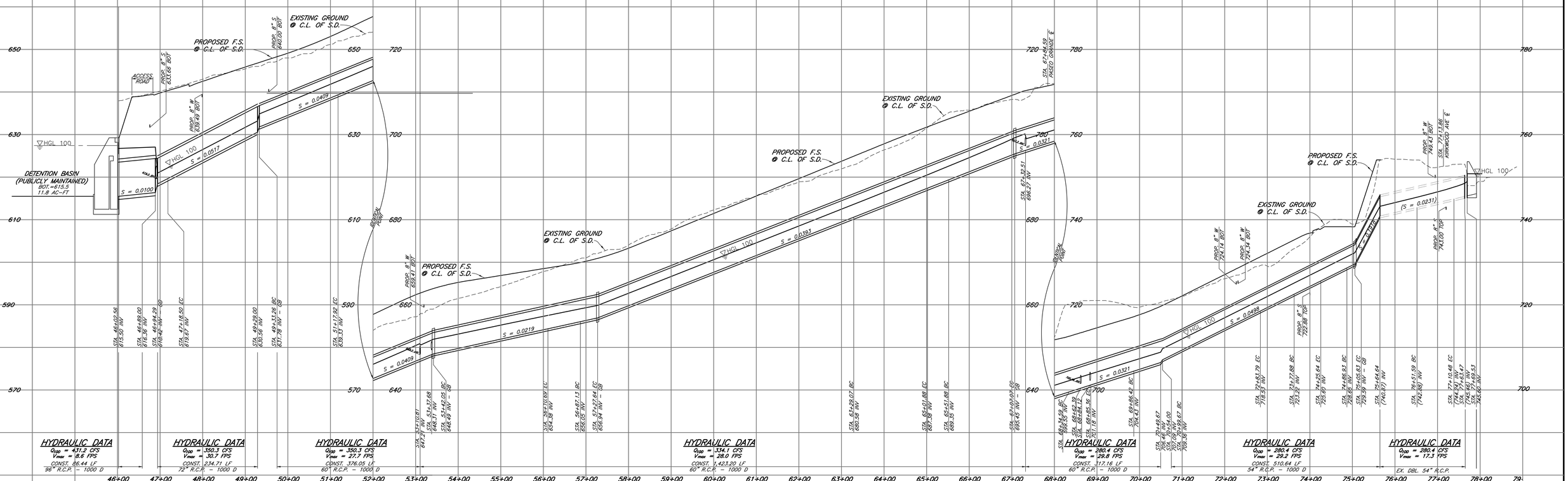
FOR

THE TRAILS AT CORONA

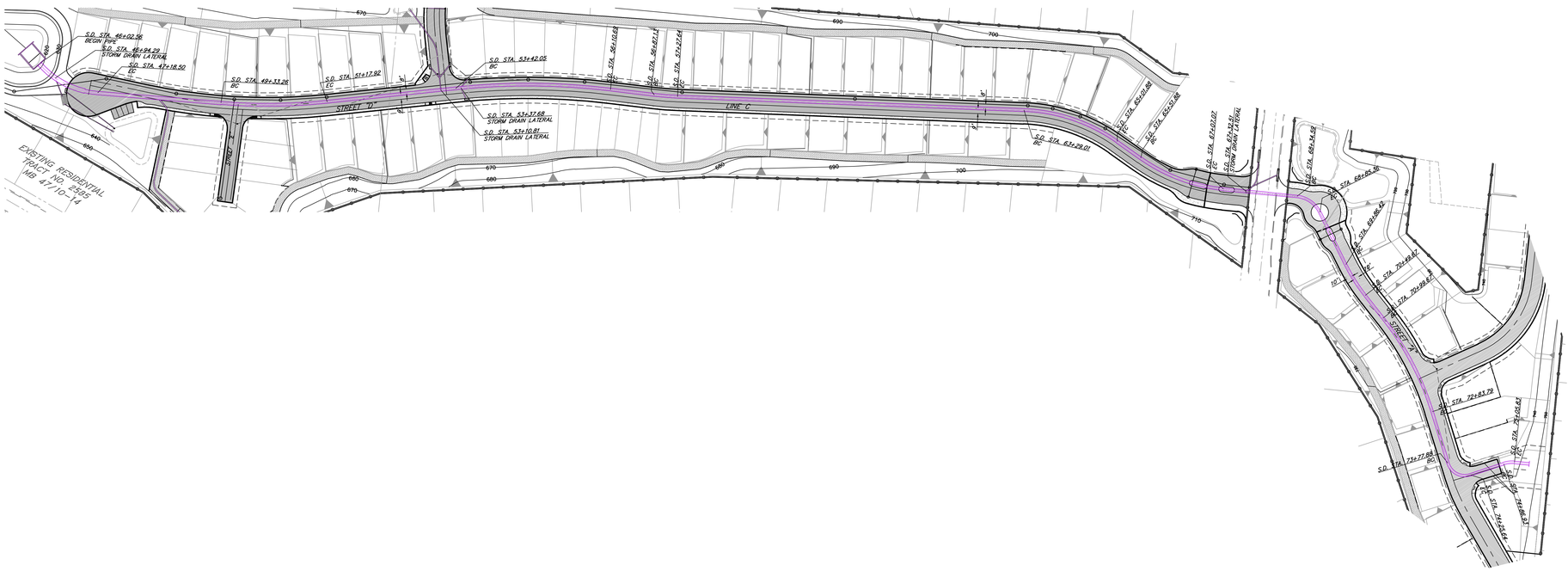
COUNTY RIVERSIDE

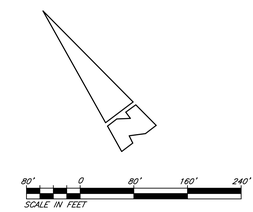
HYD: CRA	KWC ENGINEERS	SHEET 3 OF 5
DRAFT: CRA	CIVIL ENGINEERING, PLANNING, AND CONSTRUCTION MANAGEMENT 1880 COMPTON AVENUE, SUITE 100 ● CORONA, CA. 92881-3370 ● 909-734-2130	
CHECK: MCT		

K:\CIV\2311\WRKLM\CAD\WRKLM HYDRAULICS\2311 SD Exhibit.dwg (10/4/2024 4:40 PM) Plotted by: Braden Price



CAUTION
PROFILE SCALE
HORIZ. 1" = 80'
DBL. VERT 1" = 8'





COUNTRY CLUB CREEK STORM DRAIN EXHIBIT

LINE C

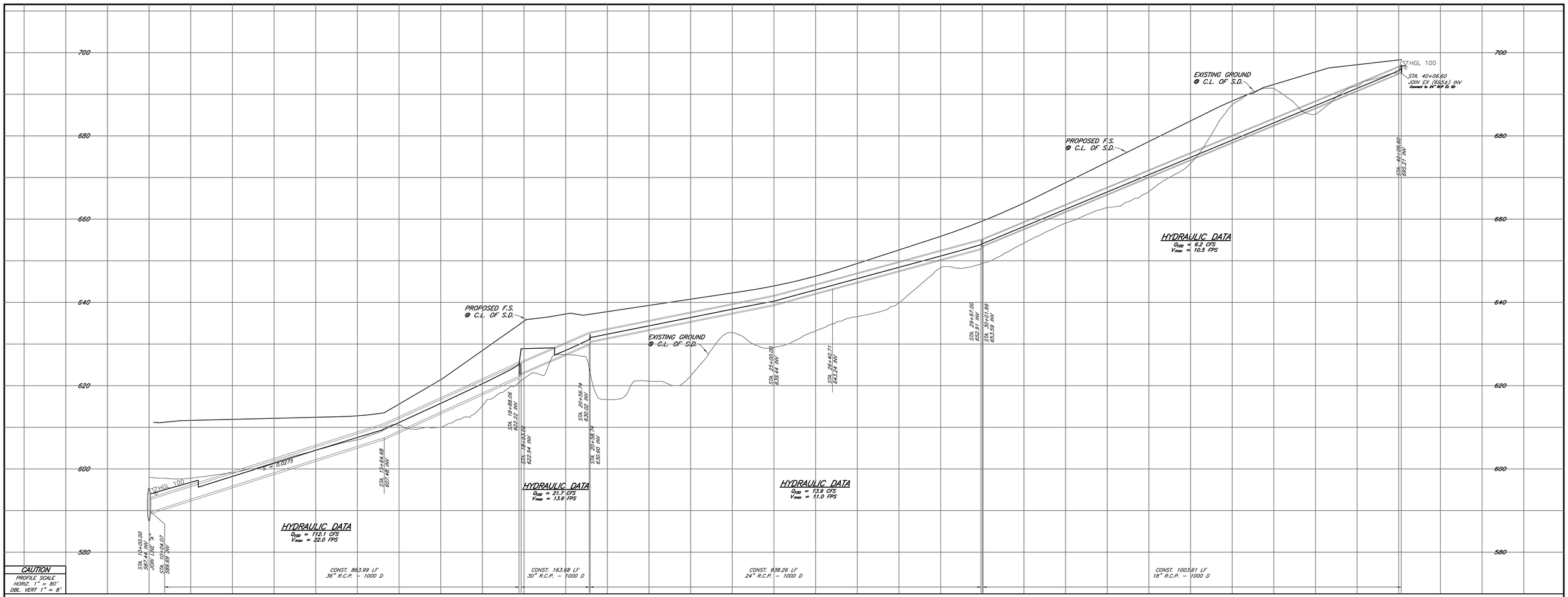
FOR

THE TRAILS AT CORONA

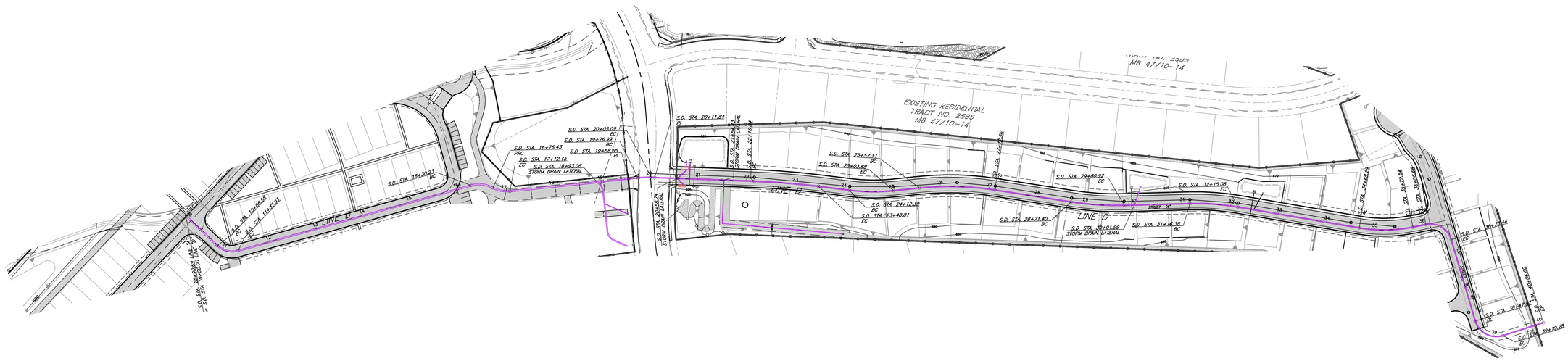
COUNTY RIVERSIDE

HYD: CRA	KWC ENGINEERS	SHEET 4 OF 5
DRAFT: CRA	CIVIL ENGINEERING, PLANNING, AND CONSTRUCTION MANAGEMENT 1880 COMPTON AVENUE, SUITE 100 ★ CORONA, CA. 92881-3370 ★ 909-734-2130	
CHECK: MCT		

K:\25\251\WRELM\DWG\WRELM HYDRAULICS\251 SD Exhibit.dwg (6/3/2024 4:21 PM) Plotted by: Jeeseo Park



CAUTION
PROFILE SCALE
HORIZ. 1" = 80'
DBL. VERT 1" = 8'



80' 0 80' 160' 240'
SCALE IN FEET

COUNTRY CLUB CREEK
STORM DRAIN EXHIBIT
LINE D
FOR
THE TRAILS AT CORONA
COUNTY RIVERSIDE

HYD: CRA	KWC ENGINEERS
DRAFT: CRA	CIVIL ENGINEERING, PLANNING AND CONSTRUCTION MANAGEMENT
CHECK: MCT	1880 COMPTON AVENUE, SUITE 100 ● CORONA, CA. 92881–3370 ● 909–734–2130

SHEET 5 OF 5

R:\25151\Exhibits\25151 SD Exhibit.dwg (10/4/2024 4:40 PM) Plotted by: Braden Price

Appendix

J

WSPG INPUT/OUTPUT FILES

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date:10- 1-2024 Time: 4:11:42

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
105.000	553.280	10.720	564.000	987.80	12.58	2.46	566.46	.00	7.57	.00	10.000	.000	.00	1 .0
33.150	.0066					.0036	.12	.00	.00	6.36	.013	.00	.00	PIPE
138.150	553.500	10.803	564.303	987.80	12.58	2.46	566.76	.00	7.57	.00	10.000	.000	.00	1 .0
275.231	.0065					.0036	.98	10.80	.00	6.41	.013	.00	.00	PIPE
413.381	555.285	10.000	565.285	987.80	12.58	2.46	567.74	.00	7.57	.00	10.000	.000	.00	1 .0
.839	.0065					.0035	.00	10.00	.00	6.41	.013	.00	.00	PIPE
414.220	555.290	9.997	565.287	987.80	12.58	2.46	567.74	10.00	7.57	.37	10.000	.000	.00	1 .0
16.381	.0068					.0034	.06	10.00	.15	6.32	.013	.00	.00	PIPE
430.601	555.401	9.937	565.338	987.80	12.59	2.46	567.80	.05	7.57	1.58	10.000	.000	.00	1 .0
HYDRAULIC JUMP														
430.601	555.401	5.641	561.041	987.80	21.63	7.27	568.31	.96	7.57	9.92	10.000	.000	.00	1 .0
22.099	.0068					.0097	.21	6.60	1.78	6.32	.013	.00	.00	PIPE
452.700	555.550	5.615	561.165	987.80	21.76	7.35	568.52	.00	7.57	9.92	10.000	.000	.00	1 .0
JUNCT STR	.0059					.0098	.10	6.76	1.79		.013	.00	.00	PIPE
462.860	555.610	7.001	562.611	952.80	20.43	6.48	569.09	.54	7.44	5.29	8.000	.000	.00	1 .0
57.670	.0101					.0099	.57	7.54	1.21	6.90	.013	.00	.00	PIPE
520.530	556.190	7.026	563.216	952.80	20.37	6.44	569.66	.00	7.44	5.23	8.000	.000	.00	1 .0
222.300	.0100					.0097	2.16	7.03	1.20	6.94	.013	.00	.00	PIPE

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
742.830	558.410	7.184	565.594	952.80	20.03	6.23	571.82	.00	7.44	4.84	8.000	.000	.00	1 .0
60.470	.0101					.0095	.58	7.18	1.13	6.89	.013	.00	.00	PIPE
803.300	559.020	7.435	566.455	952.80	19.57	5.94	572.40	8.00	7.44	4.10	8.000	.000	.00	1 .0
JUNCT STR	.0050					.0099	.02	8.00	1.00		.013	.00	.00	PIPE
805.300	559.030	8.439	567.469	924.80	18.40	5.26	572.72	.00	7.38	.00	8.000	.000	.00	1 .0
94.610	.0100					.0103	.97	.00	.00	6.65	.013	.00	.00	PIPE
899.910	559.980	9.277	569.257	924.80	18.40	5.26	574.51	.00	7.38	.00	8.000	.000	.00	1 .0
4.660	.0107					.0103	.05	9.28	.00	6.41	.013	.00	.00	PIPE
904.570	560.030	9.275	569.305	924.80	18.40	5.26	574.56	.00	7.38	.00	8.000	.000	.00	1 .0
353.100	.0100					.0103	3.63	9.28	.00	6.66	.013	.00	.00	PIPE
1257.670	563.560	9.375	572.935	924.80	18.40	5.26	578.19	.00	7.38	.00	8.000	.000	.00	1 .0
4.660	.0107					.0103	.05	9.38	.00	6.41	.013	.00	.00	PIPE
1262.330	563.610	9.373	572.983	924.80	18.40	5.26	578.24	.00	7.38	.00	8.000	.000	.00	1 .0
60.015	.0100					.0103	.62	9.37	.00	6.66	.013	.00	.00	PIPE
1322.345	564.211	9.389	573.600	924.80	18.40	5.26	578.86	.00	7.38	.00	8.000	.000	.00	1 .0
HYDRAULIC JUMP														
1322.345	564.211	5.603	569.814	924.80	24.59	9.39	579.21	.00	7.38	7.33	8.000	.000	.00	1 .0
100.425	.0100					.0153	1.54	5.60	1.91	6.66	.013	.00	.00	PIPE

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1422.770	565.216	5.427	570.644	924.80	25.47	10.08	580.72	.00	7.38	7.47	8.000	.000	.00	1 .0
113.200	.0100					.0169	1.92	5.43	2.04	6.66	.013	.00	.00	PIPE
1535.970	566.350	5.204	571.554	924.80	26.72	11.08	582.64	.00	7.38	7.63	8.000	.000	.00	1 .0
78.830	.0099					.0188	1.48	5.20	2.21	6.71	.013	.00	.00	PIPE
1614.800	567.130	5.036	572.166	924.80	27.75	11.96	584.12	.00	7.38	7.73	8.000	.000	.00	1 .0
4.660	.0107					.0198	.09	5.04	2.35	6.41	.013	.00	.00	PIPE
1619.460	567.180	5.027	572.207	924.80	27.81	12.01	584.21	.00	7.38	7.73	8.000	.000	.00	1 .0
46.568	.0100					.0204	.95	5.03	2.36	6.65	.013	.00	.00	PIPE
1666.028	567.647	4.926	572.573	924.80	28.48	12.59	585.17	.00	7.38	7.78	8.000	.000	.00	1 .0
86.042	.0100					.0224	1.93	4.93	2.46	6.65	.013	.00	.00	PIPE
1752.070	568.510	4.733	573.243	924.80	29.87	13.85	587.10	8.00	7.38	7.86	8.000	.000	.00	1 .0
39.810	.0098					.0245	.98	8.00	2.65	6.75	.013	.00	.00	PIPE
1791.880	568.900	4.640	573.540	924.80	30.59	14.53	588.07	.00	7.38	7.90	8.000	.000	.00	1 .0
TRANS STR	.3178					.0223	.35	4.64	2.76		.013	.00	.00	PIPE
1807.360	573.820	4.432	578.252	924.80	26.08	10.57	588.82	.00	7.46	8.00	8.000	8.000	.00	0 .0
126.910	.0215					.0188	2.39	4.43	2.18	4.26	.013	.00	.00	BOX
1934.270	576.550	4.526	581.076	924.80	25.54	10.13	591.20	.00	7.46	8.00	8.000	8.000	.00	0 .0
162.986	.0215					.0172	2.81	4.53	2.12	4.26	.013	.00	.00	BOX

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date:10- 1-2024 Time: 4:11:42

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2097.256	580.056	4.747	584.803	924.80	24.35	9.21	594.01	.00	7.46	8.00	8.000	8.000	.00	0 .0
95.970	.0215				.0152	1.46	4.75	1.97	4.26	.013	.00	.00		BOX
2193.226	582.120	4.979	587.099	924.80	23.22	8.37	595.47	.00	7.46	8.00	8.000	8.000	.00	0 .0
64.134	.0215				.0134	.86	4.98	1.83	4.26	.013	.00	.00		BOX
2257.360	583.500	5.222	588.722	924.80	22.14	7.61	596.33	.00	7.46	8.00	8.000	8.000	.00	0 .0
TRANS STR	.0044				.0108	.05	5.22	1.71		.013	.00	.00		BOX
2261.910	583.520	7.245	590.765	924.80	19.32	5.80	596.56	.12	7.38	4.68	8.000	.000	.00	1 .0
5.335	.0051				.0091	.05	7.36	1.06	8.00	.013	.00	.00		PIPE
2267.245	583.547	7.134	590.682	924.80	19.54	5.93	596.61	.13	7.38	4.97	8.000	.000	.00	1 .0
43.235	.0051				.0095	.41	7.26	1.12	8.00	.013	.00	.00		PIPE
2310.480	583.770	6.729	590.499	924.80	20.49	6.52	597.02	.00	7.38	5.85	8.000	.000	.00	1 .0
18.254	.0049				.0100	.18	6.73	1.30	8.00	.013	.00	.00		PIPE
2328.734	583.860	6.608	590.468	924.80	20.83	6.73	597.20	.00	7.38	6.07	8.000	.000	.00	1 .0
60.676	.0049				.0107	.65	6.61	1.36	8.00	.013	.00	.00		PIPE
2389.410	584.160	6.281	590.441	924.80	21.84	7.41	597.85	.00	7.38	6.57	8.000	.000	.00	1 .0
24.370	.0049				.0114	.28	6.28	1.52	8.00	.013	.00	.00		PIPE
2413.780	584.280	6.168	590.448	924.80	22.24	7.68	598.13	.00	7.38	6.72	8.000	.000	.00	1 .0
JUNCT STR	.0050				.0120	.05	6.17	1.58		.013	.00	.00		PIPE

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date:10- 1-2024 Time: 4:11:42

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2417.780	584.300	5.926	590.226	913.20	22.88	8.13	598.35	.00	7.35	7.01	8.000	.000	.00	1 .0
52.540	.0051					.0130	.68	5.93	1.69	8.00	.013	.00	.00	PIPE
2470.320	584.570	5.726	590.296	913.20	23.72	8.74	599.03	1.56	7.35	7.22	8.000	.000	.00	1 .0
20.530	.0049					.0137	.28	7.28	1.81	8.00	.013	.00	.00	PIPE
2490.850	584.670	5.649	590.319	913.20	24.07	9.00	599.32	.00	7.35	7.29	8.000	.000	.00	1 .0
22.155	.0277					.0136	.30	5.65	1.86	4.47	.013	.00	.00	PIPE
2513.005	585.285	5.785	591.070	913.20	23.46	8.55	599.62	.00	7.35	7.16	8.000	.000	.00	1 .0
33.155	.0277					.0125	.41	5.79	1.77	4.47	.013	.00	.00	PIPE
2546.160	586.204	6.056	592.261	913.20	22.37	7.77	600.03	.00	7.35	6.86	8.000	.000	.00	1 .0
24.669	.0277					.0112	.28	6.06	1.62	4.47	.013	.00	.00	PIPE
2570.829	586.889	6.355	593.244	913.20	21.33	7.06	600.31	.00	7.35	6.47	8.000	.000	.00	1 .0
17.351	.0277					.0102	.18	6.36	1.46	4.47	.013	.00	.00	PIPE
2588.180	587.370	6.692	594.062	913.20	20.33	6.42	600.48	.00	7.35	5.92	8.000	.000	.00	1 .0
JUNCT STR	.0260					.0132	.07	8.00	1.30		.013	.00	.00	PIPE
2593.180	587.500	4.843	592.343	801.10	25.17	9.84	602.18	8.00	7.05	7.82	8.000	.000	.00	1 .0
47.500	.0278					.0159	.75	8.00	2.20	4.13	.013	.00	.00	PIPE
2640.680	588.820	5.002	593.822	801.10	24.23	9.12	602.94	.00	7.05	7.74	8.000	.000	.00	1 .0
36.911	.0050					.0156	.58	5.00	2.07	8.00	.013	.00	.00	PIPE

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2677.591	589.005	4.889	593.893	801.10	24.89	9.62	603.51	.00	7.05	7.80	8.000	.000	.00	1 .0
63.119	.0050					.0172	1.09	4.89	2.16	8.00	.013	.00	.00	PIPE
2740.710	589.320	4.698	594.018	801.10	26.11	10.58	604.60	.56	7.05	7.88	8.000	.000	.00	1 .0
15.758	.0050					.0186	.29	5.25	2.33	8.00	.013	.00	.00	PIPE
2756.468	589.399	4.650	594.049	801.10	26.43	10.84	604.89	.57	7.05	7.89	8.000	.000	.00	1 .0
60.092	.0050					.0201	1.21	5.22	2.38	8.00	.013	.00	.00	PIPE
2816.560	589.700	4.472	594.172	801.10	27.72	11.93	606.10	.00	7.05	7.94	8.000	.000	.00	1 .0
94.613	.0166					.0220	2.09	4.47	2.56	4.85	.013	.00	.00	PIPE
2911.173	591.270	4.383	595.654	801.10	28.41	12.53	608.19	.00	7.05	7.96	8.000	.000	.00	1 .0
141.615	.0166					.0243	3.44	4.38	2.66	4.85	.013	.00	.00	PIPE
3052.788	593.620	4.219	597.839	801.10	29.80	13.79	611.63	.00	7.05	7.99	8.000	.000	.00	1 .0
111.643	.0166					.0275	3.08	4.22	2.86	4.85	.013	.00	.00	PIPE
3164.431	595.473	4.062	599.535	801.10	31.25	15.17	614.70	.00	7.05	8.00	8.000	.000	.00	1 .0
93.219	.0166					.0313	2.91	4.06	3.08	4.85	.013	.00	.00	PIPE
3257.650	597.020	3.913	600.933	801.10	32.78	16.68	617.62	.89	7.05	8.00	8.000	.000	.00	1 .0
36.170	.0542					.0321	1.16	4.80	3.30	3.41	.013	.00	.00	PIPE
3293.820	598.980	3.997	602.977	801.10	31.90	15.80	618.78	.84	7.05	8.00	8.000	.000	.00	1 .0
6.285	.0541					.0307	.19	4.84	3.17	3.41	.013	.00	.00	PIPE

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
3300.105	599.320	4.013	603.333	801.10	31.74	15.65	618.98	.83	7.05	8.00	8.000	.000	.00	1 .0
49.875	.0541					.0287	1.43	4.85	3.15	3.41	.013	.00	.00	PIPE
3349.980	602.020	4.167	606.187	801.10	30.27	14.22	620.41	.76	7.05	7.99	8.000	.000	.00	1 .0
4.811	.0540					.0267	.13	4.93	2.93	3.41	.013	.00	.00	PIPE
3354.791	602.280	4.184	606.464	801.10	30.11	14.08	620.54	.75	7.05	7.99	8.000	.000	.00	1 .0
38.411	.0540					.0250	.96	4.93	2.91	3.41	.013	.00	.00	PIPE
3393.201	604.356	4.347	608.703	801.10	28.71	12.80	621.50	.68	7.05	7.97	8.000	.000	.00	1 .0
30.986	.0540					.0220	.68	5.03	2.70	3.41	.013	.00	.00	PIPE
3424.187	606.030	4.518	610.548	801.10	27.37	11.63	622.18	.62	7.05	7.93	8.000	.000	.00	1 .0
25.353	.0540					.0195	.49	5.13	2.51	3.41	.013	.00	.00	PIPE
3449.540	607.400	4.699	612.099	801.10	26.10	10.58	622.68	.00	7.05	7.88	8.000	.000	.00	1 .0
18.860	.0546					.0173	.33	4.70	2.33	3.40	.013	.00	.00	PIPE
3468.400	608.430	4.872	613.302	801.10	24.99	9.70	623.00	1.01	7.05	7.81	8.000	.000	.00	1 .0
3.028	.0541					.0162	.05	5.88	2.17	3.41	.013	.00	.00	PIPE
3471.428	608.594	4.903	613.497	801.10	24.80	9.55	623.05	.99	7.05	7.79	8.000	.000	.00	1 .0
17.045	.0541					.0151	.26	5.90	2.15	3.41	.013	.00	.00	PIPE
3488.473	609.516	5.107	614.623	801.10	23.65	8.68	623.31	.89	7.05	7.69	8.000	.000	.00	1 .0
14.064	.0541					.0134	.19	6.00	1.99	3.41	.013	.00	.00	PIPE

Program Package Serial Number: 1873

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OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
3502.537	610.277	5.324	615.601	801.10	22.55	7.90	623.50	.79	7.05	7.55	8.000	.000	.00	1 .0
11.503	.0541					.0119	.14	6.12	1.83	3.41	.013	.00	.00	PIPE
3514.040	610.900	5.556	616.456	801.10	21.50	7.18	623.63	.00	7.05	7.37	8.000	.000	.00	1 .0
7.480	.0535					.0108	.08	5.56	1.69	3.42	.013	.00	.00	PIPE
3521.520	611.300	5.749	617.049	801.10	20.72	6.67	623.71	.00	7.05	7.19	8.000	.000	.00	1 .0
31.980	.0156					.0100	.32	5.75	1.58	4.94	.013	.00	.00	PIPE
3553.500	611.800	5.879	617.679	801.10	20.23	6.36	624.04	1.99	7.05	7.06	8.000	.000	.00	1 .0
21.660	.0152					.0095	.21	7.87	1.51	4.99	.013	.00	.00	PIPE
3575.160	612.130	5.983	618.113	801.10	19.87	6.13	624.24	.00	7.05	6.95	8.000	.000	.00	1 .0
8.287	.0154					.0093	.08	5.98	1.45	4.97	.013	.00	.00	PIPE
3583.447	612.258	6.030	618.287	801.10	19.71	6.03	624.32	.00	7.05	6.89	8.000	.000	.00	1 .0
37.868	.0154					.0087	.33	6.03	1.43	4.97	.013	.00	.00	PIPE
3621.314	612.840	6.325	619.166	801.10	18.79	5.48	624.65	.00	7.05	6.51	8.000	.000	.00	1 .0
22.104	.0154					.0079	.17	6.33	1.29	4.97	.013	.00	.00	PIPE
3643.418	613.181	6.658	619.839	801.10	17.92	4.99	624.82	.00	7.05	5.98	8.000	.000	.00	1 .0
7.752	.0154					.0072	.06	6.66	1.15	4.97	.013	.00	.00	PIPE
3651.170	613.300	7.049	620.349	801.10	17.08	4.53	624.88	.00	7.05	5.18	8.000	.000	.00	1 .0
57.046	.0051					.0068	.39	7.05	1.00	8.00	.013	.00	.00	PIPE

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
3708.216	613.589	7.560	621.149	801.10	16.29	4.12	625.27	.00	7.05	3.65	8.000	.000	.00	1 .0
10.155	.0051					.0067	.07	7.56	.78	8.00	.013	.00	.00	PIPE
3718.370	613.640	7.601	621.241	801.10	16.24	4.10	625.34	.00	7.05	3.48	8.000	.000	.00	1 .0
JUNCT STR	.0050					.0049	.02	7.93	.76		.013	.00	.00	PIPE
3722.400	613.660	12.114	625.774	516.20	10.27	1.64	627.41	.00	5.79	.00	8.000	.000	.00	1 .0
85.510	.0049					.0032	.27	.00	.00	5.45	.013	.00	.00	PIPE
3807.910	614.080	12.229	626.309	516.20	10.27	1.64	627.95	.00	5.79	.00	8.000	.000	.00	1 .0
TRANS STR	.1050					.0049	.05	12.23	.00		.013	.00	.00	PIPE
3817.910	615.130	10.302	625.432	516.20	13.41	2.79	628.23	.00	5.92	.00	7.000	.000	.00	1 .0
129.070	.0053					.0065	.84	10.30	.00	7.00	.013	.00	.00	PIPE
3946.980	615.820	10.455	626.275	516.20	13.41	2.79	629.07	.00	5.92	.00	7.000	.000	.00	1 .0
58.550	.0055					.0065	.38	.00	.00	7.00	.013	.00	.00	PIPE
4005.530	616.140	10.906	627.046	516.20	13.41	2.79	629.84	.00	5.92	.00	7.000	.000	.00	1 .0
64.030	.0053					.0065	.42	.00	.00	7.00	.013	.00	.00	PIPE
4069.560	616.480	11.516	627.996	516.20	13.41	2.79	630.79	.00	5.92	.00	7.000	.000	.00	1 .0
9.500	.0053					.0065	.06	.00	.00	7.00	.013	.00	.00	PIPE
4079.060	616.530	11.607	628.137	516.20	13.41	2.79	630.93	.00	5.92	.00	7.000	.000	.00	1 .0
JUNCT STR	.2173					.0103	.05	11.61	.00		.013	.00	.00	PIPE

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
4083.800	617.560	8.734	626.294	502.40	17.77	4.90	631.20	.00	5.68	.00	6.000	.000	.00	1 .0
471.070	.0161					.0141	6.63	8.73	.00	4.60	.013	.00	.00	PIPE
4554.870	625.150	7.774	632.924	502.40	17.77	4.90	637.83	.00	5.68	.00	6.000	.000	.00	1 .0
156.546	.0161					.0141	2.20	.00	.00	4.60	.013	.00	.00	PIPE
4711.416	627.671	7.702	635.373	502.40	17.77	4.90	640.28	.00	5.68	.00	6.000	.000	.00	1 .0
HYDRAULIC JUMP														
4711.416	627.671	4.196	631.867	502.40	23.79	8.79	640.65	.13	5.68	5.50	6.000	.000	.00	1 .0
48.204	.0161					.0204	.98	4.33	2.14	4.60	.013	.00	.00	PIPE
4759.620	628.448	4.151	632.599	502.40	24.07	9.00	641.60	.13	5.68	5.54	6.000	.000	.00	1 .0
123.710	.0161					.0220	2.72	4.28	2.19	4.60	.013	.00	.00	PIPE
4883.330	630.440	3.978	634.418	502.40	25.25	9.90	644.32	.00	5.68	5.67	6.000	.000	.00	1 .0
75.850	.0235					.0232	1.76	3.98	2.38	3.97	.013	.00	.00	PIPE
4959.180	632.220	3.982	636.202	502.40	25.22	9.88	646.08	.14	5.68	5.67	6.000	.000	.00	1 .0
460.090	.0235					.0219	10.09	4.12	2.37	3.96	.013	.00	.00	PIPE
5419.270	643.030	4.155	647.185	502.40	24.05	8.98	656.16	.00	5.68	5.54	6.000	.000	.00	1 .0
JUNCT STR	.0862					.0248	.20	4.16	2.18		.013	.00	.00	PIPE
5427.270	643.720	3.624	647.344	440.70	26.54	10.94	658.28	.00	5.28	5.21	5.500	.000	.00	1 .0
107.120	.0289					.0290	3.10	3.62	2.62	3.62	.013	.00	.00	PIPE

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
5534.390	646.820	3.623	650.443	440.70	26.55	10.94	661.39	.14	5.28	5.22	5.500	.000	.00	1 .0
119.210	.0289					.0290	3.46	3.77	2.62	3.62	.013	.00	.00	PIPE
5653.600	650.270	3.622	653.892	440.70	26.56	10.95	664.84	.00	5.28	5.22	5.500	.000	.00	1 .0
391.290	.0290					.0292	11.41	3.62	2.62	3.62	.013	.00	.00	PIPE
6044.890	661.600	3.608	665.208	440.70	26.67	11.05	676.26	.13	5.28	5.23	5.500	.000	.00	1 .0
185.600	.0290					.0295	5.48	3.74	2.64	3.62	.013	.00	.00	PIPE
6230.490	666.980	3.592	670.572	440.70	26.81	11.16	681.74	.00	5.28	5.24	5.500	.000	.00	1 .0
194.850	.0289					.0302	5.88	3.59	2.67	3.62	.013	.00	.00	PIPE
6425.340	672.620	3.553	676.173	440.70	27.15	11.44	687.62	.12	5.28	5.26	5.500	.000	.00	1 .0
74.660	.0289					.0309	2.31	3.67	2.72	3.63	.013	.00	.00	PIPE
6500.000	674.780	3.529	678.309	440.70	27.36	11.62	689.93	.00	5.28	5.27	5.500	.000	.00	1 .0
146.832	.0290					.0321	4.72	3.53	2.76	3.62	.013	.00	.00	PIPE
6646.832	679.032	3.462	682.494	440.70	27.98	12.16	694.65	.00	5.28	5.31	5.500	.000	.00	1 .0
173.608	.0290					.0352	6.11	3.46	2.86	3.62	.013	.00	.00	PIPE
6820.440	684.060	3.325	687.385	440.70	29.35	13.37	700.76	1.60	5.28	5.38	5.500	.000	.00	1 .0
91.630	.0290					.0392	3.59	4.92	3.10	3.62	.013	.00	.00	PIPE
6912.070	686.720	3.223	689.943	440.70	30.46	14.41	704.35	.00	5.28	5.42	5.500	.000	.00	1 .0
66.076	.0289					.0429	2.84	3.22	3.28	3.63	.013	.00	.00	PIPE

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
6978.146	688.631	3.134	691.764	440.70	31.52	15.43	707.19	.00	5.28	5.45	5.500	.000	.00	1 .0
75.364	.0289					.0478	3.60	3.13	3.47	3.63	.013	.00	.00	PIPE
7053.510	690.810	3.014	693.824	440.70	33.06	16.97	710.79	5.50	5.28	5.47	5.500	.000	.00	1 .0
54.820	.0290					.0537	2.94	5.50	3.73	3.62	.013	.00	.00	PIPE
7108.330	692.400	2.916	695.316	440.70	34.45	18.43	713.74	.00	5.28	5.49	5.500	.000	.00	1 .0
14.470	.0608					.0565	.82	2.92	3.98	2.85	.013	.00	.00	PIPE
7122.800	693.280	2.920	696.200	440.70	34.39	18.36	714.56	5.50	5.28	5.49	5.500	.000	.00	1 .0
31.370	.0612					.0560	1.76	5.50	3.97	2.85	.013	.00	.00	PIPE
7154.170	695.200	2.931	698.131	440.70	34.23	18.19	716.33	.00	5.28	5.49	5.500	.000	.00	1 .0
71.440	.0616					.0546	3.90	2.93	3.94	2.84	.013	.00	.00	PIPE
7225.610	699.600	2.966	702.566	440.70	33.72	17.66	720.22	1.79	5.28	5.48	5.500	.000	.00	1 .0
2.599	.1505					.0530	.14	4.76	3.85	2.20	.013	.00	.00	PIPE
7228.209	699.991	2.984	702.976	440.70	33.47	17.40	720.37	1.77	5.28	5.48	5.500	.000	.00	1 .0
14.481	.1505					.0494	.72	4.75	3.81	2.20	.013	.00	.00	PIPE
7242.690	702.170	3.102	705.272	440.70	31.91	15.81	721.09	.00	5.28	5.45	5.500	.000	.00	1 .0
72.550	.0396					.0475	3.45	3.10	3.53	3.26	.013	.00	.00	PIPE
7315.240	705.040	3.053	708.093	440.70	32.54	16.44	724.53	1.66	5.28	5.47	5.500	.000	.00	1 .0
41.650	.0610					.0476	1.98	4.72	3.64	2.85	.013	.00	.00	PIPE

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
7356.890	707.580	3.100	710.680	440.70	31.94	15.84	726.52	.00	5.28	5.46	5.500	.000	.00	1 .0
46.441	.0611					.0448	2.08	3.10	3.54	2.85	.013	.00	.00	PIPE
7403.331	710.417	3.169	713.586	440.70	31.10	15.02	728.60	.00	5.28	5.44	5.500	.000	.00	1 .0
60.929	.0611					.0408	2.49	3.17	3.39	2.85	.013	.00	.00	PIPE
7464.260	714.140	3.296	717.436	440.70	29.65	13.65	731.09	.51	5.28	5.39	5.500	.000	.00	1 .0
27.850	.0610					.0370	1.03	3.80	3.15	2.85	.013	.00	.00	PIPE
7492.110	715.840	3.375	719.215	440.70	28.83	12.91	732.12	.00	5.28	5.36	5.500	.000	.00	1 .0
35.089	.0610					.0338	1.19	3.37	3.01	2.85	.013	.00	.00	PIPE
7527.199	717.981	3.504	721.485	440.70	27.59	11.82	733.31	.00	5.28	5.29	5.500	.000	.00	1 .0
29.971	.0610					.0301	.90	3.50	2.80	2.85	.013	.00	.00	PIPE
7557.170	719.810	3.652	723.462	440.70	26.31	10.75	734.21	5.50	5.28	5.20	5.500	.000	.00	1 .0
23.220	.0612					.0268	.62	5.50	2.58	2.85	.013	.00	.00	PIPE
7580.390	721.230	3.806	725.036	440.70	25.12	9.80	734.84	.00	5.28	5.08	5.500	.000	.00	1 .0
17.669	.0611					.0241	.43	3.81	2.38	2.85	.013	.00	.00	PIPE
7598.059	722.310	3.960	726.270	440.70	24.06	8.99	735.26	.00	5.28	4.94	5.500	.000	.00	1 .0
16.041	.0611					.0217	.35	3.96	2.20	2.85	.013	.00	.00	PIPE
7614.100	723.290	4.145	727.435	440.70	22.94	8.17	735.61	5.50	5.28	4.74	5.500	.000	.00	1 .0
8.458	.0682					.0197	.17	5.50	2.01	2.76	.013	.00	.00	PIPE

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
7622.558	723.867	4.294	728.161	440.70	22.14	7.61	735.78	5.50	5.28	4.55	5.500	.000	.00	1 .0
9.387	.0682					.0181	.17	5.50	1.87	2.76	.013	.00	.00	PIPE
7631.945	724.508	4.515	729.023	440.70	21.11	6.92	735.95	5.50	5.28	4.22	5.500	.000	.00	1 .0
7.215	.0682					.0165	.12	5.50	1.67	2.76	.013	.00	.00	PIPE
7639.160	725.000	4.771	729.771	440.70	20.13	6.29	736.06	.00	5.28	3.73	5.500	.000	.00	1 .0
TRANS STR	.0625					.0154	.12	4.77	1.46		.013	.00	.00	PIPE
7647.160	725.500	5.284	730.784	440.70	18.80	5.49	736.27	.00	5.28	2.14	5.500	.000	.00	1 .0
7647.160	725.500	4.237	729.737	440.70	31.07	14.99	744.73	.00	4.24	.47	4.250	.000	.00	1 .0
HYDRAULIC JUMP														
7647.160	725.500	4.237	729.737	440.70	31.07	14.99	744.73	.00	4.24	.47	4.250	.000	.00	1 .0

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T1 JN 15.1511.8.12 THE TRAILS                                                  0
T2 OXBOW PARTNERS - RIVERSIDE COUNTY
T3 STORM DRAIN LINE A (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/09/24
SO    105.0000553.280  1                          564.000
R     138.1500553.500  1      .013                          -12.660    .000 0
R     414.2200555.290  1      .013                            0.000    .000 0
R     452.7000555.550  1      .013                           14.700    .000 0
JX    462.8600555.610  3  2   .013   35.000          556.600     -60.0       0.000
R     520.5300556.190  3      .013                           25.910    .000 0
R     742.8300558.410  3      .013                            0.000    .000 0
R     803.3000559.020  3      .013                            0.000    .000 0
JX    805.3000559.030  3  8   .013   28.000          562.690      80.0     -35.790
R     899.9100559.980  3      .013                          -54.210    .000 0
R     904.5700560.030  3      .013                            0.000    .000 0
R    1257.6700563.560  3      .013                            0.000    .000 0
R    1262.3300563.610  3      .013                            0.000    .000 0
R    1535.9700566.350  3      .013                            0.000    .000 0
R    1614.8000567.130  3      .013                            0.000    .000 0
R    1619.4600567.180  3      .013                            0.000    .000 0
R    1752.0700568.510  3      .013                            0.000    .000 0
R    1791.8800568.900  3      .013                           50.680    .000 0
TS   1807.3600573.820  6      .013                            0.000
R    2257.3600583.500  6      .013                            0.000    .000 0
TS   2261.9100583.520  3      .013                            0.000
R    2310.4800583.770  3      .013                          -12.169    .000 0
R    2389.4100584.160  3      .013                            0.000    .000 0
R    2413.7800584.280  3      .013                            0.000    .000 0
JX   2417.7800584.300  3  8   .013   11.600          586.010      45.0       0.000
R    2470.3200584.570  3      .013                            0.000    .000 0
R    2490.8500584.670  3      .013                           29.062    .000 0
R    2588.1800587.370  3      .013                            0.000    .000 0
JX   2593.1800587.500  3  5   .013  112.100          589.690      70.0       0.000
R    2640.6800588.820  3      .013                          -57.228    .000 0
R    2740.7100589.320  3      .013                            0.000    .000 0
R    2816.5600589.700  3      .013                           28.973    .000 0
R    3257.6500597.020  3      .013                            0.000    .000 0
R    3293.8200598.980  3      .013                            6.908    .000 0
R    3349.9800602.020  3      .013                           10.725    .000 0
R    3449.5400607.400  3      .013                          -19.014    .000 0
R    3468.4000608.430  3      .013                            0.000    .000 0
R    3514.0400610.900  3      .013                          -17.430    .000 0
R    3521.5200611.300  3      .013                            0.000    .000 0
R    3553.5000611.800  3      .013                            0.000    .000 0
R    3575.1600612.130  3      .013                           27.571    .000 0
R    3651.1700613.300  3      .013                            0.000    .000 0
R    3718.3700613.640  3      .013                            0.000    .000 0
JX   3722.4000613.660  3  3   .013  284.900          613.660      73.0       0.000
R    3807.9100614.080  3      .013                          -57.000    .000 0
TS   3817.9100615.130 12      .013                            0.000    .000 0
R    3946.9800615.820 12      .013                            0.000    .000 0
R    4005.5300616.140 12      .013                          -43.565    .000 0
R    4069.5600616.480 12      .013                           81.522    .000 0
R    4079.0600616.530 12      .013                           -1.826
JX   4083.8000617.560 14  8   .013   13.800          621.000      60.0       0.000
R    4554.8700625.150 14      .013                            0.000    .000 0
R    4883.3300630.440 14      .013                          -25.093    .000 0
R    4959.1800632.220 14      .013                            0.000    .000 0
R    5419.2700643.030 14      .013                           32.951    .000 0
JX   5427.2700643.720 16 15   .013   61.700          645.000      60.0       0.000
R    5534.3900646.820 16      .013                            0.000    .000 0
R    5653.6000650.270 16      .013                            8.537    .000 0
R    6044.8900661.600 16      .013                            0.000    .000 0
R    6230.4900666.980 16      .013                           11.816    .000 0
R    6425.3400672.620 16      .013                            0.000    .000 0
R    6500.0000674.780 16      .013                           -4.278    .000 0
R    6820.4400684.060 16      .013                            0.000    .000 0
R    6912.0700686.720 16      .013                           58.334    .000 0
R    7053.5100690.810 16      .013                            0.000    .000 0
R    7108.3300692.400 16      .013                          -69.803    .000 0
R    7122.8000693.280 16      .013                            0.000    .000 0
R    7154.1700695.200 16      .013                           34.561    .000 0
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R    7225.6100699.600 16      .013                                  0.000    .000 0
R    7242.6900702.170 16      .013                                 -9.062    .000 0
R    7315.2400705.040 16      .013                                  0.000    .000 0
R    7356.8900707.580 16      .013                                -22.097    .000 0
R    7464.2600714.140 16      .013                                  0.000    .000 0
R    7492.1100715.840 16      .013                                 -5.496    .000 0
R    7557.1700719.810 16      .013                                  0.000    .000 0
R    7580.3900721.230 16      .013                                -59.128    .000 0
R    7614.1000723.290 16      .013                                  0.000    .000 0
R    7639.1600725.000 16      .013                                 63.811    .000 0
TS   7647.1600725.500 16      .013                                    0.0         0.000
R    7647.1600725.500 17      .013                                  0.000    .000 0
SH   7647.1600725.500 17                          725.500
CD   1  4   1    .000  10.000     .000  .000  .000   .00
CD   2  4   1    .000   5.000     .000  .000  .000   .00
CD   3  4   1    .000   8.000     .000  .000  .000   .00
CD   4  4   3    .000   3.500     .000  .000  .000   .00
CD   5  4   1    .000   3.000     .000  .000  .000   .00
CD   6  3   0    .000   8.000    8.000  .000  .000   .00
CD   7  4   1    .000   8.000     .000  .000  .000   .00
CD   8  4   1    .000   2.000     .000  .000  .000   .00
CD   9  4   1    .000   8.000     .000  .000  .000   .00
CD  10  4   1    .000   8.000     .000  .000  .000   .00
CD  11  4   1    .000   8.000     .000  .000  .000   .00
CD  12  4   1    .000   7.000     .000  .000  .000   .00
CD  13  4   1    .000   2.000     .000  .000  .000   .00
CD  14  4   1    .000   6.000     .000  .000  .000   .00
CD  15  4   1    .000   2.500     .000  .000  .000   .00
CD  16  4   1    .000   5.500     .000  .000  .000   .00
CD  17  4   1    .000   4.250     .000  .000  .000   .00
Q            440.700   .0
```

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 5- 7-2024 Time: 1:51: 9

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE A UPSTREAM OF PASEO GRANDE (PROP. Q100) - MODELED BY

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
6972.240	696.730	2.977	699.707	440.70	20.81	6.72	706.43	.00	2.98	.52	3.000	.000	.00	3 .0
.280	.0180					.0456	.01	2.98	.58	3.00	.013	.00	.00	PIPE
6972.520	696.735	3.000	699.735	440.70	20.78	6.71	706.44	.00	2.98	.00	3.000	.000	.00	3 .0
14.720	.0180					.0473	.70	3.00	.00	3.00	.013	.00	.00	PIPE
6987.240	697.000	3.449	700.449	440.70	20.78	6.71	707.16	.00	2.98	.00	3.000	.000	.00	3 .0
82.620	.0182					.0485	4.01	3.45	.00	3.00	.013	.00	.00	PIPE
7069.860	698.500	5.957	704.457	440.70	20.78	6.71	711.16	.00	2.98	.00	3.000	.000	.00	3 .0

```
T1 JN 15.1511.8.12 THE TRAILS                                                0
T2 OXBOW PARTNERS - RIVERSIDE COUNTY
T3 STORM DRAIN LINE A UPSTREAM OF PASEO GRANDE (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/07/24

SO   6972.2400696.730  4                          699.680
R    6987.2400697.000  4      .013                              0.000    .000 0
R    7069.8600698.500  4      .013                              0.000    .000 0
SH   7069.8600698.500  4                          698.500
CD   4  4   3    .000   3.000     .000  .000  .000   .00
CD  17  3   0    .000  14.000   21.000  .000  .000   .00
Q            440.700   .0
```

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 5- 7-2024 Time: 9:15:36

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE B (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/07/

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1000.000	613.660	12.110	625.770	270.30	5.38	.45	626.22	.00	4.14	.00	8.000	.000	.00	1 .0
251.150	.0055				.0009	.22	12.11	.00	3.52	.013	.00	.00		PIPE
1251.150	615.040	10.951	625.991	270.30	5.38	.45	626.44	.00	4.14	.00	8.000	.000	.00	1 .0
64.210	.0055				.0009	.06	.00	.00	3.53	.013	.00	.00		PIPE
1315.360	615.390	10.714	626.104	270.30	5.38	.45	626.55	.00	4.14	.00	8.000	.000	.00	1 .0
20.510	.0054				.0009	.02	10.71	.00	3.54	.013	.00	.00		PIPE
1335.870	615.500	10.622	626.122	270.30	5.38	.45	626.57	.00	4.14	.00	8.000	.000	.00	1 .0
WALL	ENTRANCE													
1335.870	615.500	11.085	626.585	270.30	2.03	.06	626.65	.00	2.51	12.00	12.000	12.000	.00	0 .0

```
T1 JN 15.1511.8.12 THE TRAILS                                                  0
T2 OXBOW PARTNERS - RIVERSIDE COUNTY
T3 STORM DRAIN LINE B (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/5/07/24
SO   1000.0000613.660  1                          625.770
R    1251.1500615.040  1      .013                              0.000    .000 0
R    1315.3600615.390  1      .013                            -36.789    .000 0
R    1335.8700615.500  1      .013                              0.000    .000 0
WE   1335.8700615.500  2      .200
SH   1335.8700615.500  2                          615.500
CD   1  4   1    .000   8.000     .000  .000  .000   .00
CD   2  3   0    .000  12.000   12.000  .000  .000   .00
Q            270.300   .0
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Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 5- 7-2024 Time: 9:44:21

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE C (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/05/07

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D. / ZL	No Wth Prs/Pip / Type Ch
4602.560	615.500	11.230	626.730	431.20	8.58	1.14	627.87	.00	5.29	.00	8.000	.000	.00 1 .0
86.440	.0099					.0022	.19	.00	.00	3.88	.013	.00	.00 PIPE
4689.000	616.360	10.702	627.062	431.20	8.58	1.14	628.20	.00	5.29	.00	8.000	.000	.00 1 .0
JUNCT STR	.3894							.00	.00		.013	.00	.00 PIPE
4694.290	618.420	2.541	620.961	350.30	30.74	14.67	635.63	1.16	5.07	5.93	6.000	.000	.00 1 .0
24.210	.0516					.0488	1.18	3.70	3.91	2.50	.013	.00	.00 PIPE
4718.500	619.670	2.546	622.216	350.30	30.67	14.60	636.82	.00	5.07	5.93	6.000	.000	.00 1 .0
13.563	.0517					.0485	.66	2.55	3.89	2.50	.013	.00	.00 PIPE
4732.063	620.372	2.549	622.920	350.30	30.62	14.56	637.48	.00	5.07	5.93	6.000	.000	.00 1 .0
196.937	.0517					.0455	8.96	2.55	3.89	2.50	.013	.00	.00 PIPE
4929.000	630.560	2.643	633.203	350.30	29.20	13.24	646.44	.00	5.07	5.96	6.000	.000	.00 1 .0
TRANS STR	.2864					.0400	.17	2.64	3.63		.013	.00	.00 PIPE
4933.260	631.780	3.068	634.848	350.30	27.73	11.94	646.79	.20	4.81	4.87	5.000	.000	.00 1 .0
24.950	.0409					.0372	.93	3.27	3.03	2.98	.013	.00	.00 PIPE
4958.209	632.800	3.079	635.879	350.30	27.61	11.84	647.72	.20	4.81	4.86	5.000	.000	.00 1 .0
159.710	.0409					.0349	5.58	3.27	3.01	2.98	.013	.00	.00 PIPE
5117.920	639.330	3.207	642.537	350.30	26.33	10.76	653.30	.00	4.81	4.80	5.000	.000	.00 1 .0
28.797	.0409					.0323	.93	3.21	2.79	2.98	.013	.00	.00 PIPE

Program Package Serial Number: 1873

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
5146.717	640.507	3.244	643.751	350.30	25.98	10.48	654.23	.00	4.81	4.77	5.000	.000	.00	1 .0
75.069	.0409					.0300	2.25	3.24	2.72	2.98	.013	.00	.00	PIPE
5221.786	643.574	3.383	646.957	350.30	24.77	9.53	656.49	.00	4.81	4.68	5.000	.000	.00	1 .0
50.708	.0409					.0267	1.36	3.38	2.51	2.98	.013	.00	.00	PIPE
5272.494	645.646	3.533	649.179	350.30	23.62	8.66	657.84	.00	4.81	4.55	5.000	.000	.00	1 .0
36.816	.0409					.0239	.88	3.53	2.31	2.98	.013	.00	.00	PIPE
5309.310	647.150	3.695	650.845	350.30	22.52	7.88	658.72	.00	4.81	4.39	5.000	.000	.00	1 .0
JUNCT STR	.0400					.0247	.07	3.69	2.11		.013	.00	.00	PIPE
5312.310	647.270	3.328	650.599	334.10	24.07	8.99	659.59	.00	4.77	4.72	5.000	.000	.00	1 .0
29.740	.0410					.0259	.77	3.33	2.47	2.89	.013	.00	.00	PIPE
5342.050	648.490	3.422	651.912	334.10	23.33	8.45	660.36	.07	4.77	4.65	5.000	.000	.00	1 .0
27.063	.0219					.0251	.68	3.49	2.34	3.59	.013	.00	.00	PIPE
5369.113	649.083	3.403	652.486	334.10	23.48	8.56	661.04	.07	4.77	4.66	5.000	.000	.00	1 .0
144.382	.0219					.0269	3.88	3.47	2.37	3.59	.013	.00	.00	PIPE
5513.496	652.249	3.262	655.511	334.10	24.62	9.41	664.93	.07	4.77	4.76	5.000	.000	.00	1 .0
97.194	.0219					.0303	2.94	3.34	2.57	3.59	.013	.00	.00	PIPE
5610.690	654.380	3.131	657.511	334.10	25.82	10.36	667.87	.00	4.77	4.84	5.000	.000	.00	1 .0
2.729	.0218					.0321	.09	3.13	2.78	3.60	.013	.00	.00	PIPE

WATER SURFACE PROFILE LISTING Date: 5- 7-2024 Time: 9:44:21

JN 15.1511.8.12 THE TRAILS

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
5613.419	654.440	3.127	657.566	334.10	25.86	10.39	667.95	.00	4.77	4.84	5.000	.000	.00	1 .0
73.711	.0218					.0343	2.53	3.13	2.79	3.60	.013	.00	.00	PIPE
5687.130	656.050	3.003	659.053	334.10	27.13	11.43	670.48	.22	4.77	4.90	5.000	.000	.00	1 .0
40.510	.0220					.0378	1.53	3.23	3.01	3.59	.013	.00	.00	PIPE
5727.640	656.940	2.927	659.867	334.10	27.97	12.15	672.02	.00	4.77	4.93	5.000	.000	.00	1 .0
166.664	.0393					.0393	6.55	2.93	3.17	2.93	.013	.00	.00	PIPE
5894.304	663.494	2.927	666.421	334.10	27.97	12.15	678.57	.00	4.77	4.93	5.000	.000	.00	1 .0
434.766	.0393					.0375	16.30	2.93	3.17	2.93	.013	.00	.00	PIPE
6329.069	680.590	3.021	683.611	334.10	26.93	11.26	694.87	.37	4.77	4.89	5.000	.000	.00	1 .0
26.906	.0393					.0354	.95	3.39	2.98	2.93	.013	.00	.00	PIPE
6355.976	681.647	3.035	684.682	334.10	26.79	11.15	695.83	.36	4.77	4.88	5.000	.000	.00	1 .0
145.904	.0393					.0332	4.84	3.40	2.96	2.93	.013	.00	.00	PIPE
6501.880	687.380	3.160	690.540	334.10	25.55	10.13	700.67	.00	4.77	4.82	5.000	.000	.00	1 .0
50.000	.0394					.0302	1.51	3.16	2.73	2.93	.013	.00	.00	PIPE
6551.880	689.350	3.235	692.585	334.10	24.86	9.60	702.18	.31	4.77	4.78	5.000	.000	.00	1 .0
44.213	.0393					.0281	1.24	3.54	2.61	2.93	.013	.00	.00	PIPE
6596.094	691.088	3.325	694.413	334.10	24.09	9.01	703.43	.28	4.77	4.72	5.000	.000	.00	1 .0
48.782	.0393					.0255	1.24	3.61	2.48	2.93	.013	.00	.00	PIPE

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope				SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR		Type Ch
6644.876	693.005	3.470	696.476	334.10	22.97	8.19	704.67	.25	4.77	4.61	5.000	.000	.00	1 .0
35.479	.0393				.0227	.81	3.72	2.28	2.93	.013	.00	.00	PIPE	
6680.355	694.400	3.627	698.027	334.10	21.90	7.45	705.48	.22	4.77	4.46	5.000	.000	.00	1 .0
26.715	.0393				.0203	.54	3.85	2.09	2.93	.013	.00	.00	PIPE	
6707.070	695.450	3.797	699.247	334.10	20.88	6.77	706.02	.00	4.77	4.27	5.000	.000	.00	1 .0
23.940	.0322				.0185	.44	3.80	1.90	3.13	.013	.00	.00	PIPE	
6731.010	696.220	3.935	700.155	334.10	20.15	6.31	706.46	.00	4.77	4.09	5.000	.000	.00	1 .0
JUNCT STR	.0333				.0268	.08	3.94	1.76		.013	.00	.00	PIPE	
6734.010	696.320	2.700	699.020	280.40	25.92	10.44	709.46	.00	4.59	4.98	5.000	.000	.00	1 .0
100.580	.0321				.0372	3.74	2.70	3.10	2.79	.013	.00	.00	PIPE	
6834.590	699.550	2.643	702.193	280.40	26.62	11.00	713.20	2.20	4.59	4.99	5.000	.000	.00	1 .0
50.770	.0321				.0394	2.00	4.84	3.23	2.79	.013	.00	.00	PIPE	
6885.360	701.180	2.605	703.785	280.40	27.11	11.41	715.20	.00	4.59	5.00	5.000	.000	.00	1 .0
7.996	.0322				.0405	.32	2.61	3.32	2.79	.013	.00	.00	PIPE	
6893.355	701.437	2.598	704.035	280.40	27.20	11.49	715.52	.00	4.59	5.00	5.000	.000	.00	1 .0
93.064	.0322				.0435	4.05	2.60	3.34	2.79	.013	.00	.00	PIPE	
6986.420	704.430	2.502	706.932	280.40	28.53	12.64	719.57	.38	4.59	5.00	5.000	.000	.00	1 .0
63.250	.0321				.0491	3.11	2.88	3.59	2.79	.013	.00	.00	PIPE	

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 5- 7-2024 Time: 9:44:21

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE C (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/05/07

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip

Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	Dia.-FT or I.D.	ZL	Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
7049.670	706.460	2.418	708.878	280.40	29.81	13.80	722.68	.00	4.59	5.00	5.000	.000	.00	1 .0
TRANS STR	.1455					.0508	.22	2.42	3.83		.013	.00	.00	PIPE
7054.000	707.090	2.618	709.708	280.40	29.21	13.25	722.96	.00	4.35	4.44	4.500	.000	.00	1 .0
45.670	.0497					.0495	2.26	2.62	3.50	2.62	.013	.00	.00	PIPE
7099.670	709.360	2.618	711.978	280.40	29.20	13.24	725.22	.24	4.35	4.44	4.500	.000	.00	1 .0
184.120	.0498					.0493	9.07	2.85	3.50	2.61	.013	.00	.00	PIPE
7283.790	718.530	2.627	721.157	280.40	29.09	13.14	734.29	.00	4.35	4.44	4.500	.000	.00	1 .0
94.090	.0498					.0488	4.59	2.63	3.48	2.61	.013	.00	.00	PIPE
7377.880	723.220	2.636	725.856	280.40	28.96	13.03	738.88	4.50	4.35	4.43	4.500	.000	.00	1 .0
47.760	.0498					.0483	2.31	4.50	3.45	2.61	.013	.00	.00	PIPE
7425.640	725.600	2.643	728.243	280.40	28.88	12.95	741.19	.00	4.35	4.43	4.500	.000	.00	1 .0
61.290	.0498					.0478	2.93	2.64	3.44	2.61	.013	.00	.00	PIPE
7486.930	728.650	2.654	731.304	280.40	28.73	12.82	744.12	4.50	4.35	4.43	4.500	.000	.00	1 .0
18.900	.0497					.0474	.90	4.50	3.41	2.61	.013	.00	.00	PIPE
7505.830	729.590	2.657	732.247	280.40	28.68	12.78	745.02	.00	4.35	4.43	4.500	.000	.00	1 .0
TRANS STR	.1918					.0333	1.96	2.66	3.40		.013	.00	.00	PIPE
7564.640	740.870	2.282	743.152	280.40	17.32	4.66	747.81	.00	3.48	4.50	4.500	.000	.00	2 .0
31.155	.0231					.0189	.59	2.28	1.61	2.17	.013	.00	.00	PIPE

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 5- 7-2024 Time: 9:44:21

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE C (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/05/07

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip

L/Elem	Ch Slope				SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
7595.795	741.590	2.314	743.904	280.40	17.01	4.49	748.40	.00	3.48	4.50	4.500	.000	.00	2 .0
55.795	.0231					.0174	.97	2.31	1.57	2.17	.013	.00	.00	PIPE
7651.590	742.880	2.404	745.284	280.40	16.22	4.09	749.37	.42	3.48	4.49	4.500	.000	.00	2 .0
33.147	.0231					.0154	.51	2.83	1.46	2.17	.013	.00	.00	PIPE
7684.737	743.646	2.489	746.135	280.40	15.53	3.75	749.88	.39	3.48	4.47	4.500	.000	.00	2 .0
25.743	.0231					.0137	.35	2.87	1.36	2.17	.013	.00	.00	PIPE
7710.480	744.240	2.588	746.828	280.40	14.81	3.41	750.23	.00	3.48	4.45	4.500	.000	.00	2 .0
9.745	.0230					.0125	.12	2.59	1.27	2.17	.013	.00	.00	PIPE
7720.225	744.464	2.637	747.101	280.40	14.48	3.25	750.36	.00	3.48	4.43	4.500	.000	.00	2 .0
16.265	.0230					.0114	.19	2.64	1.22	2.17	.013	.00	.00	PIPE
7736.490	744.839	2.744	747.583	280.40	13.80	2.96	750.54	.00	3.48	4.39	4.500	.000	.00	2 .0
12.033	.0230					.0101	.12	2.74	1.13	2.17	.013	.00	.00	PIPE
7748.522	745.116	2.858	747.973	280.40	13.16	2.69	750.66	.00	3.48	4.33	4.500	.000	.00	2 .0
8.789	.0230					.0090	.08	2.86	1.05	2.17	.013	.00	.00	PIPE
7757.312	745.318	2.979	748.297	280.40	12.55	2.45	750.74	.00	3.48	4.26	4.500	.000	.00	2 .0
6.159	.0230					.0080	.05	2.98	.97	2.17	.013	.00	.00	PIPE
7763.470	745.460	3.108	748.568	280.40	11.96	2.22	750.79	.00	3.48	4.16	4.500	.000	.00	2 .0
2.180	.0231					.0073	.02	3.11	.89	2.17	.013	.00	.00	PIPE

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 5- 7-2024 Time: 9:44:21

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE C (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/05/07

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope				SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch	

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        |         |        |         |         |              |         |       |        |        |       |       |      |
7765.650   745.510    3.175   748.685    280.40   11.69    2.12   750.81     .00    3.48     4.10    4.500     .000   .00   2   .0
       -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
   2.912    .0231                                  .0067      .02     3.18     .85    2.17    .013       .00   .00  PIPE
        |         |        |         |         |              |         |       |        |        |       |       |      |
7768.562   745.578    3.320   748.898    280.40   11.14    1.93   750.83     .00    3.48     3.96    4.500     .000   .00   2   .0
       -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
    .968    .0231                                  .0060      .01     3.32     .78    2.17    .013       .00   .00  PIPE
        |         |        |         |         |              |         |       |        |        |       |       |      |
7769.530   745.600    3.480   749.080    280.40   10.62    1.75   750.83     .00    3.48     3.77    4.500     .000   .00   2   .0
       -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
WALL  ENTRANCE
        |         |        |         |         |              |         |       |        |        |       |       |      |
7769.530   745.600    5.209   750.809    280.40    4.49     .31   751.12     .00    2.57    12.00    6.000   12.000   .00   0   .0
       -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
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T1 JN 15.1511.8.12 THE TRAILS                                                    0
T2 OXBOW PARTNERS - RIVERSIDE COUNTY
T3 STORM DRAIN LINE C (PROP. Q100) - MODELED BY CRA, UPDATED BY LAJ/05/07/24

SO   4602.5600615.500  1                            626.730
R    4689.0000616.360  1      .013                                -33.020    .000 0
JX   4694.2900618.420  3  2   .013   80.900          619.200         67.0        0.000
R    4718.5000619.670  3      .013                                 -9.250    .000 0
R    4929.0000630.560  3      .013                                  0.000    .000 0
TS   4933.2600631.780  4      .013                                  0.000    .000 0
R    5117.9200639.330  4      .013                                -18.020    .000 0
R    5309.3100647.150  4      .013                                  0.000    .000 0
JX   5312.3100647.270  4  2   .013   16.200          648.200         90.0        0.000
R    5342.0500648.490  4      .013                                  0.000    .000 0
R    5610.6900654.380  4      .013                                 12.826    .000 0
R    5687.1300656.050  4      .013                                  0.000    .000 0
R    5727.6400656.940  4      .013                                 -4.642    .000 0
R    6329.0700680.590  4      .013                                  0.000    .000 0
R    6501.8800687.380  4      .013                                 33.015    .000 0
R    6551.8800689.350  4      .013                                  0.000    .000 0
R    6707.0700695.450  4      .013                                -29.641    .000 0
R    6731.0100696.220  4      .013                                  0.000    .000 0
JX   6734.0100696.320  4  2   .013   53.700          697.300         90.0        0.000
R    6834.5900699.550  4      .013                                  0.000    .000 0
R    6885.3600701.180  4      .013                                 58.180    .000 0
R    6986.4200704.430  4      .013                                  0.000    .000 0
R    7049.6700706.460  4      .013                                 10.933    .000 0
TS   7054.0000707.090  6      .013                                  0.000    .000 0
R    7099.6700709.360  6      .013                                  0.000    .000 0
R    7283.7900718.530  6      .013                                 21.099    .000 0
R    7377.8800723.220  6      .013                                  0.000    .000 0
R    7425.6400725.600  6      .013                                -91.219    .000 0
R    7486.9300728.650  6      .013                                  0.000    .000 0
R    7505.8300729.590  6      .013                                 24.063    .000 0
TS   7564.6400740.870  7      .013                                  0.000    .000 0
R    7651.5900742.880  7      .013                                  0.000    .000 0
R    7710.4800744.240  7      .013                                 38.785    .000 0
R    7763.4700745.460  7      .013                                  0.000    .000 0
R    7769.5300745.600  7      .013                                  0.000
WE   7769.5300745.600 11      .200
SH   7769.5300745.600 11                           745.600
CD   1  4   1    .000   8.000     .000  .000  .000   .00
CD   2  4   1    .000   3.000     .000  .000  .000   .00
CD   3  4   1    .000   6.000     .000  .000  .000   .00
CD   4  4   1    .000   5.000     .000  .000  .000   .00
CD   5  4   1    .000   3.500     .000  .000  .000   .00
CD   6  4   1    .000   4.500     .000  .000  .000   .00
CD   7  4   2    .000   4.500     .000  .000  .000   .00
CD   8  4   1    .000   4.500     .000  .000  .000   .00
CD   9  4   1    .000   3.500     .000  .000  .000   .00
CD  10  4   1    .000   4.500     .000  .000  .000   .00
CD  11  3   0    .000   6.000   12.000  .000  .000   .00
Q            280.400   .0
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Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 5-10-2024 Time: 9:20:20

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE D (PROP. Q100) - MODELED BY LAJ/5/10/24

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1004.070	589.690	4.370	594.060	112.10	15.86	3.91	597.97	.00	2.93	.00	3.000	.000	.00	1 .0
114.275	.0317					.0282	3.23	4.37	.00	2.32	.013	.00	.00	PIPE
1118.345	593.316	3.971	597.288	112.10	15.86	3.91	601.19	.00	2.93	.00	3.000	.000	.00	1 .0
HYDRAULIC JUMP														
1118.345	593.316	2.319	595.636	112.10	19.12	5.68	601.31	.00	2.93	2.51	3.000	.000	.00	1 .0
32.819	.0317					.0317	1.04	2.32	2.21	2.32	.013	.00	.00	PIPE
1151.164	594.358	2.319	596.677	112.10	19.12	5.68	602.35	.00	2.93	2.51	3.000	.000	.00	1 .0
258.053	.0317					.0334	8.63	2.32	2.21	2.32	.013	.00	.00	PIPE
1409.216	602.547	2.218	604.764	112.10	20.01	6.22	610.98	.00	2.93	2.63	3.000	.000	.00	1 .0
95.712	.0317					.0372	3.56	2.22	2.42	2.32	.013	.00	.00	PIPE
1504.928	605.584	2.121	607.705	112.10	20.99	6.84	614.54	.00	2.93	2.73	3.000	.000	.00	1 .0
59.752	.0317					.0417	2.49	2.12	2.64	2.32	.013	.00	.00	PIPE
1564.680	607.480	2.031	609.511	112.10	22.01	7.52	617.03	.00	2.93	2.81	3.000	.000	.00	1 .0
138.001	.0456					.0422	5.83	2.03	2.88	2.01	.013	.00	.00	PIPE
1702.681	613.770	2.098	615.868	112.10	21.23	7.00	622.87	.00	2.93	2.75	3.000	.000	.00	1 .0
73.830	.0456					.0383	2.82	2.10	2.70	2.01	.013	.00	.00	PIPE
1776.511	617.135	2.193	619.329	112.10	20.24	6.36	625.69	.00	2.93	2.66	3.000	.000	.00	1 .0
41.923	.0456					.0343	1.44	2.19	2.47	2.01	.013	.00	.00	PIPE

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 5-10-2024 Time: 9:20:20

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE D (PROP. Q100) - MODELED BY LAJ/5/10/24

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1818.435	619.046	2.297	621.343	112.10	19.30	5.79	627.13	.00	2.93	2.54	3.000	.000	.00	1 .0
27.883	.0456					.0308	.86	2.30	2.25	2.01	.013	.00	.00	PIPE
1846.317	620.317	2.412	622.729	112.10	18.40	5.26	627.99	.00	2.93	2.38	3.000	.000	.00	1 .0
19.751	.0456					.0280	.55	2.41	2.03	2.01	.013	.00	.00	PIPE
1866.068	621.218	2.543	623.760	112.10	17.55	4.78	628.54	.00	2.93	2.16	3.000	.000	.00	1 .0
14.036	.0456					.0258	.36	2.54	1.80	2.01	.013	.00	.00	PIPE
1880.105	621.857	2.700	624.557	112.10	16.73	4.35	628.90	.00	2.93	1.80	3.000	.000	.00	1 .0
7.955	.0456					.0250	.20	2.70	1.53	2.01	.013	.00	.00	PIPE
1888.060	622.220	2.932	625.152	112.10	15.95	3.95	629.10	.00	2.93	.89	3.000	.000	.00	1 .0
JUNCT STR	.1440					.0140	.07	2.93	1.00		.013	.00	.00	PIPE
1893.060	622.940	5.929	628.869	21.70	4.42	.30	629.17	.00	1.58	.00	2.500	.000	.00	1 .0
80.513	.0433					.0028	.23	5.93	.00	.86	.013	.00	.00	PIPE
1973.573	626.423	2.672	629.094	21.70	4.42	.30	629.40	.00	1.58	.00	2.500	.000	.00	1 .0
HYDRAULIC JUMP														
1973.573	626.423	.886	627.309	21.70	13.92	3.01	630.32	.00	1.58	2.39	2.500	.000	.00	1 .0
32.082	.0433					.0367	1.18	.89	3.04	.86	.013	.00	.00	PIPE
2005.655	627.810	.911	628.721	21.70	13.41	2.79	631.51	.00	1.58	2.41	2.500	.000	.00	1 .0
20.798	.0433					.0326	.68	.91	2.88	.86	.013	.00	.00	PIPE

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 5-10-2024 Time: 9:20:20

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE D (PROP. Q100) - MODELED BY LAJ/5/10/24

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch

2026.453	628.710	.944	629.654	21.70	12.79	2.54	632.19	.00	1.58	2.42	2.500	.000	.00	1 .0
13.434	.0433					.0286	.38	.94	2.69	.86	.013	.00	.00	PIPE
2039.887	629.291	.978	630.269	21.70	12.19	2.31	632.58	.00	1.58	2.44	2.500	.000	.00	1 .0
9.606	.0433					.0251	.24	.98	2.52	.86	.013	.00	.00	PIPE
2049.493	629.707	1.014	630.720	21.70	11.62	2.10	632.82	.00	1.58	2.45	2.500	.000	.00	1 .0
7.247	.0433					.0220	.16	1.01	2.35	.86	.013	.00	.00	PIPE
2056.740	630.020	1.051	631.071	21.70	11.08	1.91	632.98	.00	1.58	2.47	2.500	.000	.00	1 .0
JUNCT STR	.2900					.0203	.04	1.05	2.19		.013	.00	.00	PIPE
2058.740	630.600	.921	631.521	13.90	9.83	1.50	633.02	.00	1.34	1.99	2.000	.000	.00	1 .0
276.242	.0200					.0200	5.53	.92	2.06	.92	.013	.00	.00	PIPE
2334.982	636.134	.921	637.055	13.90	9.83	1.50	638.56	.00	1.34	1.99	2.000	.000	.00	1 .0
84.830	.0200					.0204	1.73	.92	2.06	.92	.013	.00	.00	PIPE
2419.813	637.834	.911	638.744	13.90	9.98	1.55	640.29	.00	1.34	1.99	2.000	.000	.00	1 .0
54.128	.0200					.0223	1.21	.91	2.10	.92	.013	.00	.00	PIPE
2473.941	638.918	.878	639.796	13.90	10.47	1.70	641.50	.00	1.34	1.99	2.000	.000	.00	1 .0
26.059	.0200					.0254	.66	.88	2.25	.92	.013	.00	.00	PIPE
2500.000	639.440	.847	640.287	13.90	10.98	1.87	642.16	.00	1.34	1.98	2.000	.000	.00	1 .0
56.417	.0270					.0270	1.52	.85	2.42	.85	.013	.00	.00	PIPE

Program Package Serial Number: 1873

WATER SURFACE PROFILE LISTING Date: 5-10-2024 Time: 9:20:20

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE D (PROP. Q100) - MODELED BY LAJ/5/10/24

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2556.417	640.964	.847	641.811	13.90	10.98	1.87	643.68	.00	1.34	1.98	2.000	.000	.00	1 .0
84.293	.0270					.0271	2.28	.85	2.42	.85	.013	.00	.00	PIPE
2640.710	643.240	.846	644.086	13.90	11.00	1.88	645.96	.00	1.34	1.98	2.000	.000	.00	1 .0

222.557	.0271						.0271	6.04	.85	2.42	.85	.013	.00	.00	PIPE				
2863.267	649.280	.846	650.126	13.90	11.00	1.88	652.00	.00	1.34	1.98	2.000	.000	.00	1	.0				
84.621	.0271						.0259	2.19	.85	2.42	.85	.013	.00	.00	PIPE				
2947.888	651.577	.868	652.445	13.90	10.63	1.75	654.20	.00	1.34	1.98	2.000	.000	.00	1	.0				
32.552	.0271						.0232	.76	.87	2.31	.85	.013	.00	.00	PIPE				
2980.440	652.461	.900	653.361	13.90	10.13	1.59	654.96	.00	1.34	1.99	2.000	.000	.00	1	.0				
16.560	.0271						.0204	.34	.90	2.15	.85	.013	.00	.00	PIPE				
2997.000	652.910	.934	653.844	13.90	9.66	1.45	655.29	.00	1.34	2.00	2.000	.000	.00	1	.0				
JUNCT STR	.1363						.0303	.15	.93	2.01		.013	.00	.00	PIPE				
3001.990	653.590	.553	654.143	6.20	10.48	1.71	655.85	.00	.96	1.45	1.500	.000	.00	1	.0				
895.213	.0415						.0415	37.12	.55	2.89	.55	.013	.00	.00	PIPE				
3897.203	690.715	.553	691.268	6.20	10.48	1.71	692.97	.00	.96	1.45	1.500	.000	.00	1	.0				
52.926	.0415						.0395	2.09	.55	2.89	.55	.013	.00	.00	PIPE				
3950.129	692.910	.568	693.478	6.20	10.10	1.58	695.06	.00	.96	1.46	1.500	.000	.00	1	.0				
19.515	.0415						.0351	.69	.57	2.74	.55	.013	.00	.00	PIPE				

Program Package Serial Number: 1873

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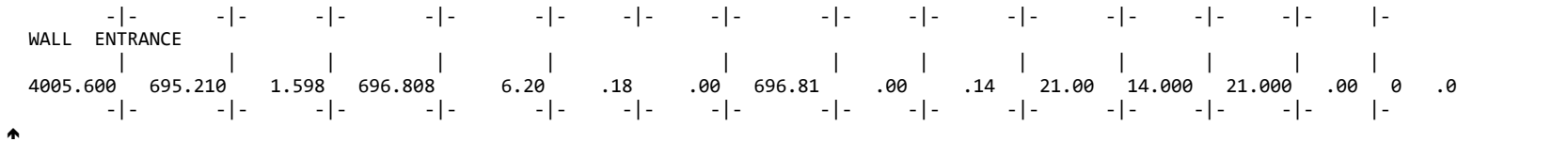
JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE D (PROP. Q100) - MODELED BY LAJ/5/10/24

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
3969.644	693.719	.589	694.308	6.20	9.63	1.44	695.75	.00	.96	1.46	1.500	.000	.00	1 .0
10.312	.0415					.0308	.32	.59	2.56	.55	.013	.00	.00	PIPE
3979.956	694.147	.610	694.757	6.20	9.18	1.31	696.07	.00	.96	1.47	1.500	.000	.00	1 .0
6.717	.0415					.0271	.18	.61	2.39	.55	.013	.00	.00	PIPE
3986.673	694.425	.633	695.058	6.20	8.75	1.19	696.25	.00	.96	1.48	1.500	.000	.00	1 .0
4.798	.0415					.0238	.11	.63	2.23	.55	.013	.00	.00	PIPE

3991.471	694.624	.656	695.280	6.20	8.35	1.08	696.36	.00	.96	1.49	1.500	.000	.00	1 .0
3.599	.0415					.0209	.08	.66	2.08	.55	.013	.00	.00	PIPE
3995.069	694.773	.680	695.453	6.20	7.96	.98	696.44	.00	.96	1.49	1.500	.000	.00	1 .0
2.767	.0415					.0184	.05	.68	1.94	.55	.013	.00	.00	PIPE
3997.836	694.888	.706	695.594	6.20	7.59	.89	696.49	.00	.96	1.50	1.500	.000	.00	1 .0
2.160	.0415					.0162	.03	.71	1.81	.55	.013	.00	.00	PIPE
3999.996	694.978	.732	695.710	6.20	7.24	.81	696.52	.00	.96	1.50	1.500	.000	.00	1 .0
1.692	.0415					.0142	.02	.73	1.69	.55	.013	.00	.00	PIPE
4001.688	695.048	.760	695.808	6.20	6.90	.74	696.55	.00	.96	1.50	1.500	.000	.00	1 .0
1.309	.0415					.0125	.02	.76	1.57	.55	.013	.00	.00	PIPE
4002.997	695.102	.789	695.891	6.20	6.58	.67	696.56	.00	.96	1.50	1.500	.000	.00	1 .0
.995	.0415					.0110	.01	.79	1.46	.55	.013	.00	.00	PIPE

JN 15.1511.8.12 THE TRAILS
OXBOW PARTNERS - RIVERSIDE COUNTY
STORM DRAIN LINE D (PROP. Q100) - MODELED BY LAJ/5/10/24

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope				SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch	
4003.992	695.143	.820	695.964	6.20	6.27	.61	696.57	.00	.96	1.49	1.500	.000	.00	1 .0
.732	.0415					.0097	.01	.82	1.36	.55	.013	.00	.00	PIPE
4004.724	695.174	.852	696.026	6.20	5.98	.56	696.58	.00	.96	1.49	1.500	.000	.00	1 .0
.495	.0415					.0086	.00	.85	1.26	.55	.013	.00	.00	PIPE
4005.219	695.194	.887	696.081	6.20	5.70	.50	696.59	.00	.96	1.47	1.500	.000	.00	1 .0
.286	.0415					.0076	.00	.89	1.17	.55	.013	.00	.00	PIPE
4005.506	695.206	.923	696.129	6.20	5.44	.46	696.59	.00	.96	1.46	1.500	.000	.00	1 .0
.094	.0415					.0067	.00	.92	1.08	.55	.013	.00	.00	PIPE
4005.600	695.210	.962	696.172	6.20	5.18	.42	696.59	.00	.96	1.44	1.500	.000	.00	1 .0


WALL ENTRANCE
4005.600 695.210 1.598 696.808 6.20 .18 .00 696.81 .00 .14 21.00 14.000 21.000 .00 0 .0

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T1 JN 15.1511.8.12 THE TRAILS                                                    0
T2 OXBOW PARTNERS - RIVERSIDE COUNTY
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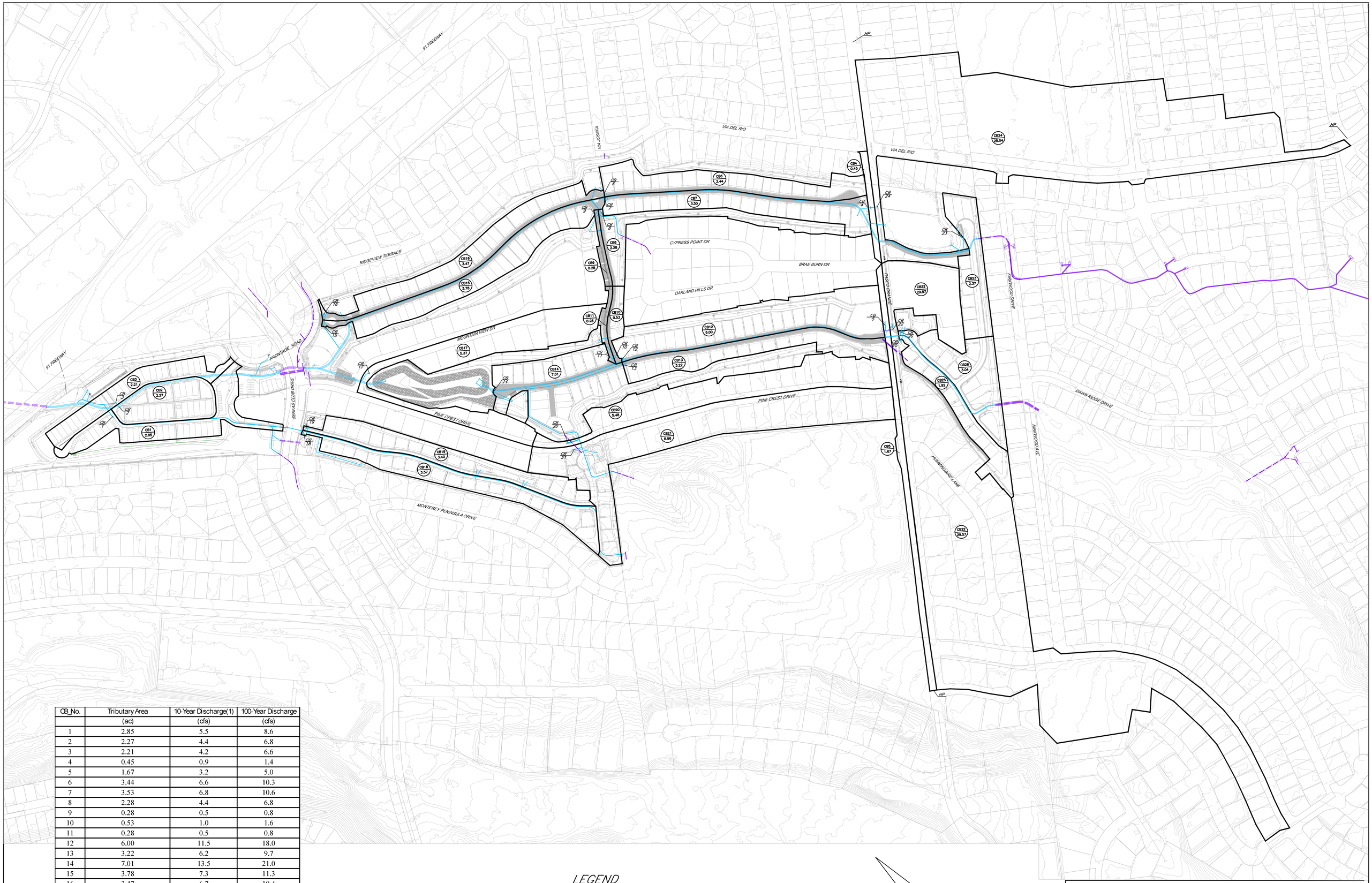
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JX   2058.7400630.600  8  3   .013    7.800          630.850        45.0        0.000
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R    2640.7100643.240  8      .013                                0.000    .000 0
R    2997.0000652.910  8      .013                                0.000    .000 0
JX   3001.9900653.590  3  3   .013    7.700          653.400        45.0        0.000
R    4005.6000695.210  3      .013                                0.000    .000 0
WE   4005.6000695.210 17      .200
SH   4005.6000695.210 17                          695.210
CD   1  4   1    .000   3.000     .000  .000  .000   .00
CD   2  4   1    .000   2.500     .000  .000  .000   .00
CD   3  4   1    .000   1.500     .000  .000  .000   .00
CD   4  4   3    .000   3.000     .000  .000  .000   .00
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Q              6.200   .0
```

Appendix

K

CATCH BASIN HYDROLOGY MAP



CB_No.	Tributary Area	10-Year Discharge(1)	100-Year Discharge
	(ac)	(cfs)	(cfs)
1	2.85	5.5	8.6
2	2.27	4.4	6.8
3	2.21	4.2	6.6
4	0.45	0.9	1.4
5	1.67	3.2	5.0
6	3.44	6.6	10.3
7	3.53	6.8	10.6
8	2.28	4.4	6.8
9	0.28	0.5	0.8
10	0.53	1.0	1.6
11	0.28	0.5	0.8
12	6.00	11.5	18.0
13	3.22	6.2	9.7
14	7.01	13.5	21.0
15	3.78	7.3	11.3
16	3.47	6.7	10.4
17	5.37	10.3	16.1
18	3.57	6.9	10.7
19	3.40	6.5	10.2
20	5.48	10.5	16.4
21	8.96	17.2	26.9
22	29.57	56.8	88.7
23	2.37	4.6	7.1
24	25.04	48.1	75.1
25	1.92	3.7	5.8
26	3.04	5.8	9.1

(1) Ratio of 1.92 cfs/ac was used to estimate the 10-Year Discharge
(2) Ratio of 3.00 cfs/ac was used to estimate the 100-Year Discharge

LEGEND

CATCH BASIN TRIBUTARY AREA BOUNDARY

EXISTING STORM DRAIN

PROPOSED STORM DRAIN

150' 0 150' 300' 450'

SCALE IN FEET

CATCH BASIN HYDROLOGY MAP

FOR

THE TRAILS

AT

CORONA, CA

HYD: LJ
DRAFT: PB
CHECK: LJ

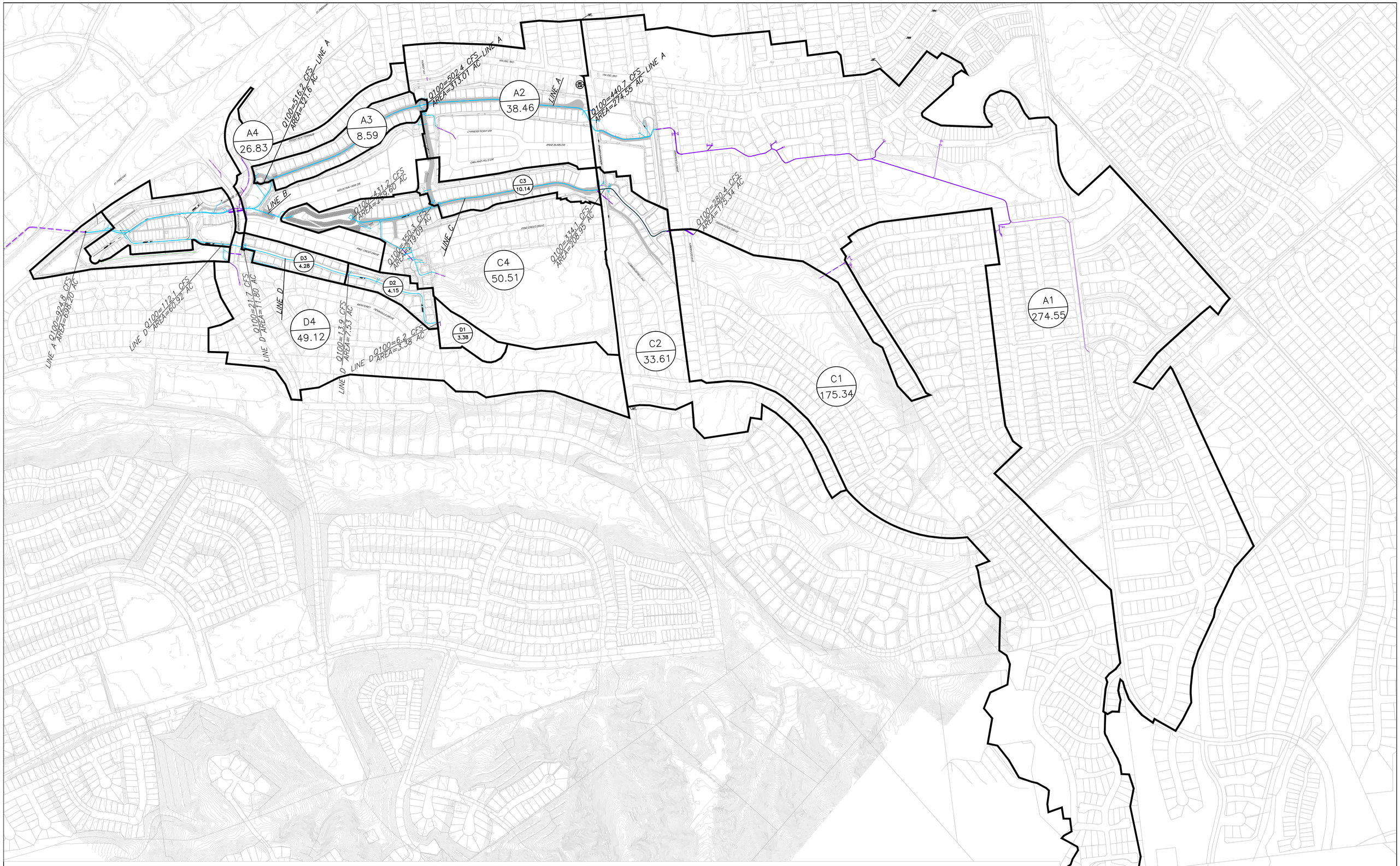
KWC ENGINEERS
CIVIL ENGINEERS + PLANNERS + SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

SHEET 1 OF 1 SHEETS

Appendix

L

STORM DRAIN HYDROLOGY MAP



LEGEND

- STORM DRAIN TRIBUTARY AREA BOUNDARY
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN

150' 0 150' 300' 450'

SCALE IN FEET

Exhibit E

STORM DRAIN HYDROLOGY MAP

FOR

THE TRAILS

AT

CORONA, CA

HYD: LJ	KWC ENGINEERS	SHEET 1 OF 1 SHEETS
DRAFT: PB	CIVIL ENGINEERS • PLANNERS • SURVEYORS	
CHECK: LJ	1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881–3370 951–734–2130	

Appendix

M

EXHIBIT F: EMERGENCY FLOWPATH FROM BASIN PA3 and COUNTY CLUB CREEK LOMR MR 365 EXHIBIT

Frontage Rd

Serfas Club Dr

Pine Crest Dr

Mountain View Dr

WS = 628.00

Estimated: assume 1 ft depth over spillway

WS = 628.30

WS = 630.06

WS = 631.90

WS = 632.32

(632 PAD)

0 25 50 100 150 Feet

Exhibit F

THE TRAILS
Emergency Flowpath From Basin PA3
Q100 = 431.2 cfs, Spillway Crest Elevation =631

TOPOGRAPHIC WORKMAP
COUNTRY CLUB CREEK - LOMR, MR365

TIE INTO EXISTING RCB, 1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN STRUCTURE PER FIRM 06065-C2055H

EFFECTIVE FLOODPLAIN AND FLOODWAY TO BE REMOVED

TIE INTO EFFECTIVE FEMA FLOODPLAIN

MAINLINE

NORTH TRIBUTARY

CITY OF CORONA

RIVERSIDE COUNTY

RIVERSIDE COUNTY UNINCORPORATED AREAS

CITY OF CORONA

UPSTREAM FLOODPLAIN LIMIT REVISED

EFFECTIVE FLOODPLAIN TO BE REMOVED

TIE-INTO EXISTING RCP (CITY OF CORONA DRAINAGE FACILITY)

RIVERSIDE FREEWAY 91

COLONIAL DR

NORTHMOOR DR

MONTEREY PENINSULA DR

PALISADES DR

SERFAS CLUB DR

MOUNTAIN VIEW DR

PINE CREST DR

PASEO GRANDE

AVENIDA DEL VISTA

VIA DEL RIO

LAS POSAS RD

GREEN RIVER RD

KIRKWOOD DRIVE

14261

Cross Sections
(Water Surface Elevation NAVD 88)

MAINLINE	Station	Elevation (NAVD88) WSE-100-YR	Elevation (NAVD88) WSE-500-YR
A-1	10+00	(596.0)	(598.5)
A-2	10+77	(596.0)	(598.5)
A-3	11+92	(596.9)	(598.4)
A-4	13+50	(600.6)	(601.1)
A-5	14+90	(602.5)	(603.0)
A-6	17+01	(607.7)	(608.1)
A-7	18+96	(612.2)	(612.7)
A-8	20+72	(615.1)	(616.1)
A-9	22+10	(618.1)	(620.7)
A-10	23+04	(619.9)	(622.3)
A-11	24+59	(627.2)	(629.0)
A-12	24+83	(627.3)	(629.0)
A-13	26+57	(627.0)	(628.4)
A-14	27+14	(629.8)	(631.8)
A-15	27+75	(633.9)	(634.7)
A-16	28+23	(634.4)	(635.6)
A-17	29+04	(634.5)	(635.7)
A-18	29+88	(634.5)	(635.7)
A-19	30+86	(634.5)	(635.6)
A-20	31+97	(635.3)	(635.9)
A-21	32+86	(638.1)	(638.6)
A-22	33+74	(640.4)	(641.0)
A-23	34+81	(642.7)	(643.4)
A-24	35+85	(645.8)	(646.4)
A-25	36+58	(647.9)	(648.5)
A-26	38+03	(651.5)	(652.3)
A-27	39+48	(656.2)	(656.9)
A-28	40+52	(659.3)	(660.2)
A-29	41+81	(664.6)	(665.5)
A-30	42+95	(667.4)	(668.1)
A-31	44+45	(672.4)	(673.1)
A-32	46+12	(678.3)	(679.1)
A-33	47+26	(682.7)	(683.4)
A-34	48+79	(688.3)	(689.1)
A-35	50+56	(693.8)	(694.6)
A-36	51+84	(698.5)	(699.2)
A-37	53+34	(703.2)	(703.9)
A-38	54+63	(707.4)	(708.3)
A-39	56+13	(715.0)	(715.5)
A-40	57+65	(720.0)	(721.1)
A-41	58+50	(722.3)	(723.3)
A-42	59+39	(725.5)	(726.4)
A-43	60+81	(732.2)	(732.7)
A-44	62+79	(744.1)	(745.0)

Cross Sections
(Water Surface Elevation NAVD 88)

NORTH TRIB	Station	Elevation (NAVD88) WSE-100-YR	Elevation (NAVD88) WSE-500-YR
B-1	10+00	(625.4)	(626.1)
B-2	11+09	(626.9)	(627.6)
B-3	12+15	(628.6)	(629.4)
B-4	13+41	(631.9)	(632.9)
B-5	15+26	(637.7)	(638.2)
B-6	16+74	(640.4)	(641.0)
B-7	18+50	(642.1)	(642.8)
B-8	19+28	(645.7)	(646.3)
B-9	20+36	(647.5)	(648.1)
B-10	22+11	(651.8)	(652.8)
B-11	24+13	(656.5)	(657.2)
B-12	25+83	(662.7)	(663.2)
B-13	27+50	(665.7)	(666.2)
B-14	29+27	(670.6)	(671.8)
B-15	30+49	(673.9)	(674.5)
B-16	32+30	(679.7)	(680.3)
B-17	34+29	(684.7)	(685.3)
B-18	36+24	(690.5)	(691.1)
B-19	38+35	(696.2)	(696.6)
B-20	40+43	(702.6)	(704.1)
B-21	42+05	(711.3)	(712.1)
B-22	43+10	(711.3)	(712.1)
B-23	44+26	(711.3)	(712.1)
B-24	45+25	(712.5)	(713.4)
B-25	46+37	(728.4)	(729.0)

STATS OVERALL:

Community	# Structures Removed	Acres Removed	# Parcels Removed
Riverside County	24	5	11
City of Corona	4	0.4	4

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
COUNTRY CLUB CREEK - MR365

- EFFECTIVE FEMA ZONE AE FLOODPLAIN
- EFFECTIVE FEMA ZONE AE FLOODWAY
- EFFECTIVE FEMA ZONE SHADED X FLOODPLAIN
- PROPOSED FEMA ZONE AE FLOODPLAIN
- PROPOSED FEMA ZONE AE FLOODWAY
- PROPOSED FEMA ZONE SHADED X FLOODPLAIN
- PROJECT CENTERLINE
- MODEL CROSS SECTION
- CITY BOUNDARIES

REGISTERED PROFESSIONAL ENGINEER — HILA A. ELHADDAD — Hilal Haddad — No. 78229 — CIVIL — STATE OF CALIFORNIA

N / W / E / S

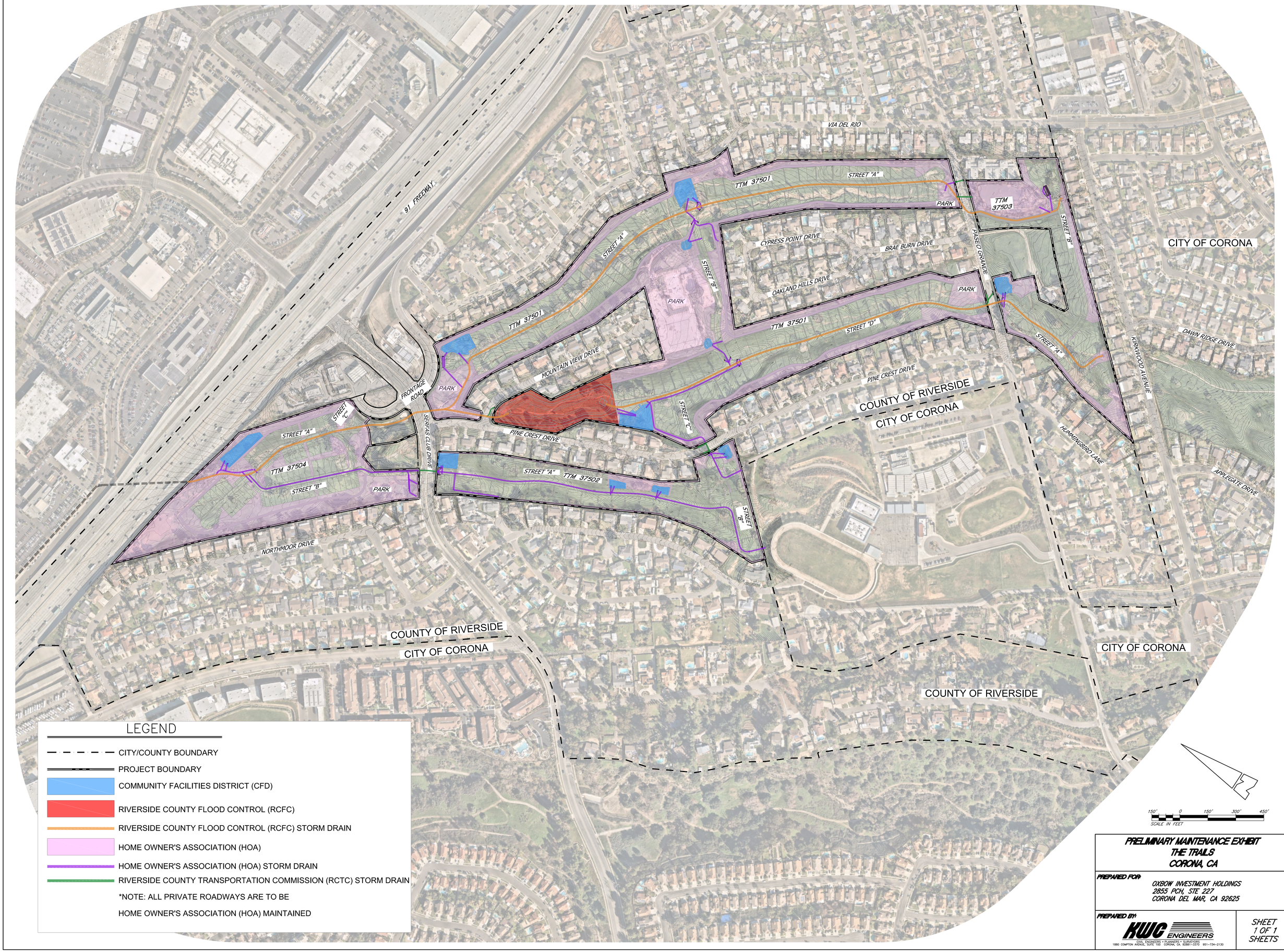
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PHOTOGRAPHY DATA	TOPOGRAPHY DATA	BENCHMARK DATA
BY: COUNTY OF RIVERSIDE DATE: 2019	DATUM: NAD83, NAVD88 BY: USGS OPEN TOPOGRAPHIC DATE: 2018	Z 14261

Appendix

N

PRELIMINARY STORM DRAIN MAINTENANCE EXHIBIT



LEGEND

- CITY/COUNTY BOUNDARY
- PROJECT BOUNDARY
- COMMUNITY FACILITIES DISTRICT (CFD)
- RIVERSIDE COUNTY FLOOD CONTROL (RCFC)
- RIVERSIDE COUNTY FLOOD CONTROL (RCFC) STORM DRAIN
- HOME OWNER'S ASSOCIATION (HOA)
- HOME OWNER'S ASSOCIATION (HOA) STORM DRAIN
- RIVERSIDE COUNTY TRANSPORTATION COMMISSION (RCTC) STORM DRAIN

*NOTE: ALL PRIVATE ROADWAYS ARE TO BE HOME OWNER'S ASSOCIATION (HOA) MAINTAINED

150' 0 150' 300' 450'
SCALE IN FEET

PRELIMINARY MAINTENANCE EXHIBIT
THE TRAILS
CORONA, CA

PREPARED FOR:
OXBOW INVESTMENT HOLDINGS
2855 PCH, STE 227
CORONA DEL MAR, CA 92625

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881-3370 951-734-2130

SHEET 1 OF 1 SHEETS

JOB NO. 14.1463.1 R:\15\1571\PREL\M EXH\1571 Preliminary Maintenance Exhibit.dwg

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G.2 - Preliminary Water Quality Management Plans

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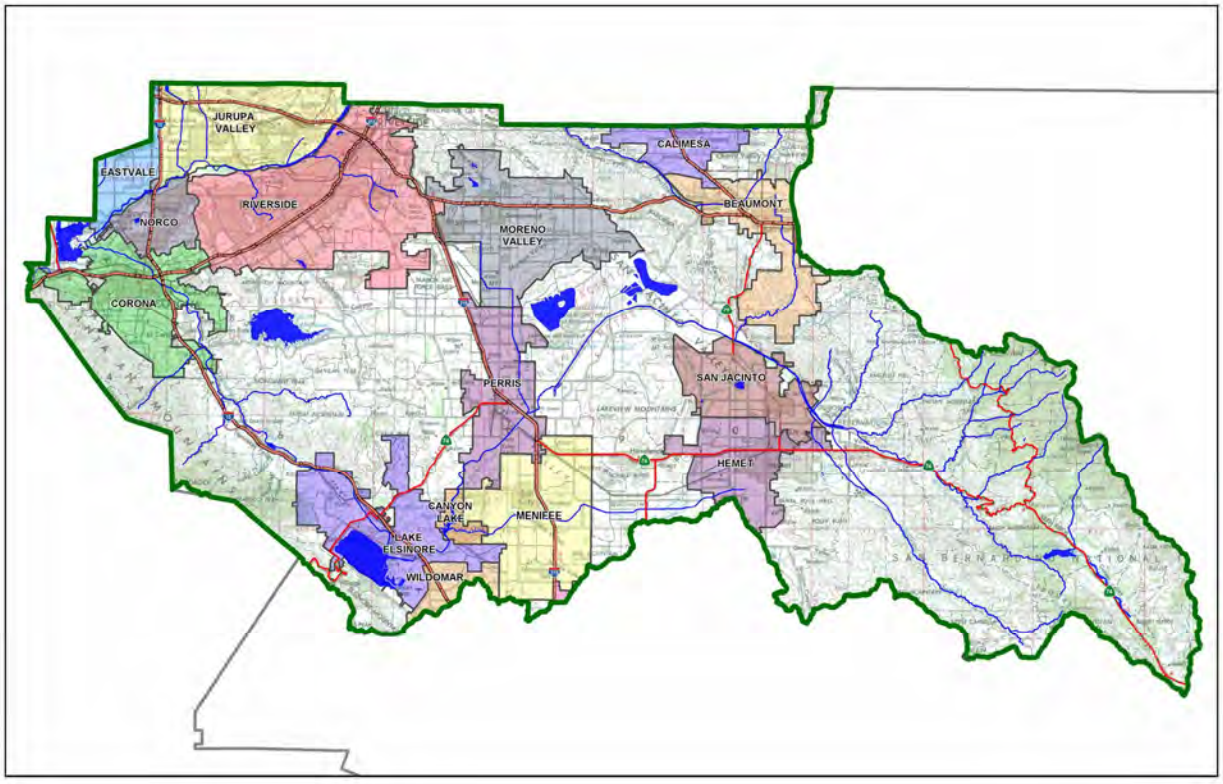
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: The Trails at Corona

Development No: TTM 37504, 37501, 37503, 37502 (County of Riverside)

Design Review/Case No: XXXXXX



☒ **Preliminary**
☐ **Final**

Original Date Prepared: 06-29-2018

Revision Date(s): 10-18-2024

-

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**

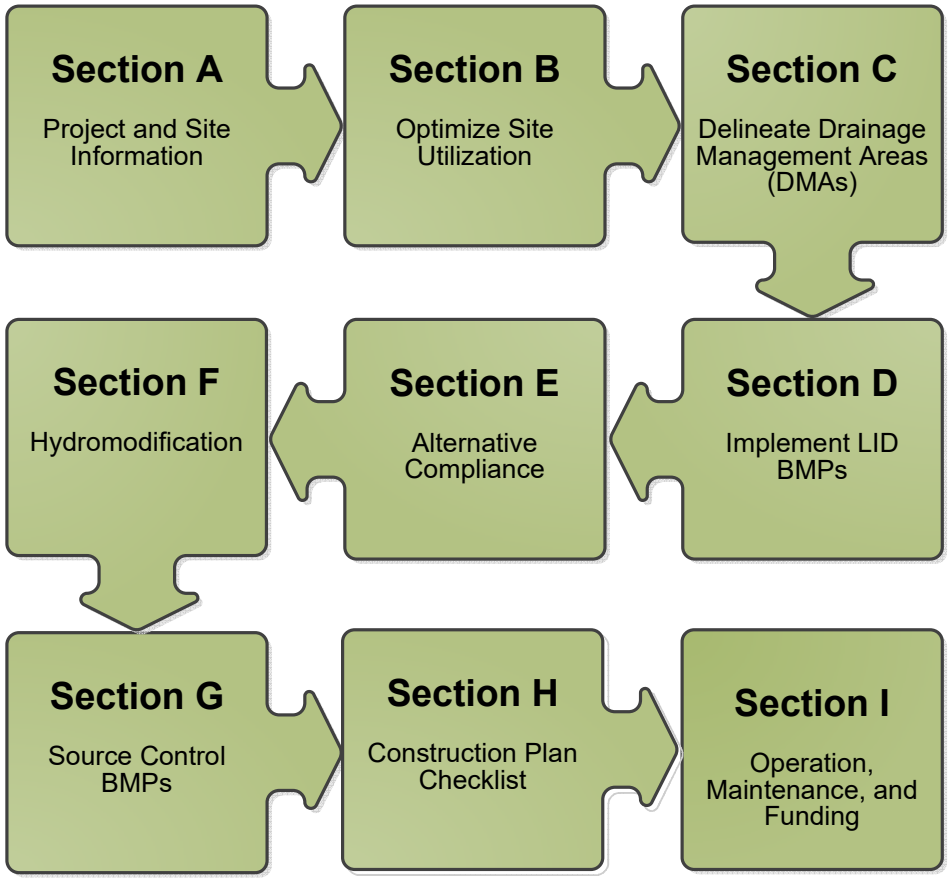
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Corona, CA 92881
Brandon Barnett, P.E., P.L.S.
(951) 734-2130 x203
brandon.barnett@kwcengineers.com

A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for Pinecrest Badger Associates, LCC by KWC Engineers for the The Trails project.

This WQMP is intended to comply with the requirements of Riverside County for Storm Water Quality Ordinance which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under Riverside County Ordinance #_____.

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	Date
Brandon Barnett	President
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure: P.E.

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Single Family Residential (R1-7.2) and Commecial
Planning Area:	Temescal Canyon Area Plan
Community Name:	City of Corona
Development Name:	The Trails

PROJECT LOCATION

Latitude & Longitude (DMS): 33° 50'44''N, 117° 36'26''W

Project Watershed and Sub-Watershed: Middle Santa Ana River Watershed, Prado Dam To Mission Blvd. In Riverside

APN(s): 102-050-022, 102-050-024, 102-050-021, 102-050-004, 102-112-008, 102-160-003, 102-113-015, 102-050-008, 102-203-007, 102-192-117

Map Book and Page No.: Book 47, Page 10

PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Single Family Residential
Proposed or Potential SIC Code(s)	N/A
Area of Impervious Project Footprint (SF)	1,216,998 sf
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement	1,216,998 sf
Does the project consist of offsite road improvements?	☐ Y ☒ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y ☒ N
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the project limits (SF)	112,255 sf
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	☒ Y ☐ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	N/A
What is the Water Quality Design Storm Depth for the project?	0.86

Project Description:

The Trails at Corona proposed project consists of approximately 68 acres. The property is the former Mountain View Golf Course which ceased operations in 2009. This property has the unique attributes of being both in-fill and master planned.

PA's 1 will provide duplex housing, while PA's 4 and 5 will consist of single family detached residential. PA 3 will consist of a mix of both single family residential lots and duplex housing residents. PA's 3 through 5 are designed to accommodate age restricted (60+) homes.

The project is also proposing to construct additional storm drain pipelines and detention facilities throughout the development to control and convey the storm water runoff to the existing 8'x8' RCB located west of the project underneath the 91 Freeway. The storm drain system consisting of varying sizes from 18-inch to 96-inch diameter pipes will be designed to convey the 100-year storm. The development will be designed to provide the required 10-year and 100-year flood protection as dictated by the City of Corona and Riverside County Flood Control & Water Conservation District standards.

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Reach 3 - Prado Dam To Mission Blvd. In Riverside	Bacteria, Metals	AGR, PROC, REC1, REC2, WARM, WILD, RARE, SPWN	11,308 Feet

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☐ Y	☒ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* Riverside County Grading, Improvement, and Building Permits.	☒ Y	☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

TTM 37504-PA1: *The existing drainage pattern of the site was identified and preserved. In the existing condition the site drains Westerly across the site along several valleys and small ravines. The existing and proposed drainage patterns are identified on the WQMP Site Plan (as well as identified in the project Preliminary Hydrology Report). Using a system of bio retention basins, self treating areas, and storm drain piping, offsite flow will by-pass the site and will not be co-mingled with development runoff which needs to be treated at the proposed designated BMP treatment areas.*

TTM 37502-PA4: *The existing drainage pattern of the site was identified and preserved. In the existing condition the site drains Westerly across the site along several valleys and small ravines. The existing and proposed drainage patterns are identified on the WQMP Site Plan (as well as identified in the project Preliminary Hydrology Report). Using a system of bio retention basins and storm drain piping, onsite flows are to be treated at the proposed designated BMP treatment areas.*

TTM 37501-PA3: *The existing drainage pattern of the site was identified and preserved. In the existing conditions of the site, the Northern and Southern portion of the site drains Westerly across several valleys and small ravines. The portion of the site connecting the Northern and Southern halves drains to the North across the site through several valleys and ravines. The existing and proposed drainage patterns are identified on the WQMP Site Plan (as well as identified in the project Preliminary Hydrology Report). Using a system of bio retention basins, self treating areas, and storm drain piping, offsite flow will by-pass the site and will not be co-mingled with development runoff which needs to be treated at the proposed designated BMP treatment areas.*

TTM 37503-PA5: *The existing drainage pattern of the site was identified and preserved. In the existing condition, the Southwest corner of the site drains Northern towards TTM 35701 through valleys and ravines. 800 feet Easterly of the Southern corner of the site the existing conditions begin to drain Northeasterly towards the existing retention basin through valley and ravines. The existing and proposed drainage patterns are identified on the WQMP Site Plan (as well as identified in the project Preliminary Hydrology Report). Using a system of MWS unit, underground detention, bioretention basin, and storm drain piping, offsite flow will by-pass the site and will not be co-mingled with development runoff which needs to be treated at the proposed designated BMP treatment areas.*

Did you identify and protect existing vegetation? If so, how? If not, why?

TTM 37504-PA1, TTM 37501-PA3, TTM 37502-PA4 & TTM 37503-PA5: *The project site borders residential areas from all directions. The site consists of sparsely vegetated land with trees and shrubs on otherwise undeveloped land. The vegetation that is on building grounds will be removed based on the Soil report recommendations. This project is proposing landscape areas to improve existing vegetation that is being removed.*

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

TTM 37504-PA1, TTM 37501-PA3, TTM 37502-PA4 & TTM 37503-PA5: *The site consists of old alluvium fan deposits (Qoal) from the early Pleistocene-age and Santa Ana Mountains as well as young alluvium (Qal) from the Temescal and Wardlow Canyon Washes and their tributaries. Soils within these units are predominately found to consist of sand, silt, silty clays, sand clays, clayey silts, sand silts with clay, and silts with sands. Undocumented fill soil is also present at depth between 1 and 4 feet deep which consist of brown silty fine to medium sand, clayey fine to medium sand, and silty fine sand with trace clay. Percolation test where not performed throughout each planning area but based on the boring logs, and percolation test found from borings BP-1 to BP-5, infiltration capacities can be estimated for all areas where BMPs are to be used comparing boring logs with what type of soils is present under each area. According to the soil report attached in Appendix 3, the planning areas associated with TTM 37504, 37501, 37502, and 37503 have poor infiltrating capacities. Furthermore, the location of some BMPs are sitting in fill conditions for our proposed site further diminishing possible infiltration. As such, no infiltration was used throughout the site, and bioretention and biotreatment methods were utilized to treat the onsite runoff instead.*

Did you identify and minimize impervious area? If so, how? If not, why?

TTM 37504-PA1, TTM 37501-PA3, TTM 37502-PA4 & TTM 37503-PA5: *The impervious area has been minimized in relation to the size of the site and the relative density of the development. The site design proposes public roadways, residential lots, landscaped slopes, and natural open space. The proposed roadway widths are designed to meet City of Corona Standards. The project was designed to provide protected green/open space and to achieve an overall density of approx. 4.0 units per acre.*

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

TTM 37504-PA1, TTM 37501-PA3, TTM 37502-PA4 & TTM 37503-PA5: *Yes, roof runoff has been designed to drain into pervious landscape areas with each residential lot prior to discharge onto streets or connection to proposed on-site storm drain systems.*

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

TTM 37504-PA1

DMA Name or ID	Surface Type(s)[1]	Area (Sq. Ft.)	DMA Type
DMA A1	Roofs	122,760	Type D
	Streets	80,599	Type D
	Landscape	325,768	Type D
DMA A2	Landscape	75,771	Type C

[1]Reference Table 2-1 in the WQMP Guidance Document to populate this column.

TTM 37501-PA3

DMA Name or ID	Surface Type(s)[1]	Area (Sq. Ft.)	DMA Type
DMA C1	Roofs	133,829	Type D
	Streets	73,847	Type D
	Landscape	308,410	Type D
DMA C2	Roofs	115,814	Type D
	Streets	53,460	Type D
	Landscape	233,635	Type D
DMA C3	Roofs	4,173	Type D
	Streets	16,567	Type D
	Landscape	113,951	Type D
DMA C4	Streets	10,506	Type D
	Landscape	96,096	Type D
DMA C5	Roofs	183,366	Type D
	Streets	92,517	Type D
	Landscape	272,287	Type D
DMA C6	Landscape	242,850	Type C

TTM 37502-PA4

DMA Name or ID	Surface Type(s)[1]	Area (Sq. Ft.)	DMA Type
DMA D1	Roofs	54,808	Type D
	Streets	35,985	Type D
	Landscape	95,126	Type D
DMA D2	Roofs	20,553	Type D
	Streets	20,862	Type D
	Landscape	55,729	Type D
DMA D3	Roofs	15,986	Type D
	Streets	9,339	Type D
	Landscape	43,817	Type D

DMA D4	Roofs	15,986	Type D
	Streets	18,958	Type D
	Landscape	40,410	Type D
DMA D5	Landscape	19,284	Type C

TTM 37503 –PA5

DMA Name or ID	Surface Type(s)[1]	Area (Sq. Ft.)	DMA Type
DMA E1	Roofs	24,852	Type D
	Streets	29,540	Type D
	Landscape	51,369	Type D
DMA E2	Roofs	49,368	Type D
	Streets	46,742	Type D
	Landscape	152,233	Type D

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
N/A			

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]
N/A						

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

TTM 37504-PA1

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Runoff factor	Product		Area(square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]
DMA A2	75,771	Landscape	0.1	7,577	DMA A2	75,771	0.1

TTM 37501-PA3

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Runoff factor	Product		Area(square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]
DMA C6	242,850	Landscape	0.1	24,285	DMA C6	242,850	0.1

TTM 37502-PA4

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Runoff factor	Product		Area(square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]
DMA D4	19,284	Landscape	0.1	1,928	DMA D4	19,284	0.1

Table C.5 Type 'D', Areas Draining to BMPs

TTM 37504-PA1

DMA Name or ID	BMP Name or ID
DMA A1	Bioretention Basin
DMA A2	Self-Retaining Area

TTM 37501-PA3

DMA Name or ID	BMP Name or ID
DMA C1	Bioretention Basin
DMA C2	Bioretention Basin
DMA C3	Bioretention Basin
DMA C4	Bioretention Basin
DMA C5	Vaulted MWS Unit
DMA C6	Self-Retaining Area

TTM 37502-PA4

DMA Name or ID	BMP Name or ID
DMA D1	Bioretention Basin
DMA D2	Bioretention Basin
DMA D3	Bioretention Basin
DMA D4	Bioretention Basin
DMA D5	Self-Retaining Area

TTM 37503-PA5

DMA Name or ID	BMP Name or ID
DMA E1	Vaulted MWS Unit/Underground Detention Chambers
DMA E2	Bioretention Basin

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site. If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?		X
If Yes, list affected DMAs:		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?	X	
Describe here: Underlying soil material is bedrock, and silty clay soil that does not infiltrate very well. A geotechnical report will be attached to Appendix 3 of the Preliminary Project Specific WQMP Report for reference.		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies*:*

- ☐ Reclaimed water will be used for the non-potable water demands for the project.
- ☐ Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).
- ☐ The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If neither of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: 42.86 Ac

Type of Landscaping (Conservation Design or Active Turf): Conservation Design

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 22.85 Ac

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: 2.12

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: 48.44 Ac

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
48.44 AC	42.86 AC

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: 924 (308 lots x 3 persons)

Project Type: Residential

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 22.85 Ac

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-1 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: 138

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: 3,153

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
3,153	924

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

N/A

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand:

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces:

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-3 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-3:

Step 4: Multiply the unit value obtained from Step 4 by the total of impervious areas from Step 3 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use:

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D.3 below.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

TTM 35704-PA1

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA A1	☐	☐	☒	☐	☐

TTM 35701-PA3

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA C1	☐	☐	☒	☐	☐
DMA C2	☐	☐	☒	☐	☐
DMA C3	☐	☐	☒	☐	☐
DMA C4	☐	☐	☒	☐	☐
DMA C5	☐	☐	☐	☒	☐

TTM 35702-PA4

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA D1	☐	☐	☒	☐	☐
DMA D2	☐	☐	☒	☐	☐
DMA D3	☐	☐	☒	☐	☐
DMA D4	☐	☐	☒	☐	☐

TTM 35703-PA5

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA E1	☐	☐	☐	☒	☐
DMA E2	☐	☐	☒	☐	☐

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

- DMA A2 and DMA C6 are both designated self-treating areas and as such do not require structural BMP methods.

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Refer to Appendix 6 for DCV calculations sheets corresponding to the proposed LID BMPs. All proposed BMPs are designed to handle and treat the minimum design capture volumes as identified on the DCV calculations.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviou s Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	***BIORETENTION BASIN A1***		
	[A]		[B]	[C]	[A] x [C]			
Roofs	*122,760*	*Roofs*	*1*	*0.89*	*109501.9*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Street	*80,599*	*Concrete or Asphalt*	*1*	*0.892*	*71894.3*			
Landscape	*325,768*	*Ornamental Landscaping*	*0.1*	*0.110458*	*35983.7*			
	A_T = 529,127				Σ= 217,379.9 [D]	[E] 0.86	[F] = 15,578.9	[G] 15,855

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviou s Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BIORETENTION BASIN C1*		
	[A]		[B]	[C]	[A] x [C]			
Roofs	*133,829*	*Roofs*	*1*	*0.89*	*119,375.5*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Street	*73,847*	*Concrete or Asphalt*	*1*	*0.892*	*65,871.5*			
Landscape	*308,41-*	*Ornamental Landscaping*	*0.1*	*0.110458*	*34,066.4*			
	A_T = 516,086				Σ= 219,313.4 [D]	[E] 0.86	[F] = 15,717.5	[G] 17,474

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviou s Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BIORETENTION BASIN C2*		
	[A]		[B]	[C]	[A] x [C]			
Roofs	*115814*	*Roofs*	*1*	*0.89*	*103,306.1*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Street	*53460*	*Concrete or Asphalt*	*1*	*0.892*	*47,686.3*			
Landscape	*233635*	*Ornamental Landscaping*	*0.1*	*0.110458*	*25,806.9*			
	A_T = 402,209				Σ= 176,799.3 [D]	[E] 0.86	[F] = 12,670.6	[G] 12,704

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviou s Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BIORETENTION BASIN C3*		
	[A]		[B]	[C]	[A] x [C]			
Roofs	*4,173*	*Roofs*	*1*	*0.89*	*3722.3*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Street	*16,564*	*Concrete or Asphalt*	*1*	*0.892*	*14,777.8*			
Landscape	*113,951.2*	*Ornamental Landscaping*	*0.1*	*0.110458*	*12,586.8*			
	A_T = 134,691.2				Σ= 31,086.9 [D]	[E] 0.86	[F] = 2,227.9	[G] 2,412

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviou s Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BIORETENTION BASIN C4*		
	[A]		[B]	[C]	[A] x [C]			
Street	*10,505.6*	*Concrete or Asphalt*	*1*	*0.892*	*9,371*			
Landscape	*96,095.6*	*Ornamental Landscaping*	*0.1*	*0.110458*	*10,614.5*			
	A_T = 106,601.2				Σ= 19,985.5 [D]	[E] 0.86	[F] = 1,432.3	[G] 1,570

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviou s Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*MWS UNIT C5/DETENTION BASIN*		
	[A]		[B]	[C]	[A] x [C]			
Roofs	*183,366*	*Roofs*	*1*	*0.89*	*163,562.5*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Street	*92,517*	*Concrete or Asphalt*	*1*	*0.892*	*82,525.2*			
Landscape	*272,286.7*	*Ornamental Landscaping*	*0.1*	*0.110458*	*30,076.2*			
	A_T = 548,169.7				Σ= 276,163.9 [D]	[E] 0.86	[F] = 19,791.7	[G] 20,303

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviou s Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BIORETENTION BASIN D1*		
	[A]		[B]	[C]	[A] x [C]			
Roofs	*54,808.1*	*Roofs*	*1*	*0.89*	*48,888.8*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Street	*35,985*	*Concrete or Asphalt*	*1*	*0.892*	*32,098.6*			
Landscape	*95,126.1*	*Ornamental Landscaping*	*0.1*	*0.110458*	*10,507.4*			
	A_T = 185,919.2				Σ= 91,494.8 [D]	[E] 0.86	[F] = 6,557	[G] 7,026

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviou s Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BIORETENTION BASIN D2*		
	[A]		[B]	[C]	[A] x [C]			
Roofs	*20,553*	*Roofs*	*1*	*0.89*	*18,333.3*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Street	*20,862*	*Concrete or Asphalt*	*1*	*0.892*	*18,608.9*			
Landscape	*55,729*	*Ornamental Landscaping*	*0.1*	*0.110458*	*6,155.7*			
	A_T = 97,144.2				Σ= 43,097.9 [D]	[E] 0.86	[F] = 3088.7	[G] 3,558

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviou s Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BIORETENTION BASIN D3*		
	[A]		[B]	[C]	[A] x [C]			
Roofs	*15,985.7*	*Roofs*	*1*	*0.89*	*14,259.2*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Street	*9,338.7*	*Concrete or Asphalt*	*1*	*0.892*	*8,330.1*			
Landscape	*43,817.1*	*Ornamental Landscaping*	*0.1*	*0.110458*	*4,839.9*			
	A_T = 69,141.5				Σ= 27,429.2 [D]	[E] 0.86	[F] = 1,965.8	[G] 2,490

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviou s Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BIORETENTION BASIN D4*		
	[A]		[B]	[C]	[A] x [C]			
Roofs	*15,985.7*	*Roofs*	*1*	*0.89*	*14,259.2*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Street	*18,957.6*	*Concrete or Asphalt*	*1*	*0.892*	*16,910.2*			
Landscape	*40,410.1*	*Ornamental Landscaping*	*0.1*	*0.110458*	*4,463.6*			
	A_T = 75,353.4				Σ= 35,633 [D]	[E] 0.86	[F] = 2,553.7	[G] 2,569

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviou s Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*MODULAR WETLANDS SYSTEM E1*		
	[A]		[B]	[C]	[A] x [C]			
Roofs	*24,851.7*	*Roofs*	*1*	*0.89*	*22,167.7*	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
Street	*29,540*	*Concrete or Asphalt*	*1*	*0.892*	*26,349.7*			
Landscape	*51,369.1*	*Ornamental Landscaping*	*0.1*	*0.110458*	*5,674.1*			
	A_T = 105,760.8				Σ= 54,191.5	[E] 0.20	0.2	0.206

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviou s Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*UNDERGROUND STORAGE E1*		
	[A]		[B]	[C]	[A] x [C]			
Roofs	*24,851.7*	*Roofs*	*1*	*0.89*	*22,167.7*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Street	*29,540*	*Concrete or Asphalt*	*1*	*0.892*	*26,349.7*			
Landscape	*51,369.1*	*Ornamental Landscaping*	*0.1*	*0.110458*	*5,674.1*			
	A_T = 105,760.8				Σ= 54,191.5	[E] 0.86	3,833.7	4,262

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperviou s Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BIORETENTION BASIN E2*		
P	[A]		[B]	[C]	[A] x [C]			
Roofs	*49,368*	*Roofs*	*1*	*0.89*	*44,036.3*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Street	*46,742*	*Concrete or Asphalt*	*1*	*0.892*	*41,693.9*			
Landscape	*152,233*	*Ornamental Landscaping*	*0.1*	*0.110458*	*16,815.4*			
	A_T = 248,343				Σ= 102,545.6 [D]	[E] 0.86	[F] = 7,349.1	[G] 9,133

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

E.2 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☒ Detached Residential Development	P	N	P	P	N	P	P	P
☒ Attached Residential Development	P	N	P	P	N	P	P	P(2)
☐ Commercial/Industrial Development	P(3)	P	P(1)	P(1)	P(5)	P(1)	P	P
☐ Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☒ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☐ Parking Lots (>5,000 ft^2)	P(6)	P	P(1)	P(1)	P(4)	P(1)	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☒	☐	☒	☒	☐	☒	☒	☒

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.3 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
N/A	
Total Credit Percentage[1]	

[1]Cannot Exceed 50%

[2]Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.4 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Area x Runoff Factor				
	[A]		[B]	[C]	[A] x [C]				
						Design Storm Depth (in)	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T =				Σ=		[F] =	[F] X (1-[H])	[I]=

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12

[H] is from the Total Credit Percentage as Calculated from Table E.2 above

[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.5 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
DMA C5 MWS Unit	Bacteria, Nutrients, Pesticides, Sediment, Metals.	60% Medium
DMA E1 MWS Unit	Bacteria, Nutrients, Pesticides, Sediment, Metals.	60% Medium

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	.278 Hr	.191 Hr	31.3%
Volume (Cubic Feet)	309,248.6	342,641.6	10.8%

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

Unit Hydrograph Summary Table

Drainage Area	Pre-Development UH Flowrate (cfs)	Post-Development UH Flowrate (cfs)	Difference Q2 24 UH Flowrate (Prop-Exist)	Pre-Dev. Q2 24 UH Runoff Volume (acre-feet)	Post Dev. Q2 24 UH Runoff Volume (acre-feet)	Difference Q2 24 UH Runoff Volume (acre-feet)
PA 3	10.99	12.53	1.54	7.10	7.87	0.77

Table above shows a major increase in peak flowrate for DMA A, therefore, the WQMP basins will need to detain the difference in runoff volume to satisfy the HCOC requirements.

As shown above, the difference in runoff volume for DMA A is 0.77 acre-feet which equals to 33,541 cf. This is the required volume to detain in order to meet HCOC requirements. The WQMP Basin A is sized to hold 849,325 cf which is more than enough to meet HCOC requirements.

The onsite basin is provided to mitigate the increase runoff from the 2 year 24 hour storm event to satisfy HCOC requirements. The following Tables show the stage storage relationship for the proposed basin.

WQMP PA3 Basin Stage Storage

Elevation	Contour Area (sq. ft.)	Incremental Depth (ft.)	Avg. End Area Incremental Vol. (cu ft.)	Avg. End Area Cumulative Vol (cu. ft.)
615.50	22,842.52	N/A	N/A	N/A
616.00	24,530.99	0.50	11,843.38	11,843.38
617.00	26,848.39	1.00	25,689.69	37,533.07
618.00	29,190.93	1.00	28,019.66	65,552.73
619.00	31,558.93	1.00	30,374.76	95,927.49
620.00	33,951.40	1.00	32,755.00	128,682.49
621.00	36,079.65	1.00	35,015.52	163,698.02
622.00	38,545.68	1.00	37,312.66	201,010.68
623.00	41,036.31	1.00	39,790.99	240,801.67
624.00	43,551.54	1.00	42,293.93	283,095.60
625.00	46,091.38	1.00	44,821.46	327,917.06
626.00	48,655.83	1.00	47,373.61	375,290.67
627.00	51,244.88	1.00	49,950.36	425,241.02
628.00	53,858.54	1.00	52,551.71	477,792.73
629.00	56,496.80	1.00	55,177.67	532,970.40
630.00	59,159.66	1.00	57,828.23	590,798.62
631.00	61,847.09	1.00	60,503.37	651,302.00
632.00	64,559.04	1.00	63,203.06	714,505.06
633.00	67,295.45	1.00	65,927.24	780,432.31
634.00	70,489.05	1.00	68,892.25	849,324.56

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On-site Storm Drain Inlets	• Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers shall be per local agency requirements	• Maintain and periodically repaint or replace inlet markings. • Provide Stormwater pollution prevention informations to new site owners, lessees, or operators. • See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

		• Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
Landscape/ Outdoor Pesticide Use	Final landscape plans will accomplish all of the following: • Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. • Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. • Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. • Consider using pest-resistant plants, especially adjacent to hardscape. • To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	• Maintain landscaping using minimum or no pesticides. • See applicable operational BMPs in "What you should know for…..landscape and Gardening" at http://rcflood.org/stormwater/ • Provide IPM information to new owners, lessees and operators.
Plazas, sidewalks, and parking lots.		• Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect wash water containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.
Roofing, Gutters, and Trim	• Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff	

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

TTM 35704-PA1

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
DMA A1	Bioretention Basin	TTM 35704
DMA A2	Self-Retaining Area	TTM 35704

TTM 35701-PA3

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
DMA C1	Bioretention Basin	TTM 35701
DMA C2	Bioretention Basin	TTM 35701
DMA C3	Bioretention Basin	TTM 35701
DMA C4	Bioretention Basin	TTM 35701
DMA C5	Detention Basin + MWS Unit	TTM 35701
DMA C6	Self-Retaining Area	TTM 35701

TTM 35702-PA4

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
DMA D1	Bioretention Basin	TTM 35702
DMA D2	Bioretention Basin	TTM 35702
DMA D3	Bioretention Basin	TTM 35702
DMA D4	Bioretention Basin	TTM 35702
DMA D5	Self-Retaining Area	TTM 35702

TTM 35703-PA5

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
DMA E1	MWS Unit/Underground Storage	TTM 35703
DMA E2	Bioretention Basin	TTM 35703

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: Community Facilities District (CFD)

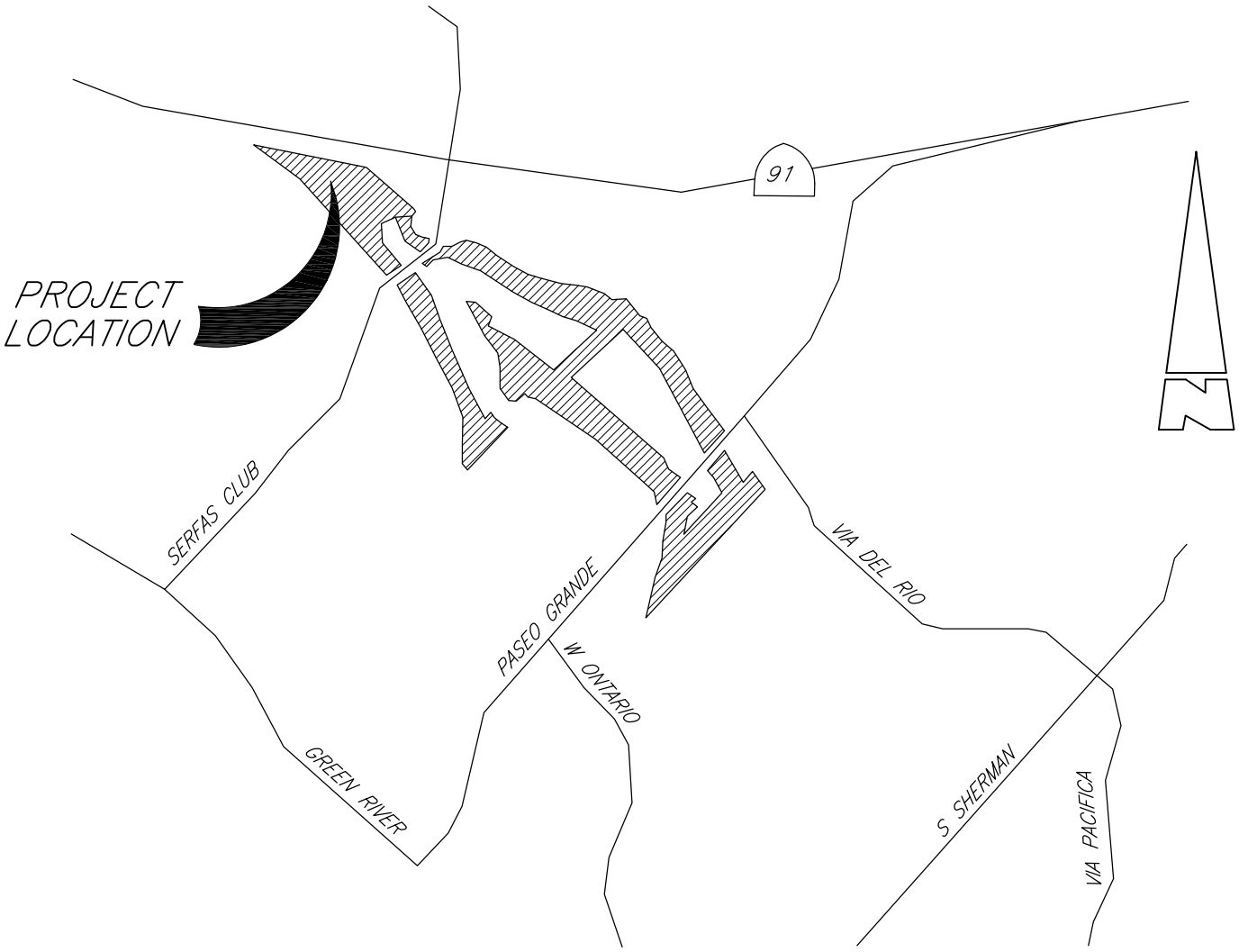
Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☐ Y ☒ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Appendix 1: Maps and Site Plans

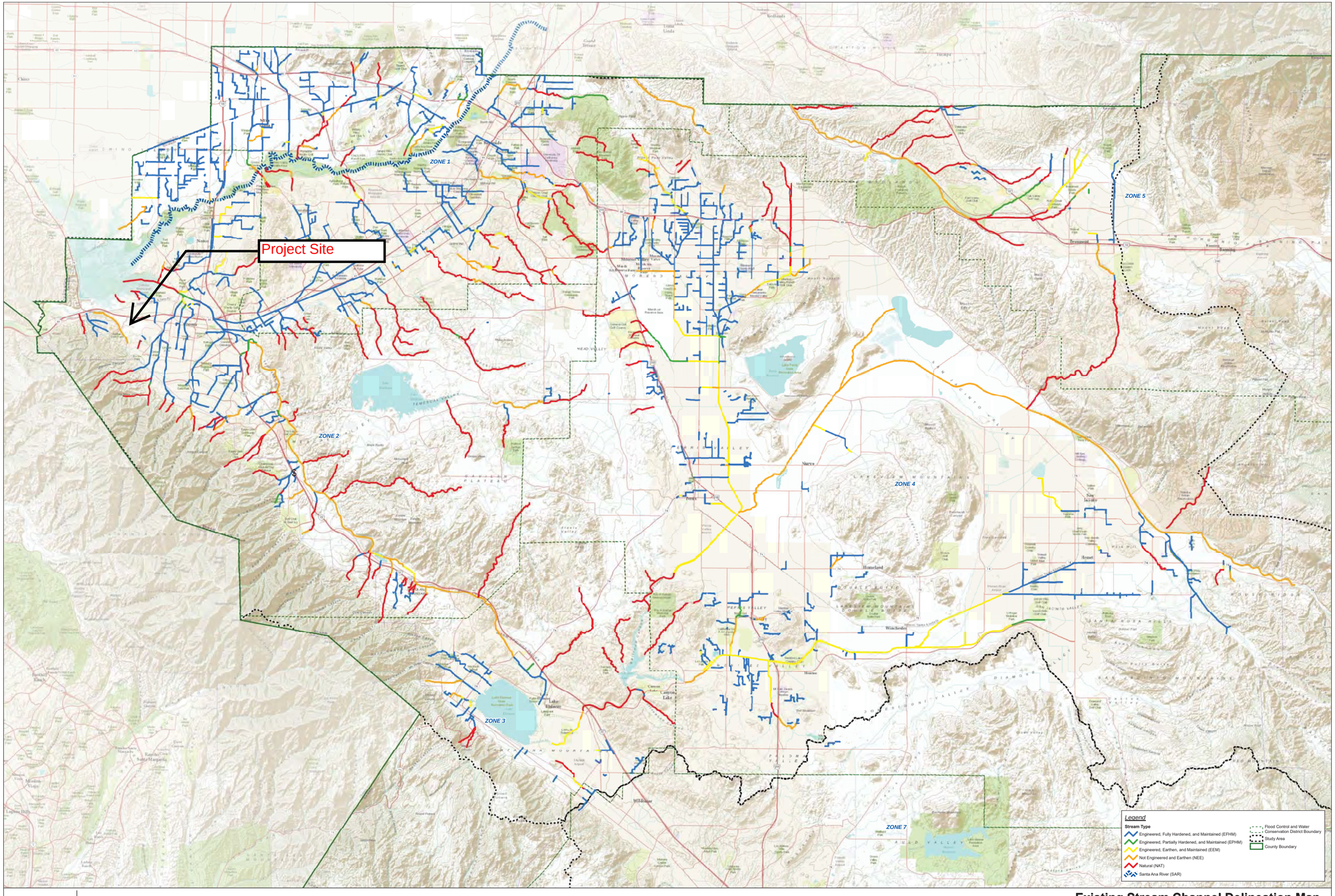
Location Map, WQMP Site Plan and Receiving Waters Map



VICINITY MAP

NOT TO SCALE

KWC ENGINEERS
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1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881-3370 951-734-2130



Existing Stream Channel Delineation Map

Hydromodification Susceptibility Documentation Report and Mapping
Riverside County Flood Control and Water Conservation District

Map 1

TRACT NO. 37504
PRELIMINARY WQMP SITE PLAN

NOTES

1. ALL NATURAL AND MANUFACTURED SLOPES NOT INCLUDED WITHIN RESIDENTIAL LOTS SHALL BE MAINTAINED BY PROJECT H.O.A.
2. ALL PUBLIC AND PRIVATE WALLS, FENCES AND ENTRY MONUMENTATION AND SIGNAGE SHALL BE MAINTAINED BY THE PROJECT H.O.A.
3. ALL STORM DRAIN SYSTEMS WITHIN THE PUBLIC RIGHT OF WAY SHALL BE MAINTAINED BY CITY OF CORONA AND/OR R.C.F.C&W.C.D. STORM DRAIN SYSTEMS UNDER 42" SHALL BE MAINTAINED BY H.O.A. AND STORM DRAIN SYSTEMS 42" AND OVER WILL BE MAINTAINED BY R.C.F.C. WQMP BASINS SHALL BE MAINTAINED BY C.F.D.
4. ALL ONSITE DRAINAGE FACILITIES SHALL BE MAINTAINED BY THE PROJECT H.O.A. ALL PUBLIC UTILITIES WITHIN THE PROPOSED ROADWAY RIGHT OF WAY AND/OR PUBLIC EASEMENTS SHALL BE MAINTAINED BY THE PURVEYOR (I.E. SEWER, WATER, POWER, TELEPHONE, C.A.T.V.)
5. FULL TRASH CAPTURE DEVICES WILL BE PROVIDED

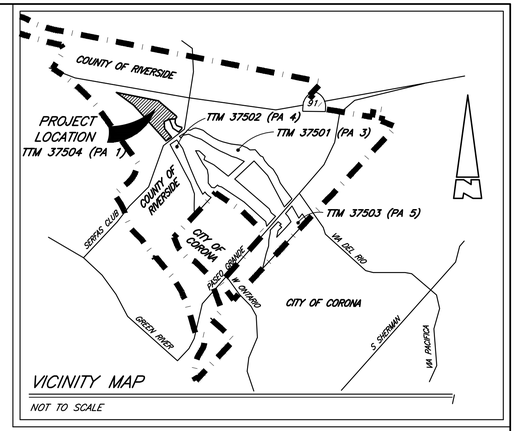
WQMP TREATMENT SUMMARY TABLE

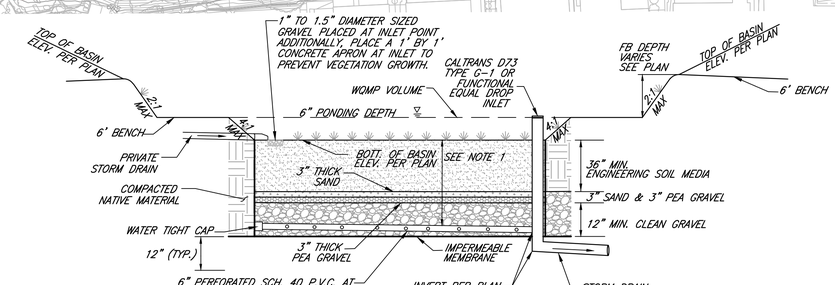
UNIT	DMA AREA (AC)	IMPERVIOUS (AC)	PERVIOUS (AC)	DESIGN CAPTURE VOLUME (CU-FT)	PROPOSED CAPTURE VOLUME (CU-FT)	BMP TYPE
A1	12.15	4.67	7.48	15,579	15,855	BIORETENTION BASIN
A2	1.74	–	1.74	–	–	SELF RETAINING AREA

SOURCE CONTROL BMPs

	WQMP REFERENCE IDENTIFIER	DESCRIPTION
NON-STRUCTURAL SOURCE CONTROL BMPs	N1	EDUCATION FOR PROPERTY OWNERS, TENANTS & OCCUPANTS
	N6	ACTIVITY RESTRICTIONS
	N3	LANDSCAPE MANAGEMENT
	N4	BMP MAINTENANCE
	N11	LITTER CONTROL
	N13	VACUUM SWEEP PRIVATE STREETS & PARKING LOTS
STRUCTURAL SOURCE CONTROL BMPs	S4	USE EFFICIENT IRRIGATION SYSTEMS & LANDSCAPE DESIGN
	S5	FINISHED GRADE OF LANDSCAPED AREAS 1-2 INCHES BELOW TOP OF CURB
	S6	PROTECT SLOPES
TREATMENT CONTROL BMP	T1	BIORETENTION BASIN
	T2	SELF RETAINING AREA







NOTE:
1. INVERT OF PERFORATED PIPE SHALL NOT BE GREATER THAN 30" FROM BASIN BOTTOM. MINIMUM 2" GRAVEL SECTION ABOVE TOP OF PIPE AND BELOW BOTTOM OF PIPE.
2. CLEANOUT ON UNDERDRAIN NOT SHOWN FOR CLARITY.
3. COUNTY RECOMMENDED PLANT LIST FOR THE BASIN IS INCLUDED IN THE REPORT.
4. ALL ROCK OR SAND TO BE PLACED IN POST-CONSTRUCTION BMPS SHALL BE CLEAN-WASHED ROCK TO THE SATISFACTION OF THE GRADING INSPECTOR.
5. IMMEDIATELY BELOW THE SOIL MEDIA (BSM) INCLUDE A SECTION OF 3" SAND, THEN 3" PEA GRAVEL. ALL SUBDRAINS SHALL BE SCH. 40 WITH A MINIMUM SLOPE OF 0.5%.

BIO-RETENTION BASIN DETAILS
NOT TO SCALE

ENGINEERED SOIL MEDIA REQUIREMENTS:

THE ENGINEERED SOIL MEDIA SHALL BE COMPRISED OF 85% MINERAL COMPONENT AND 15% ORGANIC COMPONENT, BY VOLUME, DRUM MIXED PRIOR TO PLACEMENT. THE MINERAL COMPONENT SHALL BE A CLASS A SANDY LOAM TOP SOIL THAT MEETS THE RANGE SPECIFIED IN TABLE BELOW. THE ORGANIC COMPONENT SHALL BE NITROGEN STABILIZED COMPOST.

MINERAL COMPONENT RANGE REQUIREMENT

PERCENT RANGE	COMPONENT
70–80	SAND
15–20	SILT
5–10	CLAY

SOIL MEDIA COMPONENT RANGE REQUIREMENT

PERCENT RANGE	COMPONENT
85	TOP SOIL
15	ORGANICS

LEGEND

- LOT AREA
- STREET AREA
- LANDSCAPING AREA
- PROPOSED WQMP BASINS
- CITY/COUNTY BOUNDARY
- TRIBUTARY AREA BOUNDARY
- A1 / 4.7 — BASIN NUMBER / TRIBUTARY AREA (ACRES)
- A — PROPOSED WQMP BASIN NUMBER
- PROPOSED STORM DRAIN
- PROPOSED CATCH BASIN
- FLOW DIRECTION

NOTE:
LOT AREA INCLUDES IMPERVIOUS AND LANDSCAPED AREAS

60' 0 60' 120' 180'
SCALE IN FEET

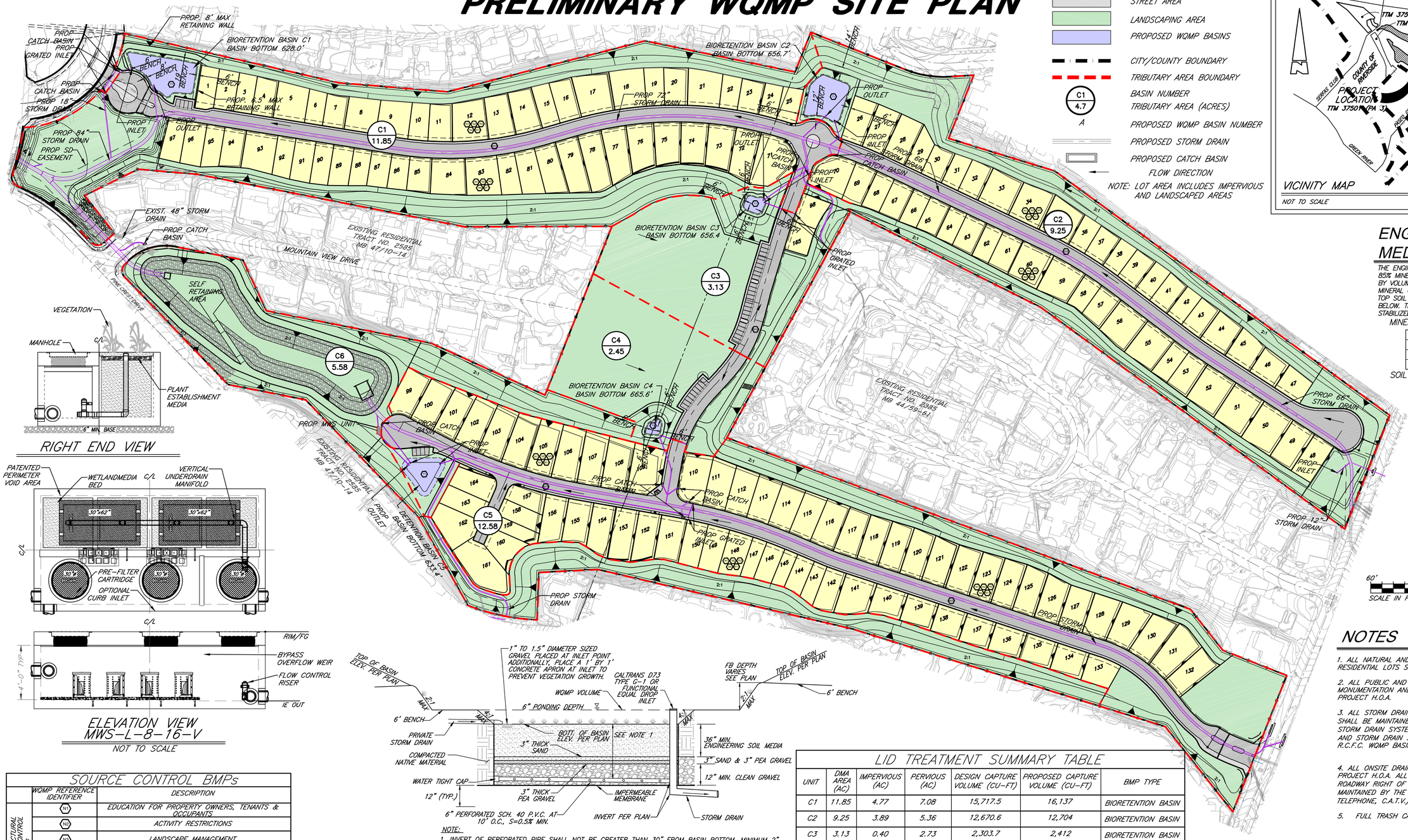
PRELIMINARY WQMP SITE PLAN
FOR
TRACT NO. 37504
CORONA, CA

HYD: LJ	KWC ENGINEERS
DRAFT: AC	CIVIL ENGINEERS • PLANNERS • SURVEYORS
CHECK: CS	1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881-3370 951-734-2130

SHEET 1 OF 1 SHEETS

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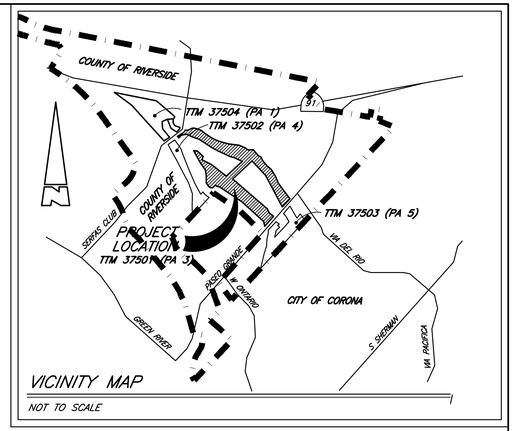
TRACT NO. 37501
PRELIMINARY WQMP SITE PLAN



LEGEND

- LOT AREA
- STREET AREA
- LANDSCAPING AREA
- PROPOSED WQMP BASINS
- CITY/COUNTY BOUNDARY
- TRIBUTARY AREA BOUNDARY
- C1 / 4.7 — BASIN NUMBER / TRIBUTARY AREA (ACRES)
- A — PROPOSED WQMP BASIN NUMBER
- PROPOSED STORM DRAIN
- PROPOSED CATCH BASIN
- FLOW DIRECTION

NOTE: LOT AREA INCLUDES IMPERVIOUS AND LANDSCAPED AREAS



VICINITY MAP

NOT TO SCALE

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MINERAL COMPONENT RANGE REQUIREMENT

PERCENT RANGE	COMPONENT
70–80	SAND
15–20	SILT
5–10	CLAY

SOIL MEDIA COMPONENT RANGE REQUIREMENT

PERCENT RANGE	COMPONENT
85	TOP SOIL
15	ORGANICS

RIGHT END VIEW

ELEVATION VIEW
MWS-L-8-16-V

NOT TO SCALE

NOTE:

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BIO-RETENTION BASIN DETAILS

NOT TO SCALE

SOURCE CONTROL BMPs

	WQMP REFERENCE IDENTIFIER	DESCRIPTION
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	N2	ACTIVITY RESTRICTIONS
	N3	LANDSCAPE MANAGEMENT
	N4	BMP MAINTENANCE
	N11	LITTER CONTROL
	N15	VACUUM SWEEP PRIVATE STREETS & PARKING LOTS
STRUCTURAL SOURCE CONTROL BMPs	S4	USE EFFICIENT IRRIGATION SYSTEMS & LANDSCAPE DESIGN
	S5	FINISHED GRADE OF LANDSCAPED AREAS 1–2 INCHES BELOW TOP OF CURB
	S6	PROTECT SLOPES
TREATMENT CONTROL BMPs	T1	BIORETENTION BASIN
	T2	SELF RETAINING AREA

LID TREATMENT SUMMARY TABLE

UNIT	DMA AREA (AC)	IMPERVIOUS (AC)	PERVIOUS (AC)	DESIGN CAPTURE VOLUME (CU-FT)	PROPOSED CAPTURE VOLUME (CU-FT)	BMP TYPE
C1	11.85	4.77	7.08	15,717.5	16,137	BIORETENTION BASIN
C2	9.25	3.89	5.36	12,670.6	12,704	BIORETENTION BASIN
C3	3.13	0.40	2.73	2,303.7	2,412	BIORETENTION BASIN
C4	2.45	0.24	2.21	1,480.7	1,570	BIORETENTION BASIN

MWS SUMMARY TABLE

UNIT	DMA AREA (AC)	IMPERVIOUS (AC)	PERVIOUS (AC)	DESIGN CAPTURE VOLUME (DCV)	VOLUME PROVIDED (CU.FT.)	48-HOUR DRAW DOWN (CU.FT.)	MWS UNIT
C5	2.43	1.25	1.18	19,648 CU.FT.	20,303	20,145	MODULAR WETLAND (MWS) MWS-L-8-16

SELF RETAINING AREA SUMMARY TABLE

UNIT	DMA AREA (AC)	IMPERVIOUS (AC)	PERVIOUS (AC)	DESIGN CAPTURE VOLUME (DCV)	VOLUME PROVIDED (CU.FT)
C6	5.58	0	5.58	–	749,898

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60' 0 60' 120' 180'

SCALE IN FEET

PRELIMINARY WQMP SITE PLAN
FOR
TRACT NO. 37501
CORONA, CA

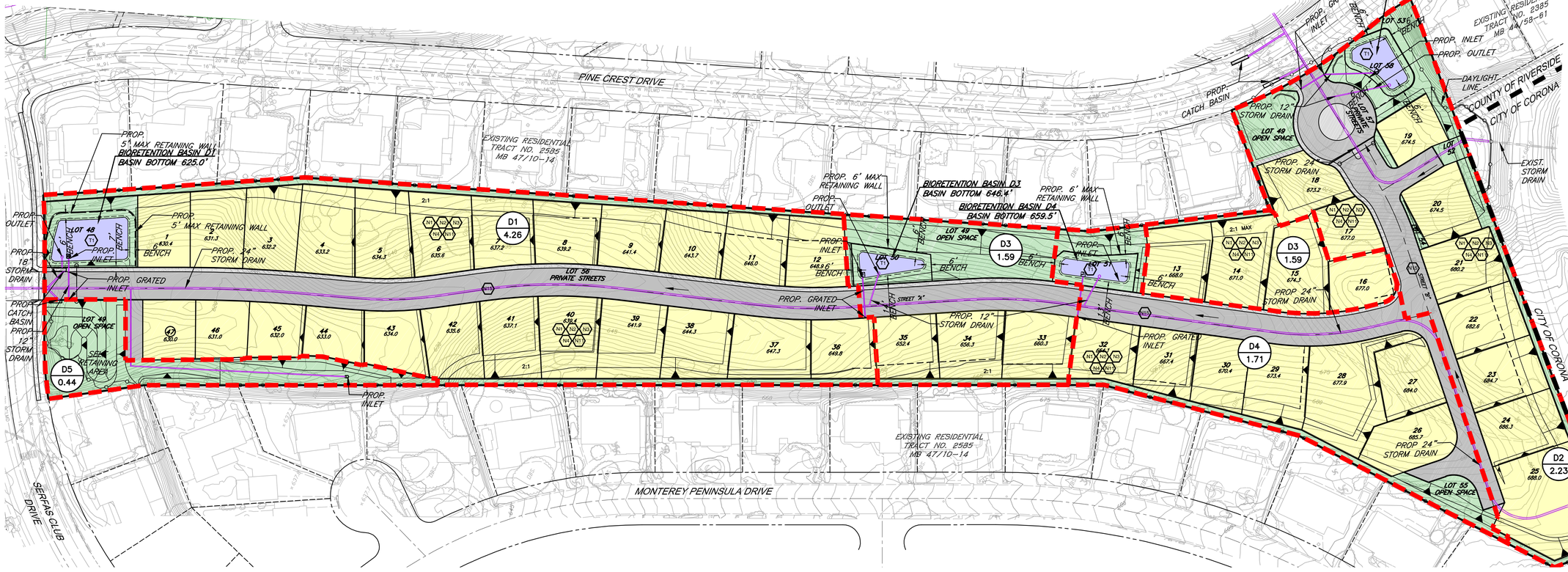
HYD: LJ
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KWC ENGINEERS
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1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881-3370 951-734-2130

SHEET 1 OF 1 SHEETS

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TRACT NO. 37502
PRELIMINARY WQMP SITE PLAN



LEGEND

- LOT AREA
- STREET AREA
- LANDSCAPING AREA
- PROPOSED WQMP BASINS
- CITY/COUNTY BOUNDARY
- TRIBUTARY AREA BOUNDARY
- D1 / 4.7 — BASIN NUMBER / TRIBUTARY AREA (ACRES)
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- PROPOSED CATCH BASIN
- FLOW DIRECTION

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5. FULL TRASH CAPTURE DEVICES WILL BE PROVIDED

ENGINEERED SOIL MEDIA REQUIREMENTS:

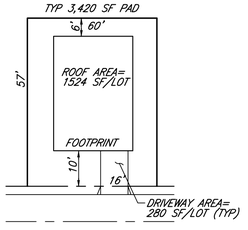
THE ENGINEERED SOIL MEDIA SHALL BE COMPRISED OF 85% MINERAL COMPONENT AND 15% ORGANIC COMPONENT, BY VOLUME, DRUM MIXED PRIOR TO PLACEMENT. THE MINERAL COMPONENT SHALL BE A CLASS A SANDY LOAM TOP SOIL THAT MEETS THE RANGE SPECIFIED IN TABLE BELOW. THE ORGANIC COMPONENT SHALL BE NITROGEN STABILIZED COMPOST.

MINERAL COMPONENT RANGE REQUIREMENT

PERCENT RANGE	COMPONENT
70–80	SAND
15–20	SILT
5–10	CLAY

SOIL MEDIA COMPONENT RANGE REQUIREMENT

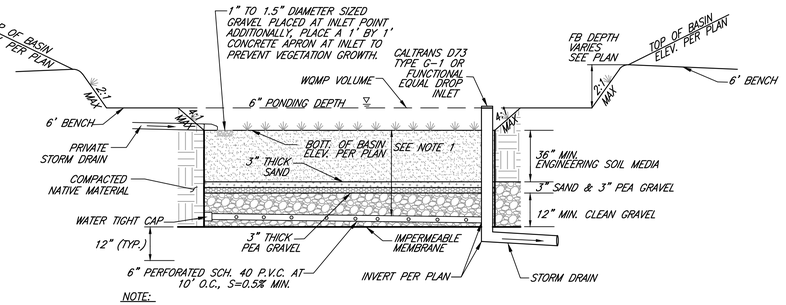
PERCENT RANGE	COMPONENT
85	TOP SOIL
15	ORGANICS



TYPICAL STREET

TYP LOT

NOT TO SCALE



NOTE:

1. INVERT OF PERFORATED PIPE SHALL NOT BE GREATER THAN 30" FROM BASIN BOTTOM. MINIMUM 2" GRAVEL SECTION ABOVE TOP OF PIPE AND BELOW BOTTOM OF PIPE.
2. CLEANOUT ON UNDERDRAIN NOT SHOWN FOR CLARITY.
3. COUNTY RECOMMENDED PLANT LIST FOR THE BASIN IS INCLUDED IN THE REPORT.
4. ALL ROCK OR SAND TO BE PLACED IN POST-CONSTRUCTION BMPS SHALL BE CLEAN-WASHED ROCK TO THE SATISFACTION OF THE GRADING INSPECTOR.
5. IMMEDIATELY BELOW THE SOIL MEDIA (BSM) INCLUDE A SECTION OF 3" SAND, THEN 3" PEA GRAVEL. ALL SUBDRAINS SHALL BE SCH. 40 WITH A MINIMUM SLOPE OF 0.5%.

BIO-RETENTION BASIN DETAILS

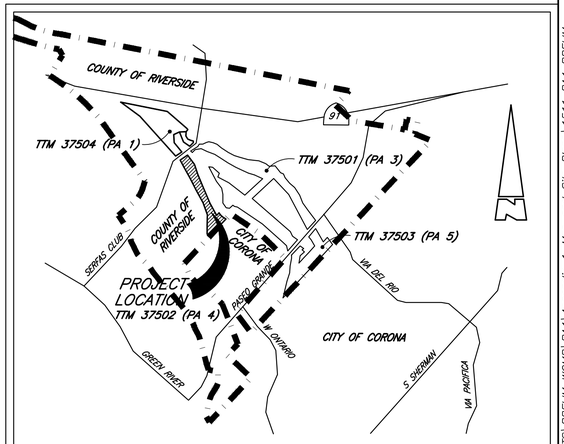
NOT TO SCALE

SOURCE CONTROL BMPs

	WQMP REFERENCE IDENTIFIER	DESCRIPTION
NON-STRUCTURAL SOURCE CONTROL BMPs	N1	EDUCATION FOR PROPERTY OWNERS, TENANTS & OCCUPANTS
	N2	ACTIVITY RESTRICTIONS
	N3	LANDSCAPE MANAGEMENT
	N4	BMP MAINTENANCE
	N7	LITTER CONTROL
	N11	VACUUM SWEEP PRIVATE STREETS & PARKING LOTS
STRUCTURAL SOURCE CONTROL BMPs	S4	USE EFFICIENT IRRIGATION SYSTEMS & LANDSCAPE DESIGN
	S5	FINISHED GRADE OF LANDSCAPED AREAS 1–2 INCHES BELOW TOP OF CURB
	S6	PROTECT SLOPES
TREATMENT CONTROL BMP	T1	BIORETENTION BASIN
	T5	SELF RETAINING AREA

WQMP TREATMENT SUMMARY TABLE

UNIT	DMA AREA (AC)	IMPERVIOUS (AC)	PERVIOUS (AC)	DESIGN CAPTURE VOLUME (CU-FT)	PROPOSED CAPTURE VOLUME (CU-FT)	BMP TYPE
D1	4.23	2.05	2.18	6,557	7,026	BIORETENTION BASIN
D2	2.23	0.95	1.28	3,089	3,558	BIORETENTION BASIN
D3	1.59	0.58	1.01	1,966	2,490	BIORETENTION BASIN
D4	1.71	0.78	0.93	2,554	2,569	BIORETENTION BASIN
D5	0.44	–	0.44	–	–	SELF RETAINING AREA



VICINITY MAP

NOT TO SCALE

PRELIMINARY WQMP SITE PLAN
FOR
TRACT NO. 37502
CORONA, CA

HYD:	PK
DRAFT:	BP
CHECK:	MCT

KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881-3370 951-734-2130

SHEET 1 OF 1 SHEETS

JOB NO. 15.1511.1 R:\15\1511\PRELIM\REPORTS\PRELIM WQMP\PA4\Appendix 1-Map and Site Plans\1511 PA4 PRELIM WQMP.dwg

TRACT NO. 37503
PRELIMINARY WQMP SITE PLAN

NOTES

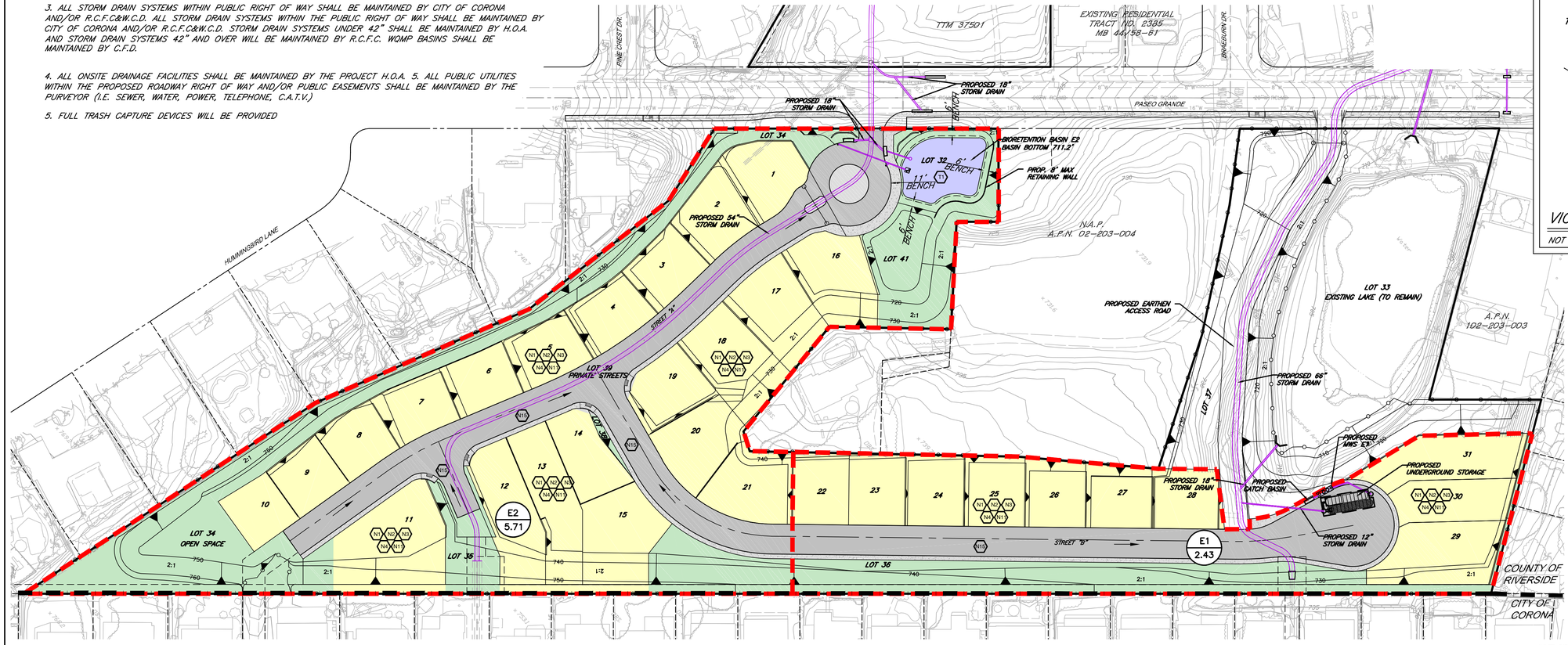
1. ALL NATURAL AND MANUFACTURED SLOPES NOT INCLUDED WITHIN RESIDENTIAL LOTS SHALL BE MAINTAINED BY PROJECT H.O.A.

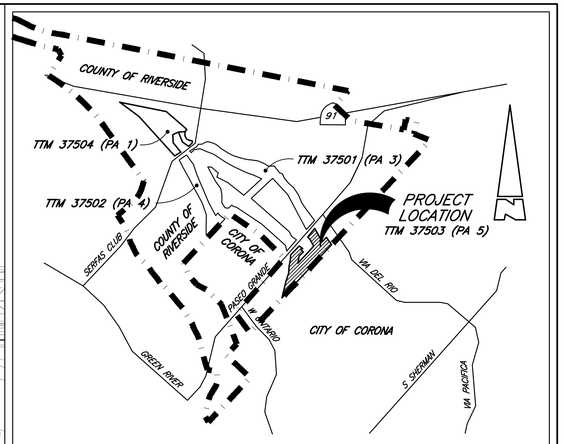
2. ALL PUBLIC AND PRIVATE WALLS, FENCES AND ENTRY MONUMENTATION AND SIGNAGE SHALL BE MAINTAINED BY THE PROJECT H.O.A.

3. ALL STORM DRAIN SYSTEMS WITHIN PUBLIC RIGHT OF WAY SHALL BE MAINTAINED BY CITY OF CORONA AND/OR R.C.F.C&W.C.D. ALL STORM DRAIN SYSTEMS WITHIN THE PUBLIC RIGHT OF WAY SHALL BE MAINTAINED BY CITY OF CORONA AND/OR R.C.F.C&W.C.D. STORM DRAIN SYSTEMS UNDER 42" SHALL BE MAINTAINED BY H.O.A. AND STORM DRAIN SYSTEMS 42" AND OVER WILL BE MAINTAINED BY R.C.F.C. WQMP BASINS SHALL BE MAINTAINED BY C.F.D.

4. ALL ONSITE DRAINAGE FACILITIES SHALL BE MAINTAINED BY THE PROJECT H.O.A. 5. ALL PUBLIC UTILITIES WITHIN THE PROPOSED ROADWAY RIGHT OF WAY AND/OR PUBLIC EASEMENTS SHALL BE MAINTAINED BY THE PURVEYOR (I.E. SEWER, WATER, POWER, TELEPHONE, C.A.T.V.)

5. FULL TRASH CAPTURE DEVICES WILL BE PROVIDED





VICINITY MAP

NOT TO SCALE

LEGEND

- LOT AREA
- STREET AREA
- LANDSCAPING AREA
- PROPOSED WQMP BASINS
- CITY/COUNTY BOUNDARY
- TRIBUTARY AREA BOUNDARY
- A1 / 4.7 — BASIN NUMBER / TRIBUTARY AREA (ACRES)
- A — PROPOSED WQMP BASIN NUMBER
- PROPOSED STORM DRAIN
- PROPOSED CATCH BASIN
- FLOW DIRECTION

NOTE:
LOT AREA INCLUDES IMPERVIOUS AND LANDSCAPED AREAS

NOTE:

1. INVERT OF PERFORATED PIPE SHALL NOT BE GREATER THAN 30" FROM BASIN BOTTOM. MINIMUM 2" GRAVEL SECTION ABOVE TOP OF PIPE AND BELOW BOTTOM OF PIPE.
2. CLEANOUT ON UNDERDRAIN NOT SHOWN FOR CLARITY.
3. COUNTY RECOMMENDED PLANT LIST FOR THE BASIN IS INCLUDED IN THE REPORT.
4. ALL ROCK OR SAND TO BE PLACED IN POST-CONSTRUCTION BMPS SHALL BE CLEAN-WASHED ROCK TO THE SATISFACTION OF THE GRADING INSPECTOR.
5. IMMEDIATELY BELOW THE SOIL MEDIA (BSM) INCLUDE A SECTION OF 3" SAND, THEN 3" PEA GRAVEL. ALL SUBDRAINS SHALL BE SCH. 40 WITH A MINIMUM SLOPE OF 0.5%.

BIO-RETENTION BASIN DETAILS

NOT TO SCALE

ENGINEERED SOIL MEDIA REQUIREMENTS:

THE ENGINEERED SOIL MEDIA SHALL BE COMPRISED OF 85% MINERAL COMPONENT AND 15% ORGANIC COMPONENT, BY VOLUME, DRUM MIXED PRIOR TO PLACEMENT. THE MINERAL COMPONENT SHALL BE A CLASS A SANDY LOAM TOP SOIL THAT MEETS THE RANGE SPECIFIED IN TABLE BELOW. THE ORGANIC COMPONENT SHALL BE NITROGEN STABILIZED COMPOST.

MINERAL COMPONENT RANGE REQUIREMENT

PERCENT RANGE	COMPONENT
70–80	SAND
15–20	SILT
5–10	CLAY

SOIL MEDIA COMPONENT RANGE REQUIREMENT

PERCENT RANGE	COMPONENT
85	TOP SOIL
15	ORGANICS

MWS UNIT TREATMENT SUMMARY TABLE

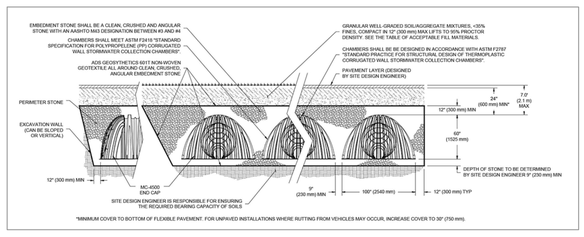
UNIT	DMA AREA (AC)	IMPERVIOUS (AC)	PERVIOUS (AC)	STORM WATER QUALITY DESIGN FLOWRATE (CFS)	BMP SIZE PROVIDED (CFS)	DESIGN CAPTURE VOLUME (CU-FT)	STORAGE VOLUME (CU-FT)	BMP TYPE
E1	2.43	1.25	1.18	0.20	0.206	3,884	4,262	MODULAR WETLAND (MWS) MWS-L-4-17-V/UNDERGROUND DETENTION CHAMBER

WQMP TREATMENT SUMMARY TABLE

UNIT	DMA AREA (AC)	IMPERVIOUS (AC)	PERVIOUS (AC)	DESIGN CAPTURE VOLUME (CU-FT)	PROPOSED CAPTURE VOLUME (CU-FT)	BMP TYPE
E2	5.71	2.20	3.50	7,341	9,133	BIORETENTION BASIN

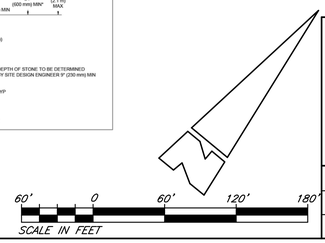
SOURCE CONTROL BMPs

	WQMP REFERENCE IDENTIFIER	DESCRIPTION
NON-STRUCTURAL SOURCE CONTROL BMPs	N1	EDUCATION FOR PROPERTY OWNERS, TENANTS & OCCUPANTS
	N2	ACTIVITY RESTRICTIONS
	N3	LANDSCAPE MANAGEMENT
	N4	BMP MAINTENANCE
	N11	LITTER CONTROL
	N15	VACUUM SWEEP PRIVATE STREETS & PARKING LOTS
STRUCTURAL SOURCE CONTROL BMPs	S4	USE EFFICIENT IRRIGATION SYSTEMS & LANDSCAPE DESIGN
	S5	FINISHED GRADE OF LANDSCAPED AREAS 1-2 INCHES BELOW TOP OF CURB
	S6	PROTECT SLOPES
TREATMENT CONTROL BMP	T1	BIORETENTION BASIN
	T2	SELF RETAINING AREA

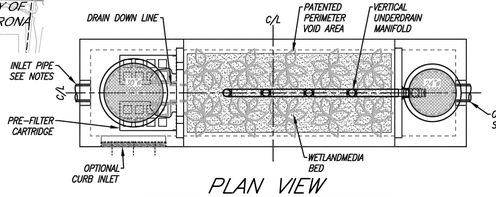


UNDERGROUND STORAGE

NOT TO SCALE

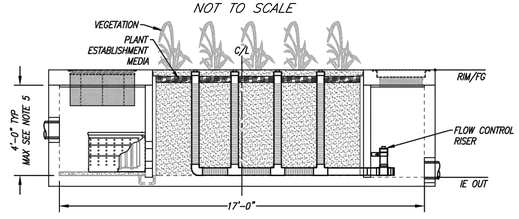


SCALE IN FEET



PLAN VIEW

NOT TO SCALE



ELEVATION VIEW
MWS-L-4-17-V

NOT TO SCALE

PRELIMINARY WQMP SITE PLAN
FOR
TRACT NO. 37503
CORONA, CA

HYD: PK	KWC ENGINEERS
DRAFT: AC	CIVIL ENGINEERS • PLANNERS • SURVEYORS
CHECK: CS	1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881-3370 951-734-2130

SHEET 1 OF 1 SHEETS

JOB NO. 15-1511.1 R:\15\1511.1\PRELIM\REPORTS\PRELIM WQMP\PAS\Appendix 1-Map and Site Plans\1511 PAS PRELIM WQMP SITE.dwg

Appendix 2: Construction Plans

Grading/ Drainage Plans and TTM Plots

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37504
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

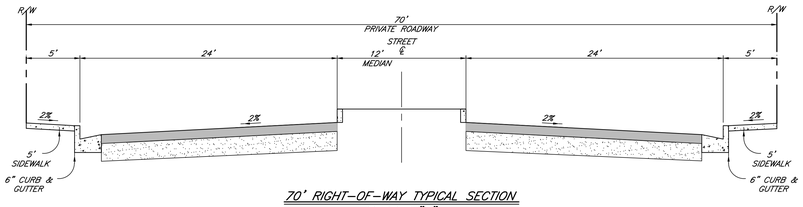
	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT.	FT.
1	2,574	2,574	31	82
2	2,542	2,542	31	82
3	2,542	2,542	31	82
4	2,542	2,542	31	82
5	2,542	2,542	31	82
6	2,542	2,542	31	82
7	2,542	2,542	31	82
8	2,542	2,542	31	82
9	2,542	2,542	31	82
10	2,542	2,542	31	82
11	2,542	2,542	31	82
12	2,542	2,542	31	82
13	2,542	2,542	31	82
14	3,274	3,274	38	82
15	3,268	3,268	39	82
16	2,542	2,542	31	82
17	2,542	2,542	31	82
18	2,542	2,542	31	82
19	2,542	2,542	31	82
20	2,542	2,542	31	82
21	2,542	2,542	31	82
22	2,578	2,578	31	82
23	2,769	2,769	31	85
24	3,067	3,067	31	103
25	2,592	2,592	31	82
26	2,879	2,879	31	83
27	2,542	2,542	31	82
28	2,542	2,542	31	82
29	2,553	2,553	31	82
30	2,575	2,575	31	82
31	2,586	2,586	31	82
32	2,570	2,570	31	82
33	2,542	2,542	31	82
34	2,542	2,542	31	82
35	2,542	2,542	31	82
36	2,542	2,542	31	82
37	2,542	2,542	31	82
38	2,562	2,562	31	82
39	2,522	2,522	31	82
40	2,542	2,542	31	82
41	2,550	2,550	31	82
42	2,566	2,566	31	83
43	2,582	2,582	31	83
44	2,598	2,598	31	44
45	2,613	2,613	31	84
46	2,610	2,610	31	84
47	2,551	2,551	31	82
48	2,542	2,542	31	82
49	2,542	2,542	31	82
50	2,542	2,542	31	82
51	2,542	2,542	31	82
52	2,542	2,542	31	82
53	2,542	2,542	31	82
54	2,542	2,542	31	82
55	2,542	2,542	31	82
56	2,542	2,542	31	82
57	2,542	2,542	31	82
58	2,542	2,542	31	82
59	2,542	2,542	31	82
60	2,542	2,542	31	82
61	2,542	2,542	31	82
62	2,542	2,542	31	82
63	2,541	2,541	31	82
64	2,541	2,541	31	82
65	2,541	2,541	31	82
66	2,538	2,538	31	82
Σ=	170,821	170,821	2,061	5,405
AVG=	2,588	2,588	31	82
MAX=	3,274	3,274	39	103
MIN=	2,522	2,522	31	44

LETTERED LOTS:

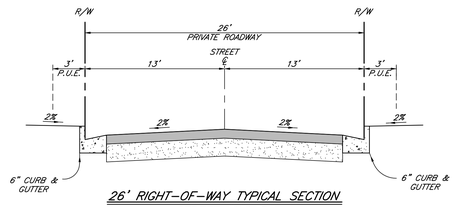
THE TRAILS PA 1 - LETTERED LOTS				
LOT	AREA (SF)	AREA (Acre)	LAND USE	MAINTAINED BY
67	73,942	1.70	OPEN SPACE/TRAIL	H.O.A
68	15,191	0.35	WQMP	C.F.D.
69	41,554	0.95	OPEN SPACE/TRAIL	H.O.A
70	181,708	4.17	OPEN SPACE/TRAIL	H.O.A
71	25,419	0.58	OPEN SPACE/TRAIL	H.O.A
72	30,709	0.70	OPEN SPACE/TRAIL	H.O.A
73	17,890	0.41	OPEN SPACE/TRAIL	H.O.A
74	50,103	1.15	PRIVATE STREETS A & B	H.O.A
75	6,953	0.16	PRIVATE STREETS - ENTRY	H.O.A
TOTAL	443,469	10.18		

STREET LOTS:

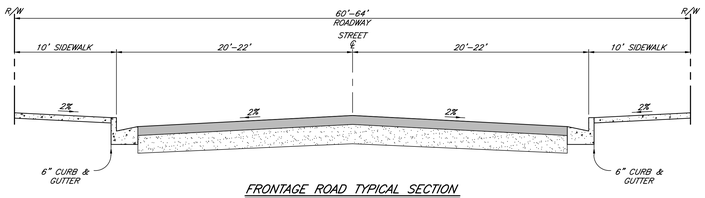
THE TRAILS - PA 1 STREET			
	STREET AREA		CL
STREET	SF	AC	FT
A	50,103	1.15	1,663
B			
C	6,953	0.16	203
TOTAL	57,056	1.31	1,866



70' RIGHT-OF-WAY TYPICAL SECTION
STREET "C"
NOT TO SCALE



26' RIGHT-OF-WAY TYPICAL SECTION
STREET "A" & "B"
NOT TO SCALE



FRONTAGE ROAD TYPICAL SECTION
NOT TO SCALE

GENERAL NOTES

1. PREPARED: FEBRUARY 2024
2. SITE ACREAGE:... 14.03 ACRES GROSS
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN

ADJACENT LAND USE:

NORTH: COMMERCIAL
EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING
PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION
PROPOSED: TRAILS SPECIFIC PLAN

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID G5

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SBCC, "P474", AND "CNPP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS, OR DEEDS AS SHOWN PER THAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

LEGAL DESCRIPTION

PARCEL 1:
LOTS "A" OF TRACT NO. 2585, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 47, PAGES 10 THROUGH 14, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THAT PORTION OF LOT "A" CONVEYED TO JOHN R JAHN AND DOROTHY J. JAHN, HUSBAND AND WIFE, AS JOINT TENANTS, BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781, OFFICIAL RECORDS.

ALSO EXCEPT THE PORTION OF SAID LOT "A" OF TRACT NO. 2585, DESCRIBED AS FOLLOWS:

COMMENCING AT THE MOST SOUTHERLY CORNER OF SAID LOT "A";
THENCE NORTHEASTERLY, ALONG THE EASTERLY LINE OF SAID LOT "A", ON A CURVE, CONCAVE, TO THE SOUTHEAST, HAVING A RADIUS OF 344.00 FEET, THROUGH AN ANGLE OF 09° 51' 00", AN ARC LENGTH OF 93.52 FEET (THE INITIAL RADIAL LINE BEARS NORTH 37° 10' 20" WEST);
THENCE NORTH 62° 40' 40" EAST, ALONG THE EASTERLY LINE OF SAID LOT "A", 66.89 FEET;
THENCE CONTINUING NORTH 62° 40' 40" EAST, ALONG THE EASTERLY LINE OF SAID LOT "A", 64.29 FEET TO THE BEGINNING OF A CURVE, CONCAVE TO THE NORTHWEST, HAVING A RADIUS OF 456.00 FEET; THENCE NORTHEASTERLY ALONG SAID CURVE, THROUGH AN ANGLE OF 17° 11' 20", AN ARC LENGTH OF
136.80 FEET TO THE MOST EASTERLY CORNER OF LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS;

THENCE NORTH 56° 39' 00" WEST, ALONG THE NORTHEASTERLY LINE OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS, 140.00 FEET TO THE TRUE POINT OF BEGINNING;
THENCE NORTH 40° 39' 00" WEST, 155.00 FEET, MORE OR LESS, TO A POINT THAT BEARS NORTH 82° 39' 00" EAST, FROM THE MOST NORTHERLY CORNER OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE SOUTH 82° 39' 00" WEST, 65.00 FEET, MORE OR LESS TO THE MOST NORTHERLY CORNER OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS; THENCE SOUTH 56° 39' 00" EAST, ALONG THE NORTHEASTERLY LINE OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS TO THE TRUE POINT OF BEGINNING.

ALSO EXCEPT THEREFROM ALL OIL, GAS, MINERALS, AND OTHER HYDROCARBON SUBSTANCES IN AND UNDER SAID LANDS.

A.P.N. 102-050-024
T.3S, R7W, SECTION 28
TRINIDAD YORBA TRACT

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES

GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
TOTAL	258,521	256,024	2,497 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

ASSESSOR'S PARCEL NUMBERS:

102-050-022
102-050-024 (PORTION OF)

PROJECT DENSITY:

TOTAL LOT: 66
TOTAL GROSS ACREAGE: 14.03 ACRES
DENSITY = 66 / 14.03 = 4.70 DU/AC

PRELIMINARY EARTHWORK:

RAW CUT: 19,037 C.Y.
RAW FILL: 109,526 C.Y.
NET: 90,489 C.Y.

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A "△"; NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□"

2 AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

3 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

5A AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2585, RECORDED MAY 28, 1963 WITH FILING NUMBER 55546 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

9 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 IN BOOK 3440 OFFICIAL RECORDS, PAGE 587 OF RIVERSIDE COUNTY. **TO REMAIN.**

11 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 13, 1963 IN BOOK 3486 OFFICIAL RECORDS, PAGE 481 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED/ABANDONED.**

12 AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 2, 1971 AS INSTRUMENT NO. 72744 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

21 AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED MAY 15, 1964 AS INSTRUMENT NO. 60291 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

26 EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE, BLANKET IN NATURE. **TO BE QUITCLAIMED.**

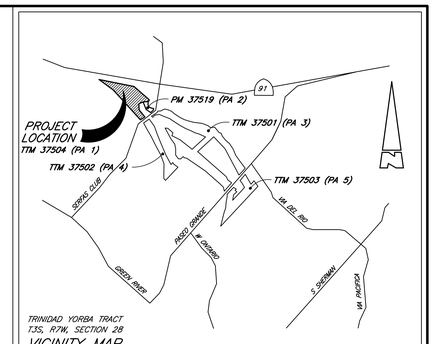
60A EMINENT DOMAIN FEE ACQUISITION BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

60B PERMANENT WALL FOOTING EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

60C TEMPORARY CONSTRUCTION EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	66
TOTAL NUMBER OF REQUIRED PARKING *	165
NUMBER OF ONE CAR GARAGES	0
NUMBER OF TWO OR THREE CAR GARAGES	66
NUMBER OF ONE CAR DRIVEWAY PARKING	0
NUMBER OF TWO CAR DRIVEWAY PARKING	0
NUMBER ON ON STREET PARALLEL PARKING	0
NUMBER OF ONSITE PARKING STALLS	62
TOTAL NUMBER OF PARKING PROVIDED	194

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT



TRINIDAD YORBA TRACT
T3S, R7W, SECTION 28
VICINITY MAP
NOT TO SCALE

LEGEND:

- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (A) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1320 = EXISTING CONTOUR ELEVATION
- 1,200 = PROPOSED SURFACE ELEVATION
- 1378.3 = PROPOSED PAD ELEVATION
- = TRAIL
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE

AC	=	ACRES
C&G	=	CURB AND GUTTER
CB	=	CATCH BASIN
CY	=	CUBIC YARDS
CONC.	=	CONCRETE
DWY.	=	DRIVEWAY
D.G.	=	DECOMPOSED GRANITE
ELEV.	=	ELEVATION
ESMT	=	EASEMENT
EVA	=	EMERGENCY VEHICLE ACCESS
EX.	=	EXISTING
FG	=	FINISH GRADE
FL	=	FLOWLINE
FS	=	FINISH SURFACE
GB	=	GRADE BREAK
HP	=	HIGH POINT
INV.	=	INVERT
L	=	LENGTH
LP	=	LOW POINT
MIN.	=	MINIMUM
MWS	=	MODULAR WETLANDS SYSTEM
N.A.P.	=	NOT A PART
PIP	=	PROJECT IN PLACE
PL	=	PROPERTY LINE
PROP.	=	PROPOSED
REM	=	REMOVE
RW	=	RIGHT OF WAY
S	=	SEWER
SD	=	STORM DRAIN
SDMH	=	STORM DRAIN MANHOLE
SMH	=	SEWER MANHOLE
SW	=	SIDEWALK
TC	=	TOP OF CURB
TG	=	TOP OF GRATE
TYP.	=	TYPICAL
W	=	WIDTH
WWM	=	WELDED WIRE MESH
45	=	LOT NUMBER

UTILITY CONTACTS

WATER:	CITY OF CORONA DEPARTMENT OF WATER AND POWER 755 CORPORATION YARD WAY CORONA, CA. 92880 (951) 736-2321	GAS:	SOUTHERN CALIFORNIA GAS CO. P.O. BOX 3003 REDLANDS, CA. 92373 (800) 427-2200
SEWER:	CITY OF CORONA DEPARTMENT OF WATER AND POWER 755 CORPORATION YARD WAY CORONA, CA. 92880 (951) 736-2321	PHONE:	AT&T 1265 N. VAN BUREN ST., #180 ANAHEIM, CA 92807 (714) 666-5423
POWER:	SOUTHERN CALIFORNIA EDISON CO. 1351 E. FRANCIS ONTARIO, CA. 91761 (800) 930-8591	CABLE TV:	TIME WARNER CABLE 1500 AUTO CENTER DRIVE ONTARIO, CA 91761 (909) 975-3396

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF LATEST CHANGE TO TTM, MAP
09/27/24 BY: RS
DATE OF THIS PLOT
09/27/24

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37504
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

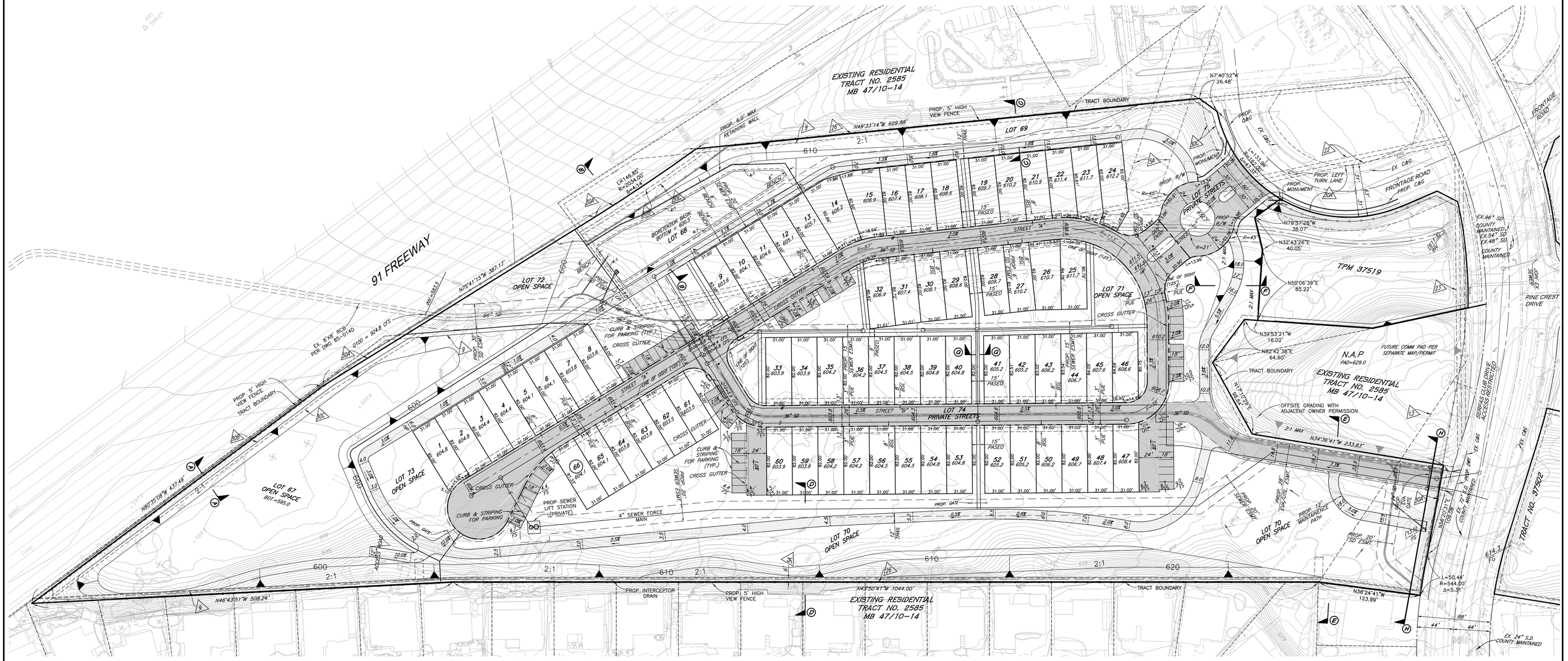
PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

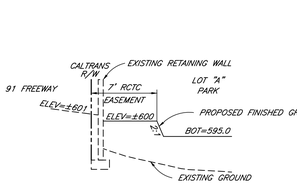
PREPARED BY: KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100, CORONA, CA. 92881-3370 951-734-2130

SHEET 1 OF 2 SHEETS

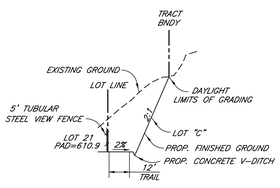
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THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37504
IN THE COUNTY OF RIVERSIDE

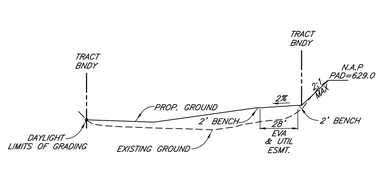




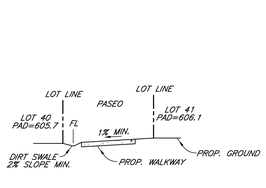
SECTION "A–A"
N.T.S.



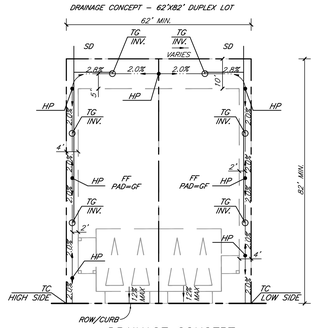
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N.T.S.



SECTION "E–E"
N.T.S.

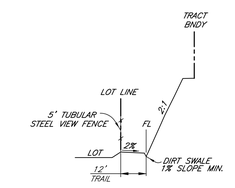


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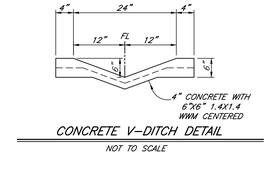


DRAINAGE CONCEPT
N.T.S.

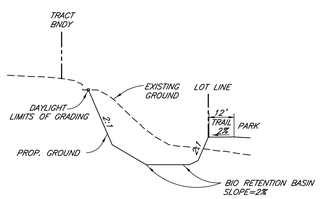
NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX.
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEYARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUILDING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING



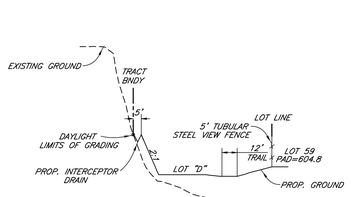
TYPICAL TRAIL DETAIL
N.T.S.



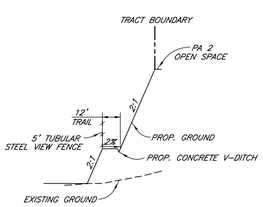
CONCRETE V-DITCH DETAIL
NOT TO SCALE



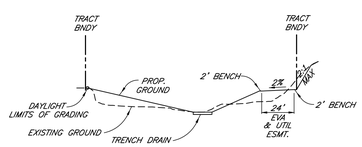
SECTION "B–B"
N.T.S.



SECTION "D–D"
N.T.S.

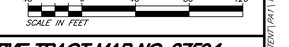


SECTION "F–F"
N.T.S.



SECTION "H–H"
N.T.S.





REGISTERED PROFESSIONAL ENGINEER BRADDON M. BARNETT No.78472 CIVIL STATE OF CALIFORNIA

TTM DATE IDENTIFIER (MOST RECENT CHANGE TO TTM MAP)
09/27/24 BY: RS
(MOST RECENT CHANGE TO THIS SHEET)
09/27/24

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37504
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394–3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

SHEET 2 OF 2 SHEETS

J:\28 NO. 15\1511.1 R\15\1511 PRELIM\MAPS\ENT\PA1\1511 PA 01 TTM 02.dwg 10/9/24 10:55 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37501
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT	FT
1	3,545	3,545	40	89
2	3,928	3,928	45	87
3	3,437	3,437	40	87
4	4,056	3,685	48	84
5	5,547	5,547	70	80
6	2,971	2,971	40	74
7	3,522	3,137	49	73
8	5,224	5,224	70	75
9	5,601	5,601	70	80
10	3,451	3,451	42	82
11	4,297	4,297	55	83
12	6,809	6,809	72	90
13	5,367	5,367	56	94
14	5,373	5,373	56	95
15	3,747	3,747	40	93
16	4,639	4,639	50	92
17	6,959	6,959	82	90
18	6,300	6,300	73	85
19	3,552	3,552	42	84
20	4,364	4,364	53	83
21	5,783	5,783	74	78
22	3,066	3,066	41	73
23	3,599	3,251	50	72
24	2,891	2,891	40	72
25	3,429	3,429	45	75
26	5,225	4,785	53	99
27	5,204	4,784	53	100
28	5,415	5,055	54	100
29	3,400	3,400	49	70
30	3,515	3,058	49	71
31	2,963	2,963	49	78
32	3,878	3,447	50	71
33	5,976	5,363	74	80
34	6,198	5,689	74	83
35	6,067	5,670	75	80
36	3,089	3,089	42	74
37	3,637	3,287	50	72
38	3,020	3,020	42	73
39	3,722	3,344	49	75
40	3,118	3,118	40	78
41	3,736	3,386	48	77
42	3,049	3,049	40	76
43	3,867	3,401	49	77
44	4,956	4,493	63	75
45	4,486	4,173	64	70
46	4,170	3,508	66	64
47	3,779	3,779	65	58
48	4,802	4,802	50	96
49	5,485	4,653	57	97
50	7,246	6,576	76	92
51	6,958	6,181	74	94
52	6,699	6,059	75	88
53	4,482	3,839	53	86
54	3,522	3,437	41	86
55	6,363	5,958	73	87
56	6,370	5,792	75	81
57	4,184	3,648	53	77
58	3,171	3,096	41	77
59	6,235	5,768	76	84
60	6,125	5,166	72	83
61	4,036	3,640	49	81
62	3,199	3,101	40	79
63	3,199	2,780	49	78
64	3,089	3,017	40	77
65	3,691	3,331	48	77
66	3,187	3,133	40	80
67	3,954	3,555	49	82
68	3,471	3,381	41	86
69	4,236	3,586	48	89
70	6,679	5,018	85	89
71	7,662	7,662	76	117
72	5,798	5,114	53	110
73	5,675	5,113	58	98
74	5,454	4,881	53	93
75	5,520	4,957	58	95
76	6,008	5,390	58	105
77	6,139	5,572	53	118
78	6,615	5,972	52	108
79	6,130	5,562	50	123
80	5,501	5,024	50	110
81	4,695	4,695	48	99
82	3,860	3,860	42	91
83	6,195	6,195	74	85
84	6,139	5,832	77	82
85	3,897	3,509	50	76
86	3,178	3,178	41	76
87	3,490	3,490	45	77
88	3,271	3,271	40	82
89	3,974	3,974	45	88
90	3,696	3,696	40	92
91	4,146	4,146	45	92
92	3,564	3,564	40	89
93	5,888	5,888	70	85
94	4,145	3,752	48	85
95	3,679	3,679	40	91
96	4,330	4,330	45	94
97	4,012	4,012	42	93
98	3,826	3,826	65	60
99	5,835	5,221	57	112
100	5,813	5,072	55	104
101	5,696	4,798	51	110
102	6,126	5,107	53	114
103	6,292	5,186	53	116
104	6,379	5,112	54	117
105	6,518	5,192	53	118
106	6,585	5,167	55	119
107	6,177	4,748	53	116
108	6,504	5,001	57	112
109	7,319	5,298	72	106
110	6,881	6,225	65	111
111	5,615	5,177	52	108
112	5,341	4,941	52	103
113	5,203	4,826	52	100
114	5,180	4,830	52	100
115	5,141	4,832	50	101
116	5,653	5,023	54	103
117	5,416	4,831	51	104
118	5,184	4,560	49	104
119	5,291	4,611	50	105
120	5,308	4,630	50	105
121	5,723	4,974	55	102
122	5,639	4,948	55	101
123	5,201	4,550	50	104
124	5,306	4,639	50	105
125	5,293	4,624	50	104
126	5,465	4,847	55	96
127	5,208	4,683	55	93
128	5,568	5,060	59	94
129	6,058	5,459	63	97
130	6,103	5,376	58	108
131	6,917	6,164	60	112
132	5,811	5,114	52	112
133	4,208	4,208	69	60
134	4,455	3,727	72	61
135	4,375	3,723	71	61
136	4,468	3,777	72	62
137	4,243	3,628	66	63
138	4,198	3,583	66	63
139	4,436	3,811	71	62
140	4,597	3,772	72	68
141	5,898	5,248	71	85
142	4,440	3,835	41	91
143	2,788	2,788	33	88
144	3,209	3,209	40	80
145	2,430	2,430	30	80
146	3,460	3,460	41	84
147	2,749	2,749	30	88
148	4,963	4,963	52	96
149	4,680	4,680	46	99
150	4,557	4,557	45	99
151	5,398	4,848	55	98
152	5,400	4,750	50	108
153	5,885	5,122	50	115
154	5,513	4,709	50	104
155	5,295	4,533	56	97
156	5,269	4,544	51	103
157	3,571	2,809	45	92
158	3,902	3,482	40	97
159	3,104	3,104	30	102
160	4,676	3,908	63	91
161	8,917	7,960	72	140
162	6,425	6,198	78	102
163	4,501	4,501	45	100
164	4,658	4,658	49	108
165	3,370	3,370	65	54
TOTAL AREA=	798,585	733,346	8,943	7,069
AVG=	4,840	4,445	54	85
MAX=	8,917	7,960	85	123
MIN=	2,430	2,430	30	58

LETTERED LOTS:

THE TRAILS PA 3 - LETTERED LOTS				
LOT	AREA (SF)	AREA (AC)	LAND USE	MAINTAINED BY
166	12,851	0.30	WQMP	C.F.D.
167	125,694	2.89	DETENTION BASIN	COUNTY
168	62,188	1.43	OPEN SPACE/TRAIL	H.O.A
169	123,259	2.83	OPEN SPACE/TRAIL	H.O.A
170	12,314	0.28	OPEN SPACE/TRAIL	H.O.A
171	16,654	0.38	OPEN SPACE/TRAIL	H.O.A
172	37,162	0.85	OPEN SPACE/TRAIL	H.O.A
173	39,315	0.90	OPEN SPACE/TRAIL	H.O.A
174	50,188	1.15	OPEN SPACE/TRAIL	H.O.A
175	27,356	0.63	OPEN SPACE/PARK	H.O.A
176	21,235	0.49	OPEN SPACE/PARK	H.O.A
177	81,012	1.86	OPEN SPACE/TRAIL	H.O.A
178	30,550	0.70	OPEN SPACE/TRAIL	H.O.A
179	18,192	0.42	WQMP	C.F.D.
180	70,299	1.61	OPEN SPACE/TRAIL	H.O.A
181	156,674	3.60	REC. CENTER	H.O.A
182	231,789	5.32	PRIVATE STREETS	H.O.A
183	6,577	0.15	PRIVATE STREETS - ENTRY	H.O.A
184	4,591	0.11	PRIVATE STREETS - ENTRY	H.O.A
185	13,058	0.30	WQMP	C.F.D.
186	2,655	0.06	WQMP	C.F.D.
187	1,975	0.04	WQMP	C.F.D.
TOTAL	1,148,953	26.38		

STREET LOTS:

THE TRAIL PA 3 - STREET			
	STREET AREAS		CL
STREET	SF	AC	FT
A	121,446	2.79	2,944
B	34,751	0.80	876
C	3,936	0.09	171
D	82,825	1.90	2,047
TOTAL	242,957	5.58	6,038

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	165
TOTAL NUMBER OF REQUIRED PARKING *	413
NUMBER OF ONE CAR GARAGES	5
NUMBER OF TWO OR THREE CAR GARAGES	160
NUMBER OF ONE CAR DRIVEWAY PARKING	165
NUMBER OF TWO CAR DRIVEWAY PARKING	0
NUMBER OF ON STREET PARALLEL PARKING	148
NUMBER OF ONSITE PARKING STALLS	8
TOTAL NUMBER OF PARKING PROVIDED	486

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 19.12 OFF STREET VEHICLE PARKING ARTICLE XVIII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES			
GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
TOTAL	258,521	256,024	2,497 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.

GENERAL NOTES

1. PREPARED: MAY 2024
2. SITE ACREAGE:..... 44.96 ACRES GROSS, 44.84 ACRES NET
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN.
14. THIS PLANNING AREA IS AN AGE RESTRICTED COMMUNITY.

ADJACENT LAND USE:

WEST: MDR MEDIUM DENSITY RESIDENTIAL
EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID H5 H6, AND G5

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SBCC, "P474", AND "CNPP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PERTHAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

LEGAL DESCRIPTION

PARCEL 1:
LOTS "B", AND "D," OF TRACT NO. 2585, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 42, PAGES 10 THROUGH 14, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THAT PORTION OF LOT "B" OF SAID TRACT NO. 2585, DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHEAST CORNER OF SAID LOT "B"; THENCE SOUTH 15° 31' 50" WEST, ALONG THE EASTERLY LINE OF SAID LOTS "B" AND "J" OF SAID TRACT, A DISTANCE OF 239.17 FEET TO AN ANGLE POINT IN SAID EASTERLY LINE OF SAID LOT "B"; THENCE NORTH 76° 19' 50" WEST, A DISTANCE OF 223.66 FEET, TO AN ANGLE POINT ON THE WESTERLY LINE OF SAID LOT "J";

ALSO EXCEPT THAT PORTION LYING WITHIN THE LAND DESCRIBED IN THE QUITCLAIM DEED TO ROBERT PEASE, A MARRIED MAN, RECORDED APRIL 12, 1972 AS INSTRUMENT NO. 47406, OFFICIAL RECORDS.

ALSO EXCEPT THEREFROM ALL OIL, GAS, MINERALS, AND OTHER HYDROCARBON SUBSTANCES IN AND UNDER SAID LANDS.

APN: 102-050-003 AND 102-112-008
T3S, R7W, SECTION 27

PARCEL 3:
LOT C OF TRACT 2585 AS SHOWN BY MAP ON FILE IN GOOK 47, PAGES 10 TO 14
INCLUSIVE, TOGETHER WITH LOT "E" OF TRACT NO. 2385, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 44, PAGES 39 THROUGH 41, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT ALL OIL, GAS, MINERALS AND OTHER HYDROCARBONS SUBSTANCES IN AND UNDER SAID LANDS.

SAID DESCRIPTION IS PURSUANT TO CERTIFICATE OF PARCEL MERGER NO. 990 RECORDED JANUARY 8, 1997 AS INSTRUMENT NO. 5854 OFFICIAL RECORDS.

APNS: 102-050-004 AND 102-160-003
T3S, R7W, SECTION 27,28, & 33
TRINIDAD YORBA TRACT

UTILITY CONTACTS

WATER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

SEWER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

POWER: SOUTHERN CALIFORNIA EDISON CO.
1351 E. FRANCIS
ONTARIO, CA. 91761
(800) 930-8591

GAS: SOUTHERN CALIFORNIA GAS CO.
P.O. BOX 3003
REDLANDS, CA. 92373
(800) 427-2200

PHONE: AT&T
1265 N. VAN BUREN ST., #180
ANAHEIM, CA 92807
(714) 666-5423

CABLE TV: TIME WARNER CABLE
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
(909) 975-3396

SOLID WASTE PURVEYOR: CITY OF CORONA UTILITIES DEPARTMENT-
SOLID WASTE & RECYCLING DIVISION
755 PUBLIC SAFTEY WAY
CORONA, CA 92878
(951) 736-2234

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

ASSESSOR'S PARCEL NUMBERS:

102-050-021
102-160-003
102-112-008

PROJECT DENSITY:

TOTAL LOT: 225
TOTAL GROSS ACREAGE: 44.96 ACRES
DENSITY = 225 / 44.96 = 5.00 DU/AC
PA 3 - AGE RESTRICTED COMMUNITY

PRELIMINARY EARTHWORK:

RAW CUT: 158,534 C.Y.
RAW FILL: 83,444 C.Y.
NET: 75,090 C.Y.

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 2306125Q, DATED MARCH 17, 2015.
PLOTTABLE EASEMENTS ARE INDICATED BY A "△". NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□"

[J] AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[J] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[4] A RIGHT OF WAY AND EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR THE RIGHT TO CONSTRUCT, MAINTAIN, OPERATE, INSPECT, REPAIR, REPLACE AND REMOVE ONE LINE POLES, LINES, CABLES, AND CIRCUITS FOR ANY PURPOSES, RECORDED OCTOBER 21, 1955 IN BOOK 1810 OF OFFICIAL RECORDS, PAGE 365 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED AND THE FACILITY IS TO BE ABANDONED.**

[5] AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2385, RECORDED JULY 31, 1962 WITH FILING NUMBER 71787 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[5A] AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2585, RECORDED MAY 28, 1963 WITH FILING NUMBER 55546 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[6] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 7, 1962 IN BOOK 3217 OF OFFICIAL RECORDS, PAGE 161 OF RIVERSIDE COUNTY. TO BE QUITCLAIMED/RELOCATED.

[7] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 21, 1962 AS INSTRUMENT NO. 88686 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[8] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED OCTOBER 19, 1962 IN BOOK 3243 OFFICIAL RECORDS, PAGE 177 OF RIVERSIDE COUNTY. **TO REMAIN.**

[10] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 AS INSTRUMENT NO. 73238 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

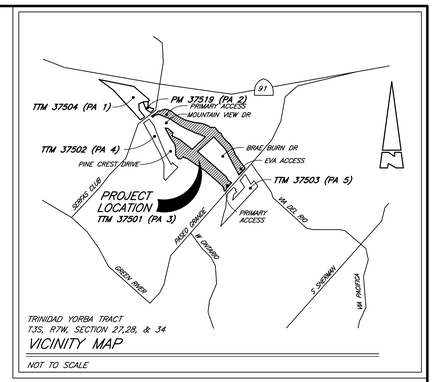
[11] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 AS INSTRUMENT NO. 73246 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[12] A RIGHT OF WAY EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 13, 1963 IN BOOK 3486 OFFICIAL RECORDS, PAGE 53 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[14] AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED NOVEMBER 26, 1963 IN BOOK 3542 OFFICIAL RECORDS, PAGE 373 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED/ABANDONED.**

[20] EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

[XX] TEMPORARY CONSTRUCTION EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**



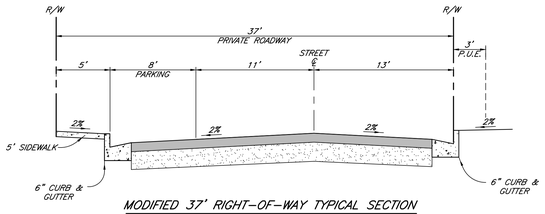
TRINIDAD YORBA TRACT
T3S, R7W, SECTION 27,28, & 34

VICINITY MAP

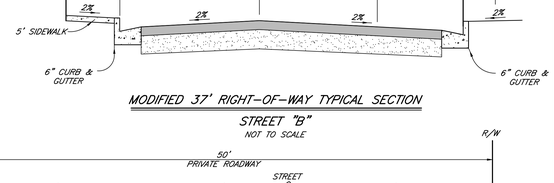
NOT TO SCALE

LEGEND:

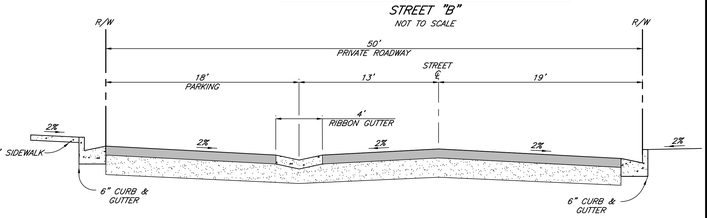
	PROPOSED WATER	AC.	= ACRES
	PROPOSED SEWER	C&G	= CURB AND GUTTER
	PROPOSED RECLAIMED WATER	CB	= CATCH BASIN
	PROPOSED STORM DRAIN	CY.	= CUBIC YARDS
	LOT LINE	CONC.	= CONCRETE
	EXIST. EASEMENT LINE	DWY.	= DRIVEWAY
	PROPOSED EASEMENT LINE	ELEV.	= ELEVATION
(A)	PROPOSED EASEMENT (SEE EASEMENT NOTES)	ESMT.	= EASEMENT
	RETAINING WALL	EX.	= EXISTING
	EXISTING WATER	FG	= FINISH GRADE
	EXISTING SEWER	FL	= FLOWLINE
	EXISTING RECLAIMED WATER	FS	= FINISH SURFACE
	EXISTING STORM DRAIN	GB	= GRADE BREAK
1200	= EXISTING CONTOUR ELEVATION	INV.	= INVERT
1200	= PROPOSED SURFACE ELEVATION	L	= LENGTH
1378.3	= PROPOSED PAD ELEVATION	MMS	= MODULAR WETLANDS SYSTEM
	= TRAIL	NAP	= NOT A PART
	TOE OF SLOPE	PIP	= PROTECT IN PLACE
	TOP OF SLOPE	PKG	= PARKING
	DAYLIGHT LINE	PL	= PROPERTY LINE
		PROP.	= PROPOSED
		RW	= RIGHT OF WAY
		S	= SEWER
		SD	= STORM DRAIN
		SW	= SIDEWALK
		TC	= TOP OF CURB
		TG	= TOP OF GRATE
		TYP.	= TYPICAL
		W	= WIDTH
		WWM	= WELDED WIRE MESH
		45	= LOT NUMBER



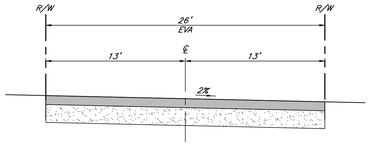
MODIFIED 37' RIGHT-OF-WAY TYPICAL SECTION
STREET "A" AND "D"
NOT TO SCALE



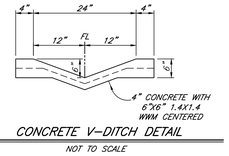
MODIFIED 37' RIGHT-OF-WAY TYPICAL SECTION
STREET "B"
NOT TO SCALE



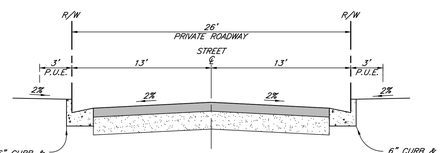
MODIFIED 50' RIGHT-OF-WAY TYPICAL SECTION
STREET "B"
NOT TO SCALE



26' TYPICAL SECTION
EVA
NOT TO SCALE



CONCRETE V-DITCH DETAIL
NOT TO SCALE



26' RIGHT-OF-WAY TYPICAL SECTION
STREET "C"
NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF TENTATIVE CHANGE TO MAP: 09/27/24 BY: RS
DATE OF THIS PLOT: 09/27/24

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37501
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

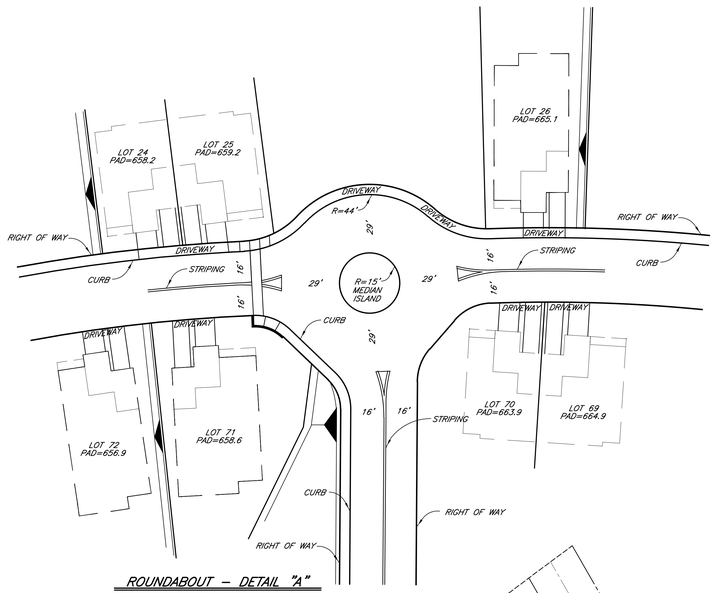
PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

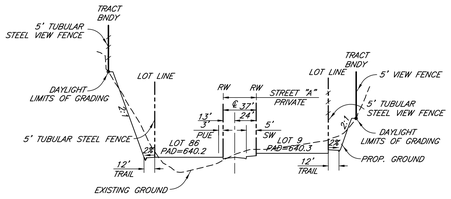
SHEET 1 OF 3 SHEETS

JOB NO. 15.1511.1 R:\15\1511\PRELIM MAPS\EXH\PA3\1511 PA 03 TTM 01.dwg 10/09/24 10:53 AM

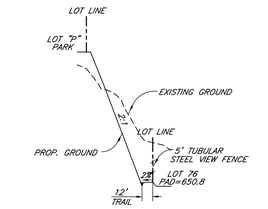
THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37501
IN THE COUNTY OF RIVERSIDE



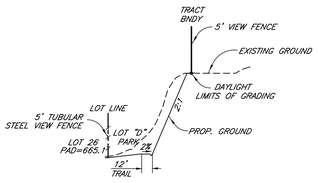
ROUNDABOUT – DETAIL "A"
N.T.S.



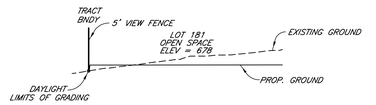
SECTION "A–A"
N.T.S.



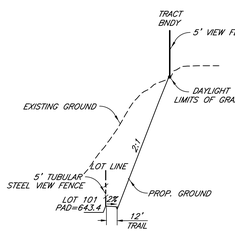
SECTION "B–B"
N.T.S.



SECTION "C–C"
N.T.S.

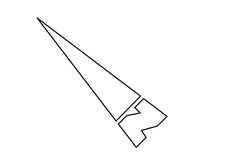


SECTION "D–D"
N.T.S.

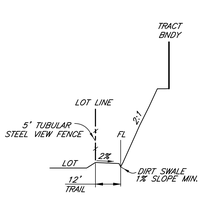


SECTION "E–E"
N.T.S.

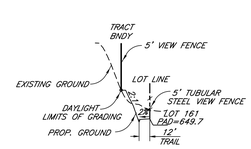
SEE SHEET 3



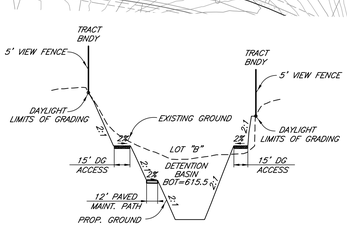
60' 0 60' 120' 180'
SCALE IN FEET



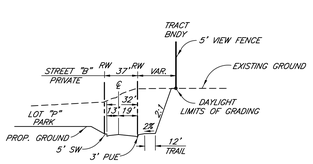
TYPICAL TRAIL DETAIL
N.T.S.



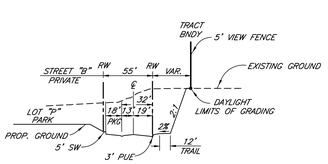
SECTION "F–F"
N.T.S.



SECTION "G–G"
N.T.S.



SECTION "H–H"
N.T.S.



SECTION "K–K"
N.T.S.

Date	By	REVISIONS	App'd

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BADGET
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
1ST SUBMITTAL DATE & INIT.
09/27/24 BY: RS
2ND SUB. DATE
09/27/24

TENTATIVE TRACT MAP NO. 37501
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394–3718

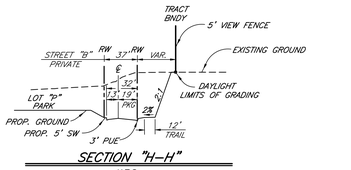
PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100, CORONA, CA. 92881–3310 951–734–2130

SHEET 2 OF 3 SHEETS

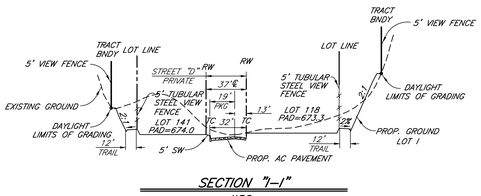
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THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37501
IN THE COUNTY OF RIVERSIDE

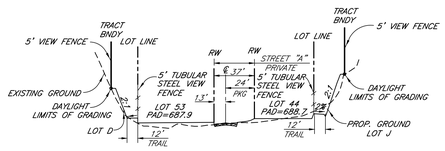




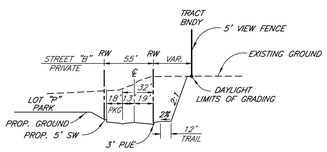
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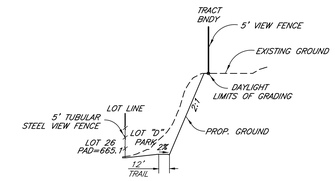
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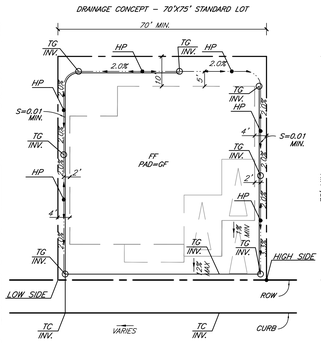
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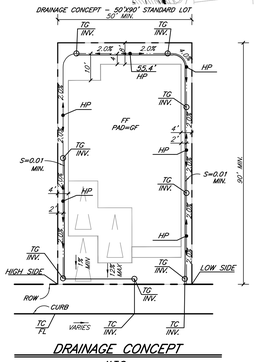
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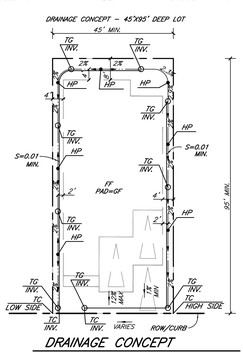
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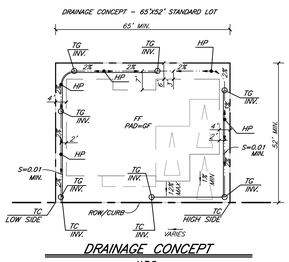
DRAINAGE CONCEPT
N.T.S.



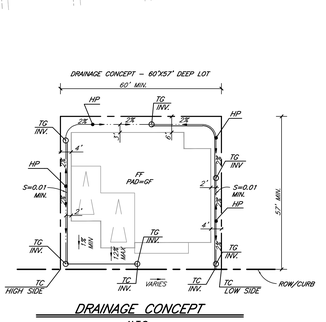
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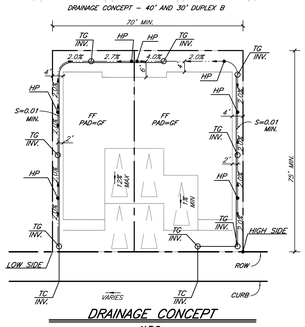
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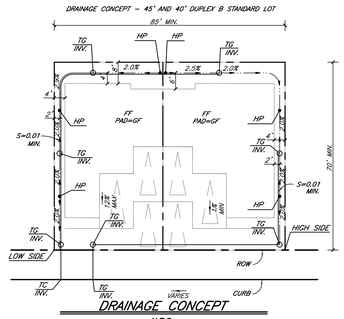
DRAINAGE CONCEPT
N.T.S.



DRAINAGE CONCEPT
N.T.S.

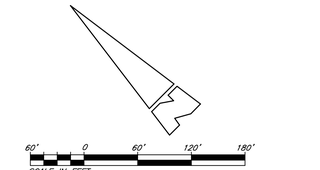


DRAINAGE CONCEPT
N.T.S.



DRAINAGE CONCEPT
N.T.S.

DRAINAGE NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX.
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEYARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUILDING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING



REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARRETT
No. 78472
CIVIL
STATE OF CALIFORNIA

TIM DATE IDENTIFIER
DATE OF LATEST CHANGE TO TRACT MAP
DATE OF THIS PLOT
09/27/24 BY: RS
09/27/24

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37501
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
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1880 COMPTON AVENUE, SUITE 100, CORONA, CA. 92881-3310 951-734-2130

SHEET 3 OF 3 SHEETS

JOB NO. 15.1511 P:\15\1511\PRELIM MAPS\TENTATIVE\PA01\1511_PA_03_TTM 03.dwg 10/01/24 10:53 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37502
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT	FT
1	5,097	4,273	60	84
2	5,566	4,891	60	89
3	5,973	4,982	63	96
4	6,581	4,902	63	102
5	6,606	4,731	65	100
6	6,449	4,339	70	91
7	5,547	3,728	70	79
8	5,339	3,648	75	72
9	5,181	3,653	72	72
10	5,302	3,571	70	75
11	5,835	3,499	72	80
12	5,359	3,647	67	79
13	6,083	3,880	73	72
14	7,018	4,931	71	100
15	7,107	6,208	70	100
16	4,259	4,259	48	70
17	3,722	3,722	62	57
18	6,166	4,708	63	94
19	3,738	3,738	55	94
20	5,335	5,335	84	75
21	5,637	4,276	66	85
22	5,790	3,631	66	87
23	5,852	3,620	65	90
24	5,954	3,895	64	92
25	11,795	7,355	121	93
26	5,962	5,560	58	110
27	4,944	4,417	75	65
28	10,114	6,354	92	129
29	6,280	4,212	69	82
30	4,942	3,677	61	81
31	4,938	3,634	67	74
32	5,034	3,752	74	70
33	5,942	4,145	79	77
34	5,813	3,778	75	76
35	5,224	3,596	72	75
36	5,032	3,958	73	69
37	6,465	5,124	91	71
38	6,094	4,073	77	79
39	6,580	3,907	75	88
40	6,403	3,990	67	93
41	6,089	3,791	66	91
42	5,512	4,230	61	83
43	4,700	4,350	70	70
44	4,108	3,912	70	59
45	3,962	3,783	65	60
46	3,969	3,969	60	65
47	4,116	4,116	60	68
Σ=	269,515	201,749	3,272	3,863
AVG=	5,734	4,293	70	82
MAX=	11,795	7,355	121	129
MIN=	3,722	3,499	48	57

LETTERED LOTS:

THE TRAILS PA 4 - LETTERED LOTS				
LOT	AREA (SF)	AREA (AC)	LAND USE	MAINTAINED BY
48	8,454	0.19	WQMP	C.F.D.
49	27,992	0.64	OPEN SPACE/TRAIL	H.O.A
50	3,566	0.08	WQMP	C.F.D.
51	3,484	0.08	WQMP	C.F.D.
52	859	0.02	OPEN SPACE	H.O.A
53	7,287	0.17	OPEN SPACE	H.O.A.
54	430	0.01	H.O.A. SLOPES	H.O.A
55	16,679	0.38	OPEN SPACE/TRAIL	H.O.A
56	75,673	1.74	PRIVATE STREETS	H.O.A
57	5,964	0.14	PRIVATE STREETS - ENTRY	H.O.A
58	3,691	0.08	WQMP	C.F.D.
TOTAL	154,079	3.54		

STREET LOTS:

	STREET AREA		CL
STREET	SF	AC	FT
A	50,687	1.16	1637
B	21,824	0.50	648
Total	72,512	1.66	2285

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES			
GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
TOTAL	258,521	256,024	2,497 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.

ADJACENT LAND USE:

WEST: MDR MEDIUM DENSITY RESIDENTIAL
EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID H5, H6, AND G5

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SBCC, 7*474," AND "CVPP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PER THAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

UTILITY CONTACTS

WATER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

SEWER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

POWER: SOUTHERN CALIFORNIA EDISON CO.
1351 E. FRANCIS
ONTARIO, CA. 91761
(800) 930-8591

GAS: SOUTHERN CALIFORNIA GAS CO.
P.O. BOX 3003
REDLANDS, CA. 92373
(800) 427-2200

PHONE: AT&T
1265 N. VAN BUREN ST., #180
ANAHEIM, CA 92807
(714) 666-5423

CABLE TV: TIME WARNER CABLE
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
(909) 975-3396

SOLID WASTE PURVEYOR: CITY OF CORONA UTILITIES DEPARTMENT-
SOLID WASTE & RECYCLING DIVISION
755 PUBLIC SAFTEY WAY
CORONA, CA 92878
(951) 736-2234

LEGAL DESCRIPTION:

LOT "E" OF TRACT NO. 2585, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 47, PAGES 10 THROUGH 14, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE COUNTY.

EXCEPT FROM SAID LOT "E" OF SAID TRACT NO. 2585, THAT PORTION DESCRIBED AS FOLLOWS: BEGINNING AT THE MOST EASTERLY CORNER OF LOT 155 OF SAID TRACT NO. 2585; THENCE SOUTHEASTERLY, ALONG THE NORTHEASTERLY LINE OF SAID LOT "E" ON A CURVE, CONCAVE TO THE NORTHEAST, HAVING A RADIUS OF 530.00 FEET, THROUGH AN ANGLE OF 10° 48' 40", AN ARC LENGTH OF 100.00 FEET; THE INITIAL RADIAL LINE BEARS SOUTH 41° 43' 20" WEST; THENCE SOUTH 30° 54' 40" WEST, A DISTANCE OF 115.00 FEET; THENCE NORTH 57° 13' 25" WEST, A DISTANCE OF 122.47 FEET TO THE MOST SOUTHERLY CORNER OF SAID LOT 155; THENCE NORTH 41° 43' 20" EAST, ALONG THE SOUTHEASTERLY LINE OF SAID LOT 155, A DISTANCE OF 122.59 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPT THAT PORTION LYING WITHIN THE LAND DESCRIBED IN THE QUITCLAIM DEED TO ROBERT PEASE, A MARRIED MAN, RECORDED APRIL 12, 1972 AS INSTRUMENT NO. 47406, OFFICIAL RECORDS.

ASSESSOR'S PARCEL NUMBERS: 102-050-008 & 102-113-015

GENERAL NOTES:
TTM, R/W, SECTION 28 & 33
TRINIDAD YORBA TRACT

1. PREPARED: FEBRUARY 2024
2. SITE ACREAGE:.....10.26 ACRES GROSS, 10.17 ACRES NET
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN
14. THIS PLANNING AREA IS AN AGE RESTRICTED COMMUNITY.

PROJECT DENSITY:

TOTAL LOT: 47
TOTAL GROSS ACREAGE: 10.26 ACRES
DENSITY = 47 / 10.26 = 4.58 DU/AC
PA 4 - AGE RESTRICTED COMMUNITY

PRELIMINARY EARTHWORK:

RAW CUT: 37,997 C.Y.
RAW FILL: 34,575 C.Y.
NET: 3,422 C.Y.

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.
PLOTTABLE EASEMENTS ARE INDICATED BY A "△". NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□"

2 AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

J A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

5A AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2585, RECORDED MAY 28, 1963 WITH FILING NUMBER 55546 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

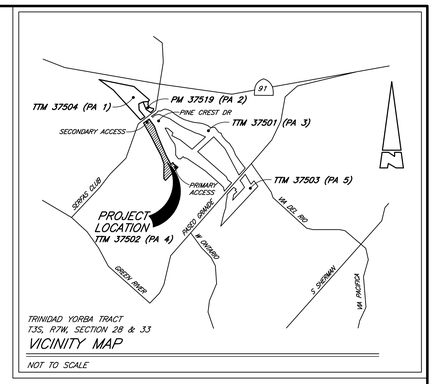
10 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 AS INSTRUMENT NO. 73238 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

28 EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

LEGEND:

- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (A) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1200 = EXISTING CONTOUR ELEVATION
- 1200 = PROPOSED SURFACE ELEVATION
- 1378.3 = PROPOSED PAD ELEVATION
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE
- TRAIL

AC = ACRES
C&G = CURB AND GUTTER
CB = CATCH BASIN
CY = CUBIC YARDS
CONC = CONCRETE
DWY = DRIVEWAY
ELEV. = ELEVATION
ESMT = EASEMENT
EX = EXISTING
FG = FINISH GRADE
FL = FLOWLINE
FS = FINISH SURFACE
GB = GRADE BREAK
INV. = INVERT
L = LENGTH
MWS = MODULAR WETLANDS SYSTEM
N.A.P. = NOT A PART
PIP = PROJECT IN PLACE
PKG = PARKING
PL = PROPERTY LINE
PROP. = PROPOSED
R/W = RIGHT OF WAY
S = SEWER
SD = STORM DRAIN
SW = SIDEWALK
TC = TOP OF CURB
TG = TOP OF GRATE
TYP. = TYPICAL
W = WIDTH
WWM = WELDED WIRE MESH
#5 = LOT NUMBER



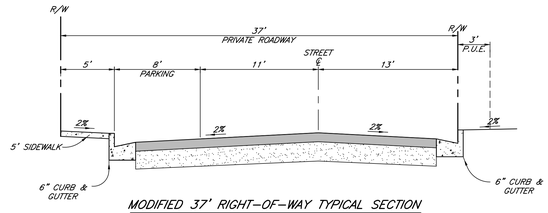
TRINIDAD YORBA TRACT
T3S, R7W, SECTION 28 & 33

VICINITY MAP

NOT TO SCALE

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	47
TOTAL NUMBER OF REQUIRED PARKING *	118
NUMBER OF ONE CAR GARAGES	0
NUMBER OF TWO OR THREE CAR GARAGES	47
NUMBER OF ZERO CAR DRIVEWAY PARKING	13
NUMBER OF ONE CAR DRIVEWAY PARKING	34
NUMBER OF ON STREET PARALLEL PARKING	38
NUMBER OF ONSITE PARKING STALLS	0
TOTAL NUMBER OF PARKING PROVIDED	166

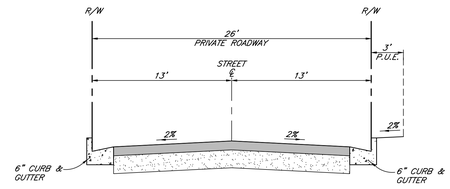
*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT



MODIFIED 37' RIGHT-OF-WAY TYPICAL SECTION

STREET "A" & "B"

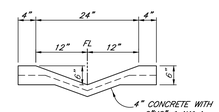
NOT TO SCALE



26' RIGHT-OF-WAY TYPICAL SECTION

STREET "B"

NOT TO SCALE



CONCRETE V-DITCH DETAIL

NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DAY of WEEK-Number Th. Day Mo.
09/27/24 BY: RS
Day Mo. Year
09/27/24

TENTATIVE TRACT MAP NO. 37502
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

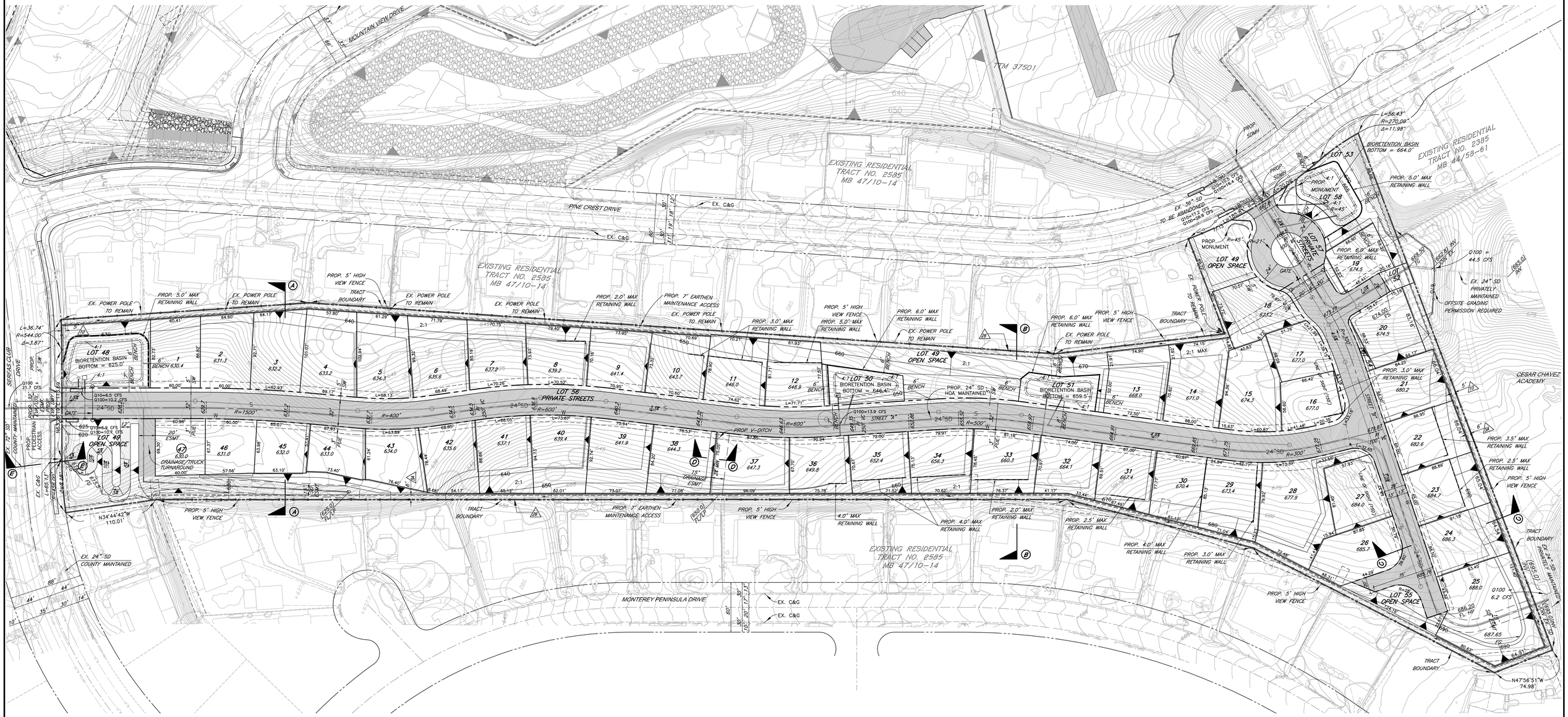
PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

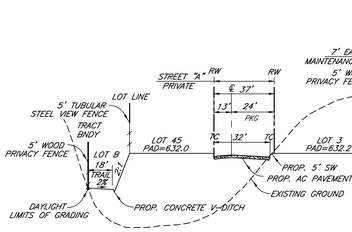
SHEET 1 OF 2 SHEETS

Date	By	REVISIONS	App'd

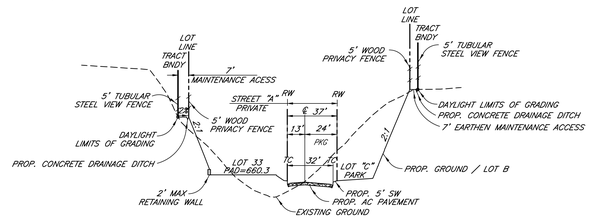
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THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37502
IN THE COUNTY OF RIVERSIDE

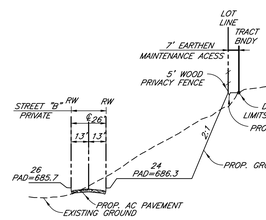




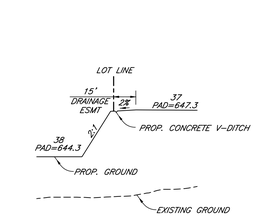
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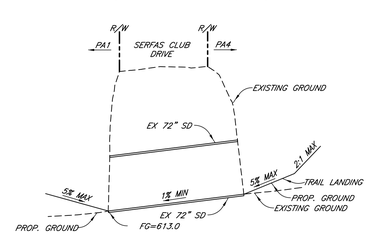
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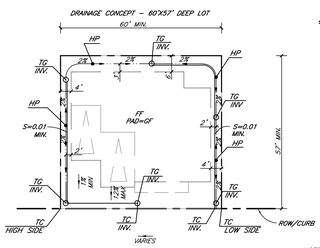
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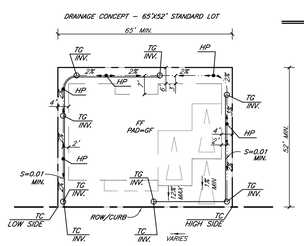
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N.T.S.



SECTION "E–E"
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.

NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX.
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEYARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUILDING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BANNOT
No. 78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
PER LATEST CHANGE THIS SHT.
09/27/24 BY: RS
DATE OF THIS PLOT
09/27/24

Date	By	REVISIONS	App'd

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100, CORONA, CA. 92881-3310 951-734-2130

SHEET 2 OF 2 SHEETS

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THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37503
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

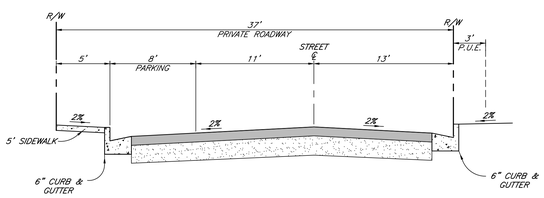
	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT	FT
1	5,850	5,141	78	83
2	5,335	4,780	76	73
3	4,619	3,728	76	63
4	4,851	3,890	84	62
5	4,818	3,989	78	62
6	4,364	3,869	68	60
7	4,621	3,648	76	60
8	4,313	4,002	66	63
9	4,180	3,881	65	63
10	3,878	3,878	60	64
11	11,573	6,917	117	110
12	8,220	5,421	54	148
13	7,563	5,923	45	176
14	5,023	5,023	58	97
15	7,733	5,343	65	105
16	7,538	4,712	68	73
17	7,309	4,436	72	100
18	7,833	4,712	70	111
19	5,371	4,822	88	65
20	6,137	5,511	87	94
21	6,536	5,212	83	75
22	4,632	4,188	60	77
23	4,601	4,287	60	77
24	4,797	4,239	63	76
25	4,926	4,108	65	75
26	4,700	3,600	65	72
27	4,768	3,597	71	67
28	4,564	4,115	71	64
29	8,115	5,206	67	116
30	5,596	5,315	45	126
31	7,536	7,238	47	168
Σ=	181,900	144,729	2,148	2,725
AVG=	5,868	4,669	69	88
MAX=	11,573	7,238	117	176
MIN=	3,878	3,597	45	60

LETTERED LOTS:

THE TRAILS PA5 - LETTERED LOTS				
LOT	AREA (SF)	AREA (Acre)	LAND USE	MAINTAINED BY
32	7,275	0.17	WQMP	C.F.D.
33	78,135	1.79	DETENTION BASIN/H.O.A. SLOPE/ PARK	H.O.A.
34	38,797	0.89	OPEN SPACE/SLOPE/TRAILS	H.O.A
35	8,386	0.19	OPEN SPACE/SLOPE/TRAILS	H.O.A
36	30,368	0.70	OPEN SPACE/SLOPE/TRAILS	H.O.A
37	28,768	0.66	OPEN SPACE/SLOPE/TRAILS	H.O.A
38	477	0.01	SLOPE	H.O.A
39	67,406	1.55	PRIVATE STREETS	H.O.A
40	5,911	0.14	PRIVATE STREETS - ENTRY	H.O.A
41	13,588	0.31	OPEN SPACE/SLOPE/TRAILS	H.O.A.
TOTAL	280,029	6.43		

STREET LOTS:

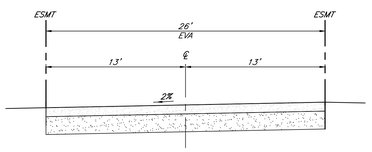
	Street Area		CL
Street	sqft	acre	Ft.
A	33,392	0.77	899
B	39,924	0.92	897
Total	73,316	1.68	1,796



37' RIGHT-OF-WAY TYPICAL SECTION

NOT TO SCALE

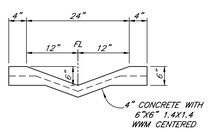
STREET "A", "B"



26' TYPICAL SECTION

EVA

NOT TO SCALE



CONCRETE V-DITCH DETAIL

NOT TO SCALE

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A " △ ". NON-PLOTTABLE EASEMENTS ARE INDICATED BY A " □ "

2 AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

3 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 782 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

4A AN EASEMENT IN FAVOR OF R. A. WATT COMPANY, INC. FOR DRAINAGE FACILITIES AND INCIDENTAL PURPOSES, RECORDED APRIL 2, 1969 AS INSTRUMENT NO. 32422 AND AS INSTRUMENT NO. 32423 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

4B EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

LEGAL DESCRIPTION:

THAT PORTION OF LOT 3 OF TRINIDAD YORBA TRACT, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 2, PAGE 22 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE COUNTY.

EXCEPT THAT PORTION OF SAID LAND CONVEYED TO KENNETH E. GRIFFIN, A MARRIED MAN AND JOHN R. GRIFFIN, A MARRIED MAN, BY DEED RECORDED JUNE 20, 1963 AS INSTRUMENT NO. 64373, OFFICIAL RECORDS.

ALSO EXCEPT THE FOLLOWING DESCRIBED PARCEL:

BEGINNING AT A POINT ON THE SOUTHEASTERLY LINE OF PASEO GRANDE, 66.00 FEET IN WIDTH, AS CONVEYED TO THE COUNTY OF RIVERSIDE, BY DEED RECORDED JANUARY 15, 1962 IN BOOK 3057, PAGE 574 OF OFFICIAL RECORDS, WHICH BEARS SOUTH 42° 02' 10" WEST, ALONG THE SOUTHEASTERLY LINE OF SAID PASEO GRANDE, A DISTANCE OF 397.90 FEET FROM THE SOUTHERLY LINE OF YORBA HEIGHTS, UNIT NO. 1, AS SHOWN BY MAP ON FILE IN BOOK 22, PAGE 5 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE SOUTH 40° 19' 20" EAST, A DISTANCE OF 82.73 FEET;
THENCE SOUTH 35° 57' 50" EAST, A DISTANCE OF 142.00 FEET;
THENCE SOUTH 29° 57' 50" EAST, A DISTANCE OF 151.00 FEET;
THENCE SOUTH 47° 02' 10" WEST, A DISTANCE OF 151.00 FEET;
THENCE SOUTH 43° 12' 10" WEST, A DISTANCE OF 287.00 FEET;
THENCE NORTH 65° 27' 50" WEST, A DISTANCE OF 22.00 FEET;
THENCE NORTH 08° 37' 50" WEST, A DISTANCE OF 125.91 FEET;
THENCE NORTH 43° 12' 10" EAST, A DISTANCE OF 141.74 FEET;
THENCE NORTH 44° 57' 50" WEST, A DISTANCE OF 130.50 FEET;
THENCE NORTH 42° 02' 10" EAST, A DISTANCE OF 45.00 FEET;
THENCE NORTH 47° 57' 50" WEST, A DISTANCE OF 100.00 FEET TO THE SOUTHEASTERLY LINE OF SAID PASEO GRANDE;
THENCE NORTH 42° 02' 10" EAST, ALONG THE SOUTHEASTERLY LINE OF SAID PASEO GRANDE, A DISTANCE OF 258.07 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPT THAT PORTION OF SAID LAND CONVEYED TO REED SPRINKLE, A MARRIED MAN, BY DEED RECORDED JUNE 14, 1965 AS INSTRUMENT NO. 68567, OFFICIAL RECORDS.

A.P.N. 102-192-017, 102-203-007
T3S, R7W, SECTION 27 & 34

GENERAL NOTES

1. PREPARED: FEBRUARY 2024
2. SITE ACREAGE.....10.60 ACRES GROSS, 9.26 ACRES NET
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN
14. THIS PLANNING AREA IS AN AGE RESTRICTED COMMUNITY.

LEGEND:

- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (4) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1200 = EXISTING CONTOUR ELEVATION
- 1200 = PROPOSED SURFACE ELEVATION
- 1378.3 = PROPOSED PAD ELEVATION
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE
- TRAIL

AC	=	ACRES
C&G	=	CURB AND GUTTER
CB	=	CATCH BASIN
CY	=	CUBIC YARDS
CONC.	=	CONCRETE
DWY.	=	DRIVEWAY
ELEV.	=	ELEVATION
ESMT.	=	EASEMENT
EX.	=	EXISTING
FG	=	FINISH GRADE
FL	=	FLOWLINE
FS	=	FINISH SURFACE
GB	=	GRADE BREAK
INV.	=	INVERT
L	=	LENGTH
MMS	=	MODULAR WETLANDS SYSTEM
NAP	=	NOT A PART
PIP	=	PROJECT IN PLACE
PKG	=	PARKING
PL	=	PROPERTY LINE
PROP.	=	PROPOSED
RW	=	RIGHT OF WAY
S	=	SEWER
SD	=	STORM DRAIN
SW	=	SIDEWALK
TC	=	TOP OF CURB
TG	=	TOP OF GRATE
TYP.	=	TYPICAL
W	=	WIDTH
WWM	=	WELDED WIRE MESH
45	=	LOT NUMBER

ADJACENT LAND USE:

WEST: MDR MEDIUM DENSITY RESIDENTIAL

EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "3RCC, "P474.1" AND "CHPP" HADJ83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PERTHAT RECORD REFERENCE: ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID H6 AND J6

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

UTILITY CONTACTS

WATER:	CITY OF CORONA DEPARTMENT OF WATER AND POWER 755 CORPORATION YARD WAY CORONA, CA. 92880 (951) 736-2321
SEWER:	CITY OF CORONA DEPARTMENT OF WATER AND POWER 755 CORPORATION YARD WAY CORONA, CA. 92880 (951) 736-2321
POWER:	SOUTHERN CALIFORNIA EDISON CO. 1351 E. FRANCIS ONTARIO, CA. 91761 (800) 930-8591
GAS:	SOUTHERN CALIFORNIA GAS CO. P.O. BOX 3003 REDLANDS, CA. 92373 (800) 427-2200
PHONE:	AT&T 1265 N. VAN BUREN ST., #180 ANAHEIM, CA 92807 (714) 666-5423
CABLE TV:	TIME WARNER CABLE 1500 AUTO CENTER DRIVE ONTARIO, CA 91761 (909) 975-3396
SOLID WASTE PURVEYOR:	CITY OF CORONA UTILITIES DEPARTMENT- SOLID WASTE & RECYCLING DIVISION 755 PUBLIC SAFTEY WAY CORONA, CA 92878 (951) 736-2234

ASSESSOR'S PARCEL NUMBERS:

102-192-017
102-203-007

PROJECT DENSITY

TOTAL LOT: 31
TOTAL GROSS ACREAGE: 10.60 ACRES
DENSITY = 31 / 10.60 = 2.92 DU/AC
PA 5 - AGE RESTRICTED COMMUNITY

PRELIMINARY EARTHWORK:

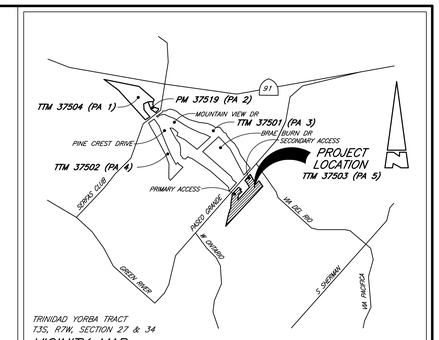
RAW CUT: 42,953 C.Y.
RAW FILL: 28,479 C.Y.
NET: 14,474 C.Y.

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES

GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
TOTAL	258,521	256,024	2,497 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.



TRINIDAD YORBA TRACT
T3S, R7W, SECTION 27 & 34

VICINITY MAP

NOT TO SCALE

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNIE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE 227
CORONA DEL MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	31
TOTAL NUMBER OF REQUIRED PARKING *	78
NUMBER OF ONE CAR GARAGES	0
NUMBER OF TWO OR THREE CAR GARAGES	31
NUMBER OF ONE CAR DRIVEWAY PARKING	31
NUMBER OF TWO CAR DRIVEWAY PARKING	0
NUMBER OF ON STREET PARALLEL PARKING	41
NUMBER OF ONSITE PARKING STALLS	0
TOTAL NUMBER OF PARKING PROVIDED	134

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4855 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
LAST ☆ DATE CHANGED ON SET
09/27/24 BY: RS
DATE OF THIS PLOT
09/27/24

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37503
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

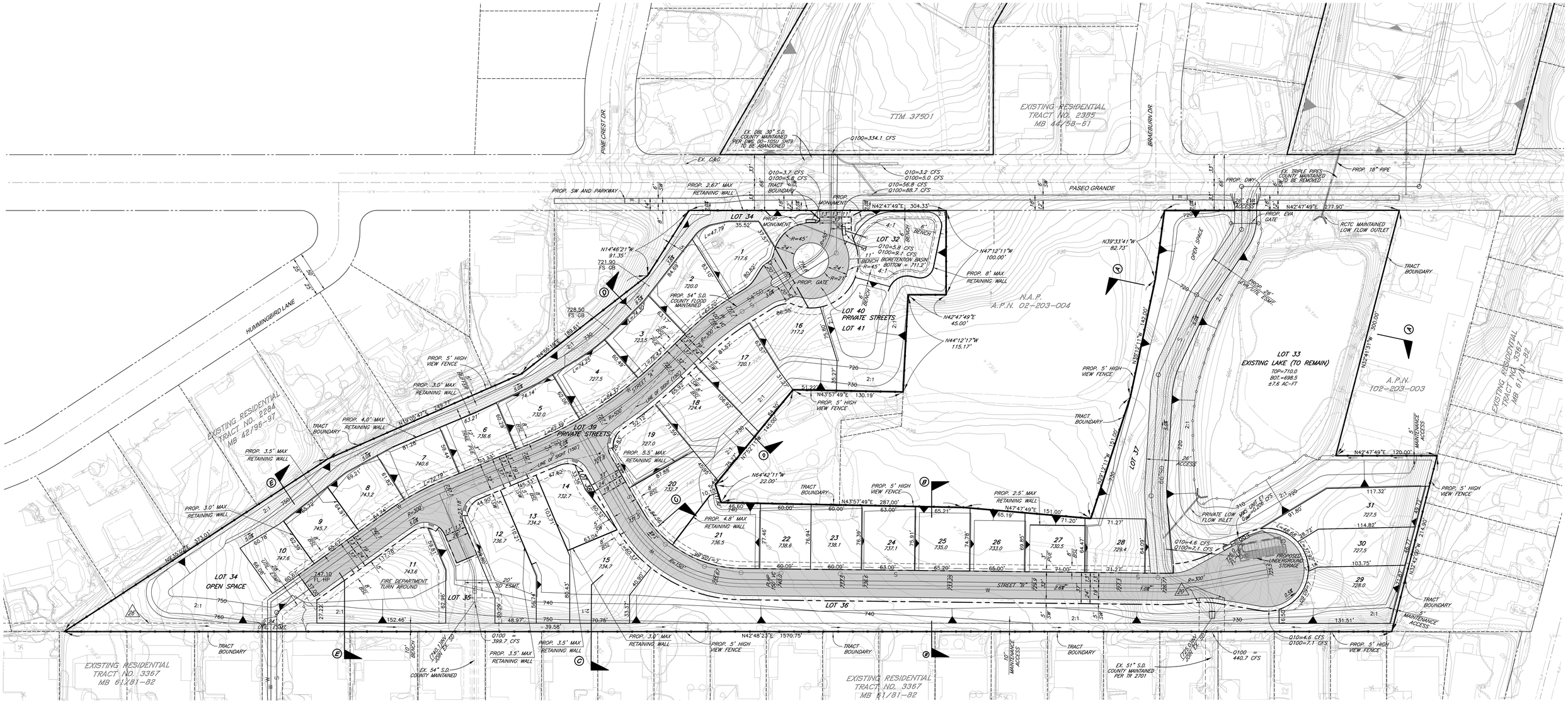
PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
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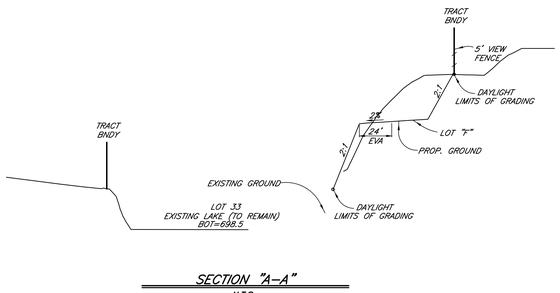
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SHEET 1 OF 2 SHEETS

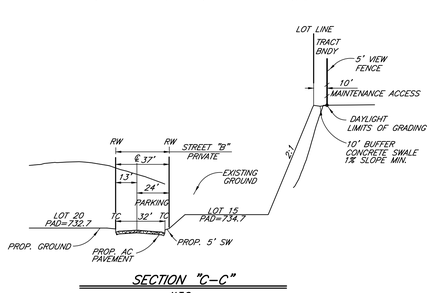
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THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37503
IN THE COUNTY OF RIVERSIDE

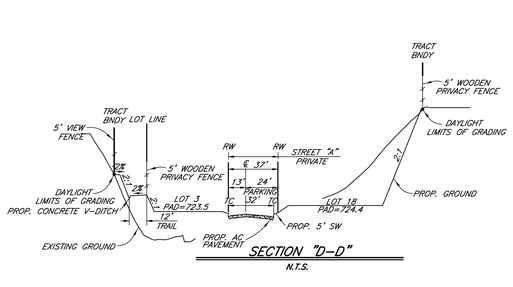




SECTION "A-A"
N.T.S.

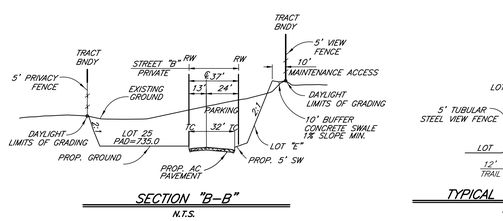


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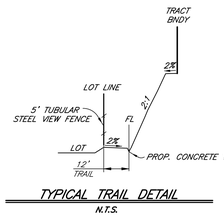


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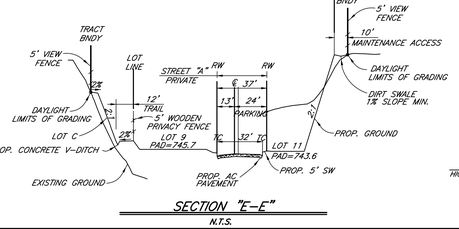
NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX.
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEWARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUILDING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING



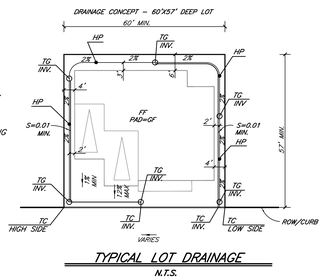
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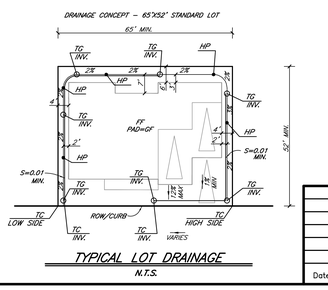
TYPICAL TRAIL DETAIL
N.T.S.



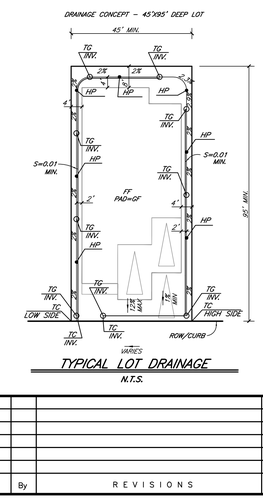
SECTION "E-E"
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.

REGISTERED PROFESSIONAL ENGINEER BRANDON M. BARNETT No.78472 CIVIL STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF MARKET CHANGE TRIGGERING TTM
09/27/24 BY: RS
DATE OF THIS PLOT
09/27/24

TENTATIVE TRACT MAP NO. 37503
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

Date	By	REVISIONS	App'd

SHEET 2 OF 2 SHEETS

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Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

ASSOCIATED SOILS ENGINEERING, INC.
Consulting Geotechnical Engineers

REPORT OF SUPPLEMENTAL GEOTECHNICAL INVESTIGATION & GRADING PLAN REVIEW

Proposed Residential Redevelopment of "The Trails at Corona"

Tentative Tract Map No.'s 37500, 37501, 37502, 37503 & 37504

Corona, California

Prepared For:

BLUE RIVER DEVELOPMENT

c/o Oxbow Partners

2855 Pacific Coast Highway, Suite 227

Corona del Mar, California 92625

Project No. 6619.18.1 **November 19, 2018**

2860 Walnut Avenue, Signal Hill CA 90755 * Tel: (562) 426-7990 * Fax: (562) 426-1842

ASSOCIATED SOILS ENGINEERING, INC.
Consulting Geotechnical Engineers

November 19, 2018
Project No. 6619.18.1

Blue River Development
c/o Oxbow Partners
2855 Pacific Coast Highway, Suite 227
Corona del Mar, California 92625

Attn.: Mr. Tom Grabiel

Subject: **REPORT OF SUPPLEMENTARY GEOTECHNICAL INVESTIGATION & GRADING PLAN REVIEW**
Proposed Residential Development of "The Trails at Corona"
Tentative Tract No.'s 37500, 37501, 37502, 37503 and 37504
Corona, California

Ladies and Gentlemen:

Presented herewith is the Report of Supplemental Investigation and Grading Plan Review (the Soils Report) prepared by Associated Soils Engineering, Inc. (ASE) for the proposed development of "the Trails at Corona" project (the Residential Development) consisting of single-family residential structures (the Buildings) to be located within Tentative Tract No.'s 37500, 37501, 37502, 37503 and 37504, in the City of Corona, California (the Site). This work was conducted in accordance with ASE's Proposal No. 6619.18.1, dated August 2, 2018, and your subsequent authorization.

The subject geotechnical investigation was planned and performed based on the relevant development information provided by your office. Provided information included the Tentative Tract Maps for the subject Tracts, prepared by KWC Engineers and Plot-dated June 1, 2018, showing the preliminary grading parameters for the proposed residential development.

The purpose of this study was to evaluate the subsurface soils conditions at the Site, followed by performance of engineering analyses and formulation/assembly of recommendations for the geotechnical design and construction of the planned Buildings. ASE's study has concluded that the Residential Development is geotechnically feasible, provided that the recommendations and design guidelines with respect to site grading and foundation construction presented in the Soils Report are incorporated in the project plans and design, and implemented during construction. This Soils Report also incorporates 1) the findings of the geotechnical field investigation, 2) the summary of potential geological/seismic hazard assessment, and 3) the results of laboratory tests performed.

We at ASE appreciate the opportunity to provide our professional services on this important project, and look forward to assisting you during site grading and construction of the Residential Development and associated appurtenant improvements.

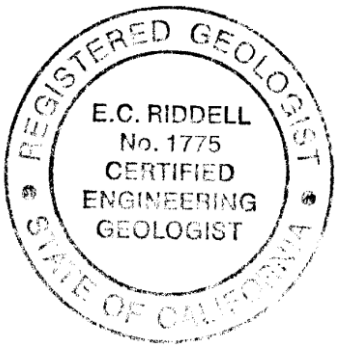
If you have any questions or require additional information, please contact the undersigned.

Respectfully submitted,
ASSOCIATED SOILS ENGINEERING, INC.

Lawrence J.D. Chang, P.E.
Geotechnical Engineer, RGE 2881

Edward C. (Ted) Riddell, P.G.
Engineering Geologist, CEG 1775





LC/ECR:tr

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1.0 INTRODUCTION

This Soils Report presents the results of ASE's supplemental geotechnical investigation and grading plan review for the proposed new residential development (the Residential Development) consisting of single-family residential structures (the Buildings) located within the former Mountain View Golf Course in the City of Corona, California (the Site). The approximate location of the Site and configuration of the Tracts is shown on the Site Location Map (Figure 1). The purpose of this supplemental investigation was to evaluate the general subsurface soil conditions at the Site and provide geotechnical recommendations for the design and construction of the Residential Development. This Soils Report presents the summary of the data collected, and the results of ASE's engineering evaluations/analyses, which provide the basis for the formulation of relevant geotechnical conclusions and recommendations.

1.1 Project Description

The following provided project information is understood to be applicable at the time of preparation of this Soils Report.

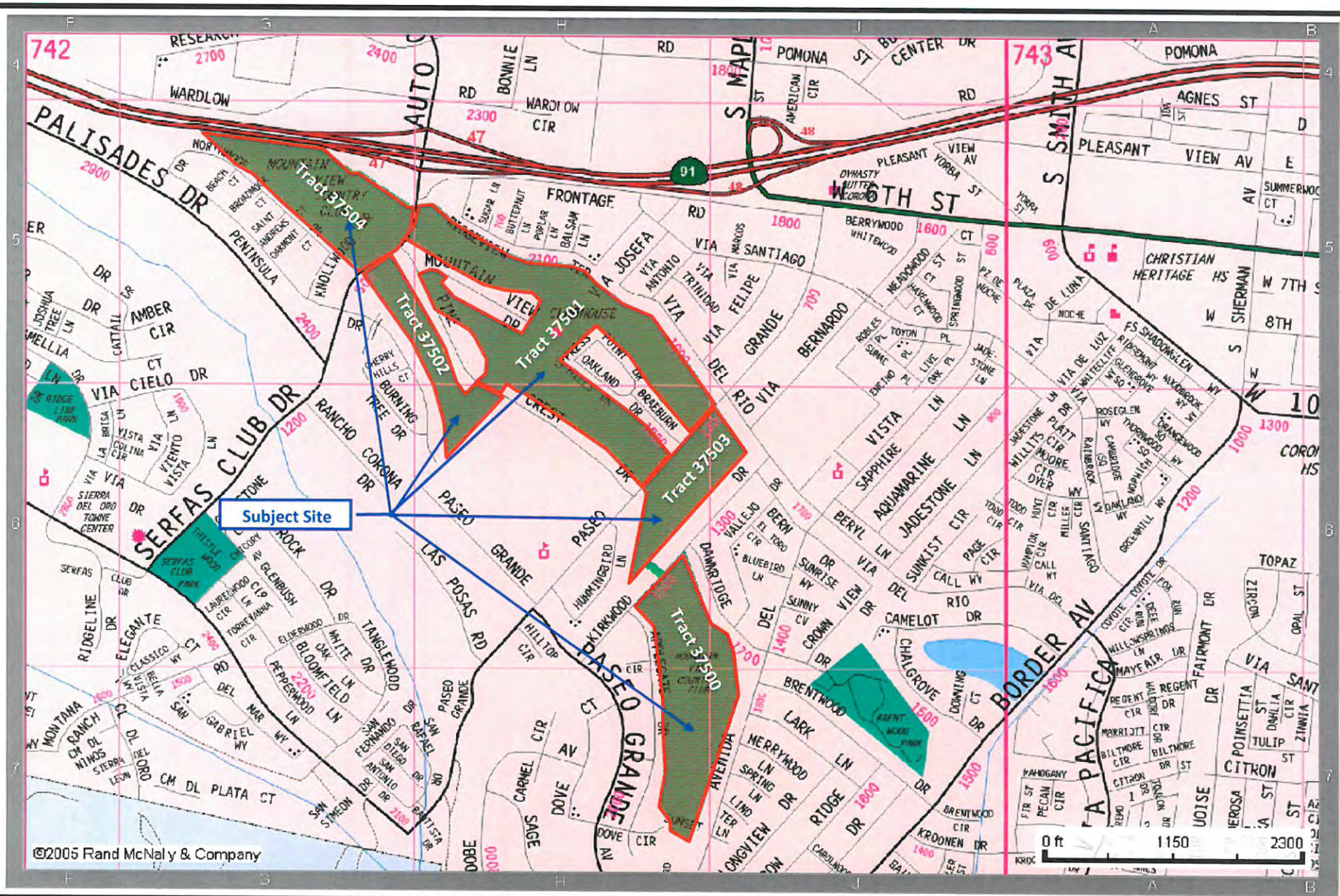
1.1.1 Building/Development Concepts:

The proposed Residential Development is to be located on five (5) separate Tracts of the former Mountain View Golf Course in the City of Corona, California. The five Tentative Tract No.'s are loosely defined as follows:

- TT 37500, Lots 1-56 – Former golf holes southeast of Kirkwood Drive,
- TT 37501, Lots 1-225 – Former golf holes northwest of Paseo Grande and southeast of Serfas Club Drive, including former Golf Clubhouse parcel,
- TT 37502, Lots 1-47 – Former golf holes southeast of Serfas Club Drive and Southwest of Pine Crest Drive,
- TT 37503, Lots 1-31 – Former Golf holes southeast of Paseo Grande and northwest of Kirkwood Drive,
- TT 37504, Lots 1-67 and Commercial Pad – Former golf holes southeast of State Route 91 and west of Serfas Club Drive.

The new residential Buildings will consist of single and two-story frame, stucco and masonry construction. According to the proposed grading as shown on the Tentative Tract Maps (TTM), typical cut/fill grading will be utilized to create individual building pads for subsequent construction of the Buildings, along with associated streets, parkways, slopes and common areas. Cuts and fills are proposed to the existing grades with the following maximums on a per tract basis:

- TT 37500 – cuts up to 15 feet, fills up to 20 feet;
- TT 37501 – cuts up to 19 feet, fills up to 10 feet;



Associated Soils Engineering, Inc. 2860 Walnut Avenue Signal Hill, CA 90755 Tel (562) 426-7990 Fax (562) 426-1842	**Site Location Map**	Proj. Name:	**Proposed "The Trails at Corona" Residential Development**
		Figure 1	Proj. No.: **6619.18.1**
			Date: **November, 2018**

- TT 37502 – cuts up to 14 feet, fills up to 13 feet
- TT 37503 – cuts up to 13 feet, fills up to 15 feet;
- TT 37504 – cuts up to 17 feet, fills up to 13 feet.

1.1.2 Structural Loading:

In the absence of structural loading information, ASE assumed that the Buildings will be supported by isolated pad footings and continuous spread footings, with a maximum concentrated column load (dead plus live loads) on the order of 20 to 50 kips, and with a maximum line load (dead plus live loads) of 2,000 to 4,000 pounds per linear foot. Tolerable total and differential settlements resulted from the aforementioned structural loadings on the order of one (1) inch and one-quarter (¼) inch over a distance of 30 feet, respectively, have also been assumed by ASE.

1.2 Scope of Exploration

In accomplishing the subject investigation, ASE's staff had performed the following geotechnical tasks:

A. Review of readily available background information, including in-house geotechnical data, geotechnical literature, geologic maps, seismic hazard maps, and literature relevant to the subject Site, specifically ASE's previous Report of Geotechnical Investigation dated March 29, 2016.

B. A geotechnical site reconnaissance to observe the general surficial soil conditions at the Site, map the surface geology and to select and mark suitable exploratory boring locations, followed by notification to Underground Service Alert (USA) of the planned boring operations at least 72 hours prior to field exploration.

C. Field exploration (including previous investigation) consisting of drilling twenty seven (27) exploratory borings with truck-mounted rotary drilling rig to depths ranging from 5 feet 1 inch to 46 feet 6 inches deep from the respective existing site grades. Field logging and sampling of soils encountered in the exploratory borings were carried out by ASE's engineer. Locations of the exploratory borings are also shown on the Geotechnical Maps, Plates A-1 through A-6, in Appendix A.

D. Laboratory testing on retrieved representative soil samples for classification and for determination of pertinent engineering properties.

E. Engineering analyses of data obtained from literature review, and the site and laboratory testing covering the following aspects:

- Evaluation of general subsurface conditions and description of types, distribution, and engineering characteristics of subsurface materials.
- Assessment of geologic/seismic hazards based on the pertinent criteria required by the California Geological Survey (CGS).

- Determination of the seismic design parameters in accordance with Chapters 16 and 18 of the California Building Code, 2016 Edition (2016 CBC).
- Evaluation of the suitability of on-site soils for foundation support and establishment of qualification criteria for on-site or imported fill material.
- Recommendations for site grading and subgrade preparation, inclusive of slab-on-grade and pavement support and geotechnical design criteria.
- Recommendations for design of shallow foundations such as conventional footings, including allowable soils bearing capacity, estimated settlement, and lateral resistance.
- Recommendations for temporary excavation and shoring.
- Evaluation of the corrosion and expansion potential of the on-site materials.

F. Preparation of this Soils Report presenting the work performed and data acquired, as well as summarizing our conclusions and geotechnical recommendations for the design and construction of the Residential Development.

Please note that ASE's geotechnical investigation did not include any evaluation or assessment of hazardous or toxic materials which may or may not exist on or beneath the site. ASE does not consult in the field of potential site contamination/mitigation.

2.0 SITE AND SUBSURFACE CONDITIONS

2.1 Location, Boundary Conditions and Existing Development

The Site is located within the grounds of the Mountain View Golf Course in and around the former Golf Clubhouse at 2121 Mountain View Drive, in the City of Corona, California. The overall project extends from State Route 91 on the northwest to south of Kirkwood drive on the southeast.

The Site consists of the former Mountain View Golf Course holes and Clubhouse. The former golf course itself is generally located within the natural drainage courses which run from the southeast (TT 37500) toward the northwest (TT 37504). The sides of each of the drainage courses are lined with existing residential development, with the exception of TT 37504, which is bound by the Riverside Freeway (SR 91) to the northwest and existing commercial development to the north.

2.2 Subsurface Conditions

2.2.1 Artificial Fill (af):

Artificial fill was observed in four (4) of ASE's exploratory borings to approximate depths of 1 foot in Borings B-1 and B-4, 2.5 feet in Boring B-3, and 4 feet in Boring B-10. The encountered artificial fill generally consists of dark yellowish brown to brown to light yellowish brown silty fine to medium

sand, clayey fine to medium sand, silty fine sand with trace clay, and fine to medium sand. Leaf litter was encountered in Boring B-1. The encountered artificial fill material has been classified as "undocumented fill" and evaluated accordingly due to the lack of documentation substantiating prior compaction effort. Additional areas of artificial fill were mapped during geologic mapping as shown on the Geotechnical Maps, Plates A-1 through A-6.

2.2.2 Very Old Alluvial Fan Deposits (Qoal) / Young Alluvial Channel Deposits (Qal):

Native site soils consisting of early Pleistocene-age very old alluvial fan deposits and Holocene to late Pleistocene young alluvial channel deposits were encountered at-grade, or below the pavement sections and/or artificial fill, in ASE's borings. Per References 4 and 5, the very old alluvial fan deposits are found scattered along the foot of the Santa Ana Mountains and extending outward up to a distance of 3 km. Per the same references, the young alluvial channel deposits are associated with deposition of the Temescal and Wardlow Canyon Washes and their tributaries. Soils within these units were found to predominantly consist of sand, silt, and clay. In specific, on-site alluvial fan and channel soils consist of silty sands, silty sands with clay, silty sands with gravel, clayey sands, clayey sands with gravel, clayey sands and gravel, gravelly sand with silt, clayey gravel with sand, silty clays, silty clays with sand, sandy clays, clayey silts, sandy silts, sandy silts with clay, and silts with sand. Plates A-1 through A-6 show geologic material distribution within the project Sites.

Site subsurface soils were, in general, in a damp to very moist condition within the explored depths at the time of ASE's site investigations. Blow counts recorded from advancing Modified California barrel sampler and Standard Penetration Test (SPT) sampler empirically indicate that the granular, sandy soils (i.e. silty sands/clayey sands) are in a loose to very dense state, while the fine-grained, cohesive soil strata (i.e. silts/clays) generally exhibit firm to hard consistencies.

More detailed descriptions of soils encountered and conditions observed during the subsurface exploration are shown in the Field Logs of Borings ("B" Plates) in Appendix A, together with information of soil classifications, depths and types of soil samples, blow counts, field dry densities and moisture contents, and corresponding laboratory tests performed.

Please note that the subsurface soils descriptions presented above have been interpreted from conditions exposed during the field investigations and/or information inferred from the reviewed geologic literature. As such, it is likely that not all of the subsurface conditions at the Site could be captured or represented. It is therefore essential that the Geotechnical Consultant should be on site during grading and foundation construction such that information/recommendations deciphered during preliminary and supplemental geotechnical investigation phases could be verified and, if necessary, amended as appropriate.

2.3 Groundwater and Caving

During field exploration, groundwater was not encountered to the maximum explored depth of 46 feet 6 inches in Boring B-5. A search on Google Earth indicates that the subject Site ranges from approximately 588 to 607 feet above Mean Sea Level (MSL) in TT 37504, and 758 to 841 feet above Mean Sea Level (MSL) in TT 37500.

Information available from the State of California Department of Water Resources website (www.water.ca.gov/waterdatalibrary/groundwater/hydrographs) indicates that the historic high groundwater level in Well No. 03S07W35B001S, close to the Site at the southwest corner of South Lincoln Avenue and South Smith Avenue, was 111.7 feet below ground surface elevation on March 16, 2015. The ground surface elevation of the well is 729.0 feet above MSL, or 141 feet higher to 112 feet lower than minimum and maximum Site grades. The depth to groundwater for the most recent reading in this well (taken October 15, 2015) was 114.6 feet below grade. Additional information from the State of California Water Resources Control Board Geotracker website (http://geotracker.waterboards.ca.gov) indicates that the minimum depth to groundwater in remediation/groundwater monitoring well B-23 located on the west side of Serfas Club Drive just south of the 91 Freeway offramp, i.e. 800 Serfas Club Drive, was 94.31 feet deep, read on March 7, 2006.

Generally, seasonal and long-term fluctuations in the groundwater may occur as a result of variations in subsurface conditions, rainfall, run-off conditions and other factors. Therefore, variations from the limited observations made in ASE's exploratory borings during the time of field investigation cannot be ruled out. Also, the use of hollow-stem augers during drilling precluded observation of potential caving conditions which may have otherwise occurred in an uncased hole. While caving and/or sloughing were not measured during the extraction of auger stem at the completion of boring operations, the potential for caving and/or soil sloughing cannot be ruled out in excavations greater in dimension that our exploratory borings.

2.4 Utilities

No overhead or underground utilities were encountered within the area of ASE's on-site investigation. However, underground and overhead lines are present which service the existing site structures, and are along the site bordering and crossing streets. Irrigation lines are present in turf and planter areas. Other utilities, though not known at the time of this report preparation, may be present on site, and should be located and incorporated into site development plans accordingly.

3.0 GEOLOGY

3.1 Regional Geologic Setting

The Site is located within the Chino Basin at the southeastern end of the Northeastern Block of the Los Angeles Basin. The Los Angeles Basin is a large northwest-trending synclinal depression at the northwestern

end of the Peninsular Ranges geomorphic Province of California. The Northeastern Block is southwesterly bounded by the Whittier Fault Zone, located approximately 1.9 to 2.2 miles (3.1 to 3.6 km) from the Site, and the Cucamonga Fault Zone, located approximately 18.1 to 19.3 miles (29.1 to 31.0 km) from the Site.

4.0 FAULTING AND SEISMICITY

Corona, like the rest of Southern California, is located within a seismically active region as a result of being located near the active margin between the North American and Pacific tectonic plates. The principal source of seismic activity is movement along the northwest-trending regional faults such as the San Andreas, San Jacinto, Newport-Inglewood and Whittier-Elsinore fault zones.

By the definition of the CGS, an active fault is one which has had surface displacement within the Holocene Epoch (roughly the last 11,000 years). The CGS has defined a potentially active fault as any fault which has been active during the Quaternary Period (approximately the last 1,600,000 years). These definitions are used in delineating Earthquake Fault Zones as mandated by the Alquist-Priolo Geologic Hazard Zones Act of 1972 and as subsequently revised in 1997 as Alquist-Priolo Earthquake Fault Zoning Act and Earthquake Fault Zones. The intent of the act is to require fault investigations on sites located within Special Studies Zones to preclude new construction of certain inhabited structures across the trace of active faults. The area of the proposed development has been located on the Corona South Quadrangle Earthquake Fault Zones Map and the southeastern-most portion of the parcel identified as TT 37500 (Lots 19 through 21) is located within a "Fault Rupture Hazard Zone" as defined in the "Alquist-Priolo Earthquake Fault Zoning Act" of the State of California Geologic Survey (formerly known as the Division of Mines and Geology). This portion of the Site is underlain by the Elsinore/Chino Fault Zone, a known active fault. The remaining Tentative Tract Map No.'s, 37501, 37502, 37503, and 37504, are not located within the Alquist-Priolo Earthquake Fault Zone. No evidence of active or potentially active faulting was observed during our investigation.

A Fault Evaluation and Investigation Report is required for most development within a Fault Rupture Hazard Zone (FRHZ). For the purpose of this investigation, ASE has assumed that this was accomplished as a portion of the overall development of the existing residences that surround the zoned area and will not have to be replicated by ASE. The City of Corona should have on file the previous fault study reports for the area and a fault study is not a part of this investigation. If a site-specific fault study is required, ASE should be consulted for the additional investigation and analysis.

Several sources were researched for information pertaining to site seismicity. The majority of data was obtained from the program, EQFAULT, by Blake (2000) that allows for an estimation of peak horizontal ground acceleration (PGA) using a data file of approximately 150 digitized California faults. This program compiles information including the dominant type of faulting within a particular region, the maximum

earthquake magnitude each fault is capable of generating, the estimated slip-rate for each fault, and the approximate location of the fault trace.

4.1 2016 CBC Seismic Design Parameters

The earthquake design requirements listed in 2016 CBC and other governing standards account for faults classified as "active", in accordance with the most recent fault listing as per the United States Geological Survey (USGS) or the CGS. The seismic design of the proposed structures should be implemented in accordance with the applicable provisions stipulated in 2016 CBC unless otherwise specified by the governing authority having jurisdiction over the project.

The 2016 CBC seismic design criteria for the Site based on a Risk Category II and a scenario of Risk-Targeted Maximum Considered Earthquake (MCE_R) that carries a 2% exceedance probability in 50 years had been determined utilizing the U.S. Seismic Design Maps web-application available from the Seismic Design Maps and Tools webpage on the website of Earthquake Hazard Program of USGS (http://earthquake.usgs.gov/hazards/designmaps/usdesign.php). Summaries of the seismic coefficients for the Site are tabulated below.

2016 CBC SEISMIC DESIGN PARAMETERS					
Seismic Parameter	**Tentative Tract No.**				
	37501	37502	37504	37500	37503
	Recommended Value				
Site Class [b]	D				
Soil Profile Name [b]	Stiff Soil Profile				
Site Coefficient, Fa [c]	1.0				
Site Coefficient, Fv [d]	1.5				
0.2-Second Spectral Response Acceleration, S_S [e] **(g)**	2.532	2.501	2.461	2.621	2.563
1.0-Second Spectral Response Acceleration, S_1 [f] **(g)**	0.973	0.959	0.938	1.017	0.990
Adjusted 0.2-Second Spectral Response Acceleration, S_{MS} [g] **(g)**	2.532	2.501	2.461	2.621	2.563
Adjusted 1.0-Second Spectral Response Acceleration, S_{M1} [h] **(g)**	1.460	1.439	1.407	1.526	1.485
Design 0.2-Second Spectral Response Acceleration, S_{DS} [i] **(g)**	1.688	1.668	1.641	1.748	1.709
Design 1.0-Second Spectral Response Acceleration, S_{D1} [j] **(g)**	0.973	0.959	0.938	1.017	0.990
Long -Period Transition Period, T_L [k] **(sec)**	8				
Mapped MCE_G Geometric Mean Peak Ground Acceleration, PGA [l] **(g)**	0.978	0.965	0.949	1.022	0.993
Site Coefficient, F_{PGA} [m]	1.0				
MCE_G Peak Ground Acceleration adjusted for Site Class Effect, PGA_M [n] **(g)**	0.978	0.965	0.949	1.022	0.993
Risk Category	**I or II or III**			**IV**	
Seismic Design Category based on S_1 [o]	E			F	

a Per 2016 CBC Table 1604.5
b Per 2016 CBC Section 1613.3.2
c Per 2016 CBC Table 1613.3.3(1)
d Per 2016 CBC Table 1613.3.3(2)
e Per 2016 CBC Figure 1613.3.1(1)
f Per 2016 CBC Figure 1613.3.1(2)
g Per 2016 CBC Equation 16-37
h Per 2016 CBC Equation 16-38
i Per 2016 CBC Equation 16-39
J Per 2016 CBC Equation 16-40
K Per ASCE 7-10 Figure 22-12
L Per ASCE 7-10 Figure 22-7
M Per ASCE 7-10 Table 11.8-1
N Per ASCE 7-10 Equation 11.8-1 = PGA x F_{PGA}
O Per 2016 CBC Table 1613A.3.5(2)

Please note that conformance to the 2016 CBC seismic design criteria does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not take place during the occurrence of a MCE_R event. The primary goal of seismic design is to protect life and not to avoid all damage, since such design may be economically prohibitive. Following a major earthquake, a building may be damaged beyond repair, yet not collapse. The Structural Consultant should review the pertinent parameters to evaluate the seismic design.

5.0 GEOLOGIC HAZARDS

5.1 Surface Fault Rupture and Ground Shaking

The majority of the Site is not located within an Alquist-Priolo Earthquake Fault Zone. However, the southeastern-most portion of the TT 37500 is within the Alquist-Priolo Earthquake Fault Zone. The known active Elsinore/Chino Fault Zone is shown adjacent to the Site, and crossing the Site in the southerly portion of TT 37500, on published maps reviewed. While evidence for active faulting was not observed by ASE in any of the exploratory borings completed during field investigation, the risk of surface rupture within Lots 19 through 21, inclusive, of Tentative Tract no. 37500 cannot be ruled out. Being in close proximity to several known active and potentially active faults, severe ground shaking should be expected during the life of the Residential Development.

5.2 Seismic Hazards

5.2.1 Liquefaction:

The term "liquefaction" describes a phenomenon in which a saturated cohesionless soil loses strength and acquires a degree of mobility as a result of strong ground shaking during an earthquake. The factors knows to the influence liquefaction potential include soil type and depth, grain size, relative density, groundwater level, degree of saturation, and both the intensity and duration of ground shaking. The soils to the maximum explored depth of 46 feet 6 inches consist predominantly of loose to very dense granular soils, and firm to hard silty/clayey soil strata.

During ASE's field exploration, groundwater was not encountered to the maximum explored depth of 46 feet 6 inches below grade in Boring B-5. Information available from the State of California Department of Water Resources indicates that the high groundwater level in a well east of the Sites is 111.7 feet below well grade, with the well grade 43 to 63 feet higher than site grades. In addition, information available from the Water Resources Control Board Geotracker website indicates that the minimum groundwater level in a well located on the west side of Serfas Club Drive just south of the 91 Freeway was 94.31 feet below grade.

Considering that: 1) groundwater was not encountered to a maximum explored depth of 46 feet 6 inches below existing grade, 2) the historic high groundwater level from the groundwater

monitoring wells located near the Site is 94.31 feet deep, 3) the as-graded soil condition of the Site is anticipated to result in soils exhibiting dense to very dense consistency in the upper ten (10) feet, and 4) the subsurface soils to the maximum explored depths generally consist of loose to very dense granular soils, and firm to hard fine-grained soils, the onsite subsurface soils encountered are deemed to exhibit negligible liquefaction potential.

5.2.2 Earthquake-Induced Landslides:

There is no indication that recent landslides or unstable slope conditions exist on or adjacent to the project Site that would otherwise result in an obvious landslide hazard to the proposed development or adjacent properties.

Due to the significant relief on or adjacent to the Site, the potential for seismic shaking, the loose nature of some site native soils, and the site remedial grading extents outlined in the Grading Section of this Soils Report, the potential for earthquake induced landslides in the future is deemed low, but cannot be totally ruled out, especially when the Site is impacted by prolonged torrential rains. However, subsequent to the recommended grading, as shown on the Tentative Tract Maps, and following the recommendations presented herein and in the attached General Earthwork & Grading Specifications, the potential for earthquake induced landslides is deemed to be very low.

5.2.3 Seismic Settlements:

Ground accelerations emitted from a seismic event can cause densification of loose soils both above and below the groundwater table that may result in settlements on ground surface due to volumetric compression of soil mass. This phenomenon is often referred to as seismic settlement and commonly takes place in relatively clean sands, as well as soils with low plasticity and less fines. The earth materials on site consist of loose to very dense silty sands and clayey sands, and firm to hard fine-grained soils. While the granular soils at the Site are considered non-liquefiable due to deep groundwater beneath the Site, as discussed in Section 4.2.1 above, they may still undergo seismically-induced volumetric densification during the MPE.

Settlement of on-site granular soils above the historic high groundwater contour as a result of seismically-induced densification (i.e. "dry" seismic settlement) is estimated to be less than one-half (½) inch after the completion of site grading outlined in Sections 6.1 and 6.2 below. Such magnitude of seismically induced “dry” soil settlement is expected to affect relatively large areas. Thus, the corresponding differential settlement over short distance is likely to be small.

5.2.4 Lateral Spreading:

Lateral spreading, a phenomenon associated with seismically-induced soil liquefaction, is a display of

lateral displacement of soils due to inertial motion and lack of lateral support during or post liquefaction. It is typically exemplified by the formation of vertical cracks on the surface of liquefied soils, and usually takes place on gently sloping ground or level ground with nearby free surface such as drainage or stream channel. Since there is no presence of "free surface" (unlined slopes, excavations, channels, etc.) on or near by the Site, and since the potential for liquefaction at the Site is nil, the potential for the occurrence of seismically-induced lateral spreading is unlikely on the Site.

5.2.5 Tsunamis and Seiches:

Due to the elevation of the Site and absence of nearby waterfront, hazard from a tsunami is considered very low.

Seiches are rhythmic movements of water within a lake or other enclosed or semi-enclosed body of water, generally caused by earthquakes. Since no lakes or other bodies of water lie on or near the site, the hazard from seiches is not present at the Site.

5.2.6 Flood Hazards:

The Site is located on the ESRII/FEMA Hazard Awareness site. Per ASE's review of FEMA Flood Insurance Rate Map Nos. 06065C0688G and 06065C1351G, both dated August 28, 2008, the majority of site parcels in Tentative Tract No.'s 37500, 37501, 37502 and 37503 are not located within the 100-year floodplain. However, the low TT 37504, as well as the northwesterly and southwesterly fringes of TT No.'s 37501 and 37502 are located within the 100-year floodplain. It should be noted that the "Limits of Detailed Study" of flood areas (i.e. Zones A and AE) stop at Kirkwood Drive, therefore no flood areas are shown extending into TT 37500. As such, 100-year flood hazard in TT 37500 should be evaluated by the Project Civil Consultant. In addition, the Project Architect or Civil Consultant should incorporate all requirements/ordinances regarding 100-year flood protection planning imposed by local governing authority.

6.0 GEOTECHNICAL CONSIDERATIONS AND RECOMMENDATIONS

Based on the results of field exploration, laboratory testing, and engineering analysis, it is ASE's geotechnical opinion that the construction of the Residential Development may be implemented as planned, provided that the ground preparation and foundation design criteria recommended herein are incorporated into the project plans and specifications and implemented during construction.

The major geotechnical factors affecting the design and construction of the Residential Development include the following:

1. Soil disturbances as a result of site demolition, clearing and excavation operations.

2. Presence of undocumented fill soils to depths ranging from 1 to 4 feet below existing site grades in areas of the planned Buildings.
3. Presence of loose, low density soils within the zone of foundation bearing stratum.
4. Presence of some soils that exhibit "Medium" expansion potential at shallow depth that may heave or shrink unevenly upon saturation and drying, respectively, resulting in potentially excessive uneven displacement of overlying foundations, structural improvements, flatworks, and pavements.
5. The need for raising site grade due to 100-year flood consideration that could incur undesirable consolidation settlement of underlying soil strata.

In consideration of the above factors, it is ASE's opinion that overexcavation and backfilling with properly compacted fill in the building pads of the Buildings, as recommended herein, will be essential to reduce unfavorable static foundation displacement caused by static settlements of underlying soils, and to provide satisfactory bearing stratum in support of the Buildings and appurtenant improvements. The grading recommendations provided herein should be reviewed and, if necessary, revised when final grading plans become available. It is assumed that some of the finish grades will be close to existing site grades (± one foot). However, raising grade in areas within the 100-year flood zones will be needed, and should be planned and designed by the Project Civil Consultant. ASE should be consulted for assessment of potential surcharge-induced soils settlement when raising of grade through fill placement is finalized.

Conventional shallow foundations comprising continuous spread footings and isolated pad footings bearing on properly compacted fill may be considered for structural support.

6.1 Site Preparation

6.1.1 Existing Improvements:

Prior to grading operations, it will be necessary to remove designated existing construction, including any remaining buried obstructions, which may be in the areas of the Residential Development construction. Structure removal should include foundations. Concrete flatwork and asphalt pavement should also be removed from the areas of proposed construction. Concrete and asphalt fragments from site demolition operations should be disposed of off-site, unless they can be stockpiled and processed to meet specifications for Crushed Miscellaneous Base ("CMB"), or Processed Miscellaneous Base ("PMB), as outlined in Sections 200-2.4 or 200-2.5, respectively, of the latest edition of the "Standard Specifications for Public Works Construction (i.e. the Greenbook), and reused as approved fill or base material.

6.1.2 Surface Vegetation:

Surface vegetation should be stripped from areas of proposed construction. Stripping should

penetrate six (6) inches into surface soils. Any soil contaminated with organic matter (such as root systems or strippings mixed into the soil) should be disposed of off-site or set aside for future use in non-structural landscaped areas. Removal of trees and shrubs should include rootballs and attendant root systems.

6.1.3 Underground Utilities:

Any underground utilities to be abandoned within the zone of proposed construction should be cut off a minimum of 5 feet from the area of the new structures. The ends of cut-off lines should be plugged a minimum of 5 feet with concrete exhibiting minimum shrinkage characteristics to prevent water migration to or from hollow lines. Capping of lines may also be required should the plug be subject to any line pressure.

Alternatively, deep hollow lines may be left in place provided they are filled with lean concrete or 2-sack control density fill (slurry fill). Unless otherwise assessed and approved by the Geotechnical Consultant, no filled line should be permitted within two (2) feet from the bottom of new footings. Local ordinances relative to abandonment of underground utilities, if more restrictive, will supersede the above minimum requirements.

6.2 Site Grading

In view of minimizing the potential adverse effects associated with the development of excessive total or differential settlement underneath the Buildings and structural improvements of the Residential Development, as well as to ensure uniform bearing competency for the foundations, slabs, driveways and hardscapes, preparation of on-site soils are recommended in the following sections.

6.2.1 Undocumented Fill/Disturbed Native Soils:

Undocumented fill soils ranging from 1 to 4 feet deep below existing grades were observed in ASE's exploratory Borings B-1, B-3, B-4, and B-10, and mapped in other areas of the project. As such, any undocumented fill soil encountered during site grading in the building pad areas of the Residential Development, as well as any native soils disturbed during demolition and clearing operations, should be excavated full depth under the observation and confirmation by the Geotechnical Consultant. Lateral extent of overexcavation beyond the perimeters of the Buildings, where possible, should be to a minimum distance equal to the depth of undocumented fill/disturbed soil encountered or five (5) feet, whichever is greater. For other secondary improvements such as free-standing walls or hardscape, the lateral extent of removal should be to a minimum distance equal to the depth of undocumented fill/disturbed soils encountered or one (1) foot, whichever is greater.

The exposed excavation bottom should be scarified/reworked to a minimum one (1) foot depth and recompacted to at least 90 percent relative compaction with a minimum moisture content of two (2) percentage points above optimum moisture content, prior to backfilling with approved soils as specified in Section 6.2.9. Unless otherwise stated, the measurement of relative compaction in this report should always refer to ASTM D1557-12 Test Method.

6.2.2 Expansive Soils:

Laboratory test results on near surface soil samples indicates a "Very Low" to "Medium" soil expansion potential (i.e. Expansion Indices, "EI" = 10 to 55 per ASTM D4829-11 Test Method) as defined in 2016 CBC. While foundation and slab design recommendations presented in this Soils Report have taken into account the likely presence of "Medium" expansive soils on site, it may be desirable that the soil expansion potential be re-evaluated through additional testing during or after rough grading operations to verify the design adequacy of foundation or slab-on-grade against the re-tested soil expansion potential as heterogeneity within soil mass is not uncommon.

Lightly loaded structural elements such as shallow foundations and slabs could undergo movements that might potentially result in distress due to the "Medium" expansion potential of site clayey/silty soils. Design provisions presented in Sections 6.2 and 6.3, such as the use of "Very Low" to "Low" expansive fill beneath lightly loaded structural elements, adequate reinforcements, deeper foundations or other measures, may help alleviate the effects of soils expansion but may not completely eliminate the problem

6.2.3 Remedial Grading:

Different areas across the project will require different depths of remedial grading that can be better defined when actual grading plans are developed. In general, to provide acceptable support for building foundations and slabs, it is recommended that on-site soils within the footprint of the Buildings be overexcavated and removed uniformly to a minimum depth of three (3) feet below existing grade or finish grade, whichever is lower, in areas exposing older alluvium (Map Symbol Qoal) and up to ten (10) feet below existing grades in areas of younger alluvium (Map Symbol Qal - i.e., canyon bottoms), and replaced with properly compacted fill such that the building foundations and slabs are supported on a re-engineered, compacted fill layer. The excavation bottoms should be near uniform. The overexcavation should extend laterally to a minimum distance equal to the depth of removal beyond the perimeters of the Buildings, wherever possible. Requirements on the quality, corrosivity and expansion potential of fill soils as per stipulated in Sections 6.2.9 and 6.2.10 below should be complied with.

Soils exposed at excavation bottoms to a depth of one (1) foot should be scarified, reworked and recompacted to exhibit a minimum 90 percent relative compaction with a minimum moisture

content of two (2) percentage points above the optimum moisture content prior to receiving fill placement. The exposed excavation bottoms should be observed, tested, and approved by the Geotechnical Consultant prior to placing compacted fill. In case of the presence of localized loose soils, the overexcavation needs to be deepened accordingly to delete the loose soil condition. However, this deepened overexcavation may be terminated when the exposed native, undisturbed soils exhibit a natural relative compaction greater than 85 percent, subject to the testing and inspection by the representative from the Geotechnical Consultant.

The Geotechnical Consultant should be provided with appropriate foundation details and staking during grading to verify that depths and/or locations of the recommended overexcavation are adequate. For areas on site that grading recommendations stipulated in both Sections 6.2.1 and 6.2.3 apply, the more stringent grading criteria between the two sections should govern.

The depth of overexcavation should be reviewed by the Geotechnical Consultant during the actual construction. Any subsurface obstruction, buried structural elements, and unsuitable material encountered during grading, should be immediately brought to the attention of the Geotechnical Consultant for proper exposure, removal and processing, as recommended.

6.2.4 Pumping and Heaving of Subgrade Soils:

Some site soils within the zone of recommended remedial grading were found to contain high moisture content at the time of ASE's site investigation, as evidenced in the respective Field Log of Boring in Appendix A. Therefore, pumping and/or heaving conditions may be anticipated during site overexcavation and grading operations. If soils exhibiting high moisture content are encountered during site overexcavation and grading, the grading contractor may need to use track-mounted equipment in lieu of rubber tire mounted, wherever possible.

If excavated site soils are highly moist or wet at the time of site grading, the excavated soils should be evenly spread and left aerated for a period of time to reduce the moisture content prior to being re-used. If project schedule does not allow prolonged drying of any encountered wet site soils, alternative measures such as using or blending with site drier soils or imported “Very Low” to “Low” expansive fill, may be considered. The Geotechnical Consultant should be consulted at the time of site grading for the assessment of such alternative measures.

When pumping and heaving conditions are observed with soils exposed at the overexcavation bottom, it will be necessary to deepen the overexcavation within the area of observed pumping and heaving an additional 18 inches, under the observation and evaluation of the Geotechnical Consultant’s representative. The area of the deepened overexcavation should subsequently be backfilled with 3/4” to 1” open-graded crushed rocks (per Section 200-1.2 of the Greenbook)

rammed tightly to form a stiffened platform to facilitate the ensuing fill placement and compaction. The crushed rock layer should be sandwiched top and bottom by a layer of filtering geofabric (such as Mirafi 140N or equivalent) prior to and after the placement of crushed rocks, respectively. Alternative, site-specific recommendations for stabilizing excavation bottoms may be provided by the Geotechnical Consultant based on a review of soil conditions exposed during site grading.

6.2.5 Bulking, Shrinkage and Hydro-consolidation:

Bulking and shrinkage occur when soils are excavated and recompacted on site. The bulking/ shrinkage due to the removal of the loose, on-site fill soils is estimated to be approximately 10 to 20 percent. For estimating purposes, ASE recommends that a shrinkage factor on the order of 15 percent should be considered for preliminary planning. The amount of shrinkage will vary with the depth of removal, stripping loss, and actual field conditions at the time of grading. Shrinkage figures should therefore be considered rough estimates only and should be confirmed in the field during grading.

As evidenced by the results of One-Dimensional Consolidation Properties of Soils, Plates C-1 through C-22 in Appendix A, certain on-site soils up to twenty (20) feet deep could undergo substantial volumetric contraction upon moisture inundation, which could manifest on surface as significant and uneven subsidence, potentially causing distress to foundations if unmitigated. The completion of site remedial grading mentioned in Section 6.2.3 above could ensure hydro-consolidation potential for site soils up to eleven (11) feet deep from existing or finish grade, whichever is greater, will be minimized. Soils deeper than eleven (11) feet from existing or finish grade, whichever is greater, is less susceptible to excessive moisture infiltration and, thus, the impact of hydro-consolidation of soils, due to the depth.

6.2.6 Permanent Slopes

Based on the grading plan provided, it appears that proposed permanent cut and fill slopes will be formed across the project Site. The permanent slopes should have a slope ratio not greater than 2:1 (horizontal: vertical). Fill slopes constructed in natural ground with a gradient greater than 20 percent will require construction of a keyway at the toe of the fill slope. Slopes constructed in this manner are considered grossly and surficially stable. All cut slopes and keyways should be inspected and verified by the Geotechnical Consultant for the possible presence of loose sands, weak rock, fractures, adverse bedding, groundwater seepage or other forms of weakness that may affect slope stability. Recommendations and guidelines as stipulated in Appendix B, General Earthwork & Grading Specifications, should be adopted during hillside grading.

Upon fill slope grading, the slope faces should be overbuilt, cut to grade and compacted by back-rolling with a loaded sheepfoot roller at vertical intervals not to exceed 4 feet and track-walked upon

completion. The outer surface of the slope should be compacted to at least 90 percent relative compaction. To enhance the surficial stability of the fill slopes, slopes should be planted or otherwise covered as soon as feasible after grading. The use of purely Non-Plastic (NP) artificial earth materials such as poorly graded sand on slope faces should be avoided.

6.2.7 Temporary Excavation:

Excavations of site soils 4 feet or deeper should be temporarily shored or sloped in accordance with Cal OSHA requirements.

a) Temporary Sloping:

In areas where excavations deeper than 4 feet are not adjacent to existing structures of public right-of-ways, sloping procedures may be utilized for temporary excavations. It is recommended that temporary slopes in both fill and native soils be graded no steeper than 1.5:1 (H:V) for excavations up to 20 feet in depth. The above temporary slope criteria is based on level soils conditions behind temporary slopes with no surcharge loading (structures, traffic) within a lateral distance behind the top of slope equivalent to the slope height.

It is recommended that excavated soils be placed a minimum lateral distance from top of slope equal to the height of slope. A minimum setback distance equivalent to the slope height should be maintained between the top of slope and heavy excavation/grading equipment.
Should running sand conditions be experienced during excavation operations, flattening of cut slope faces, or other special procedures may be required to achieve stable, temporary slopes.

Soil conditions should be reviewed by the Geotechnical Consultant as excavation progresses to verify acceptability of temporary slopes. Final temporary cut slope design will be dependent upon the soil conditions encountered, construction procedures and schedule.

b) Temporary Shoring:

Temporary shoring will be required for those excavations where temporary sloping as specified above is not feasible.

Temporary cantilever shoring, if used, should be designed to resist an active earth pressure of 40 pounds per cubic foot (pcf) equivalent fluid pressure (EFP) for level soil conditions behind shoring. The resultant lateral deflection of shoring and surficial settlement immediately behind shoring are estimated to be on the order of one (1) to one and one half (1 ½) percent of the shored excavation depth. Should this ground deformation be intolerable to the existing structure, ASE should be consulted for more detailed analysis and further recommendations.

The design shoring should also include surcharge loading effects of existing structures and anticipated traffic, including delivery and construction equipment, when loading is within a distance from the shoring equal to the depth of excavation. In addition, a minimum uniform lateral pressure of 100 pounds per square foot (psf) in the upper ten (10) feet of shoring should be incorporated in the design when normal traffic is permitted within ten (10) feet of the shoring.

6.2.8 Exterior Slab-on-Grade/Concrete Flatwork/Hardscape/Pavement Support:

For the purpose of reducing future unsightly and uneven movements and cracks of any newly re-constructed exterior slab-on-grade, concrete flatwork, hardscape, or pavement, it is recommended that the upper eighteen (18) inches of soils below the bottom of and one (1) foot laterally beyond the footprint of exterior slab-on-grade/concrete flatwork/hardscape/pavement should consist predominantly of "Very Low" to “Low” expansive, suitable site, import or blended material (EI ≤ 35), compacted to at least 90 percent relative compaction with a minimum moisture content of two (2) percentage points above optimum moisture content. Prior to placement of the above recommended fill layer, the upper twelve (12) inches of exposed subgrade soils should be reworked to at least 90 percent relative compaction with a minimum moisture of two (2) percentage points above optimum moisture content.

From geotechnical viewpoint, new landscape area with only softscape is not subject to subgrade preparation and remedial grading requirements mentioned in Sections 6.2.1, 6.2.3 and 6.2.7.

6.2.9 Suitable Soils and Imported Soils:

Any soil re-used or imported as fill for the completion of subgrade preparation should consist of predominantly “Very Low” to “Low” expansive, granular material exhibiting an EI not greater than 35, and should be exhibiting a relatively uniform gradation, free of debris, particles greater than 4 inches in maximum dimension, organic matter or other deleterious materials. For the excavated on-site soils to be blended such that the resultant EI is not exceeding 35, a general rule-of-thumb would be blending one (1) part of excavated site soils with two (2) parts of imported “Very Low” (EI ≤ 20) expansive soils.

Unless otherwise approved by the Geotechnical Consultant, the fill materials should also comply with the soil corrosivity criteria tabulated on next page with respect to the desired concrete and reinforcement protection.

Corrosivity Criteria for Select Fill and General Fill			
Soluble Sulfate (% by weight) [1]	**Soluble Chloride (ppm) [2]**	**Resistivity Value (ohm-cm) [3]**	**pH-Value [4]**
≤ 0.1	≤ 500	≥ 2000	7.0 ~ 8.8

(1) California Test Method 417. (2) California Test Method 422. (3) ASTM G187-12a Test Method. (4) California Test Method 532.

All blended material and potential import material must be approved by the Geotechnical Consultant or his representative, prior to its use and arrival on site, and should be subjected to continuing verification testing during site grading.

6.2.10 Backfilling and Compaction Requirements:

Unless indicated otherwise, existing site soils having EI ≥ 35 are considered suitable for re-use as fill in depths greater than two (2) feet from finish subgrade during site grading within the footprint of the Buildings and flatworks. Any fill placed within two (2) feet from finish subgrade should exhibit a tested EI ≤ 35. This could be achieved by using approved "Very Low" to "Low" site soils , imported "Very Low" to "Low" expansive soils, or blended site soils and imported soils with a tested "Very Low" expansive soils, as per discussed previously in Section 6.2.3. There is no depth restriction to the re-use of site soils for fill in non-structural or landscape areas, and backfilling of utility trenches. All fill soils should also be ensured that they are 1) free of debris, particles greater than 4 inches in maximum dimension, organic matter or other deleterious materials, 2) not environmentally contaminated, and 3) adequately moisture conditioned to permit achieving the required compaction. No nesting of large particles (2 to 4-inch size) should be permitted during backfilling operations.

On-site soils and import materials approved for use as fill should be placed in horizontal lifts not exceeding 8 inches in loose thickness, moisture conditioned to a minimum of two (2) percentage points above optimum moisture content for "Low" expansive import or blended material, as well as for untreated site clayey/silty soils, and to a minimum of one (1) percentage point above optimum moisture content for "Very Low" expansive import material, and compacted to a minimum 90 percent relative compaction, per ASTM D1557-12 Test Method, unless otherwise stated.

6.2.11 Tests and Observations:

All subgrade preparation, compaction, and backfill operations should be performed under the observation of and testing by the Geotechnical Consultant's field representative. An adequate number of field tests should be taken to ensure compliance with this report and local ordinances.

If it is determined during grading that site soils require overexcavation to greater depths for obtaining proper support for the proposed structures, this additional work should be performed in accordance with the recommendations of the Geotechnical Consultant.

Imported fill soils or base materials should be examined by a representative of this office, and tested as necessary for evaluating their suitability for use as fill prior to being hauled to the Site. Final acceptance of any imported soil will be based upon review and testing of the soil actually delivered to the Site. All blended soils to be used as fill must be tested and approved by the Geotechnical Consultant prior to being used for fill placement.

6.3 Foundation Design

It is ASE's opinion that conventional continuous spread footings and isolated pad footings or alternative PT slabs bearing on approved compacted fill soils may be used to provide foundation support for the Buildings, provided that the site grading recommendations presented in Section 6.2 above are incorporated in project planning and design, and implemented during site construction. Presented below are the recommended geotechnical design and construction criteria for shallow footing foundation, slab-on-grade, and PT slabs.

6.3.1 Conventional Shallow Footing Foundation:

a) Minimum Footing Dimension and Reinforcement:

In order to mobilize sufficient soils bearing capacity supporting the new footings for the Buildings, it is recommended that the following tabulated minimum footing embedments, widths and reinforcements for various footing types be considered.

Minimum Footing Dimension & Reinforcement					
Continuous Spread Footing/Strip Footing			Isolated Pad Footing		
Depth [1] (in)	Width (in)	Reinforcement [2]	Depth [1] (in)	Width (in)	Reinforcement [2]
18/24[3]	15	Four #4 bars – two near the top and two near the bottom	18/24[3]	30 square	Four #4 bars – two near the top and two near the bottom

(1) Footing embedment measured from the nearest adjacent lowest soils grade.
(2) Based strictly from geotechnical point of view.
(3) Two-story construction/Three-story construction.

Foundation design details such as concrete strength, reinforcements, etc. should be established by the Structural Consultant.

b) Allowable Soils Bearing Capacity:

For footings complying with the minimum dimension requirements stipulated in Section 6.3.1 a) above, the allowable soils bearing capacities, inclusive of both dead and live loads, should be as per tabulated below:

Allowable Soils Bearing Capacity (psf)		Increase per 12-inch Increment in Footing Width (psf)	Increase per 12-inch Increment in Footing Depth (psf)	Maximum Composite Ceiling Value (psf)
Continuous Spread Footing/Strip Footing	Isolated Pad Footing			
2,000	2,000	50	300	3,000

The above allowable bearing capacities may be increased by one-third (1/3) when subject to short-term, transient loading induced by wind or seismic activities.

c) Lateral Resistance:

Resistance to lateral loads can be assumed to be provided by passive lateral earth pressure and by friction acting on structural components in permanent contact with the subgrade soils.

For site preparation implemented as per recommended in the above Section 6.2, lateral resistance on the sides of foundations may be computed using a passive lateral earth pressure of 220 pcf EFP for footings embedded into approved compacted fill soil, subject to a maximum of 2,200 psf. An ultimate coefficient of friction on the order of 0.3 may also be used for structural dead load acting between the footing bottom and the supporting soils. The above passive lateral earth pressure may be used in conjunction with the ultimate coefficient of friction in calculating composite lateral resistance, provided the passive lateral earth pressure value is reduced by one-third (1/3). The composite lateral resistance may be increased by one-third (1/3) under short term, transient wind or seismic loading.

d) Settlements:

Total static settlements resulting from compression of subgrade soils for conventional footings designed and constructed in accordance with the above criteria, and supporting maximum assumed dead plus live (D+L) column and wall loads mentioned in Section 1.1.2 above, are not anticipated to exceed one (1) inch, upon implementation of site preparation as per recommended in Section 6.2 above. A differential settlement on the order of 1/4 inch over a distance of 30 feet is anticipated between similarly loaded adjacent isolated pad footings, as well as for continuous wall footings over a distance of approximately 30 feet. Differential settlements on the order of 1/4 inch are anticipated between pad and wall footings supporting the assumed column/wall loads.

Please be reminded that the Geotechnical Consultant should be contracted for further evaluation and recommendations, as necessary, should final design structural loads exceed the maximum loads assumed in the above analyses by more than ten (10) percent.

6.3.2 Post-Tensioned Slabs:

If adopted, PT slabs should be designed based on the latest PTI design method (Reference 23), which is stipulated in References 24 and 25. Both of References 24 and 25 are part of the PT-slab

design procedures per 1026 CBC. The slabs should be designed for at least one (1.0) inch of differential settlement (static and dynamic) over the width of each building.

The following table presents suggested minimum coefficients to be used for soils with different degrees of expansion potential. For the encountered site soils, a "**MEDIUM**" soil expansion category should be considered for preliminary PT slab design, with verification on a lot-by-lot basis at the completion of rough grading:

PTI METOD (3RD EDITION) DESIGN PARAMETERS					
Thornswaite Index	**-20**	**Soil Fabric Factor, Ft**	1.0	**Equilibrium Suction, pF**	3.909
Surface Equilibrium Wet Suction, $(pF)_{wet}$	3.0 [a]	**Surface Equilibrium Dry Suction, $(pF)_{dry}$**	4.5 [a]		

Soil Expansion Classification	Very Low (EI ≤ 20)	Low (20 < EI ≤ 50)	Medium (50 < EI ≤ 90)	High (90 < EI ≤ 130)
(e_m) edge lift (ft) [b]	5.20 [c]	4.64 [c]	4.13 [c]	3.78 [c]
(e_m) center lift (ft) [b]	9.00 [c]	9.00 [c]	8.55 [c]	7.34 [c]
(y_m) edge lift (in)	0.25	0.62	1.11	1.61
(y_m) center lift (in)	0.10	0.25	0.43	0.60

a. Values per PTI recommendations.
b. Soil parameters such as Atterberg Limits and % passing #200 have been derived from typical values available from Day (2005), Bowles (1996), and PTI (2004).
c. Governed by soil aspect consideration.

The above tabulated coefficients are considered minimums and may not be adequate to represent worst-case conditions such as adverse drainage and/or improper landscaping and maintenance. The above parameters are applicable provided structures have gutters and downspouts and positive drainage is maintained away from structures.

Deepened footings/edges around the slab perimeter must be used to minimize non-uniform surface moisture migration (from an outside source) beneath the slab. An edge depth of at least 12 inches should be considered for soils with "Low" to "Very Low" EI's and 18 inches for soils with "Medium" to "High" EI's. The bottom of the deepened footing/edge should be designed to resist tension.

The entirety of each Building should be underlain by a minimum 15-mil polyvinyl chloride membrane vapor barrier with a minimum overlap of 12 inches in all directions. In complying with the requirements of 2016 CRC Section R506.2.3, the interior slab should be placed in direct contact with the vapor retarder, underlain by four (4) inches of clean sand or aggregate as a capillary break. The concrete slab shall consist of a concrete mix design which will address bleeding, shrinking and curling. As an alternative from a geotechnical viewpoint, the impermeable visqueen layer may be sandwiched by at least 2 inches of clean sand top and bottom prior to casting of the slab.

6.3.3 Retaining Walls:

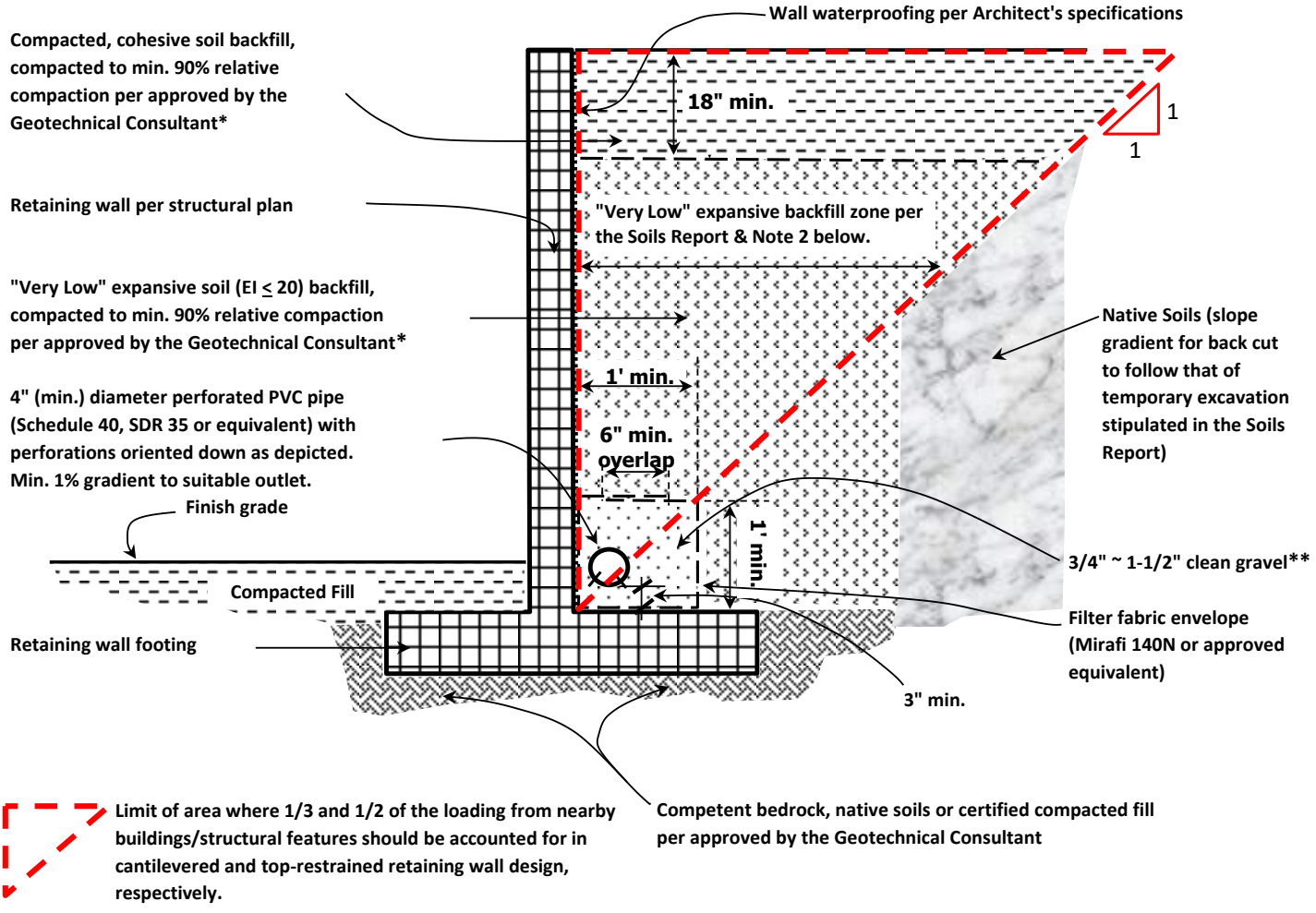
Cantilevered retaining walls should be designed for an "active" lateral earth pressure value tabulated on next page for approved granular backfill soils or site soils and level backfill conditions, whereas an "At-rest" lateral earth pressure value for approved granular backfill or site soils and level backfill conditions tabulated below should be used for top-restrained retaining walls. Retaining walls subject to uniform surcharge loads should be designed for an additional uniform lateral pressure equal to one-third (1/3) and one-half (1/2) of the anticipated surcharge pressure over the full retained height of the retaining wall (measuring from the top of wall to the heel of wall footing) for cantilevered and top-restrained wall fixity conditions, respectively, as shown in Figure 2, Nearby Building Surcharge Consideration and Retaining Wall Drainage Details. Any retaining wall with a retained height exceeding six (6) feet should additionally be designed to resist seismic lateral earth pressure. The Geotechnical Consultant should be consulted if this condition exists, or if the local governing agency requires the retaining wall to be designed for seismic lateral earth pressure regardless of the retained height. Footings should be reinforced as recommended to by Structural Consultant. Appropriate back drainage should be provided to avoid excessive build-up of hydrostatic wall pressures.

The Geotechnical Consultant should be on-site during temporary back cut and retaining wall construction to inspect and evaluate the stability of cuts and, if necessary, to provide additional remedial or mitigative recommendations.

Retaining Wall Design Parameter	Value
Allowable Soils Bearing Capacity	2,000 psf (1)(2)
Active Pressure [site soils/granular backfill (3): level]	40/35pcf EFP
At-rest Pressure [site soils/granular backfill (3): level]	60/55 pcf EFP
Passive Pressure (per foot of depth)	220 pcf (4)
Coefficient of Friction	0.3 (4)
Minimum Footing Depth	18 inches
Minimum Footing Width	15 inches
Minimum Reinforcement	Four No. 4 rebar - 2near top and 2 near bottom

(1) Based on compliance with earthwork recommendations per Section 6.2 of this Soils Report.
(2) Allowable soils bearing capacity increase for larger retaining wall footings should be as per Section 6.3.1 b).
(3) Design values assuming a drained condition with "Very Low" to "Low" expansive materials (EI ≤ 30) within the backfill zone and no surcharge loading conditions.
(4) Passive lateral resistance may be combined with frictional resistance provided the passive lateral earth pressure is reduced by 1/3. See Section 6.3.1 c.

Preferably, the backfill should consist of approved "Very Low" to "Low" expansive material (i.e. EI ≤ 35) and should be compacted to a minimum relative compaction of 90 percent. Site soils may be used for retaining wall backfill as well. The width of the "Very Low" to "Low" expansive backfill zone should be a minimum of one (1) foot measured from the rear side of the stem of the retaining wall, or the space between the rear side of the stem and the heel of the retaining wall, or one-half (1/2)



SPECIFICATIONS FOR CALTRANS CLASS II PERMEABLE MATERIAL	
U.S. STANDARD SIEVE SIZE	% PASSING
1"	100
3/4"	90 ~ 100
3/8"	40 ~ 100
No. 4	25 ~ 40
No. 8	18 ~ 33
No. 30	5 ~ 15
No. 50	0 ~ 7
No. 200	0 ~ 3
Sand Equivalent > 75	

* Based on ASTM D-1557-02

** If Caltrans Class II permeable material (see gradation to left) is used in place of 3/4" ~ 1-1/2" gravel, filter fabric may be deleted. Caltrans Class 2 permeable material should be compacted to minimum 90 percent relative compaction. Unless otherwise specified, a minimum of 1 cubic foot of gravel should be used for each 1 foot run of drain.

Note 1: Composite drainage products such as Contech C-Drain, Miradrain or J-Drain may be used as alternative to gravel or Class II. Installation should be performed in accordance with manufacturer's specifications.

Note2: Min. Extent of " Very Low" expansion backfill zone should be as per indicated by the red-dotted wedge area behind retaining wall.

Schematic Not To Scale

Associated Soils Engineering, Inc.
2860 Walnut Avenue
Signal Hill, CA 90755
Tel (562) 426-7990 Fax (562) 426-1842

Project:	Proposed "The Trails at Corona" Residential Development		
Figure 2	Nearby Building Surcharge Consideration & Retaining Wall Drainage Details		
Proj. No.:	6619.18.1	Date:	November, 2018

of the retained height of the retaining wall, whichever is greater. In order to be able to use the "granular backfill" lateral earth pressure values tabulated above, the "Very Low" expansive backfill (i.e. EI≤20) zone should be as per the red-dotted wedge area behind the retaining wall indicated in Figure 2. Flooding or jetting of backfill should not be permitted. Granular backfill should be capped with 18 inches (minimum) of relatively impervious fill to seal the backfill and prevent saturation. Figure 2 illustrates the general configuration and requirements for retaining wall drainage. Should any conflict noticed between recommendations stated in this report and those shown in Figure 2, the fore should govern. Other retaining wall drainage alternatives may be considered but should first be reviewed and approved by the Geotechnical Consultant prior to implementation.

Should the space behind the new retaining wall be too tight to implement the above recommended backfill effort, as an alternative, 2-sack slurry fill may be used in lieu of regular soil backfill, provided that the integrity and functionality of wall backdrain is protected and maintained.

It should be noted that the use of heavy compaction equipment in close proximity to retaining structures can result in wall pressures exceeding design values and corresponding wall movement greater than that normally associated with the development of active or at-rest conditions. In this regard, the contractor should take appropriate precautions during the backfill placement.

6.3.4 Footing/Foundation Observation:

All footing/foundation excavations should be observed by the Geotechnical Consultant's representative to verify minimum embedment depths and competency of bearing soils. Such observations should be made prior to placement of any reinforcing steel or concrete.

6.4 Slabs-on-Grade in Non-Loading Areas

Concrete floor slabs in the Buildings and exterior concrete flatwork should be supported on properly compacted soils as recommended in the Site Grading section (i.e. Section 6.2) of this report. The slab subgrade soils should also be proof-rolled just prior to construction to provide a firm, unyielding surface, especially if the subgrade has been disturbed or loosened by the passage of construction traffic. Final compaction and testing of slab subgrade should be performed just prior to placement of concrete.

Per the 2016 CBC requirements, when the WRI/CRSI Design of Slab-on-Ground Foundations is adopted, the Effective Plasticity Index (EPI) should be utilized for slab-on-grade design. The EPI defined as the weighted plasticity index (WPI) x Cs x Co. Subsequent to grading, the building pad area is anticipated to be underlain by "Very Low" to "Low" expansive site or import (EI ≤ 35) soils above possibly deeper compacted site soils. However, it is of essential importance that the EPI's for final slab-on-grade design should be based on additional laboratory tests performed on soils samples retrieved from rough graded or stabilized building pad.

Area	WPI	C_S (1)	C_0 (2)	EPI
With expansive site soils (EI > 35) from finish subgrade	22	1.0	1.0	22
With 2' of "Very Low" to "Low" Expansive (EI ≤ 35) fill from finish grade(3)	18	1.0	1.0	18

(1) For essentially flat ground, C_s = 1.0.
(2) For over-consolidated foundation materials with unconfined compressive strength not exceeding 6000 psf, C_0 effect is deemed less significant.
(3) A PI of 0 is assumed for Select Fill.

For structural design of concrete slabs supported by approved compacted "Very Low" to "Low" expansive fill (EI ≤ 35) soils, a modulus of subgrade reaction ("k") on the order of 120 per square inch per inch ("psi/in"), and an allowable bearing capacity of 900 psf may be used. Interior and exterior slabs should be properly designed and reinforced for the construction and service loading conditions, as well as considering the soil expansion potential. To minimize slab distress due to soil expansion induced ground movement, geotechnically, it would be prudent to provide a minimum actual slab thickness of four (4) inches with minimum reinforcement consisting of number 3 reinforcing bars spaced maximum 18 inches on centers each way. The structural details, such as slab thickness, concrete strength, amount and type of reinforcements, joint spacing, etc., should be established by the Structural Consultant in accordance with pertinent sections in 2016 CBC.

The entire slabs within the Buildings should be underlain by an impermeable vapor barrier (minimum 15-mil-thick visqueen) per 2016 California Residential Code, Section R506.2.3. A minimum 12-inch overlap between visqueen sheets should be ensured during placement. All visqueen sheets should be puncture free prior to slab construction. Above the visqueen, the interior slab may be underlain by 2 inches of clean sand with a Sand Equivalent (S.E.) value tested per ASTM D2419-14 Test Method of no less than 30. The visqueen should also be underlain by a minimum 4-inch-thick capillary break layer consisting of aggregate complying with the following criteria:

Sieve Size	1/2 inch	No. 16	No. 200	Sand Equivalent
Percent Passing	100	50 – 85	< 15	≥ 50

Exterior slabs should be properly jointed to limit the number of concrete shrinkage cracks. For long/thin sections, such as sidewalks, expansion or control joints should be provided at spacing intervals equal to the width of the section. Slabs between 5 and 10 feet in minimum dimension should have a control joint at centerline. Slabs greater than 10 feet in minimum dimension should have joints such that unjointed sections do not exceed 10 feet in maximum dimension. Where flatwork adjoins structures, it is recommended that a foam joint or similar expansion material be utilized. Joint depth and spacing should conform to the ACI recommendations. It is, however, cautioned that uneven heaving of exterior slabs may develop in the future when prolonged irrigation or seepage permeates the subgrade soil, especially in areas that expansive soil pockets exist due to inadequate control or inspection of earthwork construction.

6.5 Site Drainage

Per Section 1804.3 of 2016 CBC, a minimum 5% descending gradient away from the Buildings of the Residential Development for a minimum distance of 10 feet should be incorporated for earth grade placed adjacent to the foundation. This descending gradient may be reduced to 2% for any impervious areas, such as concrete paved walkways, within the 10-foot zone. For areas where the 10-foot drainage distance is not attainable, alternative measure such as concrete-lined swales having a minimum 2% gradient may be adopted to divert the water away from the Buildings, provided that the minimum 5% gradient is maintained in the distance between the building footprint and the diversion measure such as swales. For more specific site drainage guidelines, the Civil Consultant should refer to the pertinent sections in 2016 CBC. However, final site drainage planning shall be decided by the Civil Consultant based on the functionality of the Buildings and the surficial coverage adjacent to the Buildings.

Any planter areas to be placed adjacent to structure perimeters should be provided with solid bottoms and a drainage pipe, to divert water away from foundation and slab subgrade soils. Excessive moisture variations in site soils could result in significant volume changes and movement.

6.6 Soil Corrosivity Evaluation

Soils corrosivity tests were performed on representative samples of site soil. These tests were meant to determine the corrosive potential of on-site soils to proposed concrete foundations/flatwork and underground metal conduits. The soils corrosivity test results are presented in Appendix A.

6.6.1 Concrete Corrosion:

Disintegration of concrete may be attributed to the chemical reaction of soils sulfates and hydrated lime and calcium aluminate with the cement. The severity of the reaction resulting in expansion and disruption of the cement is primarily a function of the concentration of soluble sulfates and the water-cement ratio of the concrete.

Soluble sulfate contents of 0.002% to 0.047% by weight have been recorded from testing per CTM 417 conducted on on-site soils, as indicated in Appendix A. Per Table 4.2.1 of ACI 318-14, soils exhibiting soluble content less than 0.1% by weight are classified as having “Not Applicable” sulfate exposure and “S0” sulfate exposure category. As such, for structural features to be in direct contact with on-site soils, the special geotechnical requirements on the type of Portland cement or water cement ratio corresponding to the tested “S0” sulfate exposure category as per stipulated in Table 4.3.1 of ACI 318-14 should be considered.

6.6.2 Metal Corrosion:

In the evaluation of soil corrosivity to metal, the hydrogen ion concentrates (pH) and the electrical resistivity of the site and backfill soils are the principal variables in determining the service life of

ferrous metal conduit. The pH of soil and water is a measure of acidity or alkalinity, while the resistivity is a measure of the soils resistance to the flow of electrical current.

Currently available design charts indicate that corrosion rates decrease with increasing resistivities and increasing alkalinities. It can also be noted that for alkaline soils, the corrosion rate is more influenced by resistivity than by pH-value.

Resistivity values of 1,190 to 1,641 ohm-cm per ASTM G187-12a Test Method coupled with pH-values of 7.41 to 7.91 per CTM 643, as shown in Appendix A, classify the on-site soils tested to be corrosive to buried ferrous metals. Based on CTM 643, the year to perforation for 18-gauge steel in contact with soils of similar resistivities and pH-values is approximately 27 to 31 years for the corrosive soils. In lieu of additional testing, alternative piping materials, i.e. plastic piping, may be used instead of metal if longer service life is desired or required. The resistivity values of on-site soils may also have implications to other building materials and depths of embedment for steel reinforcement etc., therefore it might be desirable that a qualified corrosion consultant be engaged to review the building plans.

Soluble chloride contents of 27 to 73 ppm were recorded in our laboratory tests per CTM 422. Per Caltrans guidelines and specifications (References 19 and 20), soils exhibiting soluble chloride contents exceeding 500 ppm are considered "corrosive". The soils are thus classified as "non-corrosive" per Caltrans criterion. In addition, special measure in terms of rebar protection against chloride corrosion under Exposure Class "C0" ("Not Applicable") stipulated in Tables 4.2.1 and 4.3.1 of ACI 318-14 may be required as a result of the soluble chloride content tested. However, the compliance with the corrosivity criteria stipulated in Section 6.2.9 above will ensure that no other particular reinforcement protection measure will be needed for slab-on-grade in contact with import fill.

6.7 Utility Trenches

All trenches should be backfilled with approved fill material compacted to relative compaction of not less than 90 percent per ASTM D1557-12 Test Method. Care should be taken during backfilling to prevent utility line damage.

The on-site soils may be used for backfilling utility trenches from one (1) foot above the top of pipe to the surface, provided the material is free of organic matter and deleterious substances. Any soft and/or loose materials or fill encountered at pipe invert should be removed and replaced with properly compacted fill or adequate bedding material.

On-site soils are not considered suitable for bedding or shading of utilities. Imported soils for pipe bedding should consist of non-expansive granular soils. Bedding materials should consist of sand with a Sand Equivalent value (ASTM Test Method D2419-14) not less than 30.

If sandy soils are used for trench backfill, the backfill should be topped with a minimum 2-foot thick cap of compacted fine-grained, cohesive soil. Also, a minimum 10-foot length of trench at the entrance and exit points of structures should be backfilled with fine-grained soils to serve as a plug to prevent water migration into structure foundation support zones.

The walls of temporary construction trenches may not be stable when excavated nearly vertical due to the potential for caving. Shoring of excavation walls or flattening of slopes as stipulated in Section 6.2.6 above will be required if excavation depths greater than 4 feet are necessary.

Trenches should be located so as not to impair the bearing capacity of soils or cause settlement under foundations. As a guide, trenches parallel to foundations should be clear of a 45-degree plane extending outward and downward from the edge of the foundations. All work associated with trenches, excavations and shoring must conform to the State of California Safety Code.

6.8 Plan Review, Observations and Testing

Once foundation and grading plans are completed, they should be forwarded to the Geotechnical Consultant for review of conformance with the intent of these recommendations and criteria presented in the pertinent sections of this report.

All excavations should be observed by a representative of this office to verify minimum embedment depths, competency of bearing soils and that the excavations are free of loose and disturbed materials. Such observations should be made prior to placement of any fill, reinforcing steel or concrete. All grading and fill compaction should be performed under the observation of and testing by a Geotechnical Consultant or his representative.

7.0 FIELD PERCOLATION TESTING AND ANALYSIS

Observation of water levels in Borings B-P1 through B-P5 after overnight pre-soaking indicated the time interval between readings should be 30 minutes. The percolation tests were performed using the normal soil method (i.e. six hour test maximum) for the borings in accordance with the Orange County Technical Guidance Document Appendices (Appendix VII) procedures modified to test the cross sectional zone of typical soils within the level of anticipated storm water infiltration (e.g. approximately 1 foot to 5 feet below existing grade).

Field percolation testing was conducted on January 13 and 27, 2016 for Borings B-P1 and B-P2, while Borings B-P3, B-P4 and B-P5 were tested on September 28, 2018. Stabilized field percolation test data indicates a preadjusted percolation test rate varying from approximately 2.67 to 120.0 minutes per inch (mpi) for clean water at each of the boring locations

Tabulated on the following table are the results of percolation testing conducted at the locations of Borings BP-1 through BP-5, including the infiltration rate derived from the Porchet Method of Percolation Rate Conversion procedures outlined in Appendix VII of the Technical Guidelines Document.

	Depth Tested	Percolation Test Rate	Infiltration Rate*
Boring No./TT No.	**(Feet)**	**(Minutes/Inch)**	**(Inches/Hour)**
BP-1/ 37501	1-5	120.0	0.01
BP-2/37504	1-5	120.0	0.01
BP-3/37500	1-4	2.67	0.642
BP-4/37503	3-8	6.67	0.113
BP-5/37501	1-5	3.64	0.341

*Infiltration Rate derived from Porchet Method Conversion from Percolation Rate using a Factor of Safety of 2

The rate presented above is anticipated to be the fastest rate that can be absorbed by the site soils at the boring locations. However, with time and depending on the degree of saturation of soils and other factors, the percolation rate may reduce which is typical for sewage disposal or stormwater dispersal fields.

Please be informed that during installation of on-site storm water dispersal system, the following factors should be noted:

- The degree of compactive effort in the upper 1 to 1.5 feet of soils above any filter material should be between 90 and 92 percent relative compaction. As any greater compactive efforts in the soil strata of water retention system construction may cause the percolation rates to reduce substantially, it is not advisable to impose significant structural loading in these areas, from a geotechnical viewpoint.
- The rate of water transmission from the filter material to the soil will be limited the porosity characteristics of the fabric wrap around the filter material.

8.0 CLOSURE

This report has been prepared for the exclusive use of **Blue River Development** and their design consultants for use in the design and construction of the proposed Residential Development at the Site. The report has not been prepared for use by other parties, and may not contain sufficient information for purposes of other parties.

Blue River Development or its representatives are responsible for ensuring the information and recommendations contained in this report are brought to the attention of the project engineers and architects, incorporated into the project plans, and implemented by project contractors. This report should be reflected on project grading plans as a part of the project specifications.

ASE requests and recommends proper notification from the Client should any of the following occur:

1. Final plans for site development indicate utilization of areas not originally proposed for construction.
2. Structural loading conditions vary from those utilized for evaluation and preparation of this report.
3. The Site is not developed within 12 months following the date of this report.
4. Change of ownership of property occurs that would render the property development indicated in this report irrelevant or significantly different.

If changes or delays do occur, this office should be notified and provided with finalized plans of site development for our review to enable us to provide the necessary recommendations for additional work and/or updating of the report. Any charges for such review and necessary recommendations would be at the prevailing rate at the time of performing review work.

The findings contained in this report are based upon our evaluation and interpretation of the information obtained from the limited number of test borings and the results of laboratory testing and engineering analysis. As part of the engineering analysis it has been assumed, and is expected, that the geotechnical conditions existing across the area of study are similar to those encountered in the test excavations. However, no warranty is expressed or implied as to the conditions at locations or depths other than those excavated. Should conditions encountered during construction differ significantly from those described in this report, this office should be contacted immediately for recommendations prior to continuation of work.

Our findings and recommendations were obtained in accordance with generally accepted current professional principles and local practice in geotechnical engineering and reflect our best professional judgment. We make no other warranty, either express or implied.

These recommendations are, however, dependent on the aforementioned assumption of uniformity and upon proper quality control of engineered fill and foundations. Geotechnical observations and testing should be provided on a continuous basis during grading at the site to confirm preliminary design assumptions and to verify conformance with the intent of our recommendations. If parties other than ASE are engaged to provide geotechnical services during construction, they must be informed that they will be

required to assume complete responsibility for the geotechnical phase of the project by either concurring with the recommendations in this report or providing alternative recommendations.

This concludes our scope of services as indicated in ASE's proposal dated August 2, 2018, however, our report is subject to review by the controlling authorities for the project. Any further geotechnical services that may be required of our office to respond to questions/comments of the controlling authorities after their review of the report will be performed on a time-and-expense basis as per our current fee schedule. We would not proceed with any response to report review comments/questions without authorization from your office.

The following Appendices contain the substantiating data and laboratory test results to complement the engineering evaluations and recommendations contained in the report.

APPENDIX A

Site Exploration

On January 12 and 26, and February 26, 2016, supplemented on September 27, 2018, field exploration was performed by drilling twenty seven (27) exploratory borings at the approximate locations as per indicated on the Boring Location Plan, Plate A. The exploratory borings were drilled by Geoboden, Inc., utilizing a truck mounted, rotary drilling rig equipped with 8-inch diameter continuous flight, hollow-stem rotary augers. The borings were extended to terminal depths ranging from 5 feet 1 inch to 46 feet 6 inches from the existing grades.

Continuous observations of the materials encountered in the borings were recorded in the field. The soils were classified in the field by visual and textural examination and these classifications were supplemented by obtaining bulk soil samples for future examination in the laboratory. Relatively undisturbed samples of soils were extracted in a Modified California barrel sampler lined with 2.416-inch diameter by one-inch high rings and tipped with tapered cutting shoe. Additional samples were obtained in a Standard Penetration sampler in accordance with specifications outlined in ASTM D1586-08a Test Method. All samples were secured in moisture-resistant bags immediately after retrieval from exploratory boring to minimize the loss of field moisture, followed by timely transportation to ASE's laboratory for ensuing testing.

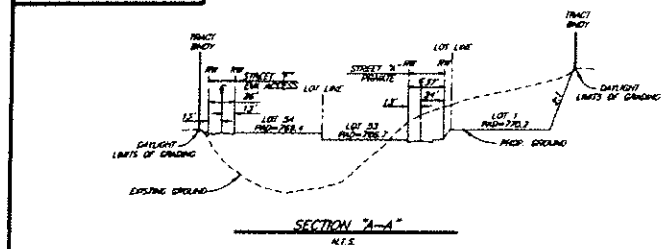
Upon completion of exploration, the borings were backfilled with excavated materials and compacted by tamping.

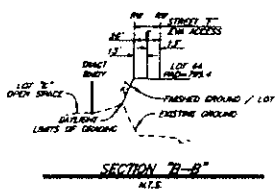
Description of the soils encountered, depth of samples, field density and moisture content of tested samples, respective laboratory tests performed, as well as Standard Penetration Test ("N" Values) and Modified California barrel sampler blow counts are presented in the attached Field Logs of Borings ("B" Plates).

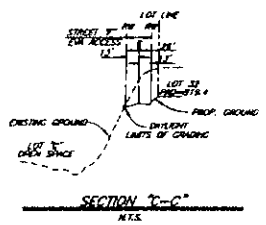
Plates A-1 thru A-6	Geotechnical Map
Plates B-1 thru B-22	Field Logs of Borings
Plates B-P1 thru B-P5	Field Logs of Percolation Borings

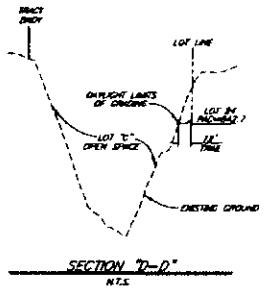
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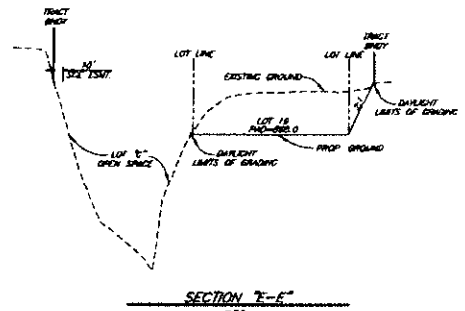
THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37500
IN THE CITY OF CORONA

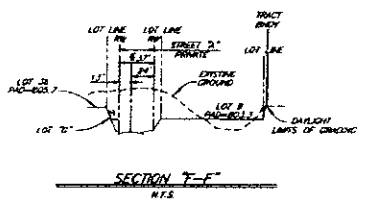


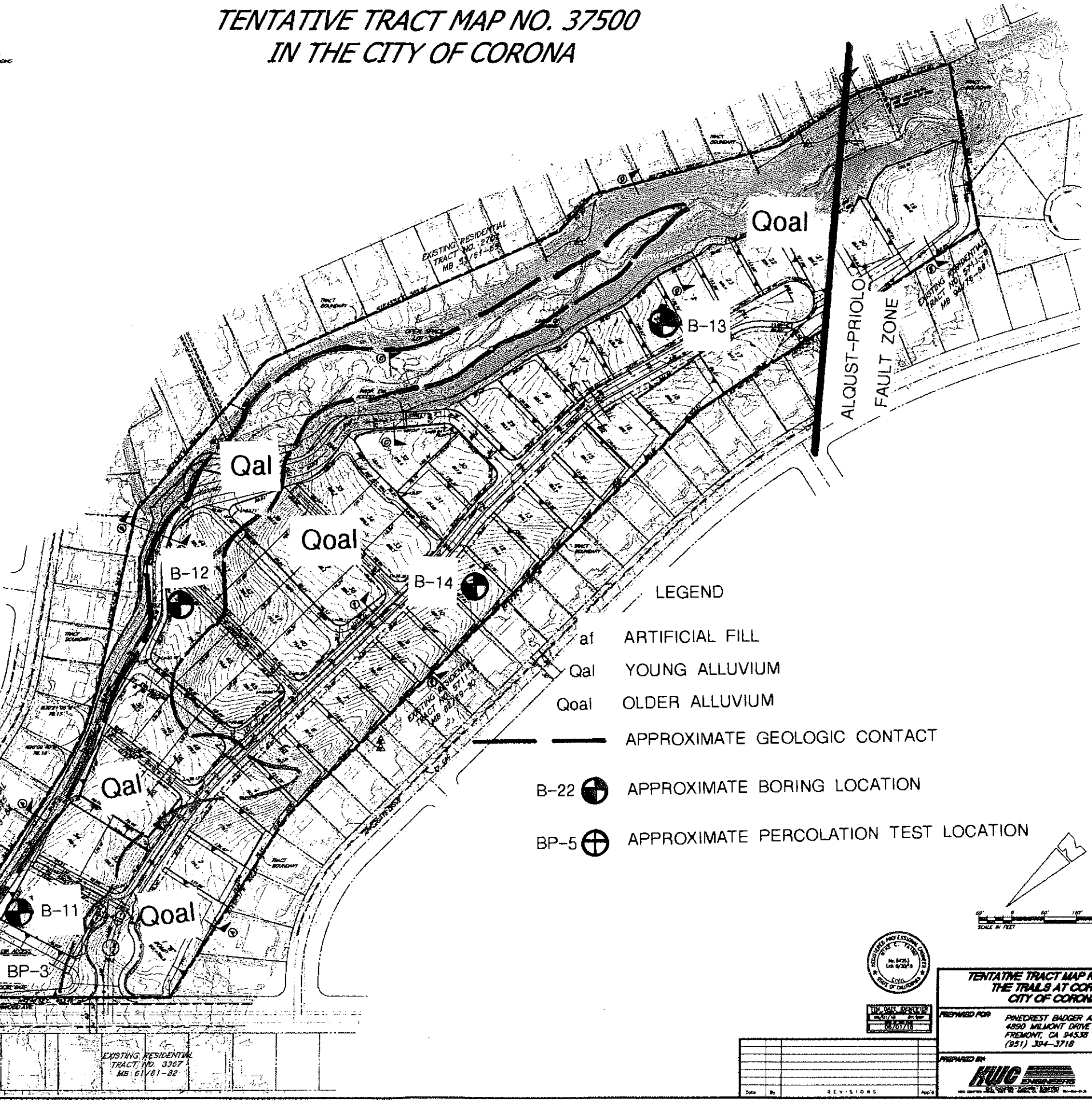












TENTATIVE TRACT MAP NO. 37500
THE TRAILS AT CORONA
CITY OF CORONA

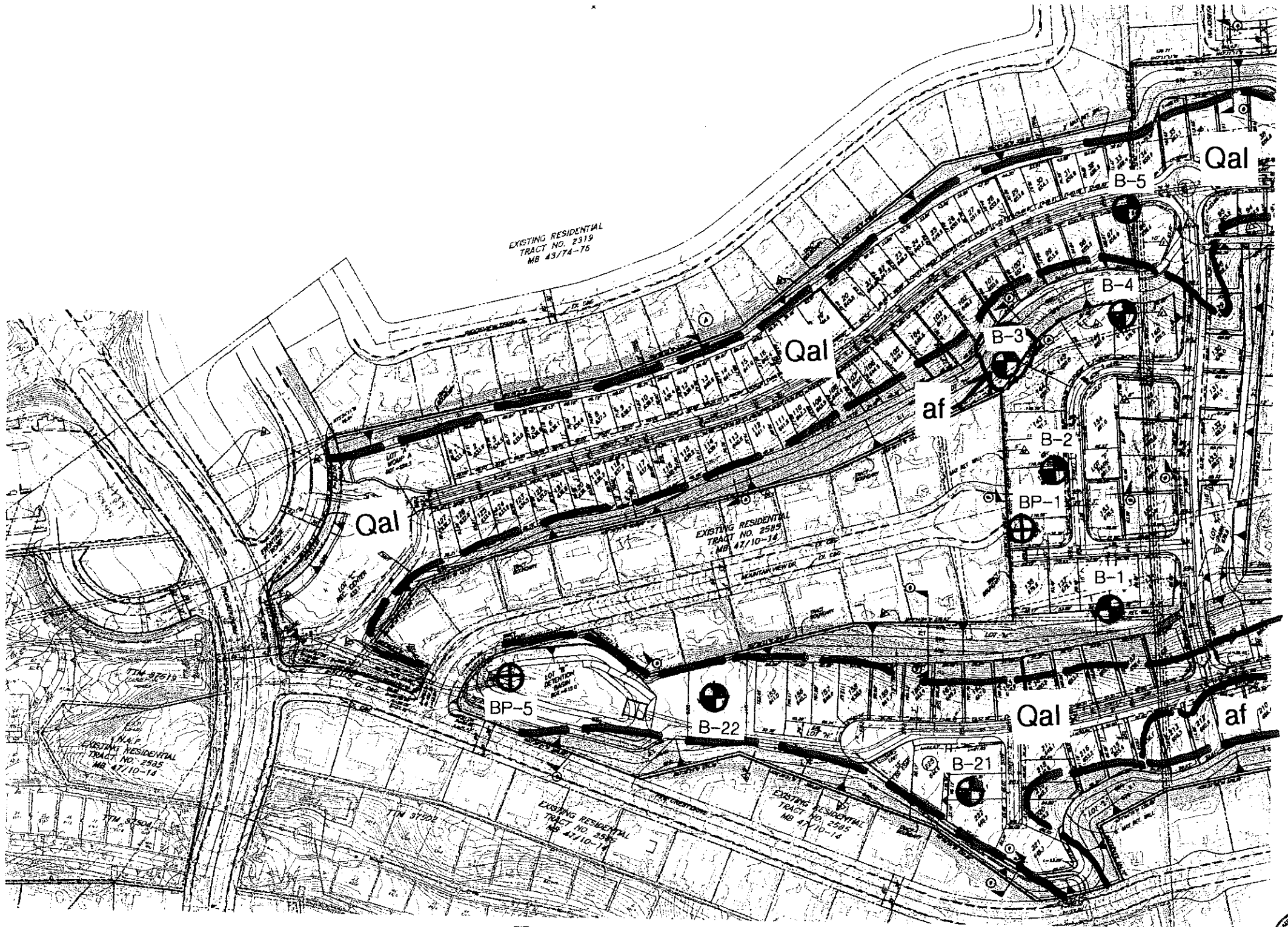
PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
4890 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

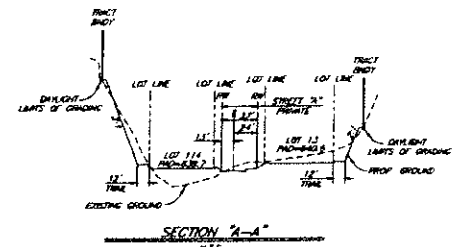
PREPARED BY: KWC ENGINEERS

SHEET 2 OF 2 SHEETS

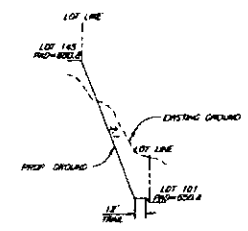
PLATE A-1

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37501
IN THE COUNTY OF RIVERSIDE

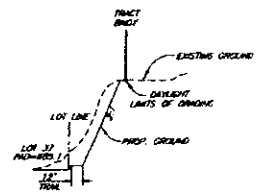




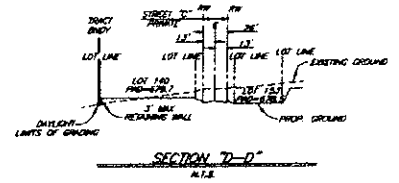
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N.T.S.



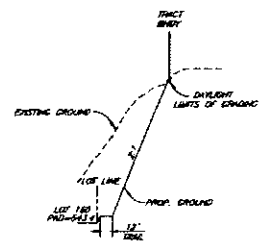
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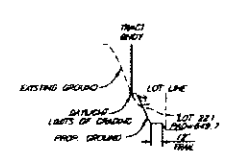
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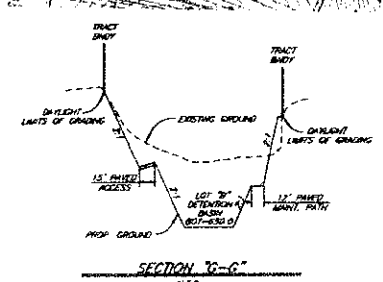
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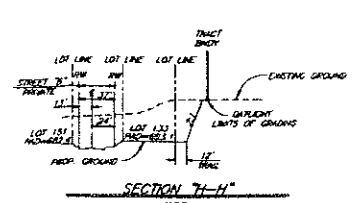
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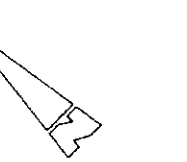
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SECTION "G-G"
N.T.S.



SECTION "H-H"
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SCALE IN FEET

REVISIONS

TENTATIVE TRACT MAP NO. 37501
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

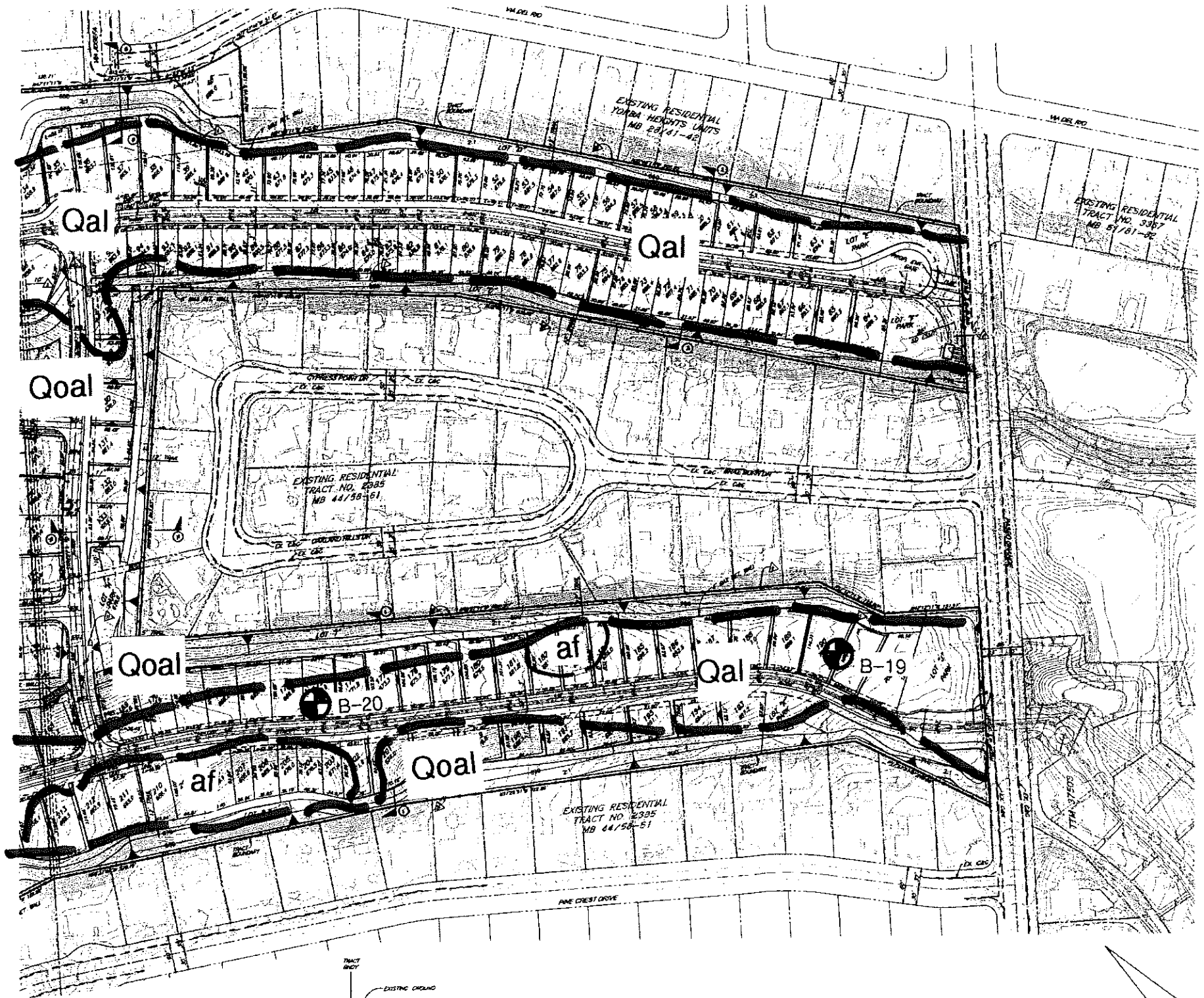
PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
4590 WILMONT DRIVE
FREMONT, CA 94538
(951) 394-3716

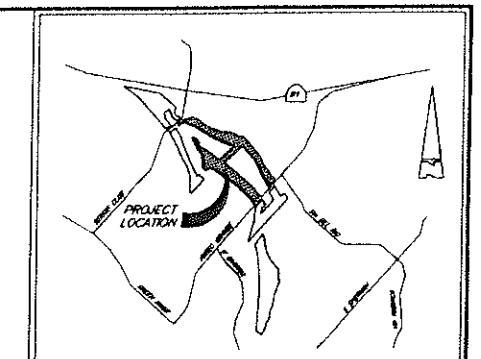
PREPARED BY:
HWG ENGINEERS

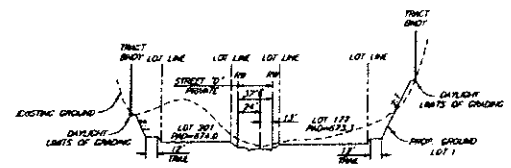
SHEET 2 OF 3 SHEETS

PLATE A-2

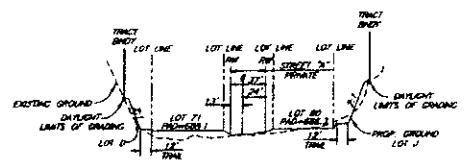
THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37501
IN THE COUNTY OF RIVERSIDE



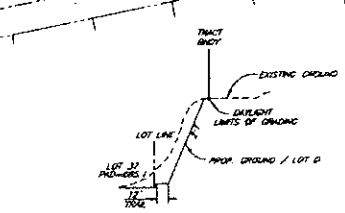




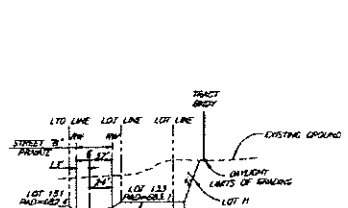
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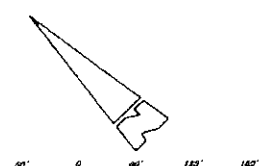
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SECTION "C-C"
N.T.S.



SECTION "H-H"
N.T.S.



REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA — No. 64153 — 6/30/19 — CIVIL

BY	DATE	BY
	6/30/18	
	6/30/18	

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37501
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

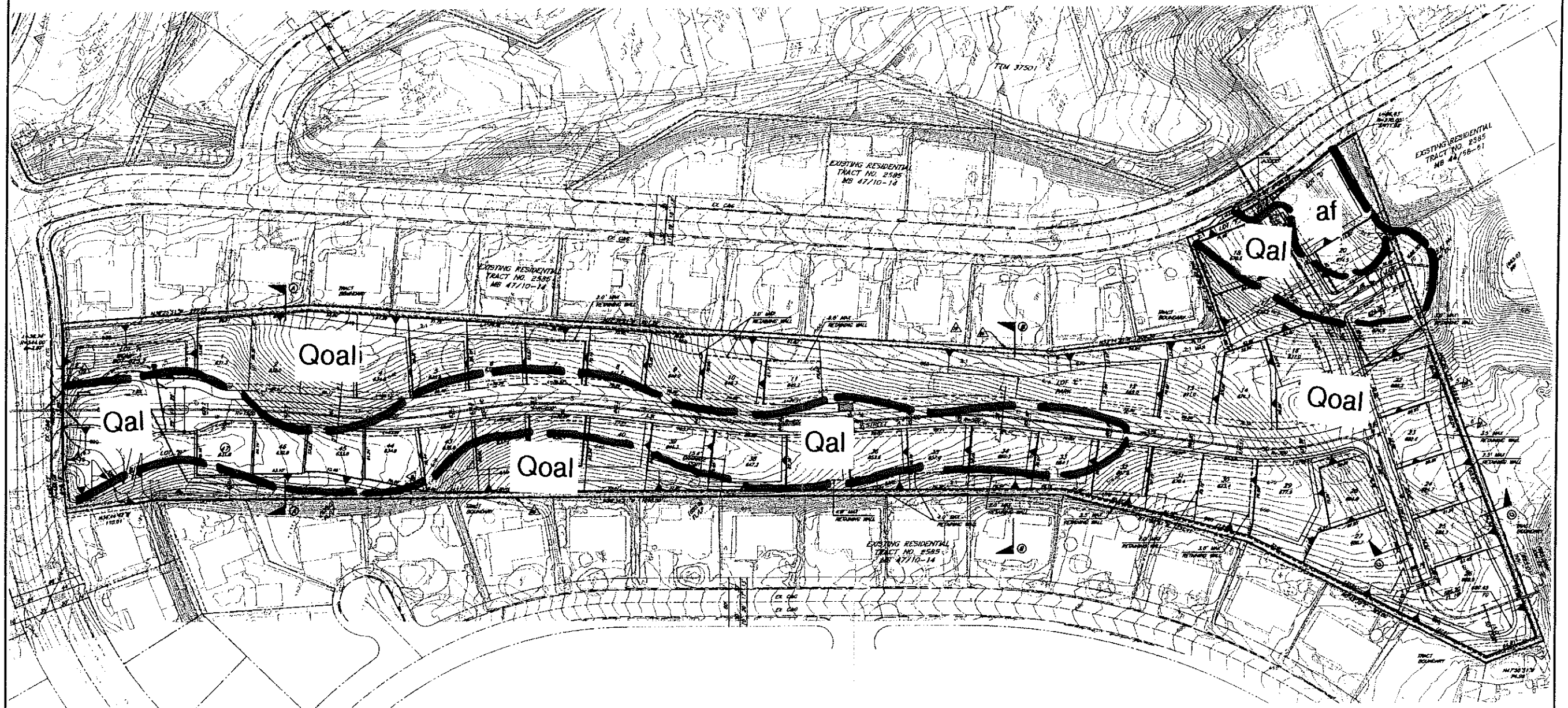
PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
4590 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

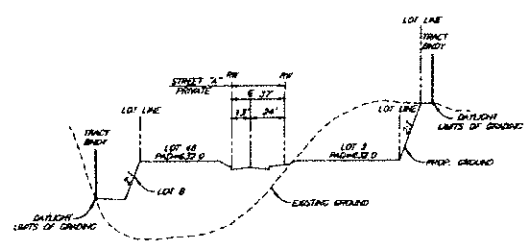
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SHEET 3 OF 3 SHEETS

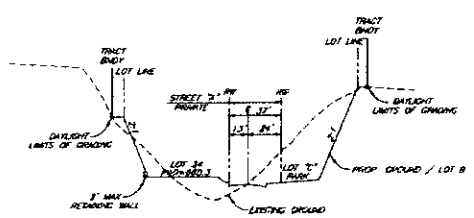
PLATE A-3

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37502
IN THE COUNTY OF RIVERSIDE

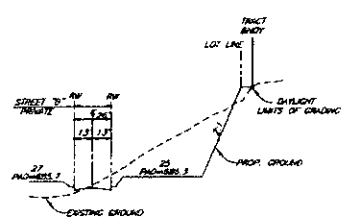




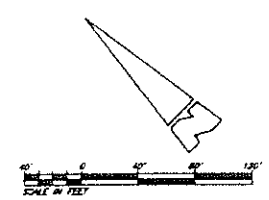
SECTION "A-A"
N.T.S.



SECTION "B-B"
N.T.S.



SECTION "C-C"
N.T.S.



TENTATIVE TRACT MAP NO. 37502
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
4890 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS

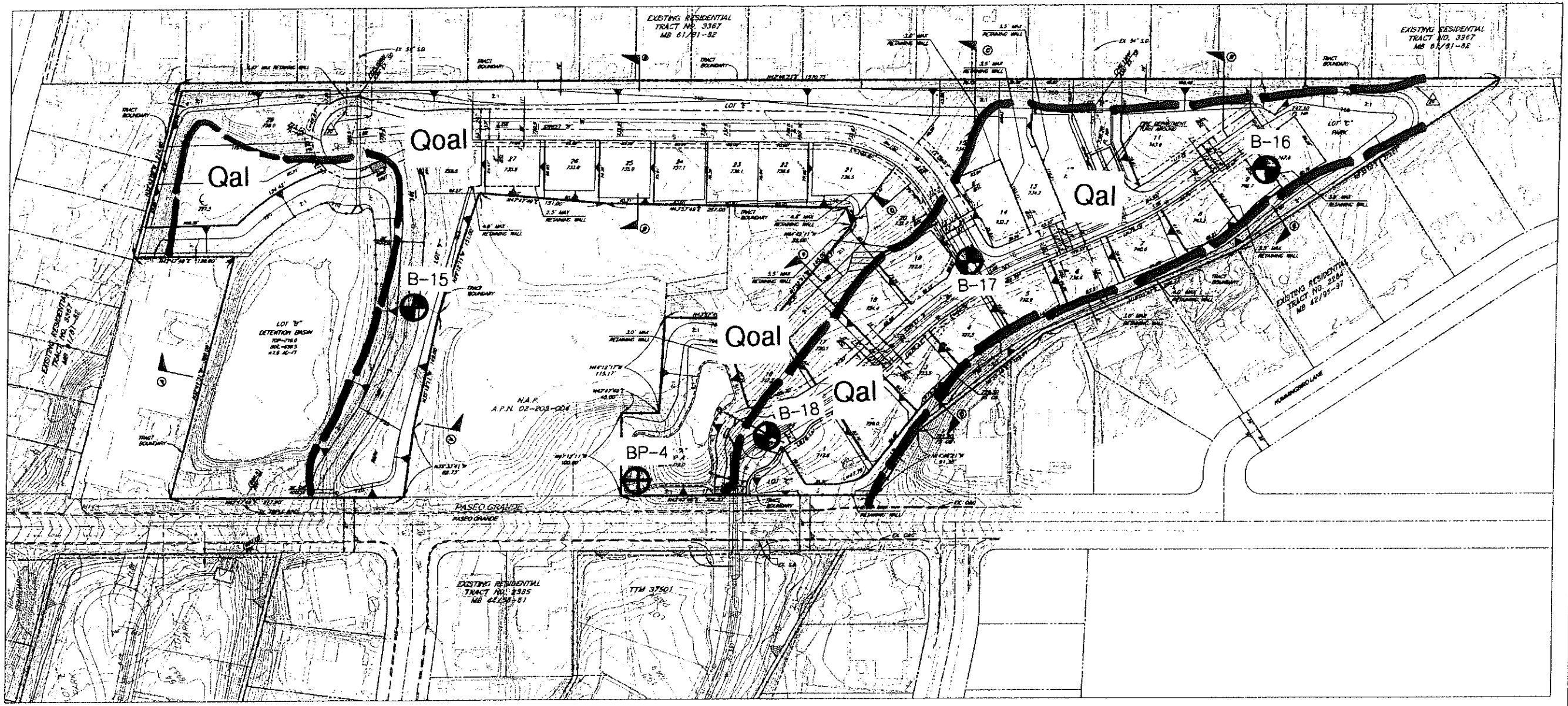
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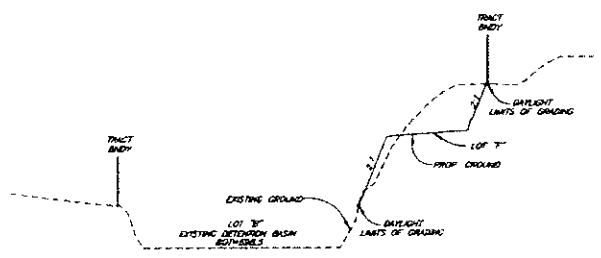
Date	By	REVISIONS	Appr'd

SHEET 2 OF 2 SHEETS

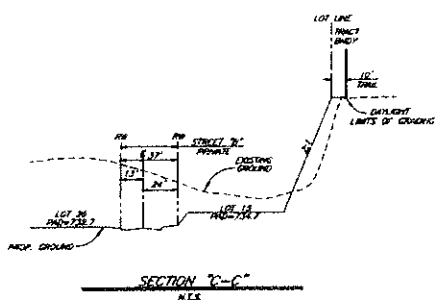
PLATE A-4

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37503
IN THE COUNTY OF RIVERSIDE

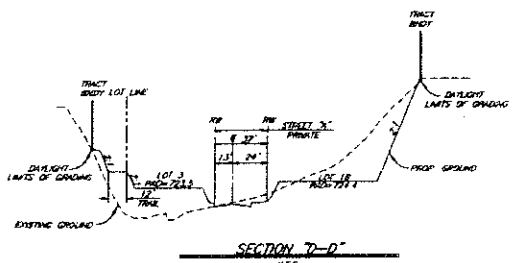




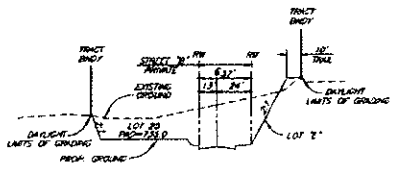
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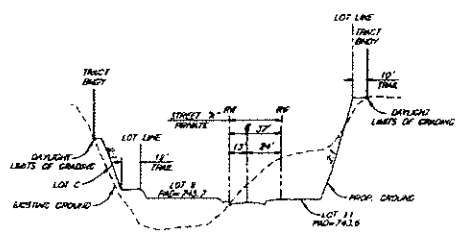
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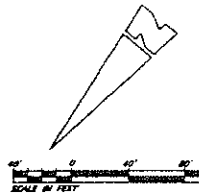
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SECTION "B-B"
N.T.S.



SECTION "E-E"
N.T.S.



Date	By	REVISIONS	Appr'd

TTM DATE EXHIBIT 'B' ON FILE WITH RIVCO PLANNING DEPT. 06/07/18 BY: SMP

TENTATIVE TRACT MAP NO. 37503
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

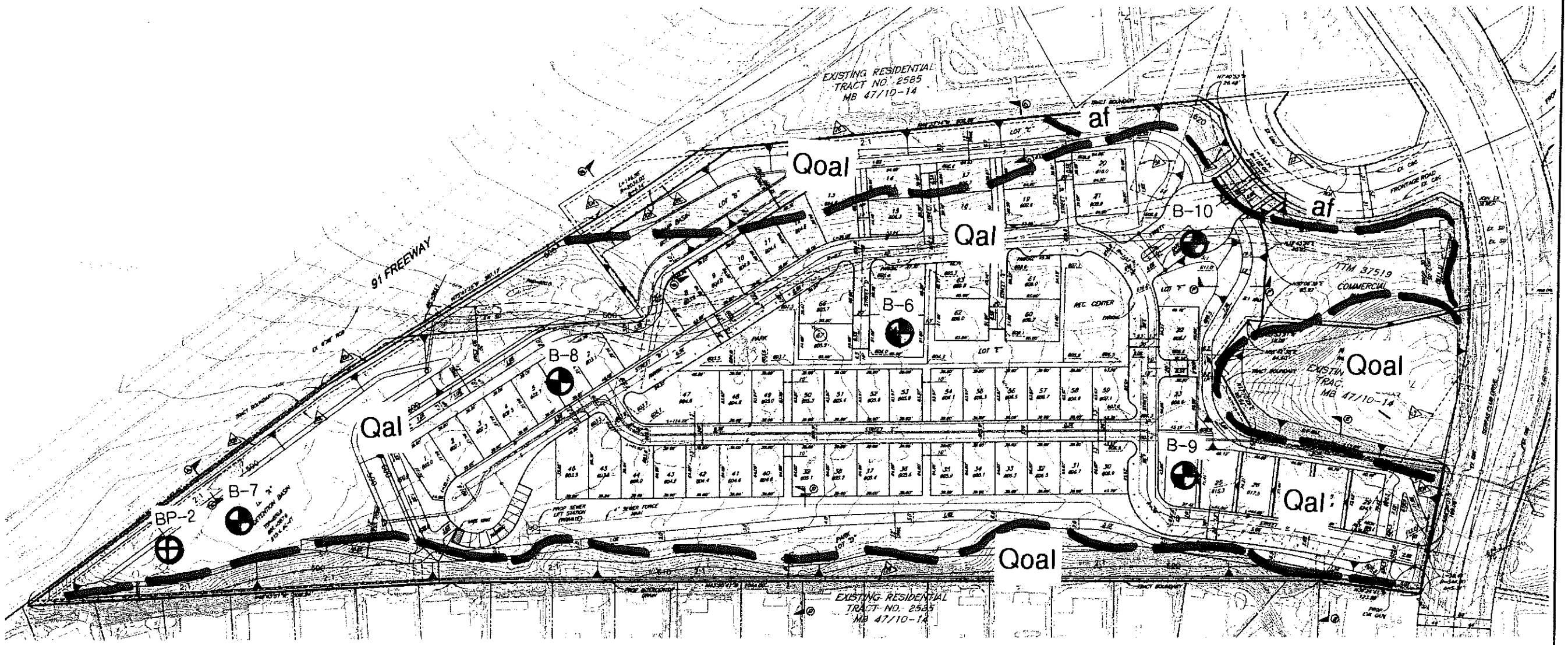
PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
4890 WILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

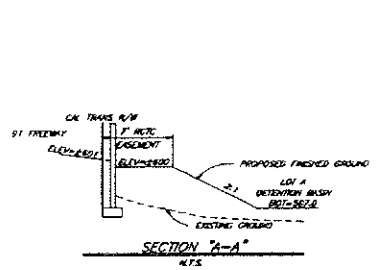
PREPARED BY:
KWC ENGINEERS

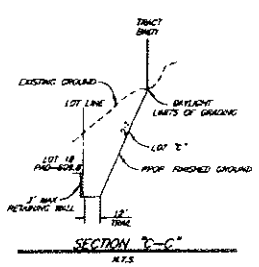
SHEET 2 OF 2 SHEETS

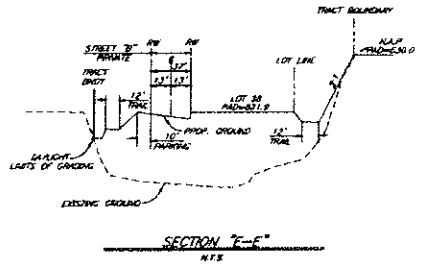
PLATE A-5

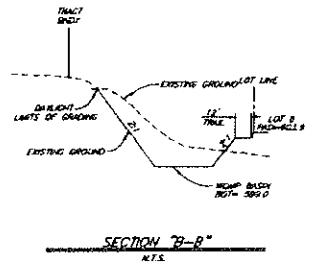
THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37504
IN THE COUNTY OF RIVERSIDE

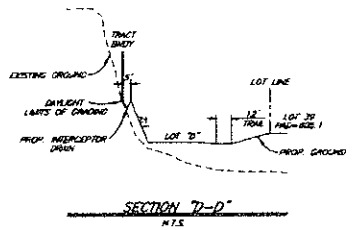


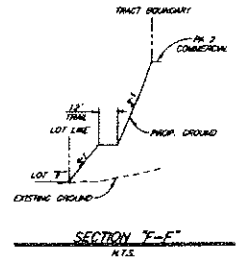


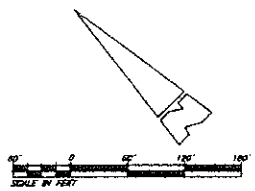












TENTATIVE TRACT MAP NO. 37504
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
4890 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS

SHEET 2 OF 2 SHEETS

PLATE A-6

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B-1

Sheet 1 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**1/12/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**26 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					Org	LEAF LITTER: FILL-Loose,dump fill				
						SC	CLAYEY SAND WITH GRAVEL: NATIVE-Yellowish brown with strong brown,damp,fine to medium-grained sand				MAX DENSITY, EXPANSION, REMOLD SHEAR, CORROSIVITY TESTS, ATTERBERG LIMITS
				25(Ring)				116.6	5.8		
5	5										
						CL	SILTY CLAY WITH SAND: Dark brown to yellowish red,moist,fine-grained sand,with some pebbles and gravel-size rock pieces				
				26(Ring)				105.5	15.6		SHEAR
10	10			66(Ring)		SC	CLAYEY SAND WITH GRAVEL: Dark yellowish brown with strong brown,moist,fine to medium-grained sand	121.4	6.7		
							same as above,becoming light olive brown with yellowish brown				
15	15			26/6" (Ring)		SC	*insufficient sample for density	*	11.1		
				23/6" (Ring)		CL	SANDY CLAY: Yellowish brown with strong brown,moist,fine to medium-grained sand	110.8	15.4		
20	20										

ASSOCIATED
SOILS ENGINEERING, INC.

FIELD LOG OF BORING B - 1

Sheet 2 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20		24(SPT)		SM	SILTY SAND: Yellowish brown,moist,fine-grained sand		14.3		
					SM	SILTY SAND: Light olive broiwn,moist to very moist,fine-grained sand,with some clay and pebbles/gravel-size rock pieces	93.7	20.5		
25	25		5/6"(Ring)				*			
			12/6" (Ring)		SM	SILTY SAND: Light olive brown,moist,fine-grained sand,trace clay and gravel *insufficient sample for density		10.9		

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B-2

Sheet 1 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**1/12/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**26 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0						ASPHALTIC CONCRETE PAVEMENT: 4.25'				
						SC	AGGREGATE BASE MATERIAL: 5.25"				
				24/6" (Ring)			CLAYEY SAND: Dark yellowish brown,moist,fine to medium-grained sand,trace gravel-size rock pieces	109.8	10.4		SHEAR
				40/5" (Ring)		CL		116.0	8.8		
5	5						SANDY CLAY: Dark yellowish brown,damp to moist,fine to medium-grained sand				
						SM	SILTY SAND WITH CLAY: Light olive brown,moist,fine to medium-grained sand,trace gravel	107.8	9.3		
				26/6" (Ring)							
				22/6" (Ring)		SC	CLAYEY SAND: Yellowish brown,moist,fine to medium-grained sand	110.5	10.4		
10	10			23/6" (Ring)		SC	same as above	111.0	10.7		
				23/6" (Ring)		CL	SILTY CLAY WITH SAND: Yellowish brown to dark yellowish brown,moist,fine to medium-grained sand	119.0	9.5		
15	15			22(SPT)		CL	same as above		12.4		
20	20										

ASSOCIATED
SOILS ENGINEERING, INC.

FIELD LOG OF BORING B - 2

Sheet 2 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20			17(Ring)		SM	SILTY SAND: Yellowish brown to light olive brown,moist,fine-grained sand,trace clay	103.6	9.4		
25	25			11(SPT)		SM	same as above,becoming olive yellow		14.3		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-3

Sheet 1 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**1/12/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**26 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SC	CLAYEY SAND: FILL-Brown to dark yellowish brown,moist,fine to medium-grained sand				
						ML	SANDY SILT: NATIVE-Brown to dark brown,moist,fine-grained sand,trace clay	94.9	11.1		
				7/6"(Ring)							
				21/6" (Ring)		ML		104.6	7.1		
5	5						SILT WITH SAND: Dark yellowish brown,damp,fine-grained sand				
				60(Ring)		SC	CLAYEY SAND: Dark yellowish brown,damp to moist,fine to medium-grained sand,with pebbles and gravel-size rock pieces	110.0	7.5		SHEAR
10	10			53(Ring)		GC	CLAYEY GRAVEL: Dark yellowish brown,moist,with fine to medium sand	108.6	11.3		
15	15			28(SPT)		CL	SILTY CLAY: Dark yellowish brown,moist,trace fine to medium sand		16.3		
20	20										

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B - 3

Sheet 2 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20	27(Ring)		SM	SILTY SAND: Yellowish brown,moist,fine-grained sand,trace clay	102.0	13.6		
25	25	12(SPT)		ML	SILT WITH SAND: Yellowish brown,moist,fine-grained sand,trace organics		20.5		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-4

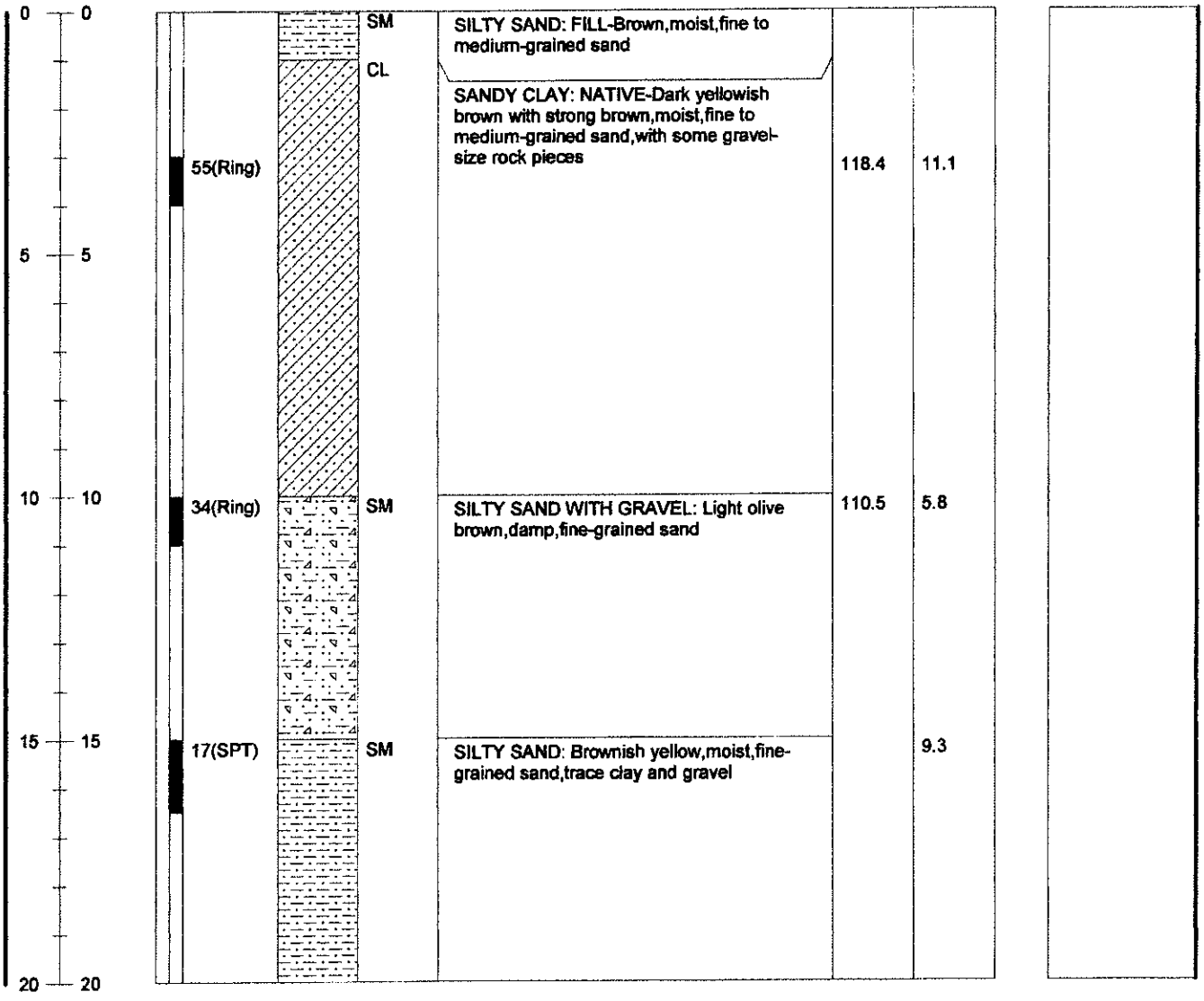
Sheet 1 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**1/12/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**26 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.



DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SM	SILTY SAND: FILL-Brown,moist,fine to medium-grained sand				
						CL	SANDY CLAY: NATIVE-Dark yellowish brown with strong brown,moist,fine to medium-grained sand,with some gravel-size rock pieces				
				55(Ring)				118.4	11.1		
5	5										
10	10			34(Ring)		SM	SILTY SAND WITH GRAVEL: Light olive brown,damp,fine-grained sand	110.5	5.8		
15	15			17(SPT)		SM	SILTY SAND: Brownish yellow,moist,fine-grained sand,trace clay and gravel		9.3		
20	20										

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B - 4

Sheet 2 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20			18(Ring)		SM	SILTY SAND: Brownish yellow,moist,fine-grained sand,trace clay and gravel	86.6	16.3		
						SM	SILTY SAND WITH GRAVEL: Brownish yellow,moist,fine-grained sand				
25	25			21(SPT)					13.0		

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B-5

Sheet 1 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**1/12/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**46 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SM	SILTY SAND: Dark brown,very moist,fine-grained sand,trace clay,scattered gravel,with small roots				MAX DENSITY, EXPANSION, REMOLD SHEAR, CORROSIVITY TESTS, ATTERBERG LIMITS
				13(Ring)				98.0	22.0		
5	5										
				9(Ring)		SC	CLAYEY SAND WITH GRAVEL: Brown to dark brown,moist,fine-grained sand	109.7	15.6		CONSOL
10	10			4/6"(Ring)		SM	SILTY SAND: Brown,moist,fine-grained sand	102.9	8.1		CONSOL
				5/6"(Ring)		SM	SILTY SAND: Dark brown,moist,fine-grained sand *insufficient sample for density	*	14.7		
15	15			9(SPT)		SC	CLAYEY SAND: Dark brown,moist,fine-grained sand		13.6		
20	20										

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B - 5

Sheet 2 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20			14(Ring)		SC	CLAYEY SAND: Dark yellowish brown,moist,fine-grained sand,with some gravel	106.7	12.4		CONSOL
25	25			13(SPT)		SM	SILTY SAND WITH CLAY: Dark yellowish brown,moist,fine-grained sand,trace gravel		9.9		
30	30			21(Ring)		SC	CLAYEY SAND: Dark yellowish brown,moist,fine-grained sand,with some gravel	117.6	13.6		
35	35			37(SPT)		SC	same as above,becoming yellowish brown		12.4		
40	40			5/6"(Ring)		SC	same as above	100.2	19.3		
				15/6" (Ring)		SM	SILTY SAND: Yellowish brown,moist,fine-grained sand	100.9	8.6		
45	45			24(SPT)		ML	SANDY SILT WITH CLAY: Yellowish brown,moist,fine-grained sand		18.3		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-6

Sheet 1 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**1/26/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**36 Feet**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SM	SILTY SAND: Brown,moist,fine-grained sand				MAX DENSITY, EXPANSION, REMOLD SHEAR, CORROSIVITY TESTS, ATTERBERG LIMITS
				24(Ring)		SM	same as above,becoming very pale brown,damp	91.6	4.7		
5	5			34(Ring)		SM	same as above,becoming pale brown with brown,moist	99.9	10.5		CONSOL
				22(Ring)		SM	same as above,damp	98.3	6.4		
10	10			55(Ring)		SM	same as above,becoming pale brown	110.4	7.5		CONSOL
15	15			21/6" (Ring)		SM	same as above,with trace gravel *insufficient sample for density	*	5.8		
				20/6" (Ring)		ML	CLAYEY SILT: Yellowish brown,moist	114.5	8.8		
20	20										

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B - 6

Sheet 2 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20	10(SPT)		SM	SILTY SAND WITH CLAY: Yellowish brown,moist,fine-grained sand		8.1		
25	25	22(Ring)		CL	SANDY CLAY: Dark yellowish brown,moist,fine-grained sand	119.8	12.4		
30	30	21(SPT)		CL	same as above		11.7		
				SC	CLAYEY SAND: Yellowish brown,moist,fine to medium-grained sand				
35	35	61/10" (Ring)				128.8	8.7		

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B-7

Sheet 1 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**1/26/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**37 Feet**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					ML	SANDY SILT WITH CLAY: Dark brown,moist,fine-grained sand				MAX DENSITY, EXPANSION, REMOLD SHEAR, CORROSIVITY TESTS, ATTERBERG LIMITS
				6(Ring)		ML	same as above	102.1	20.5		
5	5										
				8(Ring)		CL	SILTY CLAY WITH SAND: Brown to dark brown,moist to very moist,fine-grained sand	101.2	22.0		CONSOL
10	10			9(Ring)		CL	SANDY CLAY: Brown to dark brown,moist,fine-grained sand	108.5	17.7		CONSOL
15	15			7/6"(Ring)		CL	same as above	104.0	20.2		
				7/6"(Ring)		CL	SANDY CLAY: Dark yellowish brown,moist,fine-grained sand	120.2	13.2		CONSOL
20	20										

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FIELD LOG OF BORING B - 7

Sheet 2 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20			8(SPT)		SC	CLAYEY SAND: Dark yellowish brown,moist,fine-grained sand		11.1		
25	25			58(Ring)		SC	CLAYEY SAND WITH GRAVEL: Dark yellowish brown,moist,fine-grained sand	125.0	11.1		
30	30			65(SPT)		SC	same as above		12.4		
35	35			35/6" (Ring)		SC	CLAYEY SAND WITH GRAVEL: Yellowish brown,moist,fine to medium-grained sand *insufficient sample for density	*	9.8		
				50/5" (Ring)		SM	SILTY SAND: Yellowish brown,moist,fine to coarse-grained sand	116.0	8.4		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-8

Sheet 1 of 1

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**1/26/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**16 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SM	SILTY SAND WITH CLAY: Dark brown,moist,fine-grained sand				
				5/6"(Ring)		SM		114.4	9.6		
				5/6"(Ring)		ML	SANDY SILT: Pale brown,moist,fine-grained sand	89.5	11.3		
5	5					SM	SILTY SAND: Dark brown,moist,fine-grained sand,trace clay				
				7/6"(Ring)				114.9	12.0		
				9/6"(Ring)		ML	SILT WITH SAND: Pale brown,damp to moist,fine-grained sand	91.3	9.1		
						SM	SILTY SAND: Yellowish brown to brown,moist,fine-grained sand,trace clay				
10	10			5/6"(Ring)				105.4	12.6		CONSOL
				16/6" (Ring)		SM	SILTY SAND: Pale brown,moist,fine-grained sand	106.9	8.6		
						SC	CLAYEY SAND: Dark brown,moist,fine-grained sand				
15	15			25/6" (Ring)				118.1	12.4		CONSOL
				30/6" (Ring)		CL	SILTY CLAY WITH SAND: Dark yellowish brown,moist,fine-grained sand	123.3	10.4		

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B-9

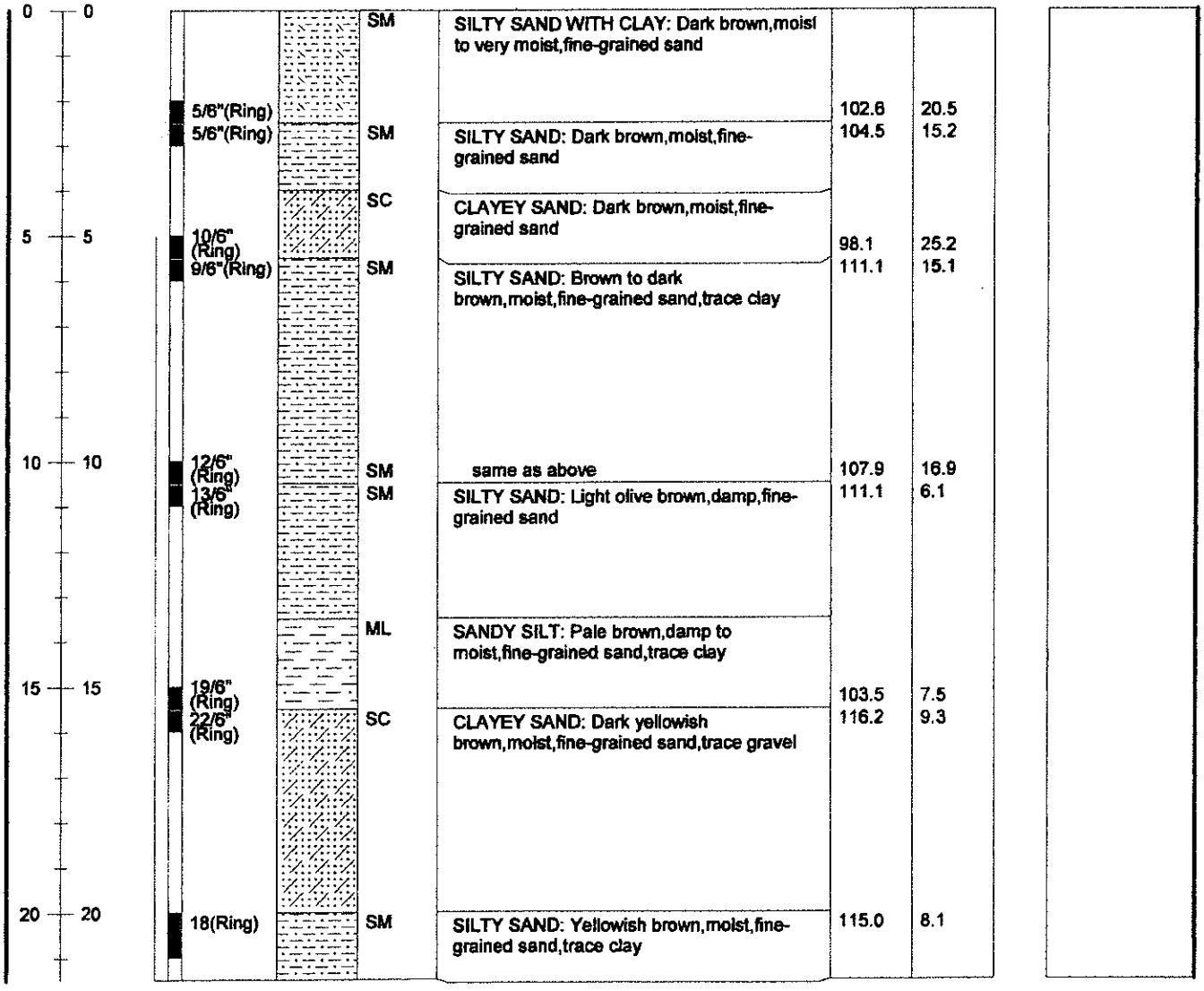
Sheet 1 of 1

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**1/26/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**21 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.



DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE, TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0				SM	SILTY SAND WITH CLAY: Dark brown,moist to very moist,fine-grained sand				
			5/6"(Ring)				102.6	20.5		
			5/6"(Ring)		SM	SILTY SAND: Dark brown,moist,fine-grained sand	104.5	15.2		
					SC	CLAYEY SAND: Dark brown,moist,fine-grained sand				
5	5		10/6" (Ring)				98.1	25.2		
			9/6"(Ring)		SM	SILTY SAND: Brown to dark brown,moist,fine-grained sand,trace clay	111.1	15.1		
10	10		12/6" (Ring)		SM	same as above	107.9	16.9		
			13/6" (Ring)		SM	SILTY SAND: Light olive brown,damp,fine-grained sand	111.1	6.1		
					ML	SANDY SILT: Pale brown,damp to moist,fine-grained sand,trace clay				
15	15		19/6" (Ring)				103.5	7.5		
			22/6" (Ring)		SC	CLAYEY SAND: Dark yellowish brown,moist,fine-grained sand,trace gravel	116.2	9.3		
20	20		18(Ring)		SM	SILTY SAND: Yellowish brown,moist,fine-grained sand,trace clay	115.0	8.1		

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B-10

Sheet 1 of 1

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**1/26/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**16 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 in.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SM	SILTY SAND: FILL-Brown to yellowish brown,moist,fine-grained sand,trace clay				
				5/6"(Ring)				97.6	10.5		
				5/6"(Ring)		SP	SAND: FILL-Light yellowish brown,damp,fine to medium-grained sand	98.7	5.1		
						SC	CLAYEY SAND: NATIVE-Yellowish brown to dark yellowish brown,moist,fine-grained sand				
5	5			11/6" (Ring)				105.2	10.5		
				14/6" (Ring)		ML	SANDY SILT: Light yellowish brown,damp to moist,fine-grained sand	103.0	7.2		
10	10			28(Ring)		ML	same as above,becoming brown to pale brown	100.0	8.7		
15	15			21(Ring)		SM	SILTY SAND WITH CLAY: Yellowish brown,moist,fine-grained sand	101.2	9.3		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-11

Sheet 1 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**2/26/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,inc.**	Total Depth:	**31 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SM	SILTY SAND WITH GRAVEL: Light yellowish brown,damp,fine-grained sand				MAX DENSITY, EXPANSION, REMOLD SHEAR, ATTERBERG LIMITS, CORROSIVITY TESTS
				45/6" (Ring)				125.6	4.4		
				19/6" (Ring)		SC	CLAYEY SAND WITH GRAVEL: Brown to dark brown,moist,fine-grained sand	121.8	9.0		
5	5										
				22(Ring)		SM	SILTY SAND: Yellowish brown,damp,fine-grained sand,with some gravel	106.1	4.7		CONSOL
10	10			16(Ring)		SM	SILTY SAND WITH GRAVEL: Yellowish brown,damp,fine to medium-grained sand	109.1	4.2		
15	15			18(Ring)		SM	SILTY SAND WITH CLAY: Yellowish brown,damp to moist,fine-grained sand,with some gravel	103.8	7.5		CONSOL

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B - 11

Sheet 2 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20			18(Ring)		SM	SILTY SAND: Light yellowish brown,damp,fine-grained sand,trace clay,with some gravel and cobbles	103.8	6.4		
25	25			25(SPT)			#no recovery		#		
						SM	SILTY SAND WITH CLAY: Yellowish brown,damp to moist,fine-grained sand				
30	30			18(SPT)					7.0		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-12

Sheet 1 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**2/26/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**26 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE; "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SM	SILTY SAND: Brown to yellowish brown,damp,fine-grained sand,trace clay,with some gravel and small roots				
				20(Ring)		SM		101.8	4.7		
5	5										
				28(Ring)		SM	same as above,with some small pores	102.6	3.1		
10	10					SM	SILTY SAND: Light yellowish brown,damp,fine-grained sand,trace clay and gravel				
				10(Ring)				98.8	5.9		
15	15										
				12(Ring)		SM	SILTY SAND: Yellowish brown,moist,fine-grained sand,trace clay and gravel	106.5	10.5		
20	20										

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B - 12

Sheet 2 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20			25(Ring)		SM	SILTY SAND WITH GRAVEL: Yellowish brown,damp,fine to medium-grained sand	107.0	4.6		
25	25			29(SPT)		SM	SILTY SAND WITH GRAVEL: Yellowish brown,moist,fine to medium-grained sand,trace clay		8.7		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-13

Sheet 1 of 1

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**2/26/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**20 Feet 2 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SC	CLAYEY SAND WITH GRAVEL: Strong brown,damp to moist,fine to medium-grained sand,with roots				
5	5			37(Ring)		SC	same as above	113.0	8.1		SHEAR
10	10			50/2" (Ring)			becoming gravelly and cobbly below 9.5 feet depth #no recovery	#			
15	15			50/2" (Ring)			#no recovery	#			
20	20			50/2" (Ring)			#no recovery	#			

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B-14

Sheet 1 of 1

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**2/26/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**21 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SM	SILTY SAND: Dark yellowish brown,damp,fine-grained sand,trace clay,with some gravel				
5	5			28(Ring)		SC	CLAYEY SAND: Dark yellowish brown to dark brown,moist,fine to medium-grained sand,with some gravel	120.4	8.1		
10	10			19(Ring)		SC	same as above	113.5	9.3		
15	15			42(Ring)		SC&GP	CLAYEY SAND AND GRAVEL: Dark yellowish brown to dark brown,damp,fine to medium-grained sand *unable to retrieve relatively undisturbed sample,too many oversize particles	*	6.7		
20	20			90(Ring)		SM	SILTY SAND WITH GRAVEL: Brown,moist,fine to coarse-grained sand,trace clay	118.4	8.1		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-15

Sheet 1 of 1

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**2/26/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**21 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SC	CLAYEY SAND: Dark yellowish brown,moist,fine to medium-grained sand,with some gravel and cobbles				
5	5			53(Ring)		SC	CLAYEY SAND WITH GRAVEL: Dark yellowish brown,damp to moist,fine to coarse-grained sand	119.6	7.6		
10	10			72(Ring)		SP-SM	GRAVELLY SAND WITH SILT: Yellowish brown to brown,moist,fine to medium-grained sand	111.3	8.3		SHEAR
15	15			24(Ring)		SM	SILTY SAND WITH CLAY: Yellowish brown,moist,fine to medium-grained sand,with gravel	113.0	9.9		
20	20			53(Ring)		SP-SM	GRAVELLY SAND WITH SILT: Light olive brown,damp,fine to medium-grained sand,trace clay	119.2	6.7		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-16

Sheet 1 of 1

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**2/26/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**16 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE, TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0				SM	SILTY SAND: Dark yellowish brown,moist,fine-grained sand,with some gravel				
5	5		19(Ring)		SC	CLAYEY SAND: Dark brown to dark yellowish brown,moist,fine-grained sand,with some gravel	122.1	10.5		
10	10		34(Ring)		SC	CLAYEY SAND WITH GRAVEL: Dark yellowish brown,moist,fine to medium-grained sand	119.8	9.3		
15	15		62(Ring)		SC	same as above,becoming yellowish brown	122.0	10.5		

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B-17

Sheet 1 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**2/26/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**31 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SM	SILTY SAND WITH CLAY: Dark yellowish brown,moist,fine to medium-grained sand				MAX DENSITY, EXPANSION, REMOLD SHEAR, ATTERBERG LIMITS, CORROSIVITY TESTS
5	5			6(Ring)		SM	same as above	116.1	8.1		
10	10			10(Ring)		SC	CLAYEY SAND: Dark yellowish brown,moist,fine to medium-grained sand	117.4	12.4		CONSOL
15	15			8(Ring)		SC	same as above,grading to yellowish brown	117.1	14.3		CONSOL
20	20										

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B - 17

Sheet 2 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20	13(Ring)		SM	SILTY SAND: Yellowish brown,moist,fine to medium-grained sand,trace clay and gravel	112.1	9.3		
25	25	58(Ring)		SP-SM	GRAVELLY SAND WITH SILT: Yellowish brown to light olive brown,damp to moist,fine to medium-grained sand,with some clay with cobbles below 27.5 feet depth	110.4	7.5		
30	30	53(Ring)		SC	CLAYEY SAND: Strong brown,moist,fine to medium-grained sand,with some gravel	123.4	13.0		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-18

Sheet 1 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**2/26/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**31 Feet 6 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SC	CLAYEY SAND: Dark yellowish brown,moist,fine to medium-grained sand,with some gravel				
5	5			15(Ring)		SM	SILTY SAND: Dark yellowish brown,damp to moist,fine to medium-grained sand,trace clay,with some gravel	114.7	7.5		
10	10			19(Ring)		SP-SM	GRAVELLY SAND WITH SILT: Yellowish brown,damp,fine to medium-grained sand,trace clay	121.1	5.2		CONSOL
15	15			6(Ring)		SC	CLAYEY SAND: Dark yellowish brown,moist,fine to medium-grained sand	109.0	14.3		
20	20										

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B - 18

Sheet 2 of 2

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20			9(Ring)		CL	SANDY CLAY: Dark yellowish brown,moist,fine to medium-grained sand	115.5	16.3		CONSOL
25	25			41(Ring)		SC	CLAYEY SAND WITH GRAVEL: Yellowish brown with strong brown,moist,fine to medium-grained sand	121.5	12.4		
30	30			77(Ring)		SC	same as above,becoming yellowish brown	119.1	13.0		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-19

Sheet 1 of 2

Project: *The Trails at Corona-Tracts 37500 to 37504*

Location: *2121 Mountain View Drive* | Project No. *6619.18.1*

Dates(s) Drilled:	**9/27/2018**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**26 Feet**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE, TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0				ML	SANDY SILT: Yellowish brown,damp,fine-grained sand,trace gravel-size rock pieces				
			14(Ring)				99.2	5.8		
5	5				SC	CLAYEY SAND: Brown to dark brown,moist,fine-grained sand,with some gravel-size rock pieces				
			6(Ring)				99.8	11.2		CONSOL
10	10		14(Ring)		SM	SILTY SAND WITH CLAY: Yellowish brown to light olive brown,moist,fine-grained sand	113.4	11.1		CONSOL
15	15		5(SPT)		SC	CLAYEY SAND: Yellowish brown,moist,fine-grained sand,trace gravel-size rock pieces		12.4		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B - 19

Sheet 2 of 2

Project: ***The Trails at Corona-Tracts 37500 to 37504***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.18.1***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20			15(Ring)		SC	CLAYEY SAND: Yellowish brown,moist,fine to medium-grained sand,trace gravel-size rock pieces	115.8	11.1		
25	25			50/6" (SPT)		CL	SANDY CLAY: Dark yellowish brown,moist,fine-grained sand,trace gravel-size rock pieces		15.6		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-20

Sheet 1 of 2

Project: ***The Trails at Corona-Tracts 37500 to 37504***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.18.1***

Dates(s) Drilled:	**9/27/2018**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**25 Feet 3 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					ML	SANDY SILT: Brown,damp,fine-grained sand,trace gravel-size rock pieces				
				17(Ring)				109.1	5.5		
5	5					SM	SILTY SAND WITH CLAY: Brown to dark brown,moist,fine-grained sand,with some gravel-size rock pieces				
				13(Ring)				110.6	8.8		
10	10			15/6" (Ring)		SM	same as above	119.4	10.0		CONSOL
				20/6" (Ring)		SM	SILTY SAND WITH GRAVEL: Yellowish brown,damp,fine to medium-grained sand	126.7	3.7		
15	15			5(SPT)		SM	SILTY SAND: Yellowish brown,moist,fine-grained sand		9.9		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B - 20

Sheet 2 of 2

Project: ***The Trails at Corona-Tracts 37500 to 37504***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.18.1***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20			10(Ring)		SM	SILTY SAND WITH CLAY: Light olive brown,moist,fine-grained sand,with some gravel-size rock pieces	115.4	9.3		
							drilling effort increases at 22 feet				
25	25			50/3" (SPT)		SM	same as above #no recovery		#		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-21

Sheet 1 of 2

Project: ***The Trails at Corona-Tracts 37500 to 37504***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.18.1***

Dates(s) Drilled:	**9/27/2018**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**31 Feet**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE, TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0				SM	SILTY SAND: Brown,dry to damp,fine-grained sand				MAX DENSITY, EXPANSION, REMOLD SHEAR, CORROSIVITY TESTS
			11(Ring)		SM	SILTY SAND WITH CLAY: Yellowish brown to dark yellowish brown,moist,fine-grained sand	106.1	8.1		
5	5				SC	CLAYEY SAND: Dark yellowish brown,moist,fine-grained sand				
			14(Ring)				118.3	12.4		CONSOL
10	10		14(Ring)		SC	same as above,trace gravel-size rock pieces	113.5	13.0		CONSOL
15	15		6/6"(Ring)		SC	same as above,yellowish brown to dark yellowish brown	119.3	11.8		
			7/6"(Ring)		SM	SILTY SAND: Yellowish brown,moist,fine-grained sand,with some clay	121.3	10.0		
20	20									

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B - 21

Sheet 2 of 2

Project: ***The Trails at Corona-Tracts 37500 to 37504***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.18.1***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20			15(Ring)		SM	SILTY SAND WITH CLAY: Dark yellowish brown,moist,fine to medium-grained sand,with some gravel-size rock pieces	118.6	12.7		
25	25			43(Ring)		SM	#no recovery	#	#		
						SM	SILTY SAND WITH CLAY: Light olive brown with dark yellowish brown and pale yellow,moist,fine to medium-grained sand,with some gravel-size rock pieces drilling effort increases at 26 feet				
30	30			62(Ring)		SM	same as above	119.4	12.1		

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-22

Sheet 1 of 2

Project: ***The Trails at Corona-Tracts 37500 to 37504***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.18.1***

Dates(s) Drilled:	**9/27/2018**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**26 Feet**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SM	SILTY SAND: Brown,dry to damp,fine-grained sand				
						SC	CLAYEY SAND: Brown,moist,fine-grained sand				
5	5			9(Ring)				106.5	13.6		
10	10			14(Ring)		SC	same as above,yellowish brown	112.4	14.3		CONSOL
15	15			12(Ring)		SC	same as above	111.6	13.6		
20	20										

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B - 22

Sheet 2 of 2

Project: ***The Trails at Corona-Tracts 37500 to 37504***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.18.1***

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
20	20			13(Ring)		SM	SILTY SAND: Dark yellowish brown,moist,fine-grained sand,with some clay and gravel-size rock pieces	116.5	9.9		
						SM	SILTY SAND WITH GRAVEL: Light olive brown with brownish yellow and pale yellow,damp,fine to medium-grained sand,trace clay				
25	25			37(Ring)				115.0	4.4		

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B-P1

Sheet 1 of 1

Project:	***Redevelopment of Mountain View Golf Course-Corona***	
Location:	***2121 Mountain View Drive***	Project No. ***6619.16***

Dates(s) Drilled:	**1/12/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**5 Feet 1 Inch**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SC	ASPHALTIC CONCRETE PAVEMENT: 4.0" AGGREGATE BASE MATERIAL: 5.0" CLAYEY SAND: Dark yellowish brown,moist,fine to medium-grained sand				
5	5						NOTE:Five feet one inch (5' 1") length of 6-inch I.D.slotted PVC pipe (one piece) placed in boring with the annular area backfilled with pea gravel to the surface. Gravel (3.25") placed at bottom of pipe and percolation test performed after minimum 24 hours of presoaking.				

ASSOCIATED SOILS ENGINEERING, INC.

FIELD LOG OF BORING B-P2

Sheet 1 of 1

Project: ***Redevelopment of Mountain View Golf Course-Corona***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.16***

Dates(s) Drilled:	**1/26/2016**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**5 Feet 1.5 Inch**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Backfill not determined.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					ML	SANDY SILT WITH CLAY: Dark brown,moist,fine-grained sand				
5	5						NOTE:Five feet one and one-half inch (5' 1.5") length of 6-inch I.D.slotted PVC pipe (one piece) placed in boring with the annular area backfilled with pea gravel to the surface. Gravel (3.5") placed at bottom of pipe and percolation test performed after minimum 24 hours of presoaking.				

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-P3

Sheet 1 of 1

Project: ***The Trails at Corona-Tracts 37500 to 37504***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.18.1***

Dates(s) Drilled:	**9/27/2018**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**5 Feet 4 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Boring backfills to 4.0 ft.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE, TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0				SM	SILTY SAND: Brown,damp,fine-grained sand				
			25(Ring)		ML	SANDY SILT WITH CLAY: Yellowish brown to light yellowish brown,moist,fine-grained sand,trace gravel-size rock pieces	102.1	9.3		
5	5					NOTE:Boring backfills to 4 feet. Five feet two inch (5' 2") length of 6-inch I.D. slotted PVC pipe (one piece) placed in boring, with one foot two inch (1' 2") portion of pipe sticking out above grade, with the annular area backfilled with pea gravel to surface. Three (3) inches of pea gravel placed at bottom of pipe. Percolation test performed after presoaking.				

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-P4

Sheet 1 of 1

Project: ***The Trails at Corona-Tracts 37500 to 37504***

Location: ***2121 Mountain View Avenue*** | Project No. ***6619.18.1***

Dates(s) Drilled:	**9/27/2018**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**9 Feet**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. Boring backfills to 8 ft. 4 in.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SM	SILTY SAND: Brown,dry to damp,fine-grained sand				
						ML	SANDY SILT WITH CLAY: Brown to dark brown,damp,fine-grained sand,trace gravel-size rock pieces				
				32(Ring)				103.3	6.7		
5	5										
				43(Ring)		ML	same as above,brown	102.9	7.5		
10	10						NOTE:Eight feet three inch (8' 3") length of 6-inch I.D. slotted PVC pipe (two pieces:upper 5 feet 3 inch solid,lower 3 feet slotted) placed in boring,with three inch (3") portion of pipe sticking out above grade, with the annular area backfilled with pea gravel to surface. Four and one-half inches (4.5") of pea gravel placed at bottom of pipe. Percolation test performed after overnight presoaking.				

ASSOCIATED SOILS ENGINEERING, INC

FIELD LOG OF BORING B-P5

Sheet 1 of 1

Project: ***The Trails at Corona-Tracts 37500 to 37504***

Location: ***2121 Mountain View Drive*** | Project No. ***6619.18.1***

Dates(s) Drilled:	**9/27/2018**	Logged By:	**Ted Riddell**
Drilled By:	**Geoboden,Inc.**	Total Depth:	**5 Feet 3 Inches**
Rig Make/Model:	**CME 75**	Hammer Type:	**Automatic**
Drilling Method:	**Hollow-stem Auger**	Hammer Weight/Drop:	**140 Lb./±30 In.**
Hole Diameter:	**8 Inches**	Surface Elevation:	**N/A**

Comments: Groundwater not encountered. No caving.

DEPTH (Ft.)	ELEVATION (MSL)	SAMPLE INTERVALS: BULK	SAMPLE INTERVALS: DRIVE	SAMPLE INTERVALS: TYPE, "N" or (Blows/ft.)	LITHOLOGY	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (Pcf)	MOISTURE CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	0					SM	SILTY SAND: Brown,dry to damp,fine-grained sand				
						SM	SILTY SAND: Light yellowish brown,damp,fine-grained sand,with some gravel-size rock pieces				
				34(Ring)				109.8	3.6		
5	5						NOTE: Five feet three inch (5' 3") length of 6-inch I.D. slotted PVC pipe (one piece) placed in boring with the annular area backfilled with pea gravel to surface. Two (2) inches of pea gravel placed at bottom of pipe. Percolation test performed after presoaking.				

Laboratory Tests

After samples were visually classified in the laboratory, a testing program aimed at generating sufficient data for subsequent evaluation was established and implemented.

- Moisture Content and Density Tests

The undisturbed soils retained within the rings of the Modified California barrel sampler were tested in the laboratory to determine in-place dry density and moisture content. Test results are presented on the Field Logs of Boring, Plates B-1 through B-22 and B-P1 through B-P5.

- Consolidation and Direct Shear Tests

Consolidation (ASTM D 2435-11 Test Method) and direct shear (ASTM D 3080-11 Test Method) tests were performed on selected relatively undisturbed and remolded samples to determine the settlement characteristics and shear strength parameters of various soil samples, respectively. The results of these tests are shown graphically on the appended “C” and “D” Plates.

- Atterberg Limit Tests

The Atterberg Limits (liquid limit-plastic limit and plasticity index) were determined on selected soils samples in accordance with ASTM D4318-10 test procedures, Method A (multi-point test), dry preparation procedures. The test results are as follows and are presented on the appended "E" Plates.

Sample ID	Liquid Limit, LL (%)	Plastic Limit, Pl (%)	Plasticity Index, PI	Soil Classification
B-1 @ 1’-5’	30	14	16	CL
B-5 @ 0-5’	35	16	19	CL
B-6 @ 0-5’	40	21	19	CL
B-7 @ 0-5’	43	21	22	CL
B-11 @ 0-5’	31	14	17	CL
B-17 @ 0-5’	33	15	18	CL

Laboratory Tests - continued

- Soil Corrosivity Tests

Tests of soluble sulfate and chloride contents were performed in accordance with California Test Methods 417 and 422, respectively, to assess the degree of corrosivity of the subgrade soils with regard to concrete and normal grade steel. Resistivity and pH-value tests were performed in accordance with ASTM G187-12a Test Method and California Test Method 643, respectively, to assess the degree of corrosivity of the subgrade soils with regard to ferrous metal piping. The test results are shown below.

Sample ID	Sulfate Content [1] (%)/ Degree of Severity	Chloride Content [2] (ppm) / Degree of Severity	Resistivity [3] (OHM-cm)/ Degree of Corrosivity	pH-Value [4]
B-1 @ 1'-5'	0.047/Not Applicable	27/Not Applicable	1,213/Corrosive	7.87
B-5 @ 0-5'	0.024/Not Applicable	73/Not Applicable	1,472/Corrosive	7.91
B-6 @ 0-5'	0.017/Not Applicable	39/Not Applicable	1,295/Corrosive	7.52
B-7 @ 0-5'	0.002/Not Applicable	42/Not Applicable	1,641/Corrosive	7.41
B-11 @ 0-5'	0.005/Not Applicable	62/Not Applicable	1,190/Corrosive	7.54
B-17 @ 0-5'	0.003/Not Applicable	24/Not Applicable	1,595/Corrosive	7.45
B-21 @ 0-5'	0.00 (ND)/Not Applicable	38/Not Applicable	2,692/Moderately Corrosive	7.71

1. California Test Method 417. 2. California Test Method 422. 3. ASTM G57 Test Method. 4. California Test Method 643.

- Maximum Dry Density/Optimum Moisture Content Tests

Maximum density tests were conducted in accordance with ASTM D1557-12, Method A, using 5 equal layers, 25 blows each layer, 10-pound hammer, 18 inch drop in a 1/30 cubic foot mold. The results are as follows:

Sample ID	Maximum Dry Density (pcf)	Optimum Moisture Content (%)	Material Classification
B-1 @ 1'-5'	132.0	9.0	SC
B-5 @ 0-5'	128.0	10.5	SM
B-6 @ 0-5'	119.0	13.5	SM
B-7 @ 0-5'	113.0	16.0	ML
B-11 @ 0-5'	132.5	8.5	SC
B-17 @ 0-5'	125.5	10.0	SM
B-21 @ 0-5'	132.5	8.5	SM

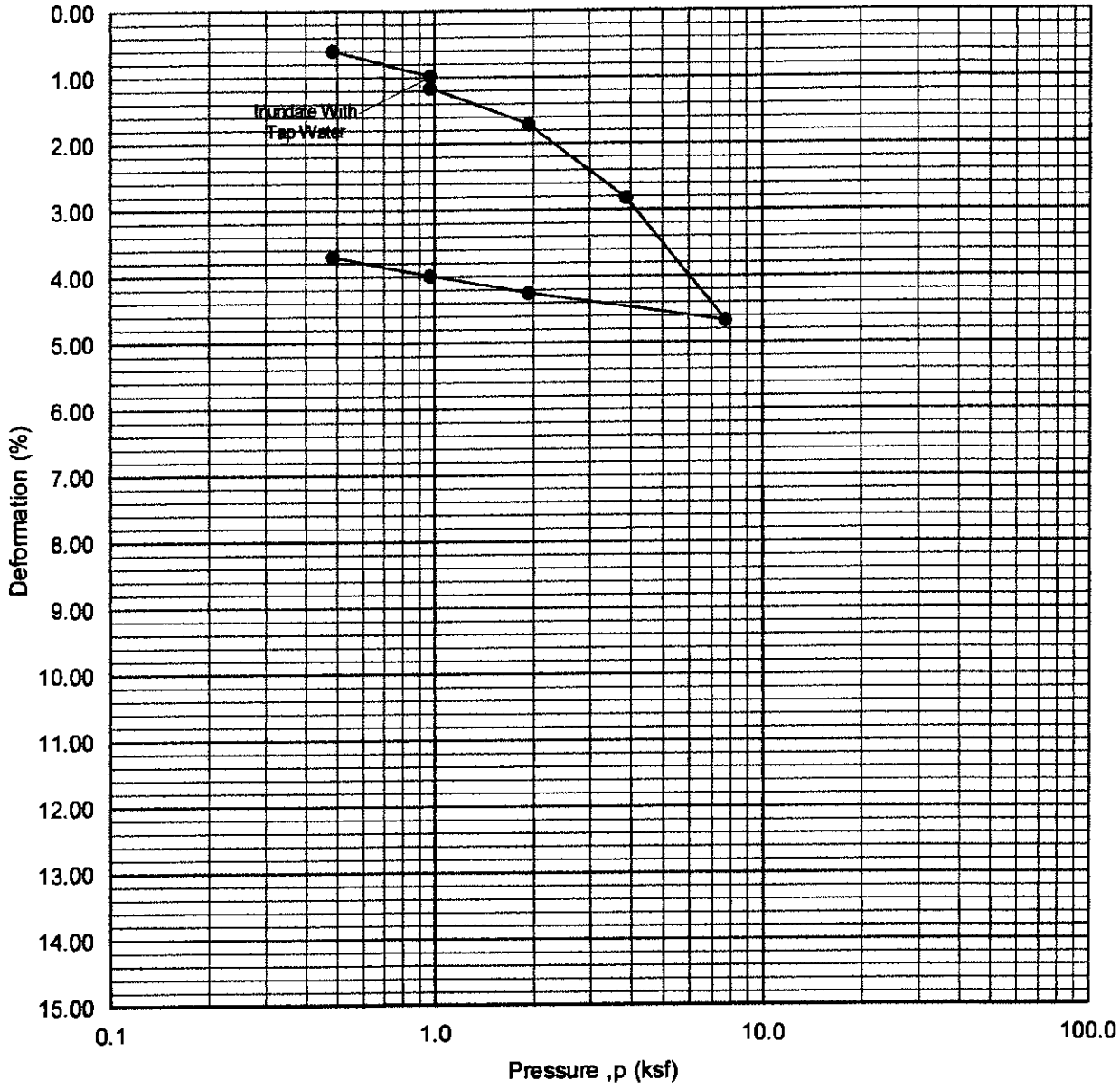
Laboratory Tests - continued

- Expansion Tests

Expansion tests were performed on soil samples to determine the swell characteristics. The expansion tests were conducted in accordance with ASTM D4829-08a test procedures. The expansion samples were remolded to approximately 90 percent relative compaction at near optimum moisture content subjected to 144 pounds per square foot surcharge load and were saturated.

Sample ID	Molded Dry Density (pcf)	Molded Moisture Content (%)	% Saturation	Expansion Index (EI)	Expansion Classification
B-1 @ 1'-5'	119.3	8.2	53.8	22	Low
B-5 @ 0-5'	114.8	10.3	59.9	30	Low
B-6 @ 0-5'	106.7	12.5	58.1	55	Medium
B-7 @ 0-5'	102.3	16.1	67.3	45	Low
B-11 @ 0-5'	118.5	8.4	54.0	10	Very Low
B-17 @ 0-5'	111.8	9.5	50.5	40	Low
B-21 @ 0-5'	117.3	9.0	55.9	17	Very Low

Plates C-1 through C-22	Uni-axial Consolidation Test Results
Plates D-1 through D-12	Direct Shear Test Results
Plates E-1 through E-6	Atterberg Limits Test Results

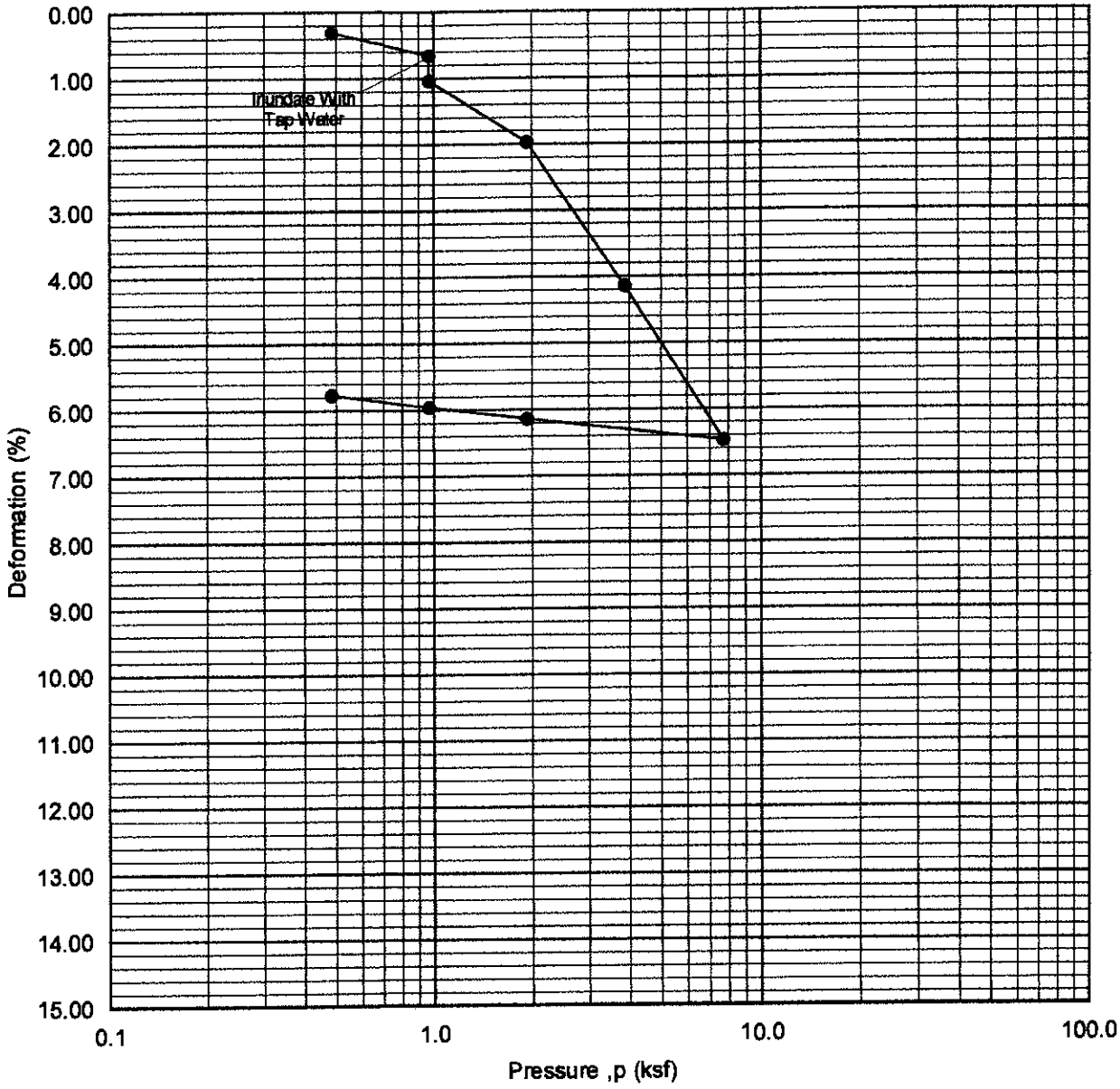


Boring No. : B-5
Depth (ft.) : 7.0
Sample Type: Clayey Fine Sand with Gravel

Dry Density (pcf) = 109.7
Moisture (%) = 15.6

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-1

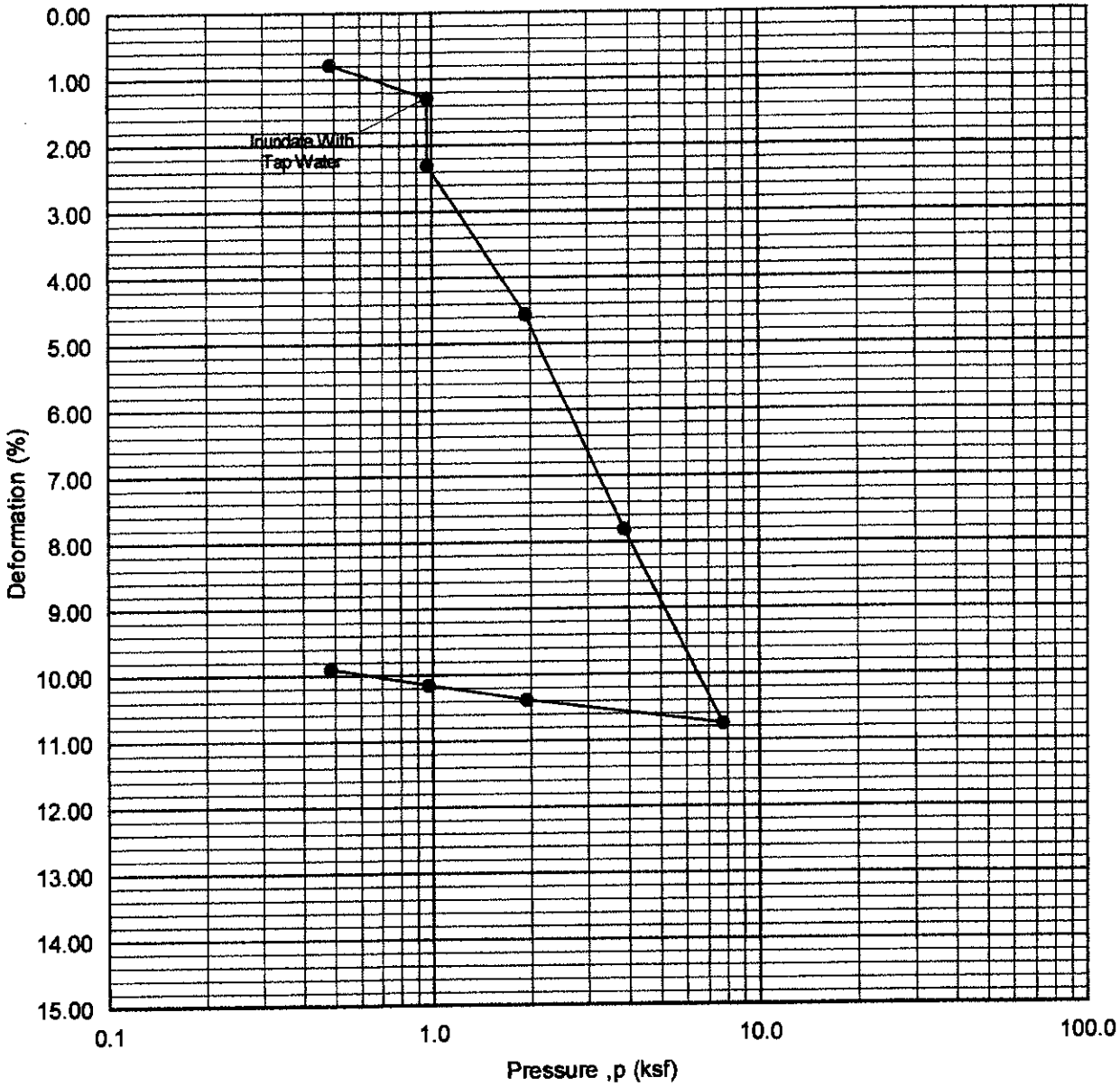


Boring No. : B-5
Depth (ft.) : 10.0
Sample Type: Silty Fine Sand

Dry Density (pcf) = 102.9
Moisture (%) = 8.1

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-2

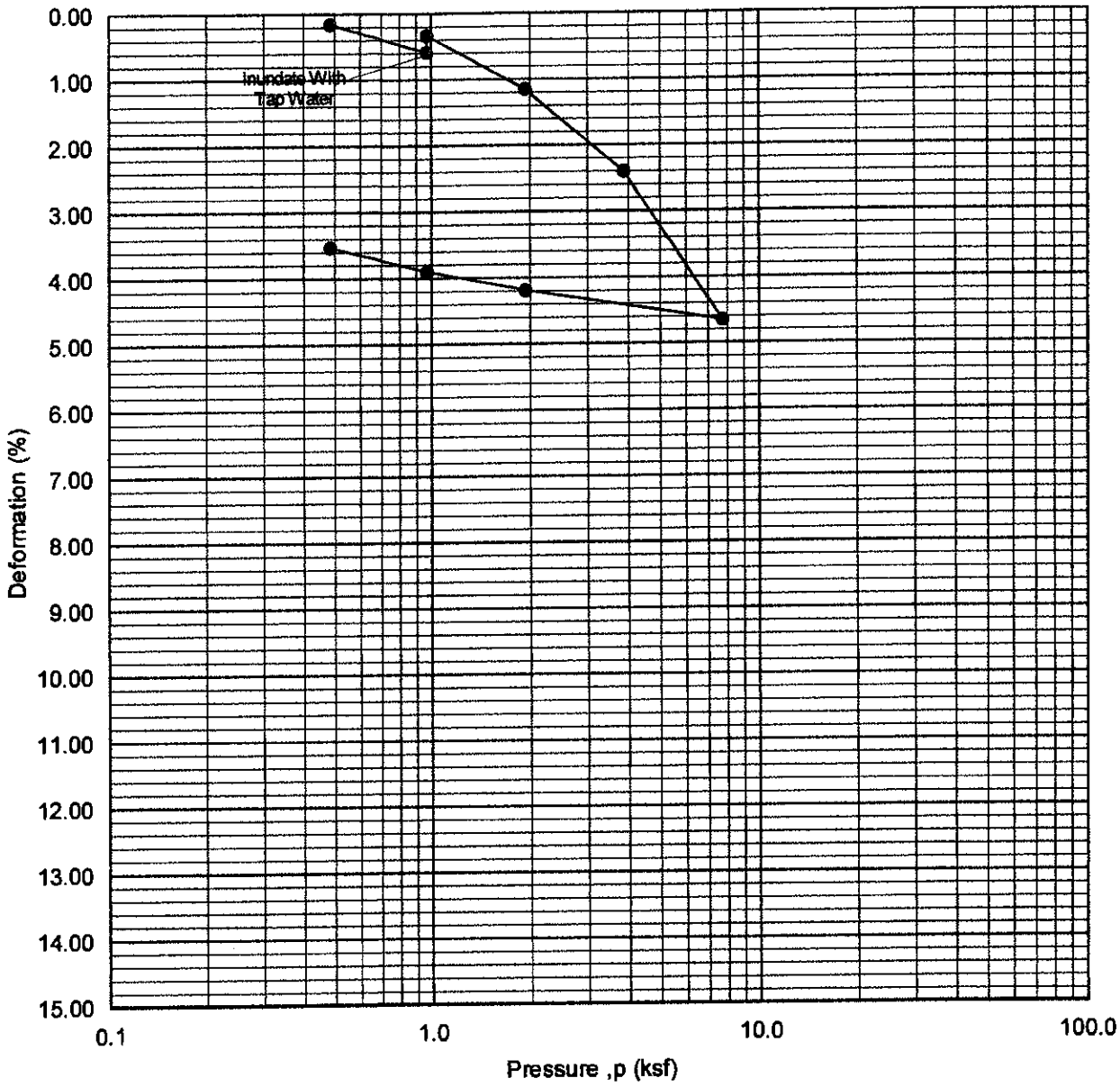


Boring No. : B-5
Depth (ft.) : 20.0
Sample Type: Clayey Fine Sand with some Gravel

Dry Density (pcf) = 106.7
Moisture (%) = 12.4

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-3

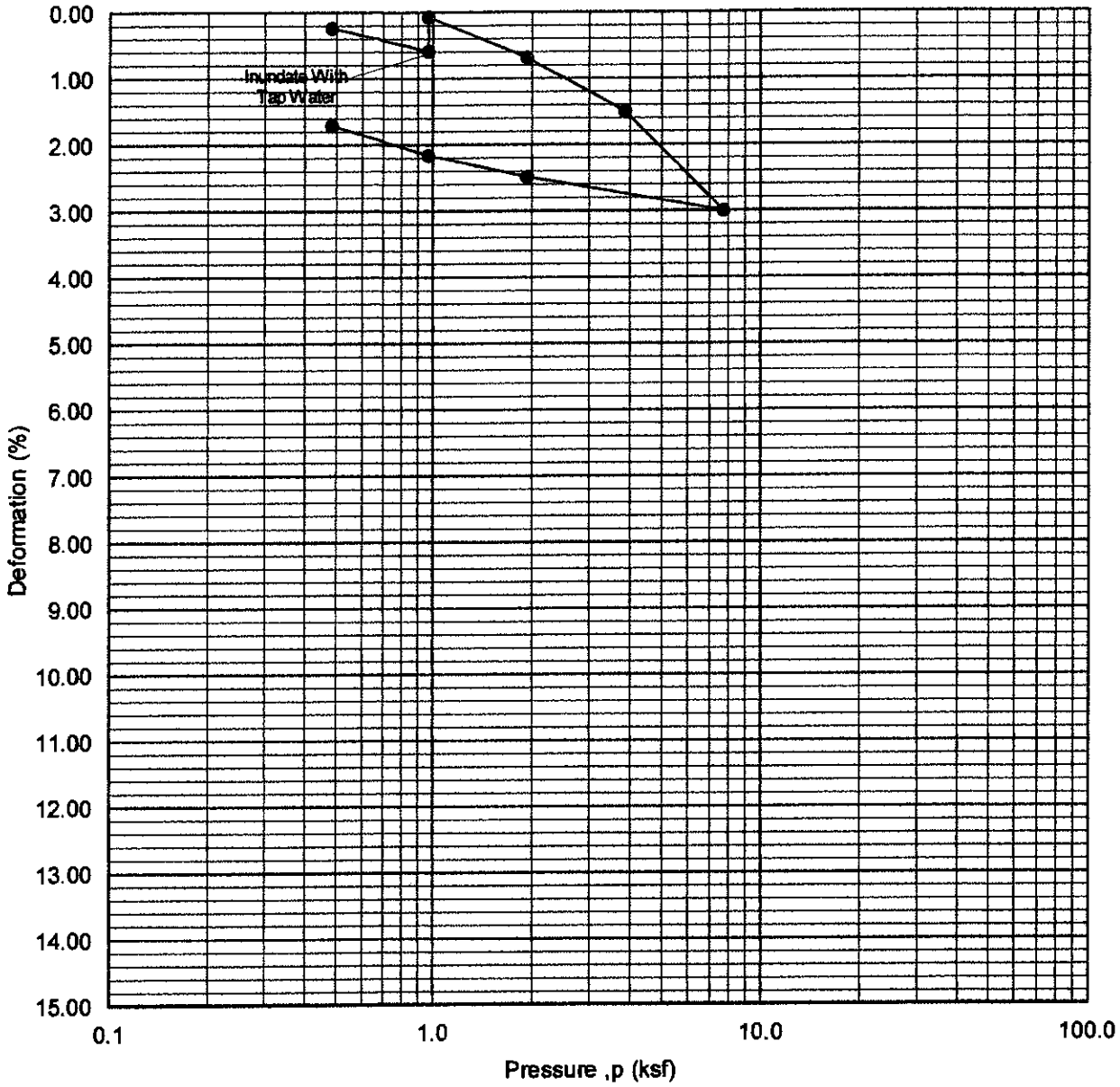


Boring No. : B-6
Depth (ft.) : 5.0
Sample Type: Silty Fine Sand

Dry Density (pcf) = 99.9
Moisture (%) = 10.5

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-4

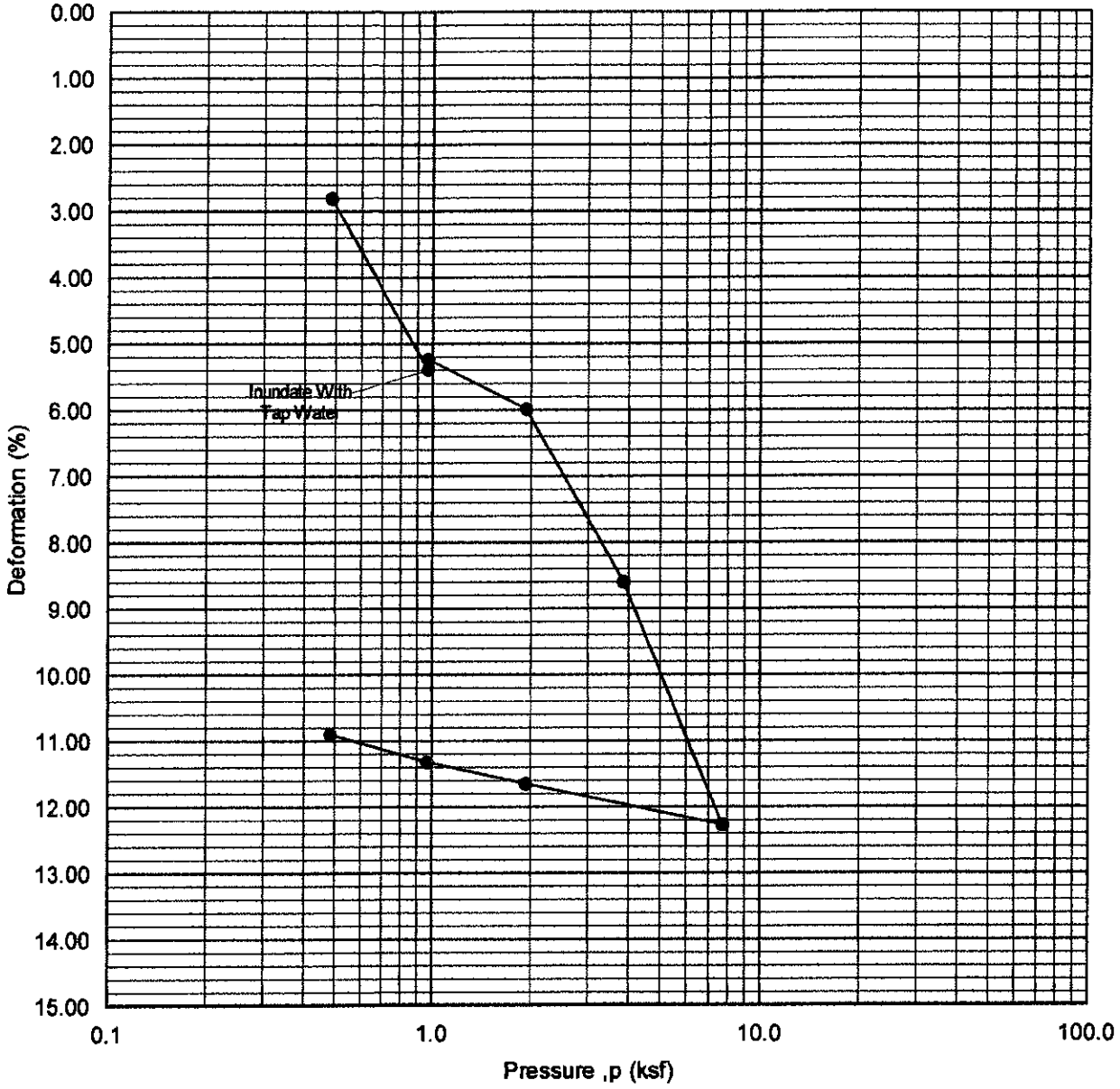


Boring No. : B-6
Depth (ft.) : 10.0
Sample Type: Silty Fine Sand

Dry Density (pcf) = 110.4
Moisture (%) = 7.5

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-5

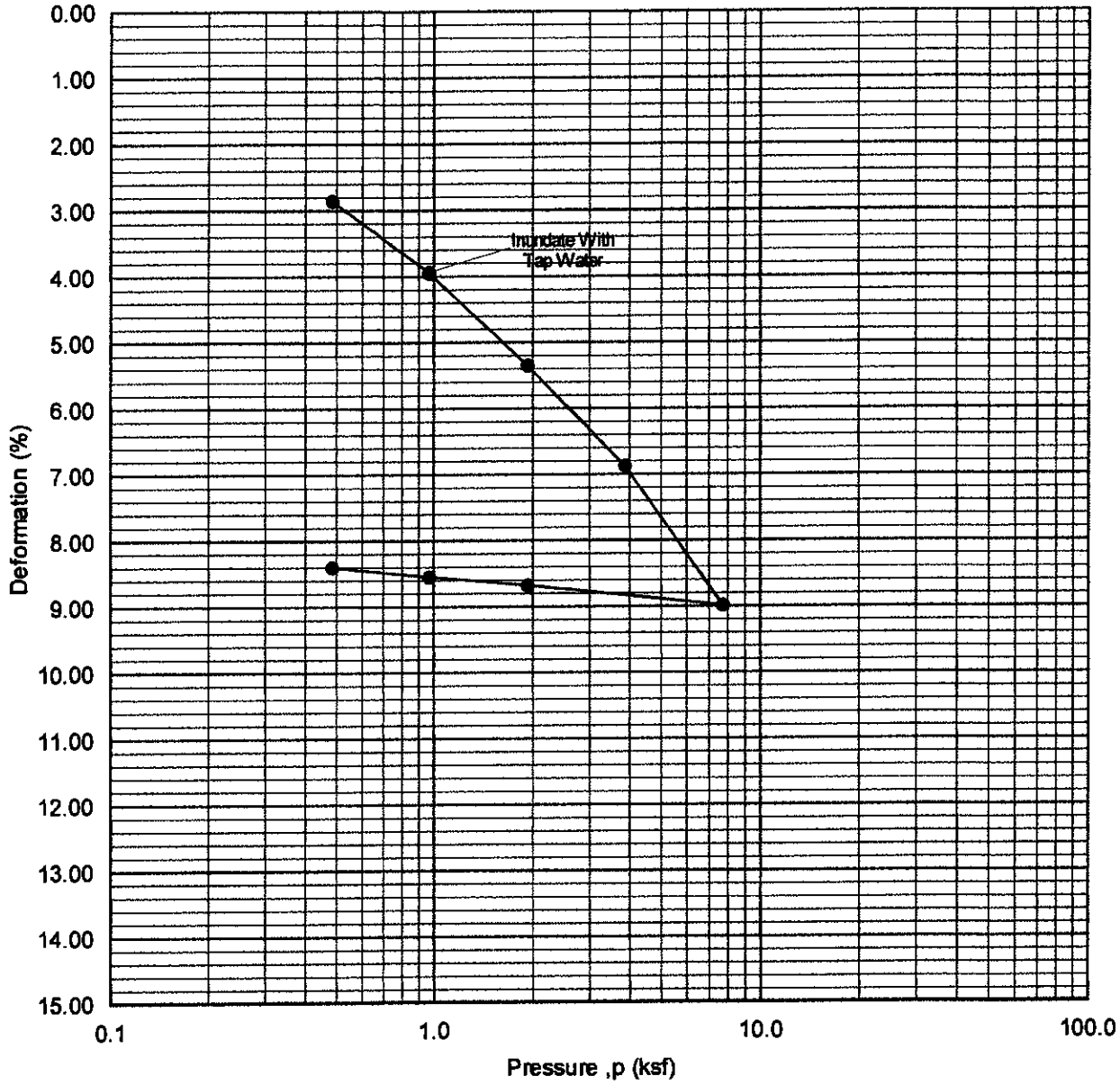


Boring No. : B-7
Depth (ft.) : 7.0
Sample Type: Silty Clay with Fine Sand

Dry Density (pcf) = 101.2
Moisture (%) = 22.0

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-6

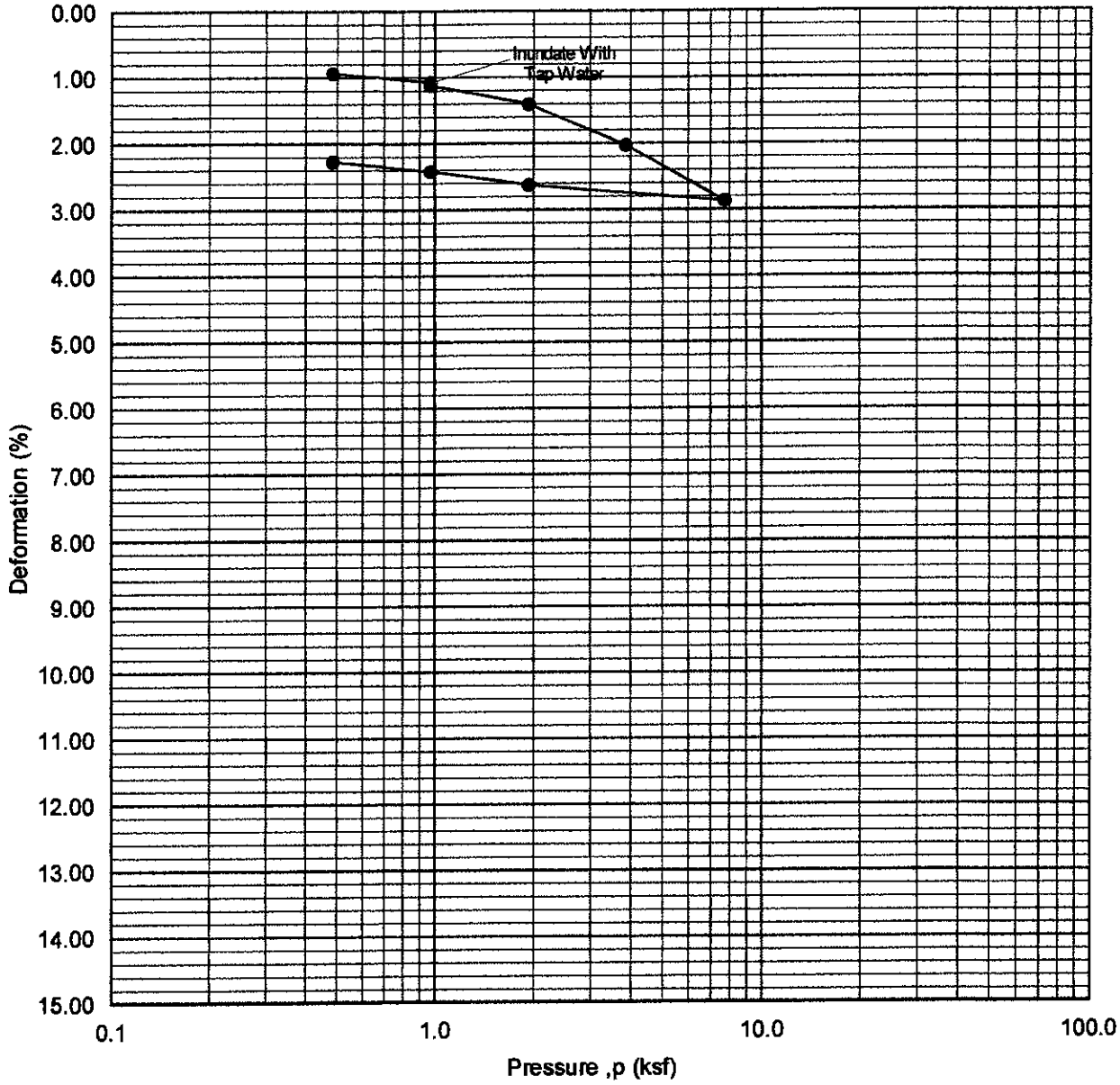


Boring No. : B-7
Depth (ft.) : 10.0
Sample Type: Fine Sandy Clay

Dry Density (pcf) = 108.5
Moisture (%) = 17.7

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-7

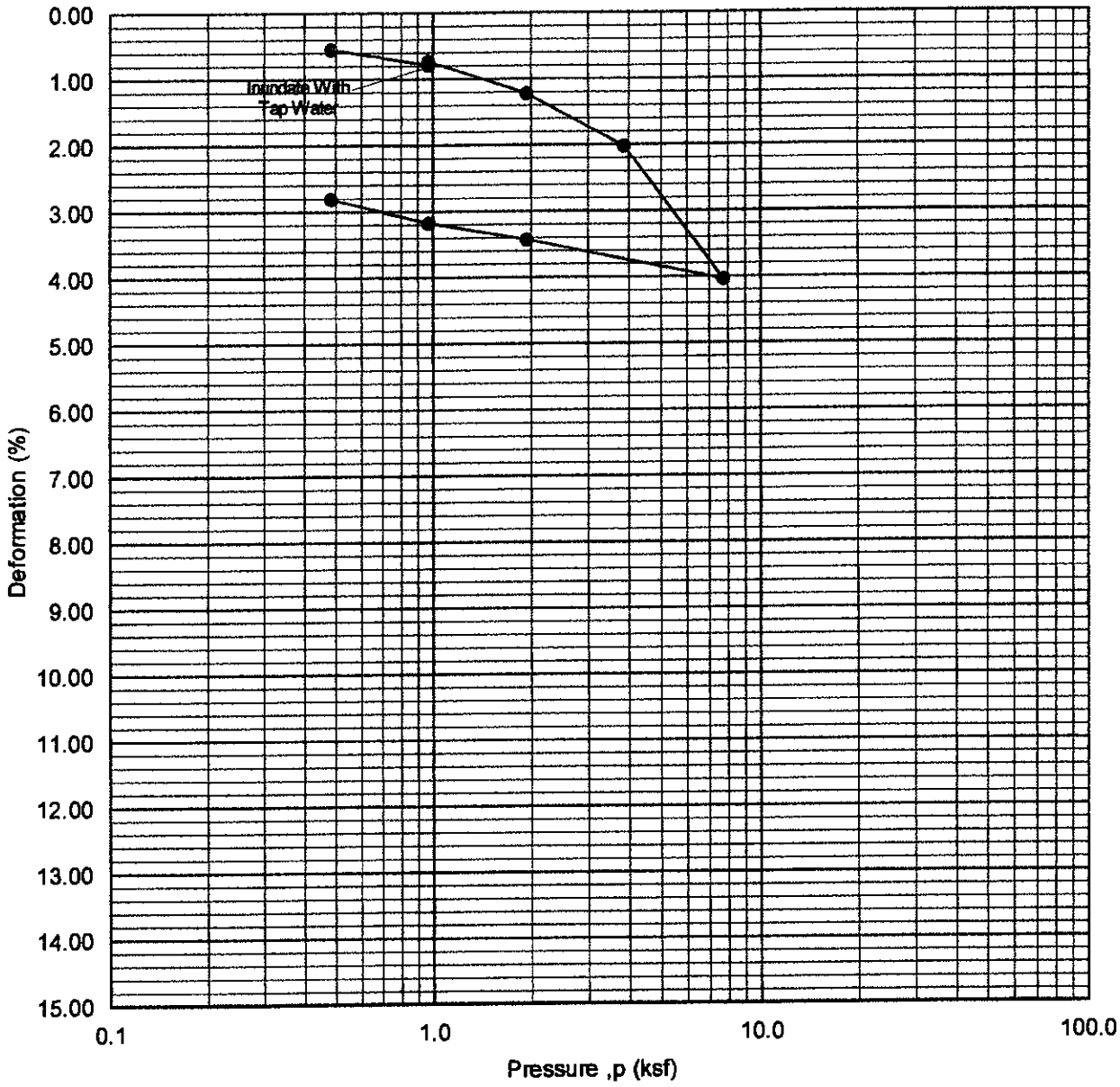


Boring No. : B-7
Depth (ft.) : 15.5
Sample Type: Fine Sandy Clay

Dry Density (pcf) = 120.2
Moisture (%) = 13.2

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-8

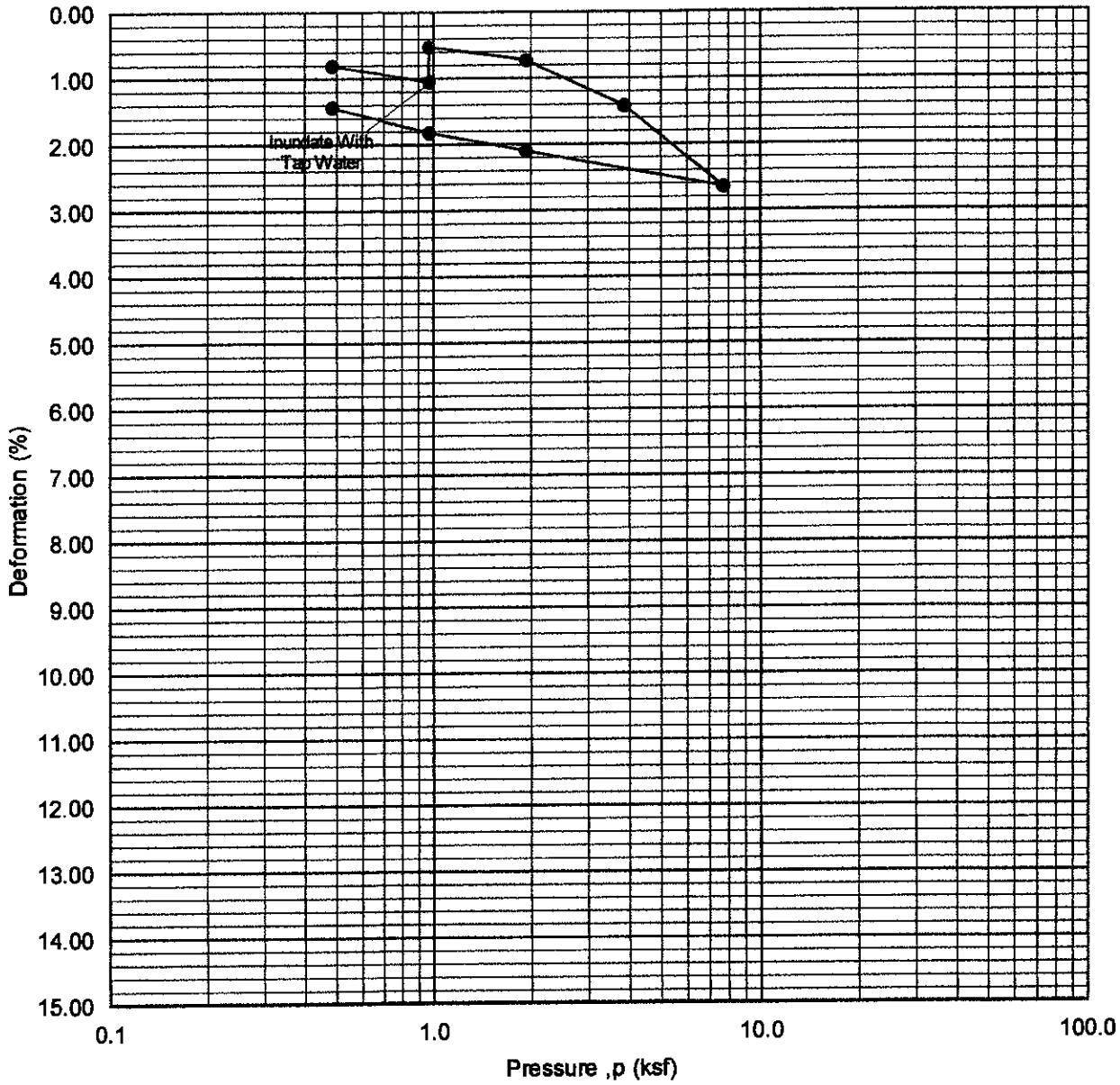


Boring No. : B-8
Depth (ft.) : 10.0
Sample Type: Silty Fine Sand with trace Clay

Dry Density (pcf) = 105.4
Moisture (%) = 12.6

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-9

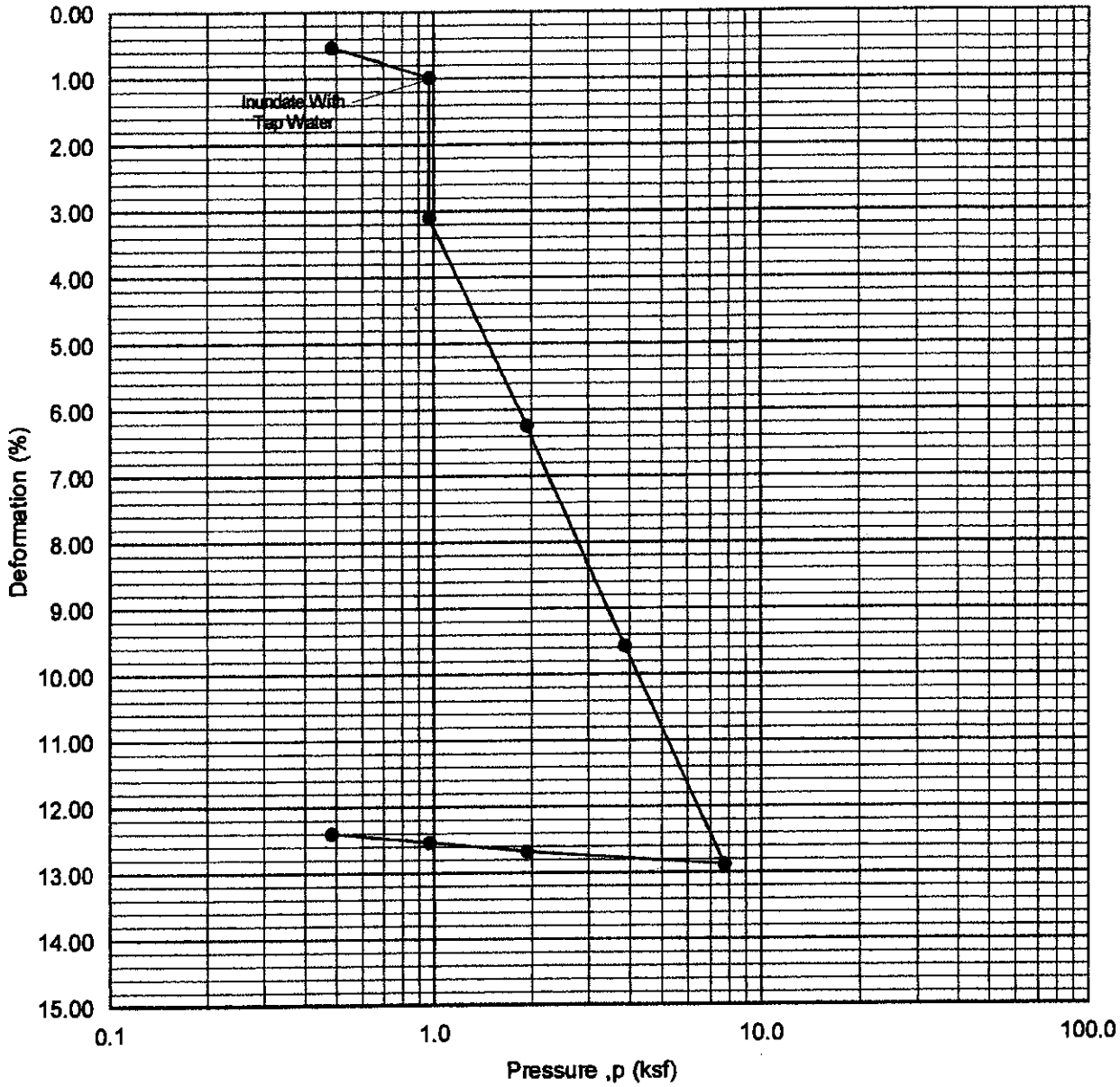


Boring No. : B-8
Depth (ft.) : 15.0
Sample Type: Clayey Fine Sand

Dry Density (pcf) = 118.1
Moisture (%) = 12.4

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-10

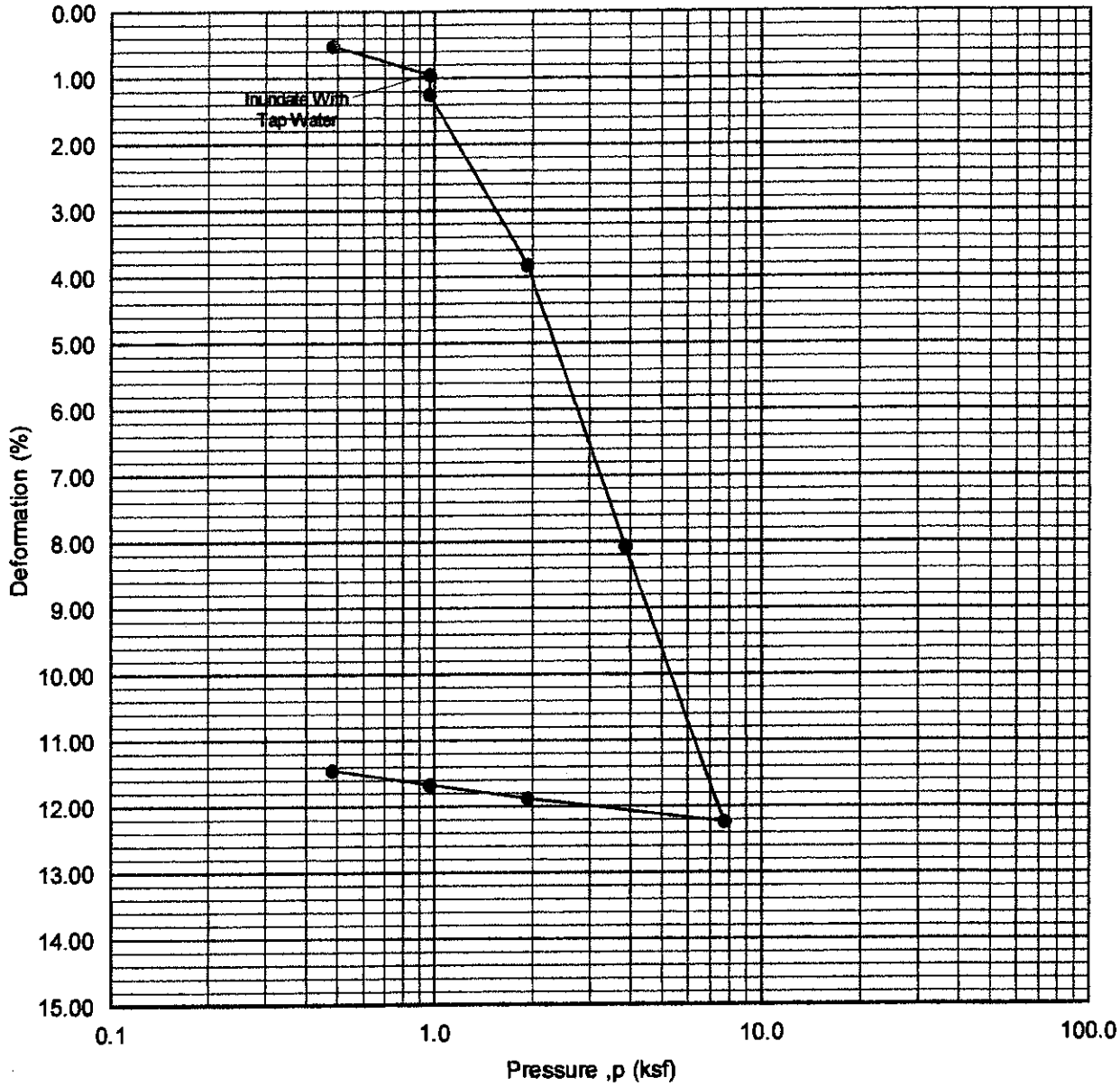


Boring No. : B-11
Depth (ft.) : 7.0
Sample Type: Silty Fine Sand with some Gravel

Dry Density (pcf) = 106.1
Moisture (%) = 4.7

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-11

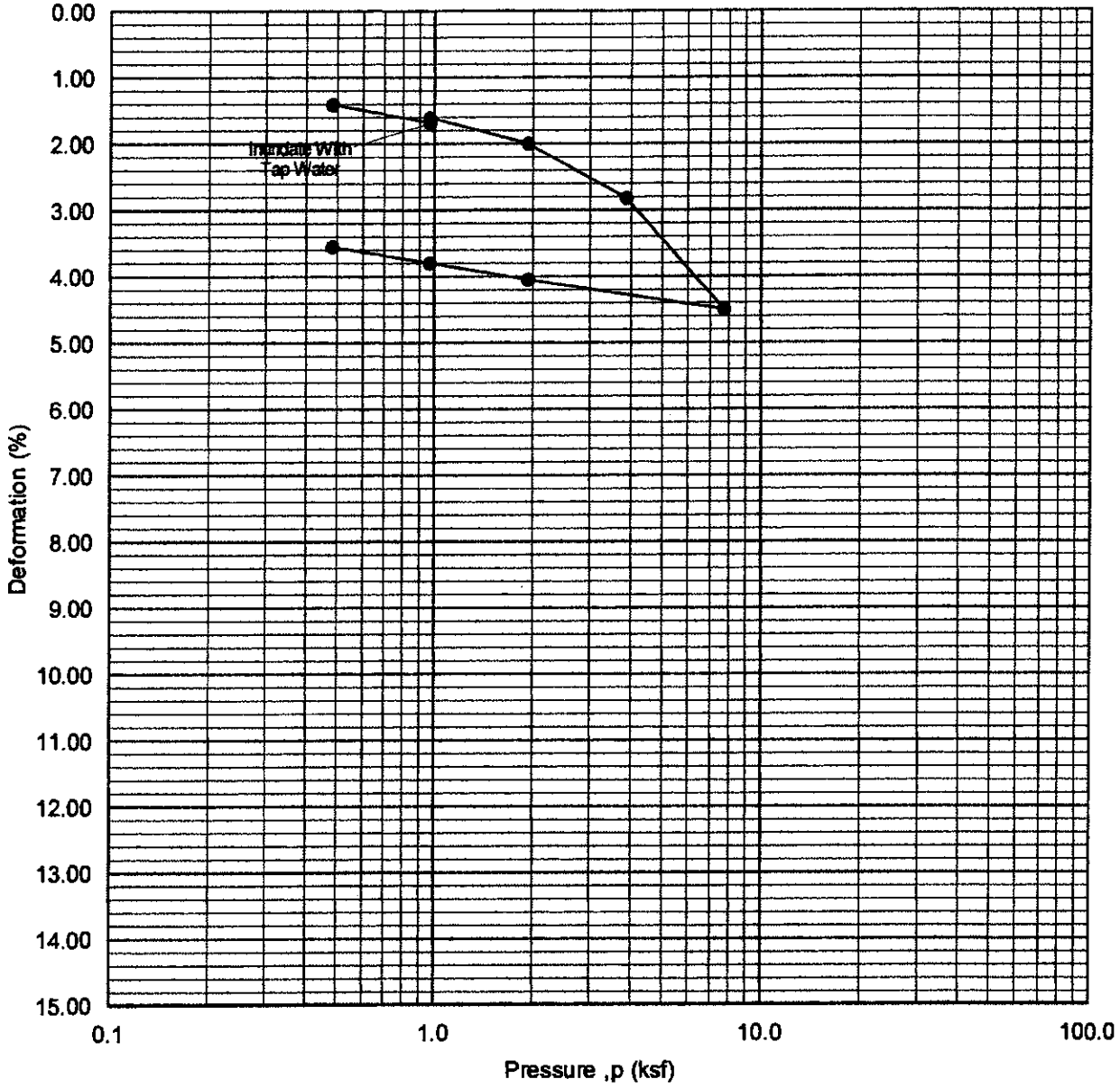


Boring No. : B-11
Depth (ft.) : 15.0
Sample Type: Silty Fine Sand with Clay and some Gravel

Dry Density (pcf) = 103.8
Moisture (%) = 7.5

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-12

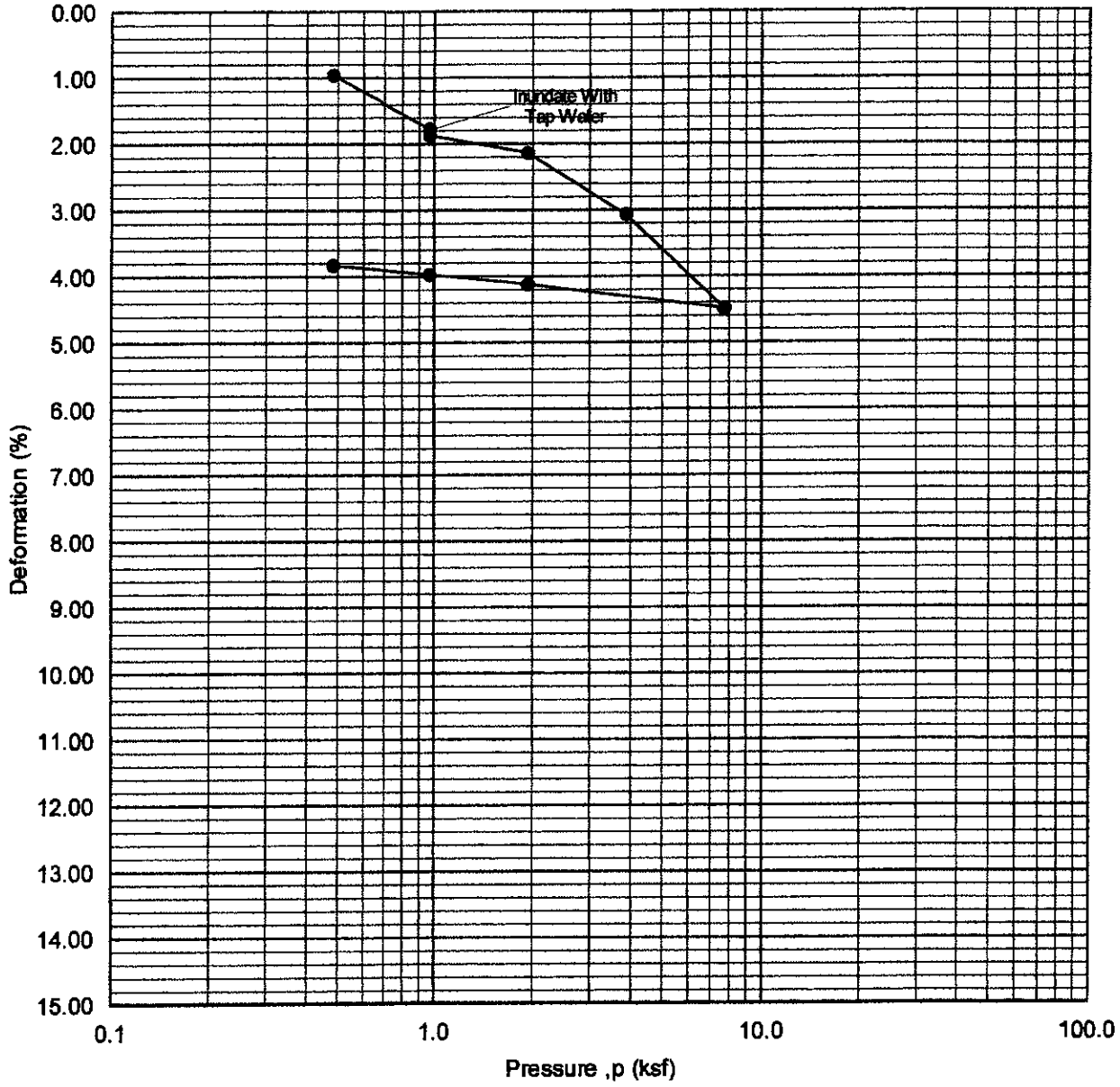


Boring No. : B-17
Depth (ft.) : 10.0
Sample Type: Clayey Fine to Medium Sand

Dry Density (pcf) = 117.4
Moisture (%) = 12.4

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-13

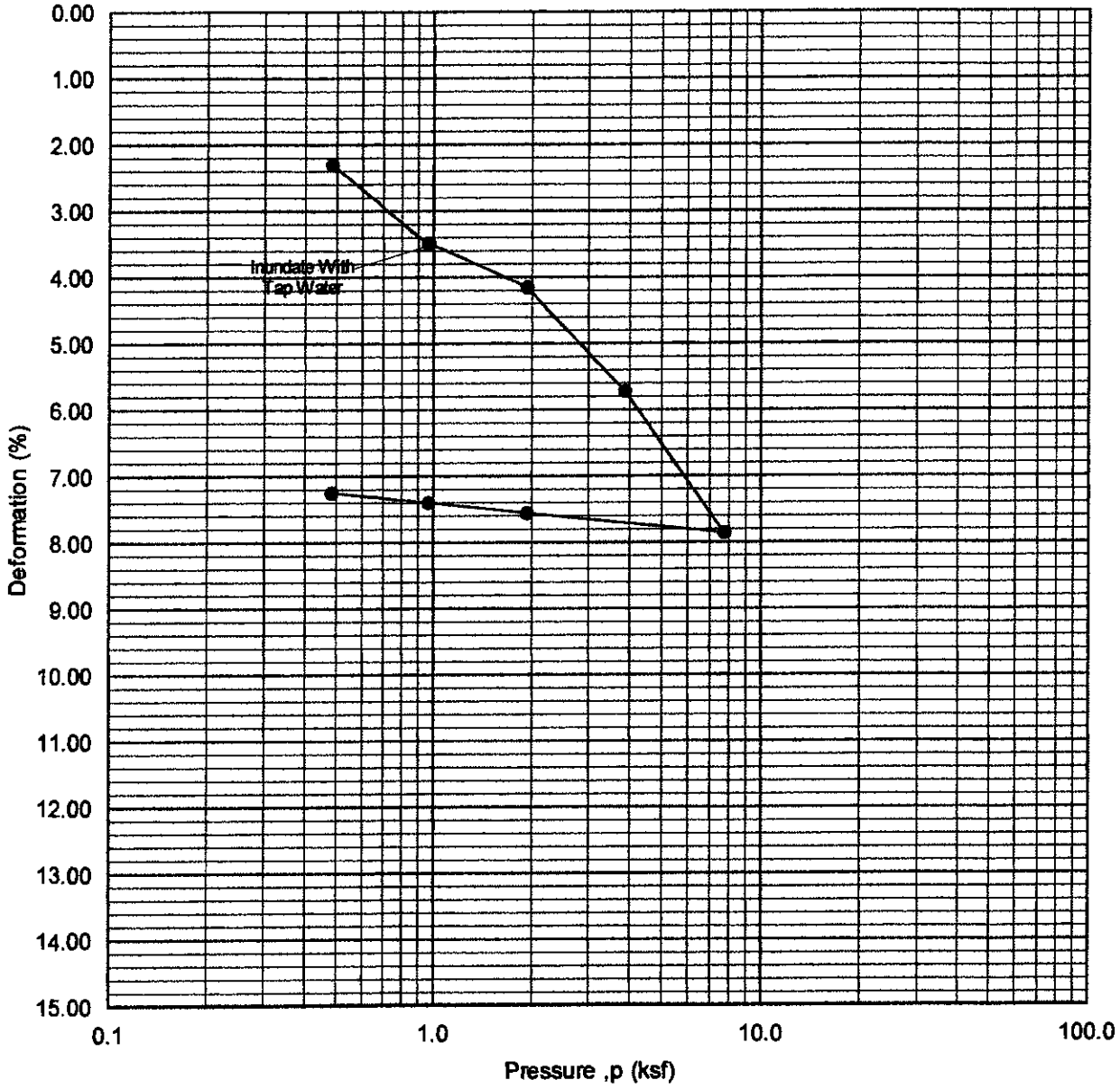


Boring No. : B-17
Depth (ft.) : 15.0
Sample Type: Clayey Fine to Medium Sand

Dry Density (pcf) = 117.1
Moisture (%) = 14.3

Project Name: Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-14

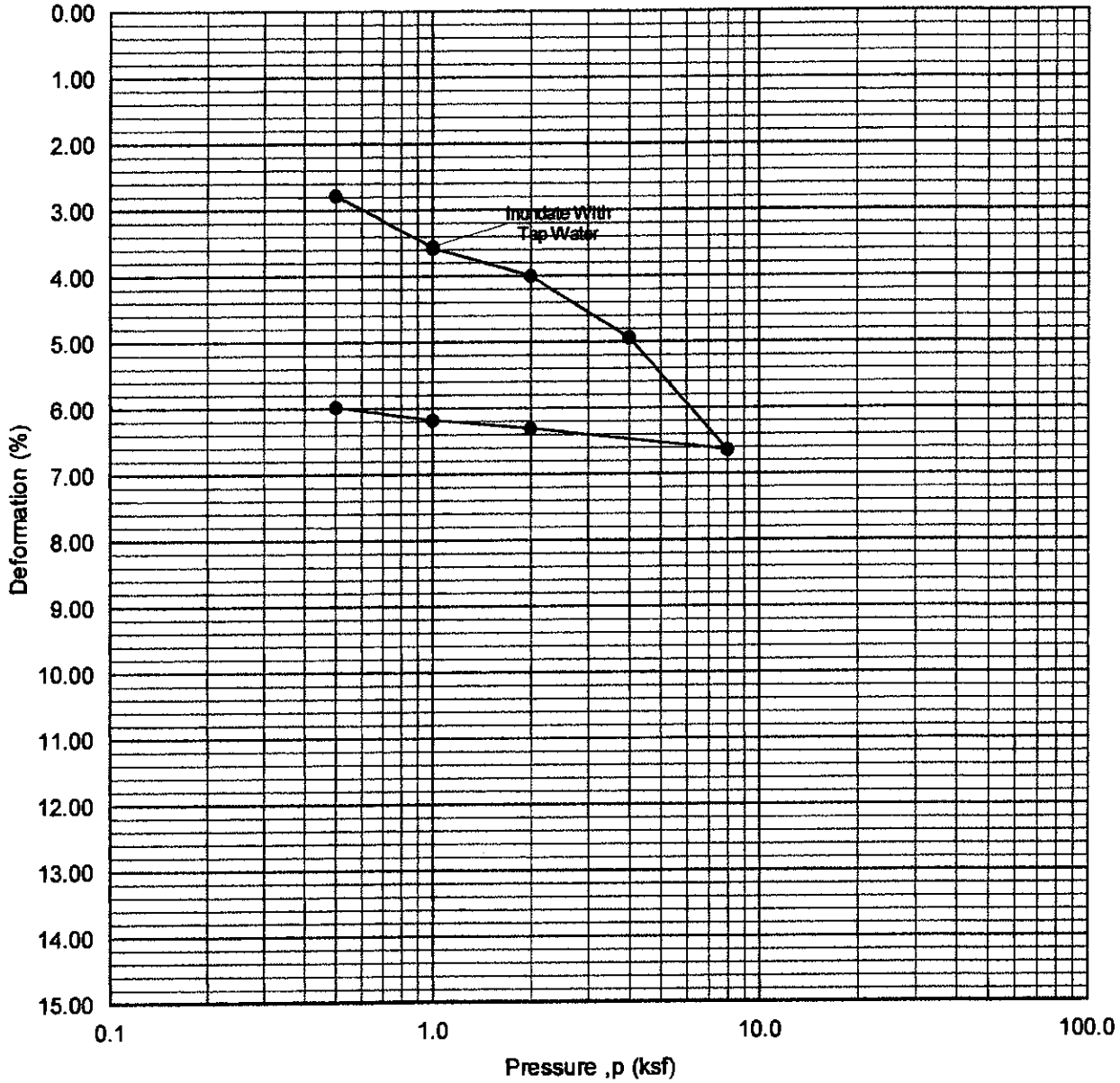


Boring No. : B-18
Depth (ft.) : 10.0
Sample Type: Silty Fine to Medium Sand with Gravel and trace Clay

Dry Density (pcf) = 121.1
Moisture (%) = 5.2

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-15

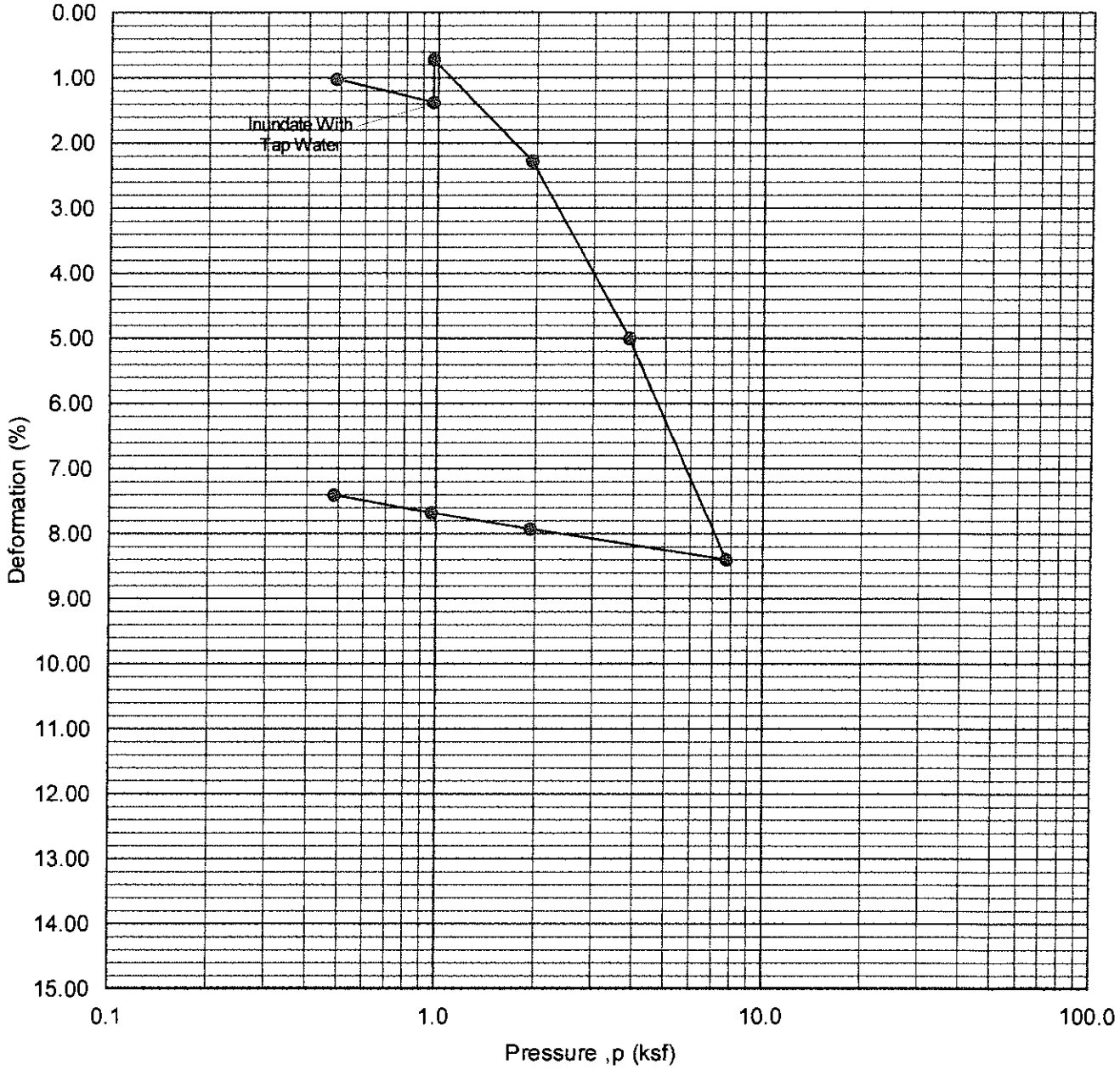


Boring No. : B-18
Depth (ft.) : 20.0
Sample Type: Fine to Medium Sandy Clay

Dry Density (pcf) = 115.5
Moisture (%) = 16.3

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-16

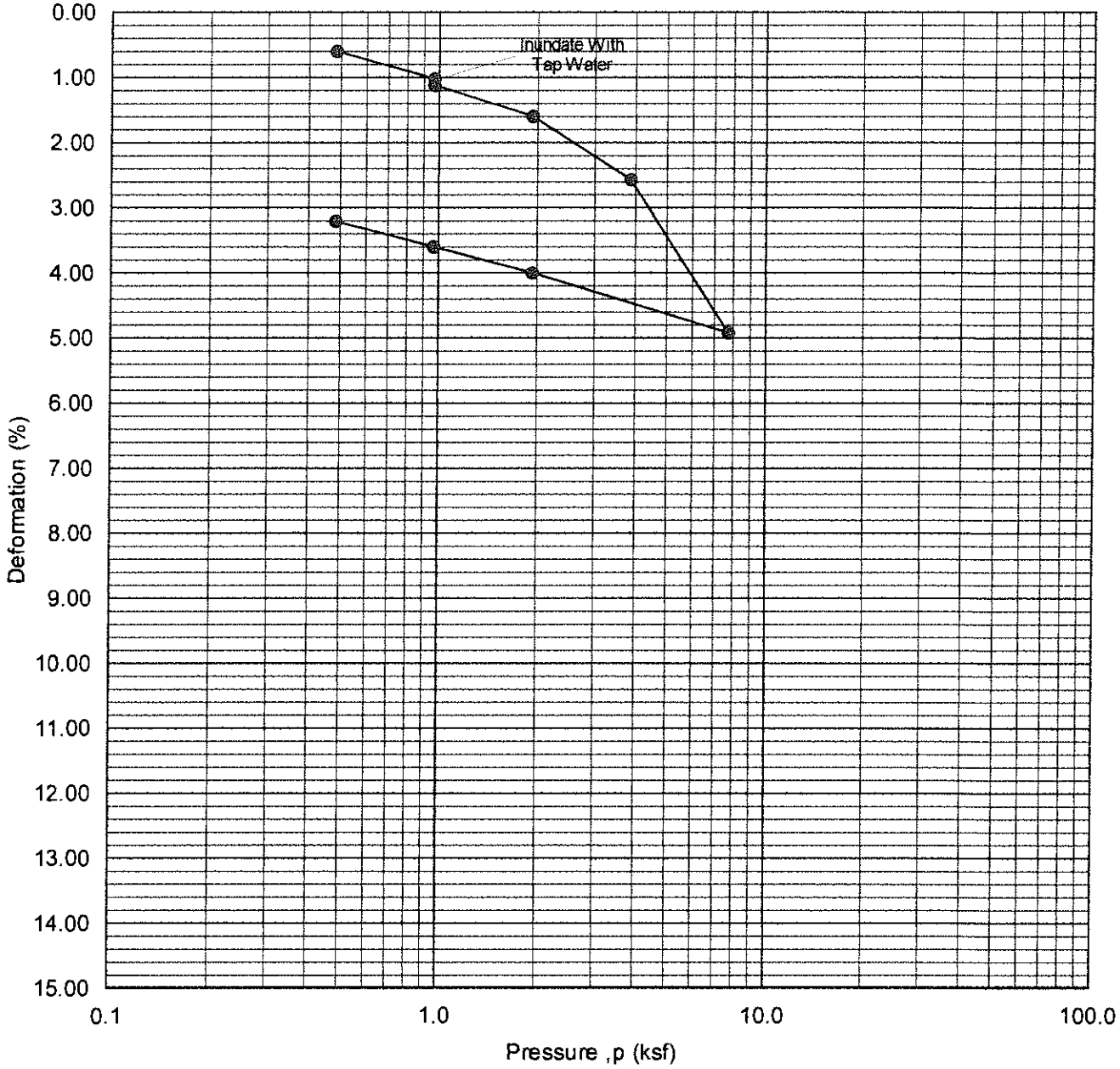


Boring No. : B-19
Depth (ft.) : 7.0
Sample Type: Clayey Fine Sand with some Gravel-size rock pieces

Dry Density (pcf) = 99.8
Moisture (%) = 11.2

Project Name:The Trails at Corona-Tracts 37500 to 37504	Project No.: 6619.18.1
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-17

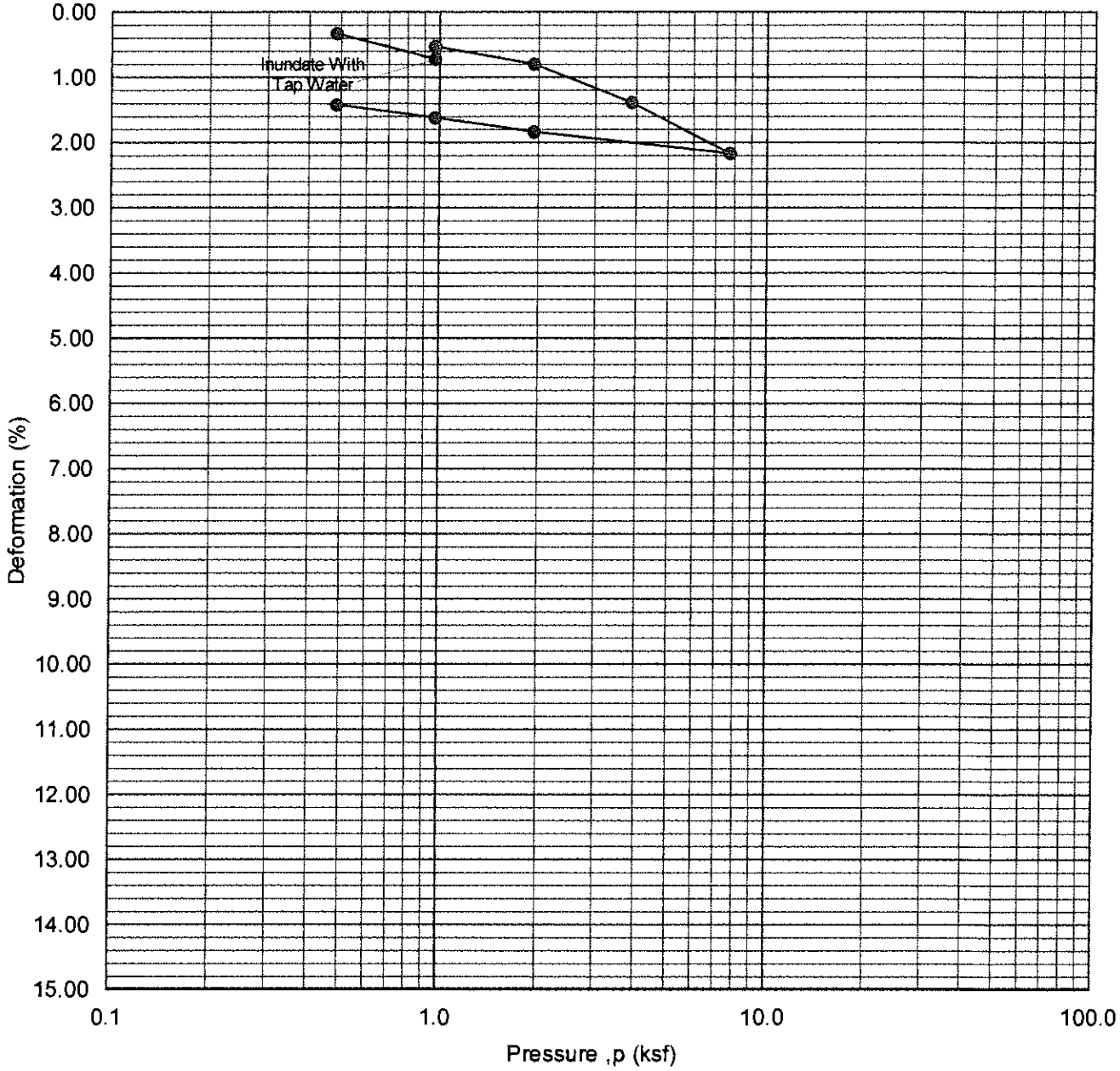


Boring No. : B-19
Depth (ft.) : 10.0
Sample Type: Silty Fine Sand with Clay

Dry Density (pcf) = 113.4
Moisture (%) = 11.1

Project Name:The Trails at Corona-Tracts 37500 to 37504	Project No.: 6619.18.1
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-18

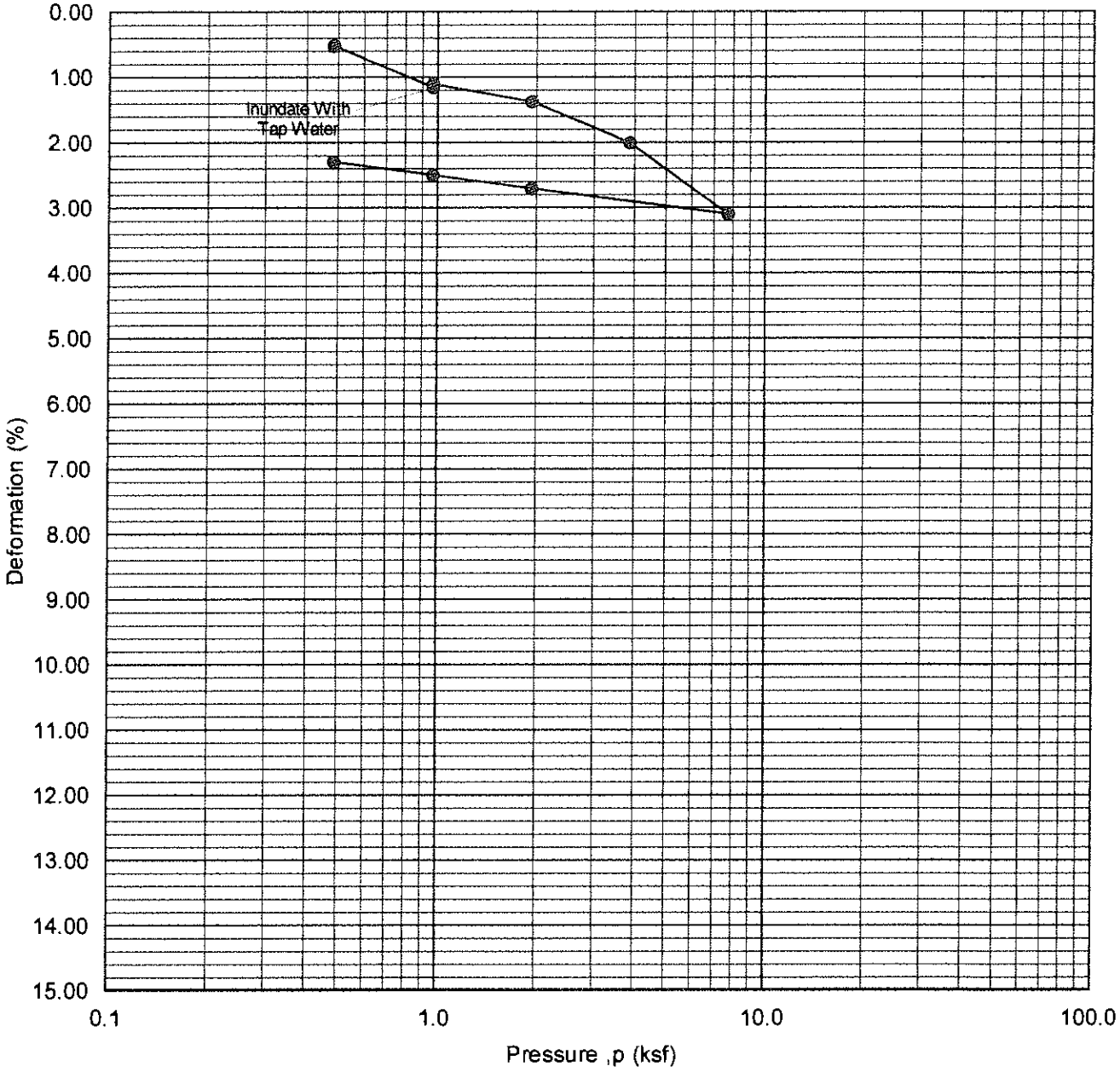


Boring No. : B-20
Depth (ft.) : 10.0
Sample Type: Silty Fine Sand with Clay and some Gravel-size rock pieces

Dry Density (pcf) = 119.4
Moisture (%) = 10.0

Project Name:The Trails at Corona-Tracts 37500 to 37504	Project No.: 6619.18.1
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-19

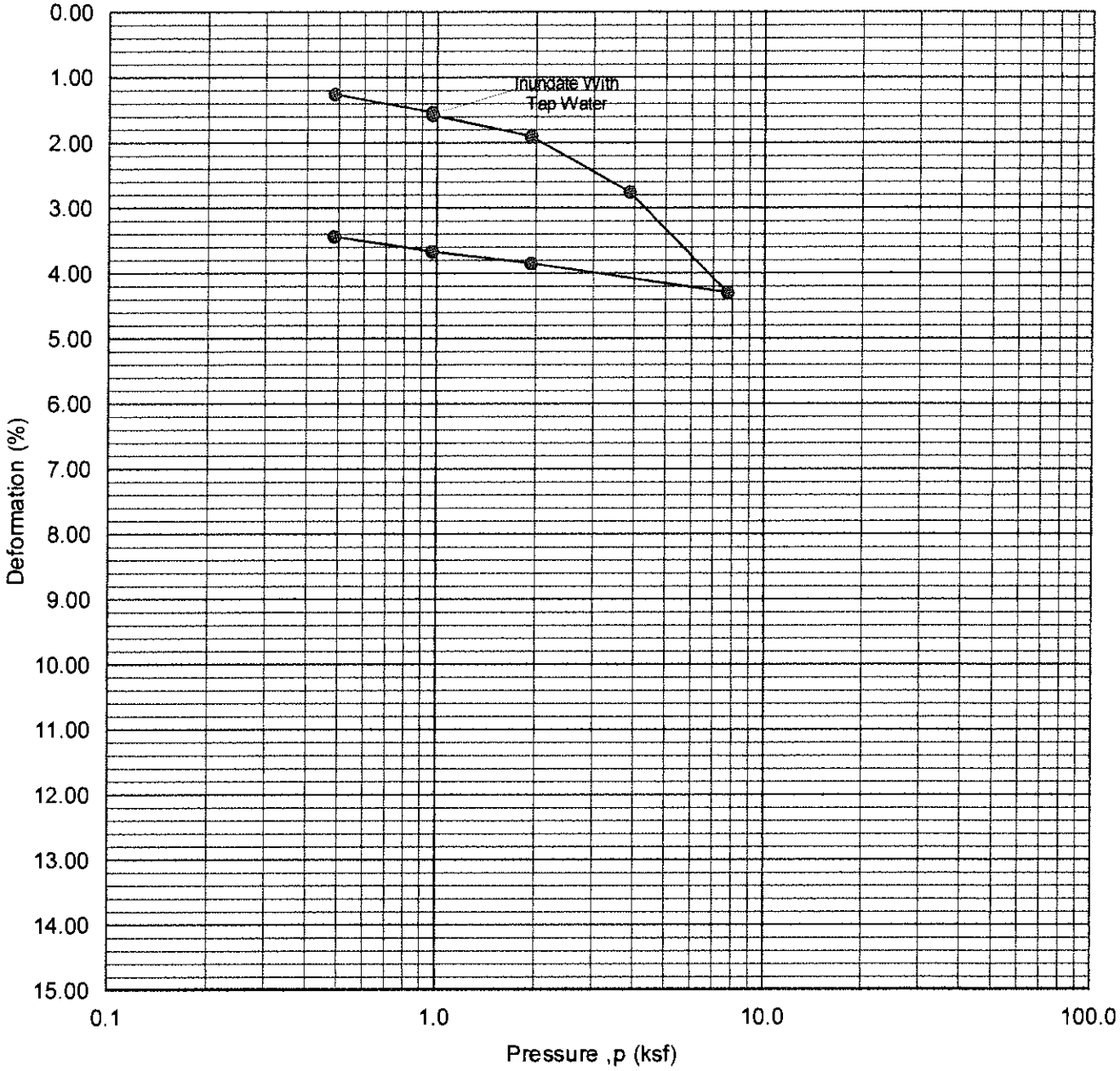


Boring No. : B-21
Depth (ft.) : 7.0
Sample Type: Clayey Fine Sand

Dry Density (pcf) = 118.3
Moisture (%) = 12.4

Project Name:The Trails at Corona-Tracts 37500 to 37504	Project No.: 6619.18.1
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-20

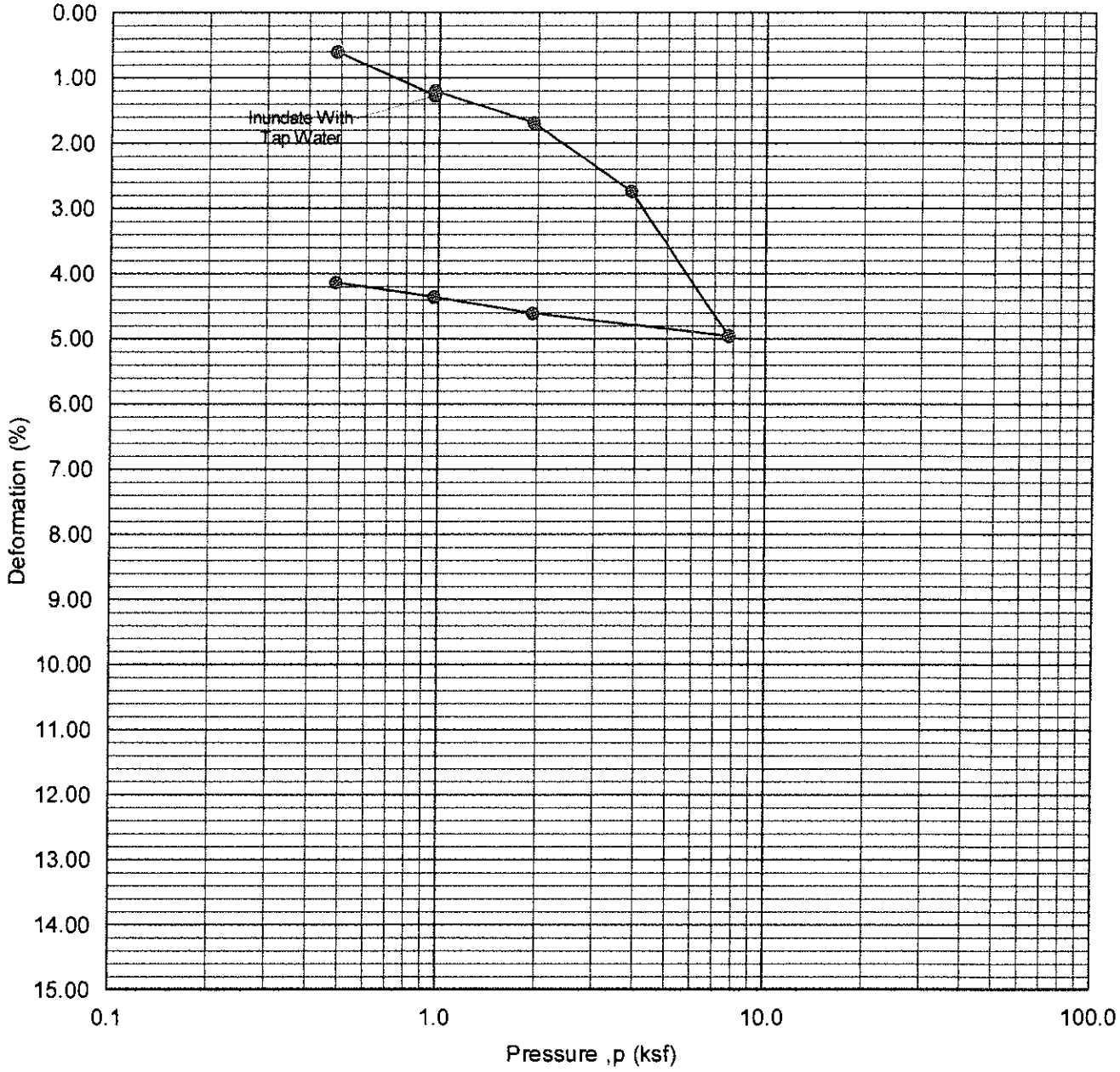


Boring No. : B-21
Depth (ft.) : 10.0
Sample Type: Clayey Fine Sand with trace Gravel-size rock pieces

Dry Density (pcf) = 113.5
Moisture (%) = 13.0

Project Name:The Trails at Corona-Tracts 37500 to 37504	Project No.: 6619.18.1
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-21

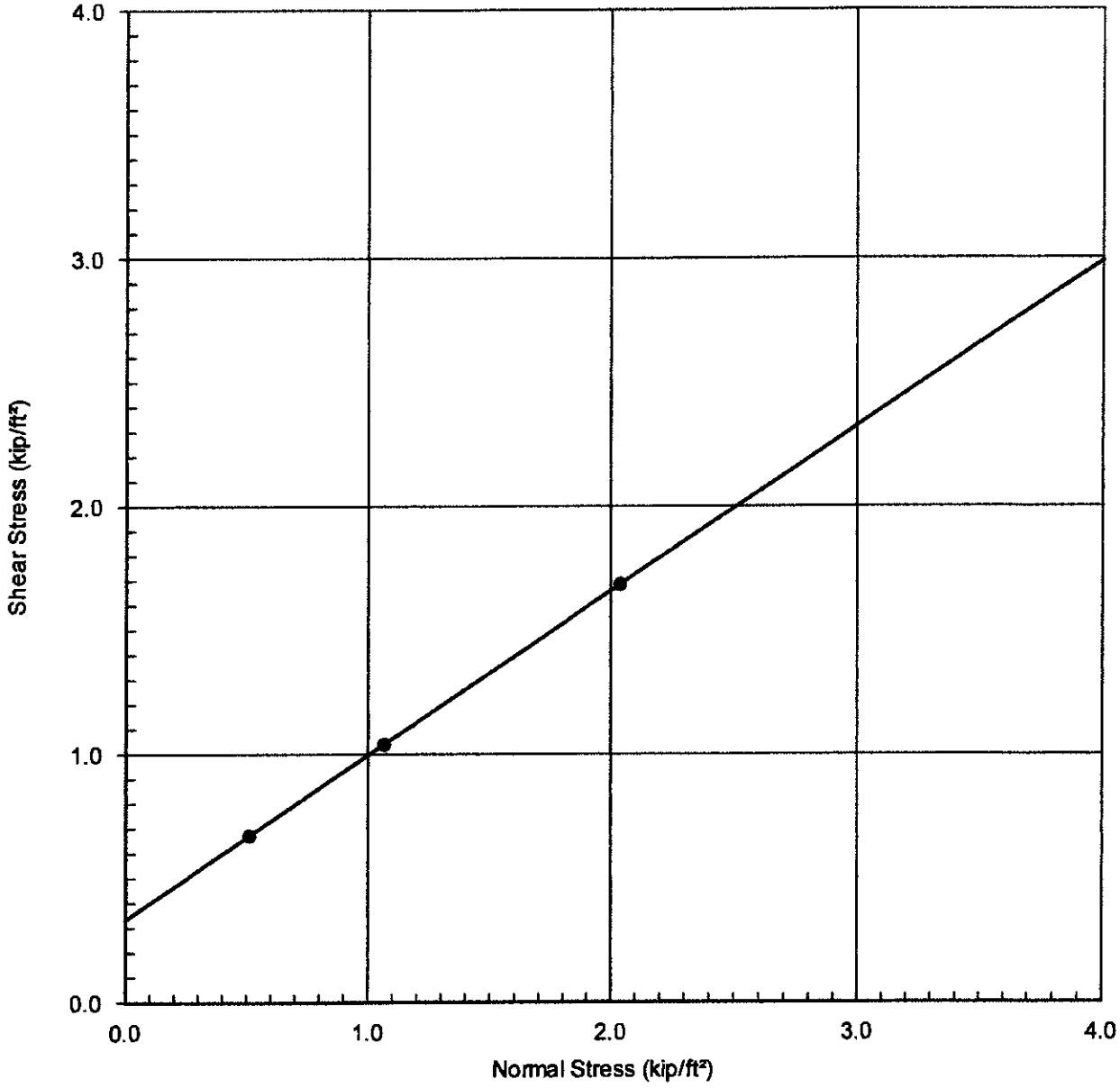


Boring No. : B-22
Depth (ft.) : 10.0
Sample Type: Clayey Fine Sand

Dry Density (pcf) = 112.4
Moisture (%) = 14.3

Project Name:The Trails at Corona-Tracts 37500 to 37504	Project No.: 6619.18.1
ASSOCIATED SOILS ENGINEERING, INC.	ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D 2435)

PLATE C-22

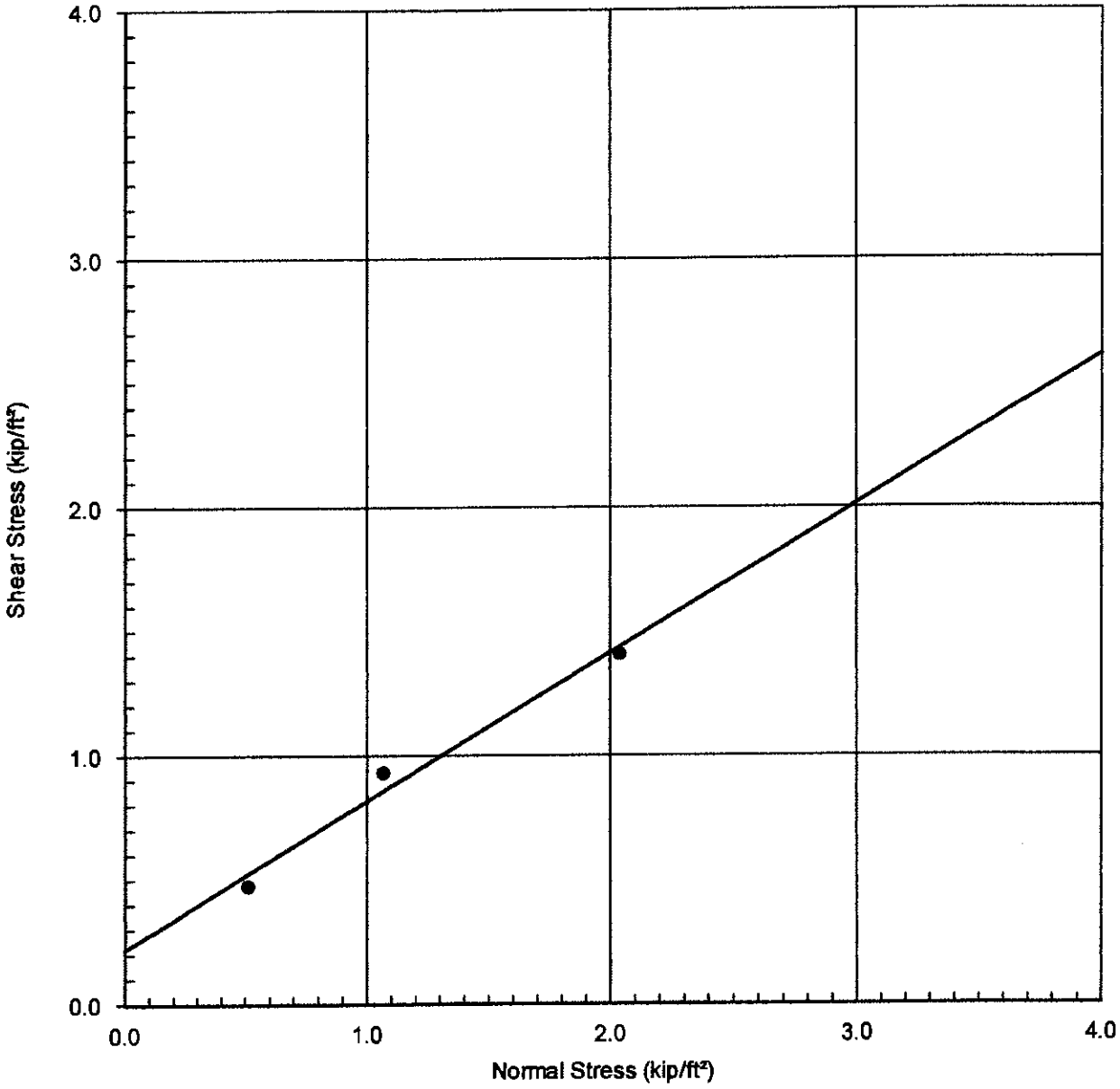


Boring No. : B-1
Depth (ft.) : 7.0
Sample Type : Relatively Undisturbed
Soil Type : Silty Clay with Fine Sand and some Gravel

Cohesion(C) = 330 psf
Friction (ϕ) = 33.5°
Dry Density (pcf) = 105.5
Moisture (%) = 15.6

Project Name: Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS (ASTM D 3080)

PLATE D-1

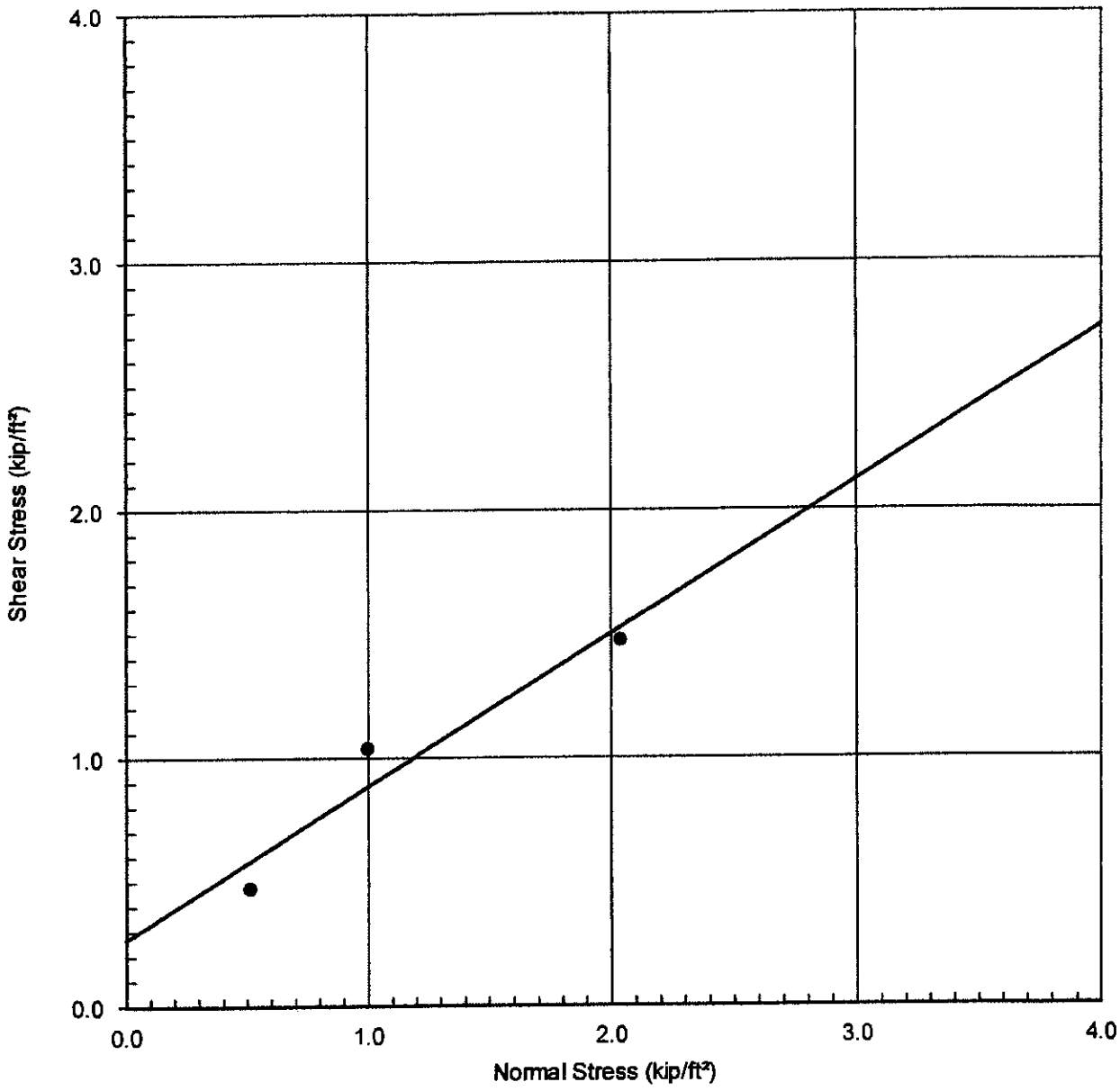


Boring No. : B-2
Depth (ft.) : 3.0
Sample Type : Relatively Undisturbed
Soil Type : Clayey Fine to Medium Sand with trace Gravel

Cohesion(C) = 215 psf
Friction (ϕ) = 30.5°
Dry Density (pcf) = 109.8
Moisture (%) = 10.4

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS (ASTM D 3080)

PLATE D-2

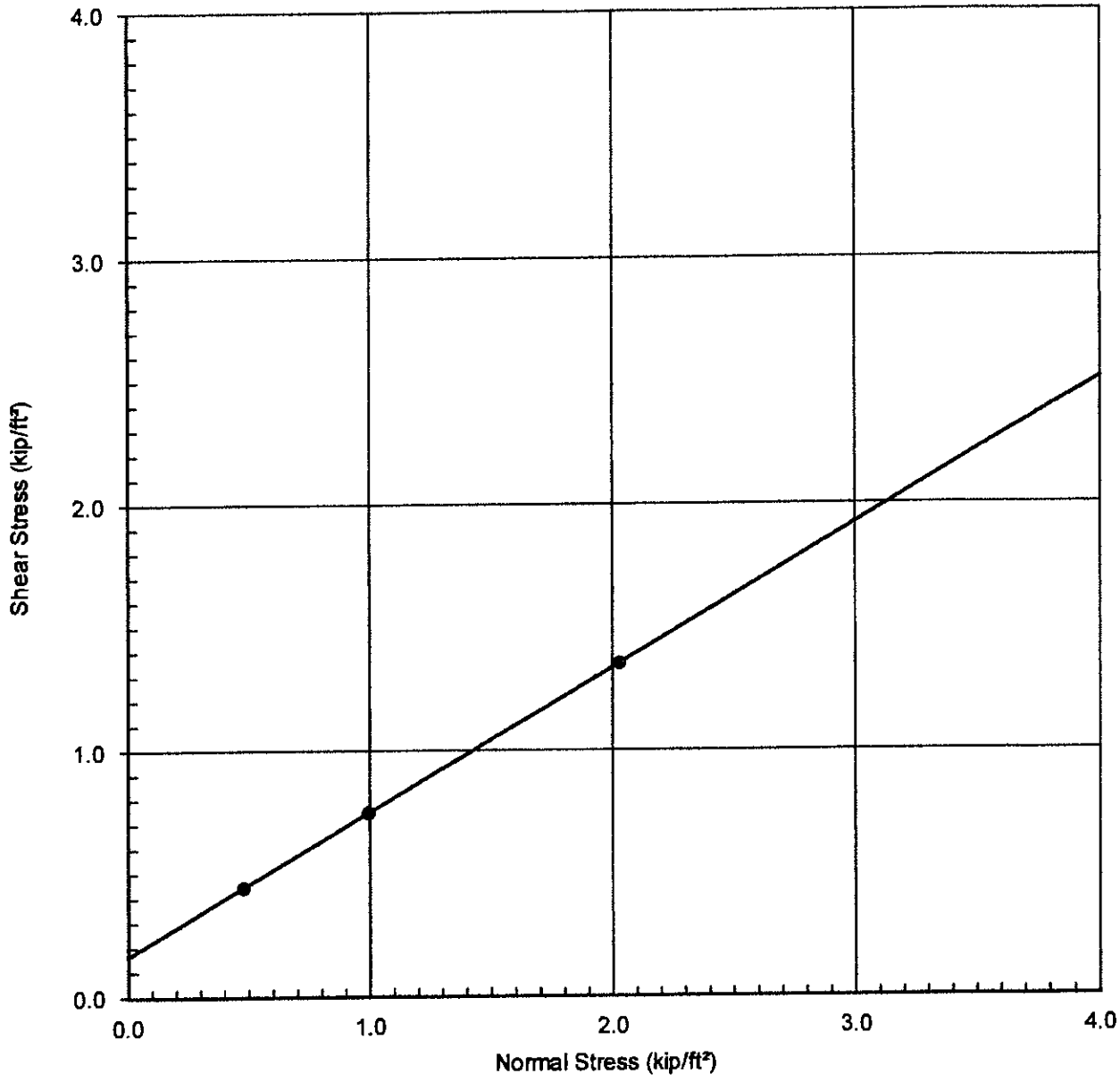


Boring No. : B-3
Depth (ft.) : 7.0
Sample Type : Relatively Undisturbed
Soil Type : Clayey Fine to Medium Sand with some Gravel

Cohesion(C) = 265 psf
Friction (ϕ) = 31.5°
Dry Density (pcf) = 110.0
Moisture (%) = 7.5

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS (ASTM D 3080)

PLATE D-3

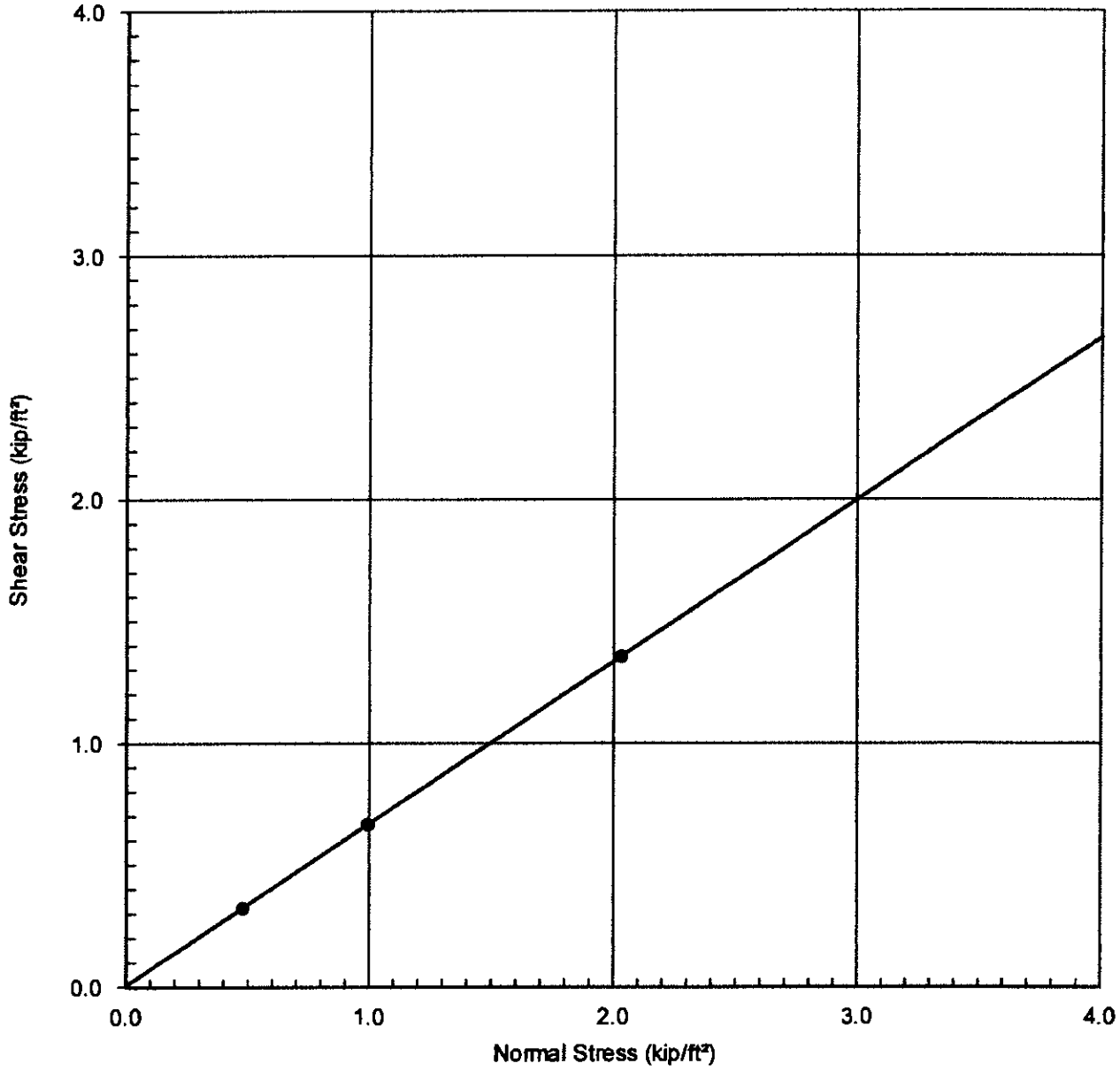


Boring No. : B-1
Depth (ft.) : 1-5
Sample Type : Remolded (90% of Maximum Density)
Soil Type : Clayey Fine to Medium Sand with Gravel

Cohesion(C) = 165 psf
Friction (ϕ) = 30°
Dry Density (pcf) = 118.8
Moisture (%) = 9.0

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS (ASTM D 3080)

PLATE D-4

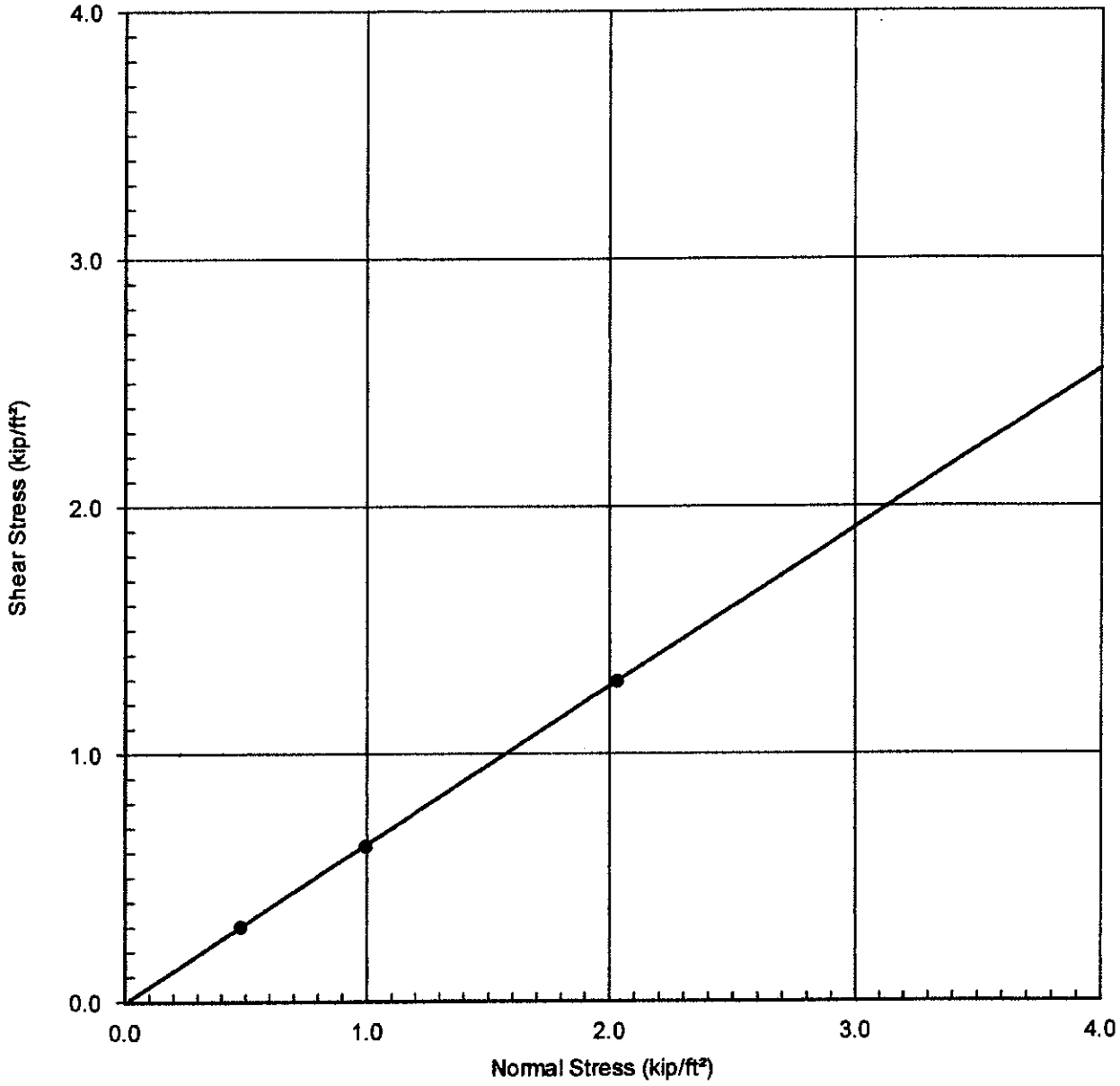


Boring No. : B-5
Depth (ft.) : 0-5
Sample Type : Remolded (90% of Maximum Density)
Soil Type : Silty Fine Sand with trace Clay

Cohesion(C) = 5 psf
Friction (ϕ) = 33.5°
Dry Density (pcf) = 115.2
Moisture (%) = 10.5

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS (ASTM D 3080)

PLATE D-5

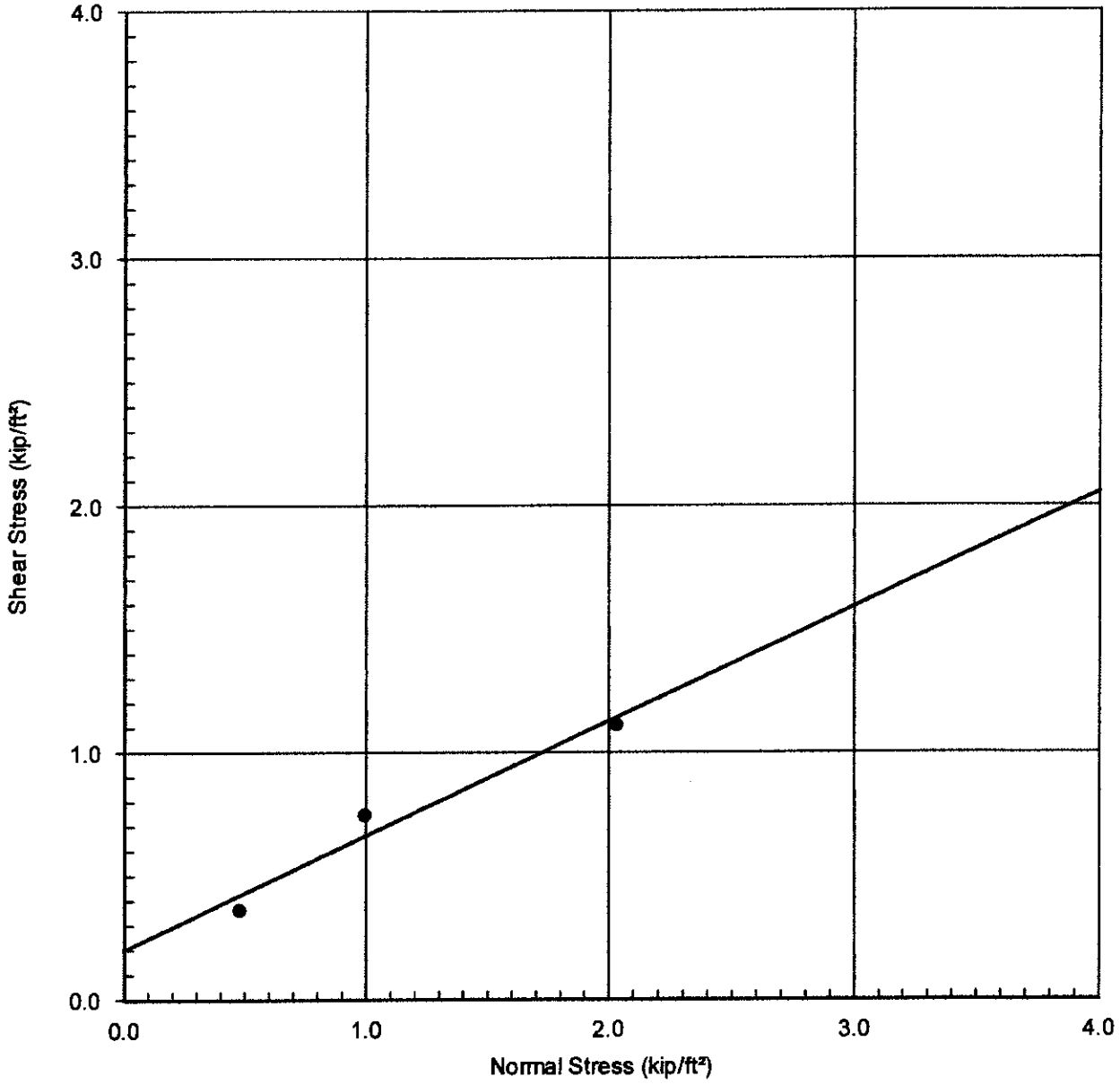


Boring No. : Boring B-6
Depth (ft.) : 0-5
Sample Type : Remolded (90% of Maximum Density)
Soil Type : Silty Fine Sand

Cohesion(C) = 0 psf
Friction (ϕ) = 32.5°
Dry Density (pcf) = 107.1
Moisture (%) = 13.5

Project Name: Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS (ASTM D 3080)

PLATE D-6

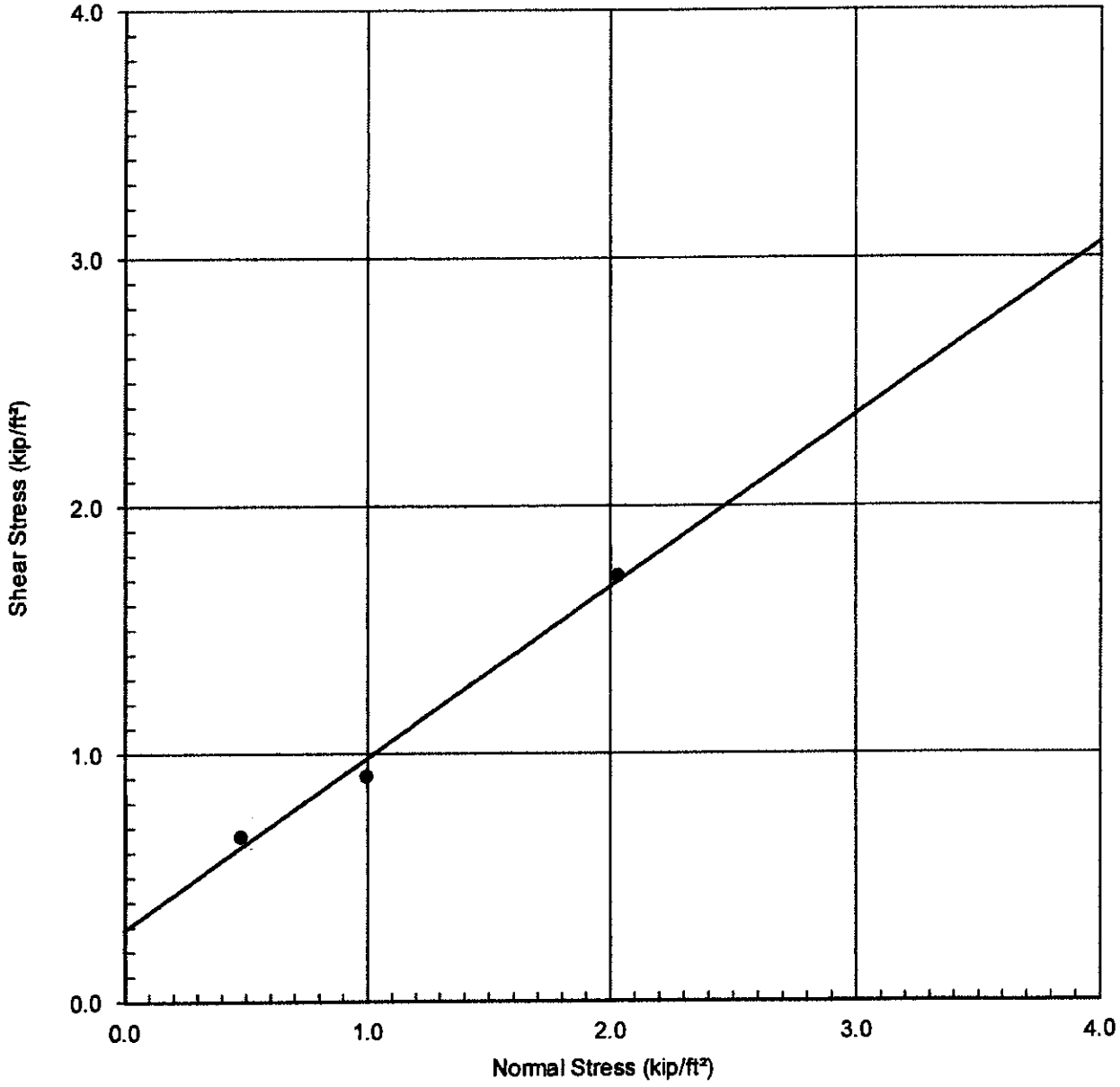


Boring No. : Boring B-7
Depth (ft.) : 0-5
Sample Type : Remolded (90% of Maximum Density)
Soil Type : Fine Sandy Silt with Clay

Cohesion(C) = 200 psf
Friction (ϕ) = 24.5°
Dry Density (pcf) = 101.7
Moisture (%) = 18.0

Project Name: Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS (ASTM D 3080)

PLATE D-7

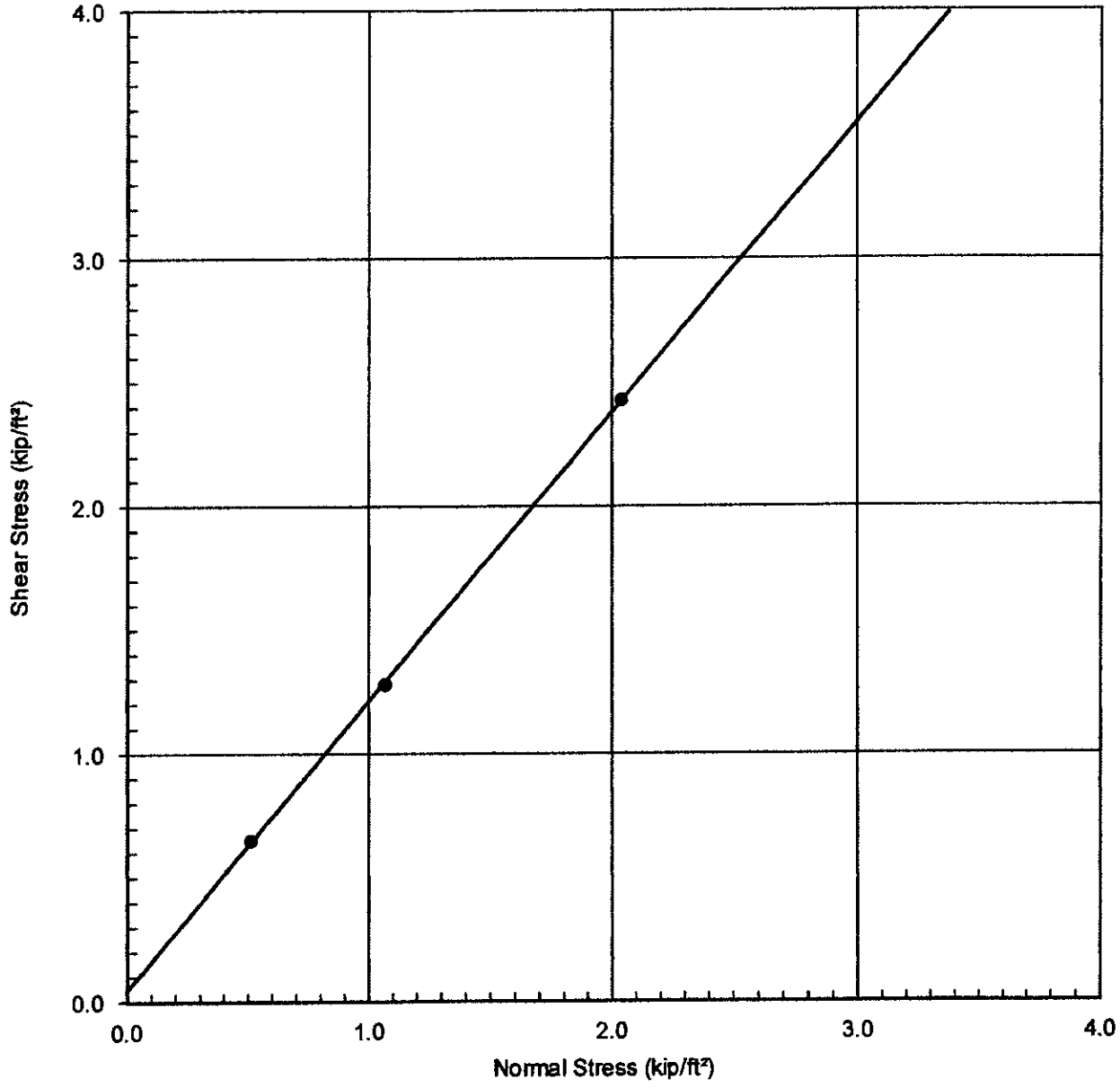


Boring No. : B-11
Depth (ft.) : 0-5
Sample Type : Remolded (90% of Maximum Density)
Soil Type : Silty Fine Sand with Gravel

Cohesion(C) = 290 psf
Friction (ϕ) = 34.5°
Dry Density (pcf) = 119.3
Moisture (%) = 8.5

Project Name: Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS (ASTM D 3080)

PLATE D-8

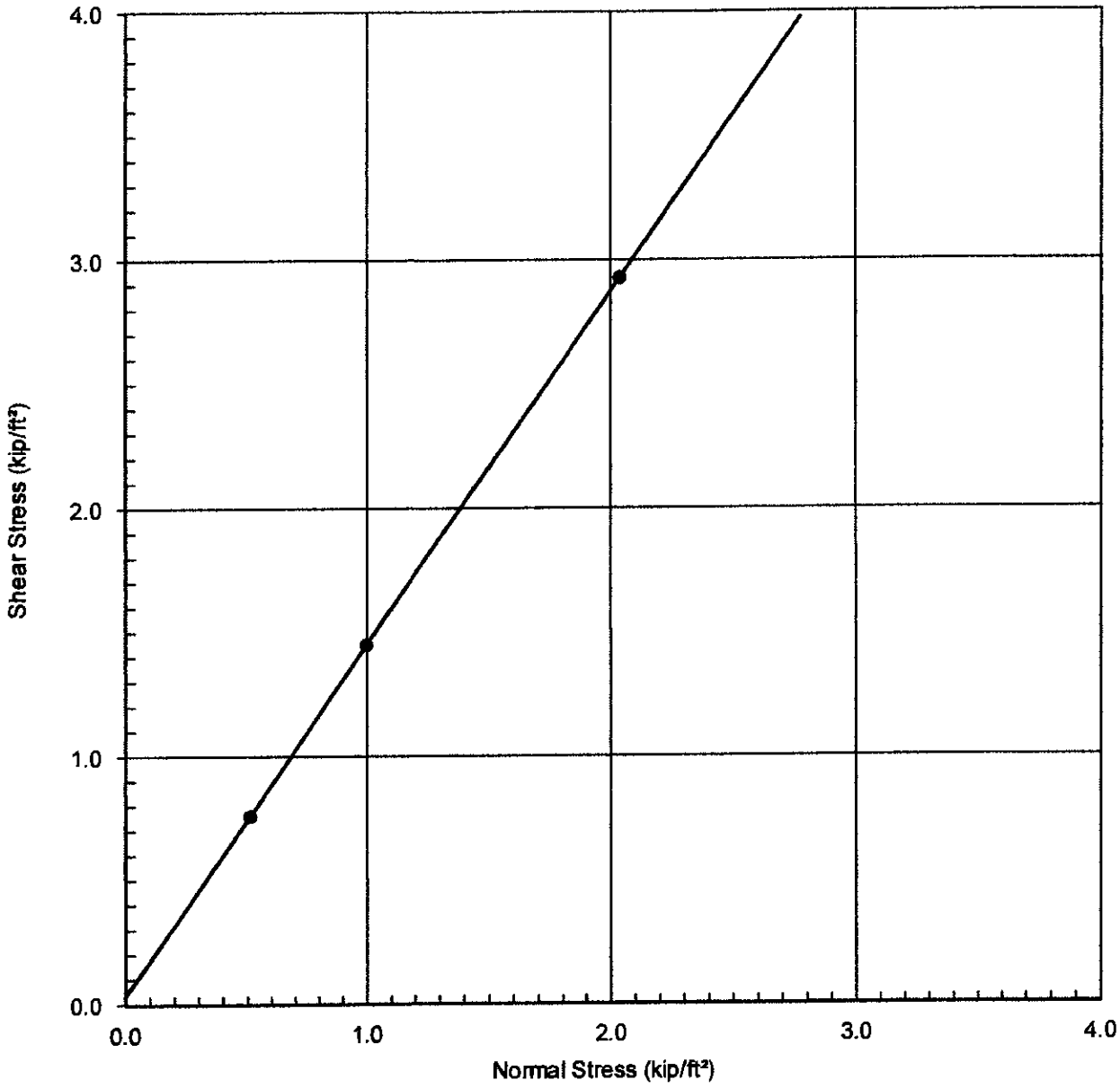


Boring No. : B-13
Depth (ft.) : 5.0
Sample Type : Relatively Undisturbed
Soil Type : Clayey Fine to Medium Sand with Gravel

Cohesion(C) = 45 psf
Friction (ϕ) = 49°
Dry Density (pcf) = 113.0
Moisture (%) = 8.1

Project Name: Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS (ASTM D 3080)

PLATE D-9

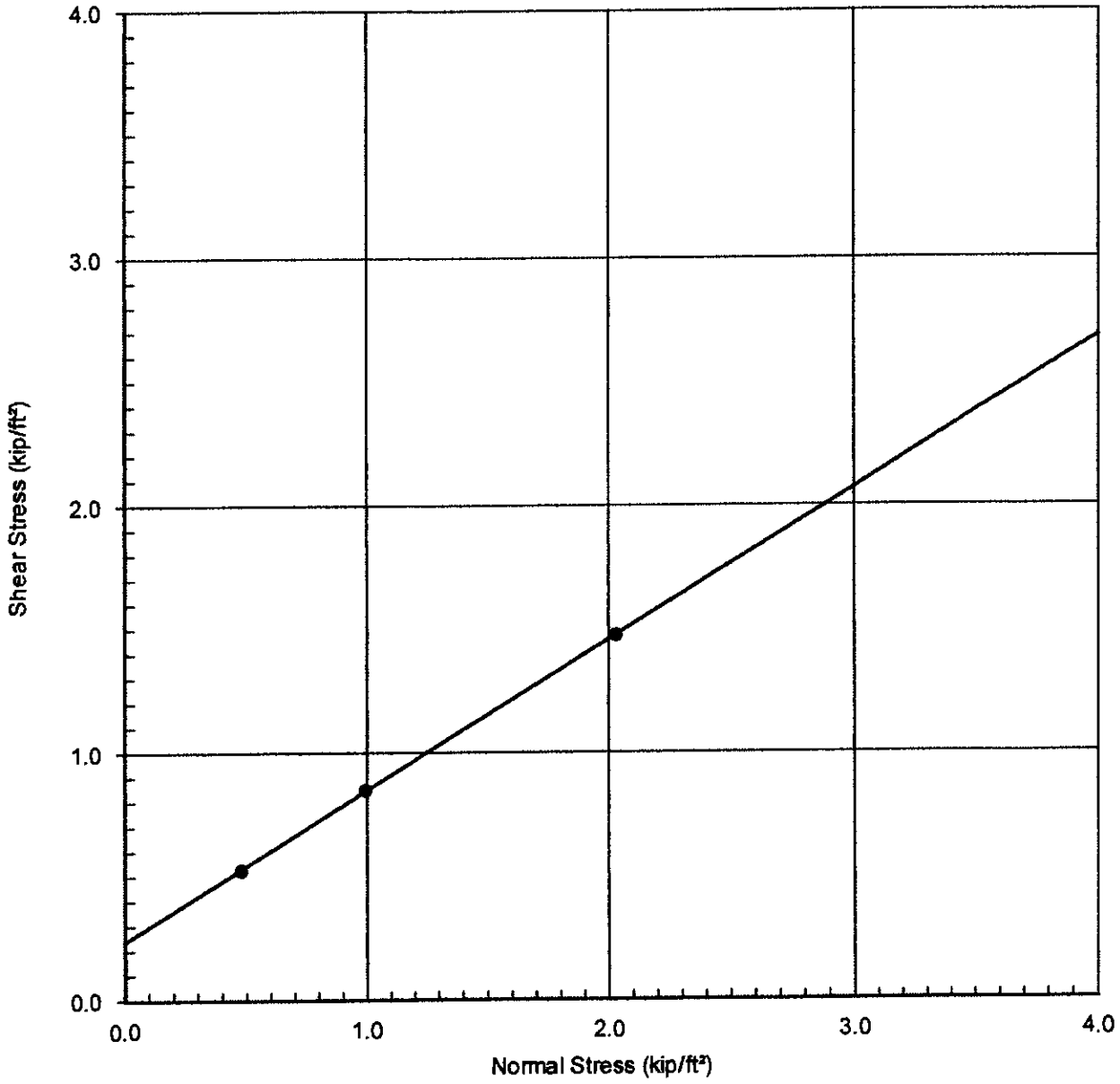


Boring No. : B-15
Depth (ft.) : 10.0
Sample Type : Relatively Undisturbed
Soil Type : Silty Fine to Medium Sand with Gravel

Cohesion(C) = 30 psf
Friction (ϕ) = 54.5°
Dry Density (pcf) = 111.3
Moisture (%) = 8.3

Project Name:Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS (ASTM D 3080)

PLATE D-10

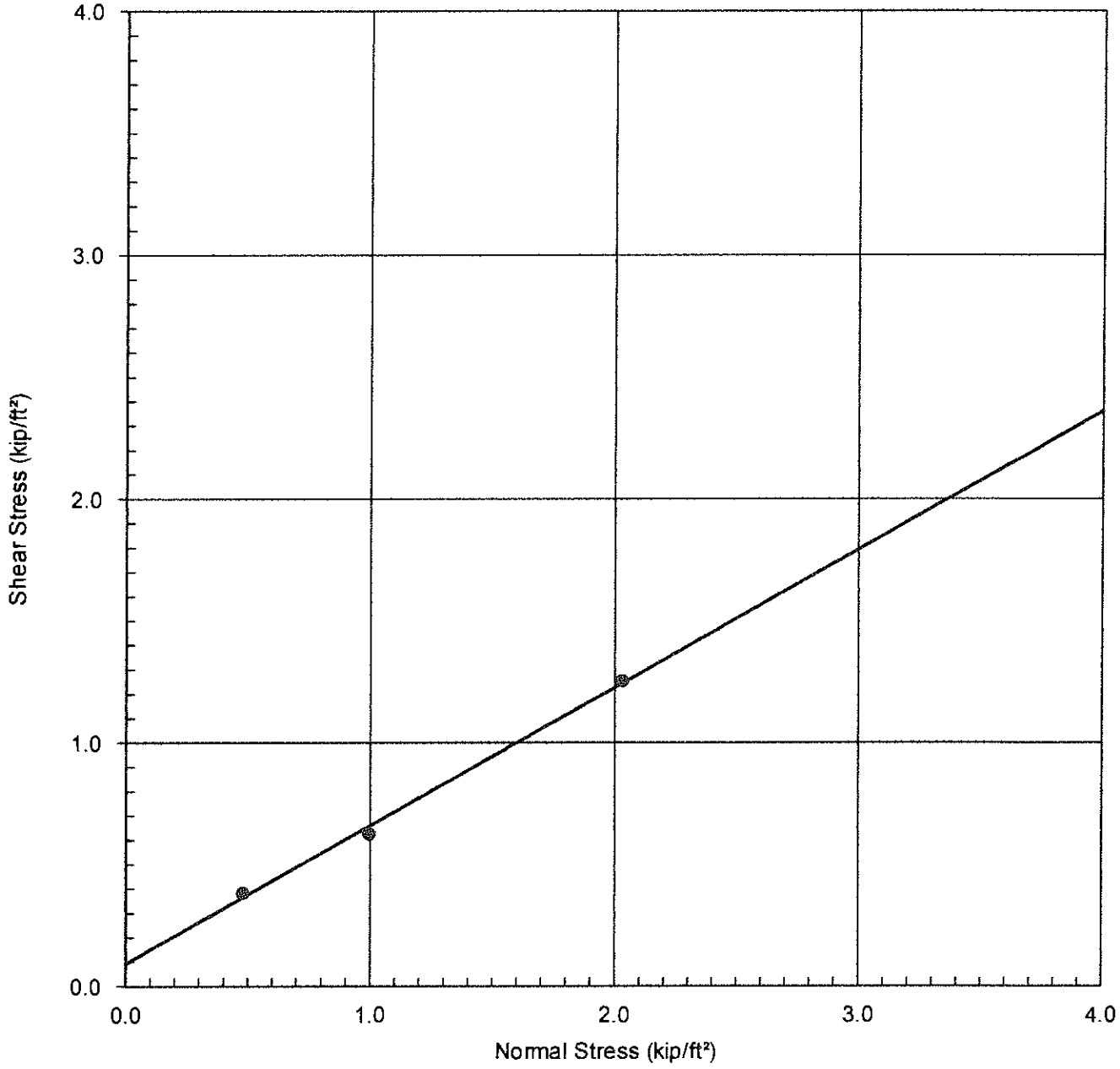


Boring No. : B-17
Depth (ft.) : 0-5
Sample Type : Remolded (90% of Maximum Density)
Soil Type : Silty Fine to Medium Sand with Clay

Cohesion(C) = 235 psf
Friction (ϕ) = 31°
Dry Density (pcf) = 113.0
Moisture (%) = 10.0

Project Name: Redevelopment of Mountain View Golf Course-Corona	Project No.: 6619.16
ASSOCIATED SOILS ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS (ASTM D 3080)

PLATE D11



Boring No. : B-21
Depth (ft.) : 0-5
Sample Type : Remolded (90% of Maximum Density)
Soil Type : Silty Fine Sand with Clay

Cohesion(C) = 90 psf
Friction (ϕ) = 29.5°
Dry Density (pcf) = 119.3
Moisture (%) = 8.5

Project Name:The Trails at Corona-Tracts 37500 to 37504	Project No.: 6619.18.1
ASSOCIATED SOILS ENGINEERING, INC.	DIRECT SHEAR TEST RESULTS (ASTM D 3080)

PLATE D-12

ATTERBERG LIMITS

ASTM D 4318-93

Project Name: Redevelopment of Mountain View Golf Course-2121 Mountain View Drive,Corona
Project No. : 6619.16
Boring No. : B-1
Depth (feet): 1.0-5.0
Visual Sample Description: Clayey Fine to Medium Sand with Gravel (SC)

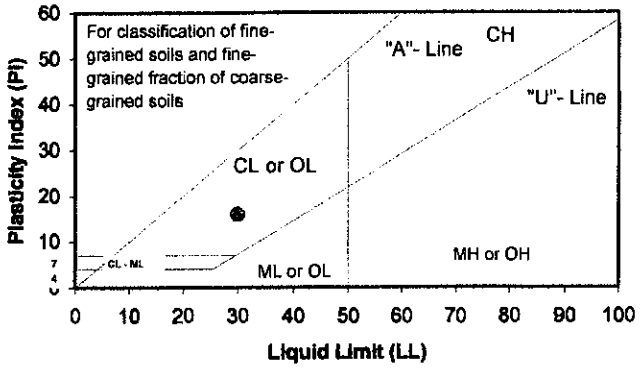
	PLASTIC LIMIT		LIQUID LIMIT			
TEST NO.	1	2	1	2	3	4
Number of Blows [N]			38	28	17	
Container No.	c1	a	A1	B1	C1	
Wet Wt. of Soil + Cont. (gm)	13.39	12.52	16.35	15.75	15.28	
Dry Wt. of Soil + Cont. (gm)	12.31	11.46	15.17	14.72	14.14	
Wt. of Container (gm)	4.30	4.28	11.04	11.24	10.60	
Moisture Content (%) [Wn]	13.48	14.76	28.57	29.60	32.20	

Liquid Limit	**30**
Plastic Limit	**14**
Plasticity Index	**16**
USCS Classification	**CL**

PI at "A" - Line = 0.73(LL-20) = 7.3

One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test

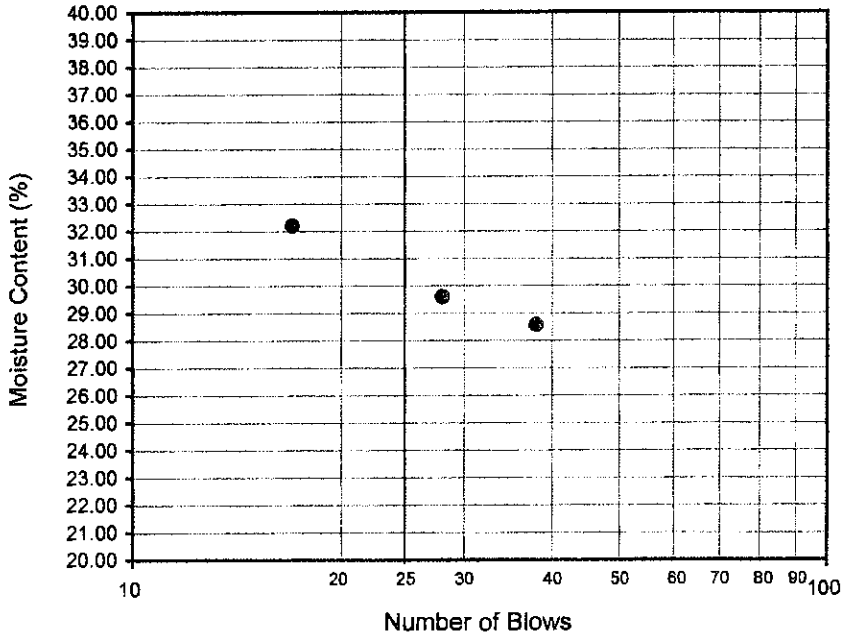


PLATE E-1

ATTERBERG LIMITS

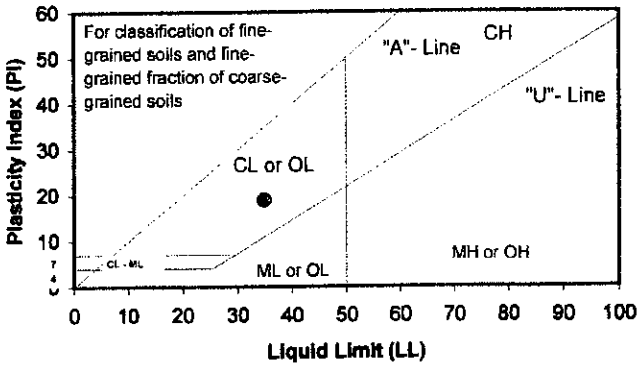
ASTM D 4318-93

Project Name: Redevelopment of Mountain View Golf Course-2121 Mountain View Drive,Corona
Project No. : 6619.16
Boring No. : B-5
Depth (feet): 0-5.0
Visual Sample Description: Silty Fine Sand with trace Clay (SM)

	PLASTIC LIMIT		LIQUID LIMIT			
TEST NO.	1	2	1	2	3	4
Number of Blows [N]			34	27	17	
Container No.	b2	c2	A2	B2	C2	
Wet Wt. of Soil + Cont. (gm)	10.46	11.76	16.32	16.45	15.97	
Dry Wt. of Soil + Cont. (gm)	9.63	10.75	14.91	15.12	14.58	
Wt. of Container (gm)	4.25	4.29	10.76	11.32	10.78	
Moisture Content (%) [Wn]	15.43	15.63	33.98	35.00	36.58	

Liquid Limit	**35**
Plastic Limit	**16**
Plasticity Index	**19**
USCS Classification	**CL**

PI at "A" - Line = 0.73(LL-20) = 10.95
One - Point Liquid Limit Calculation
LL =Wn(N/25)$^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test

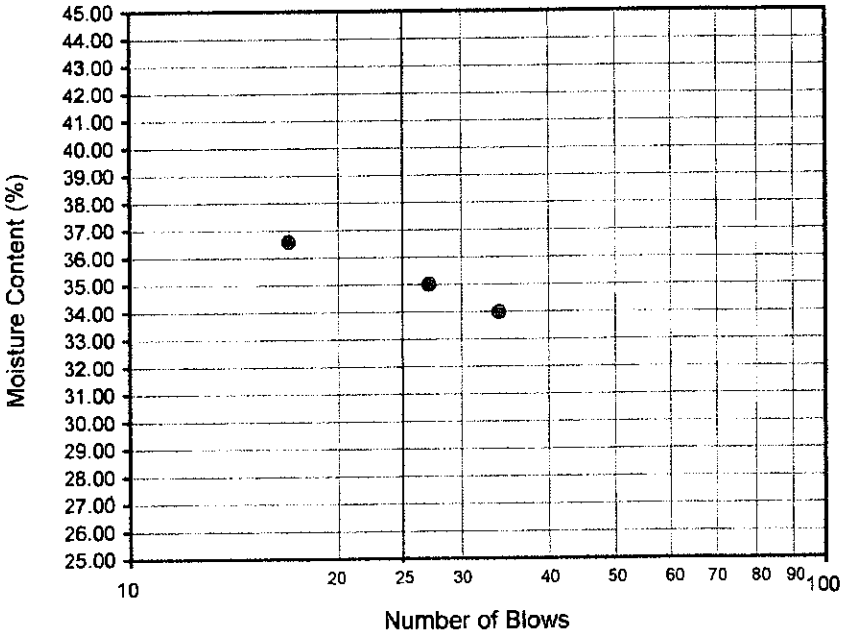


PLATE E-2

ATTERBERG LIMITS

ASTM D 4318-93

Project Name: Redevelopment of Mountain View Golf Course-2121 Mountain View Drive,Corona
Project No. : 6619.16
Boring No. : B-6
Depth (feet): 0-5
Visual Sample Description: Silty Fine Sand (SM)

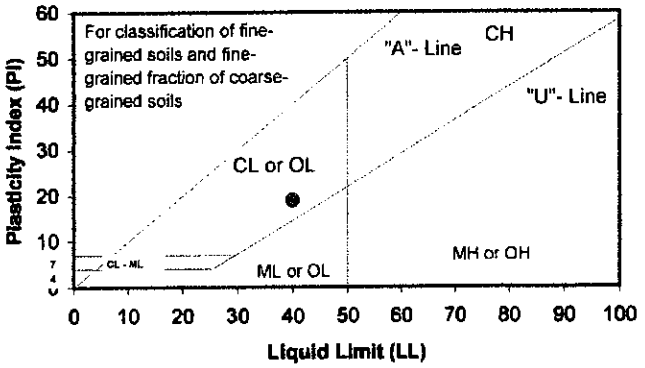
	PLASTIC LIMIT		LIQUID LIMIT			
TEST NO.	1	2	1	2	3	4
Number of Blows [N]			35	26	18	
Container No.	b1	c1	A1	B1	C1	
Wet Wt. of Soil + Cont. (gm)	13.06	13.78	15.83	16.61	15.58	
Dry Wt. of Soil + Cont. (gm)	11.49	12.14	14.50	15.09	14.11	
Wt. of Container (gm)	4.28	4.29	11.04	11.24	10.60	
Moisture Content (%) [Wn]	21.78	20.89	38.44	39.48	41.88	

Liquid Limit	**40**
Plastic Limit	**21**
Plasticity Index	**19**
USCS Classification	**CL**

PI at "A" - Line = 0.73(LL-20) = 14.6

One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test

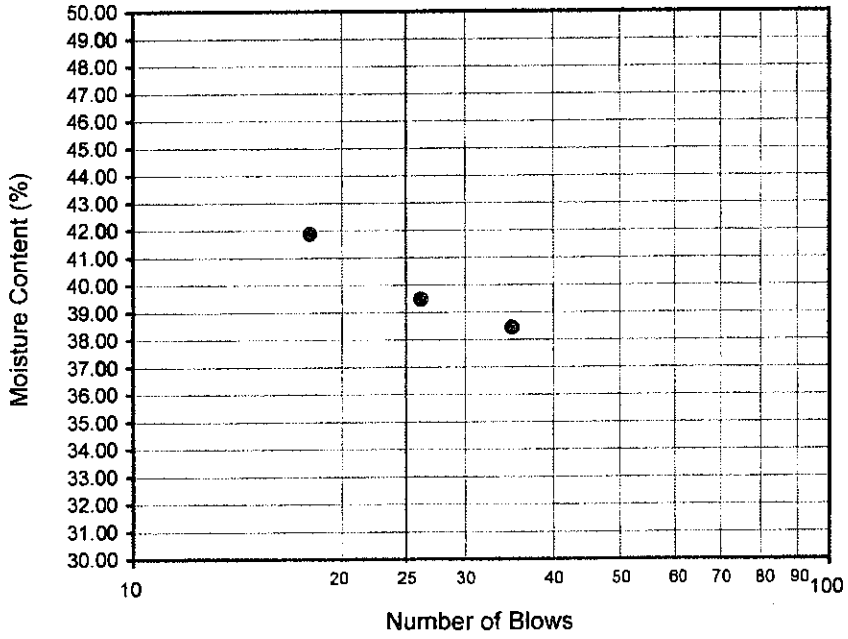


PLATE E-3

ATTERBERG LIMITS

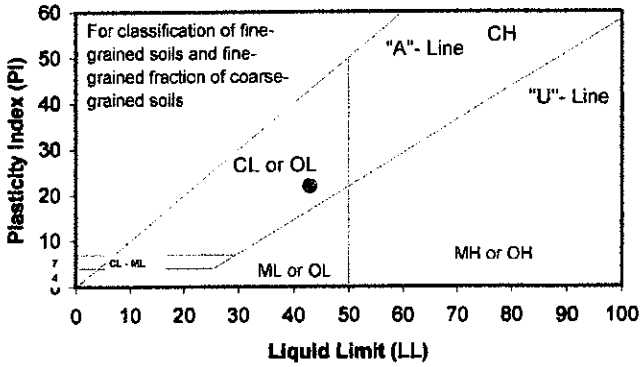
ASTM D 4318-93

Project Name: Redevelopment of Mountain View Golf Course-2121 Mountain View Drive,Corona
Project No. : 6619.16
Boring No. : B-7
Depth (feet): 0-5
Visual Sample Description: Fine Sandy Silt with Clay (ML)

	PLASTIC LIMIT		LIQUID LIMIT			
TEST NO.	1	2	1	2	3	4
Number of Blows [N]			33	24	17	
Container No.	b2	c2	A2	B2	C2	
Wet Wt. of Soil + Cont. (gm)	12.59	13.60	16.92	16.60	15.70	
Dry Wt. of Soil + Cont. (gm)	11.13	11.99	15.10	15.00	14.17	
Wt. of Container (gm)	4.24	4.29	10.76	11.31	10.77	
Moisture Content (%) [Wn]	21.19	20.91	41.94	43.36	45.00	

Liquid Limit	**43**
Plastic Limit	**21**
Plasticity Index	**22**
USCS Classification	**CL**

PI at "A" - Line = 0.73(LL-20) = 16.79
One - Point Liquid Limit Calculation
LL =Wn(N/25)$^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test

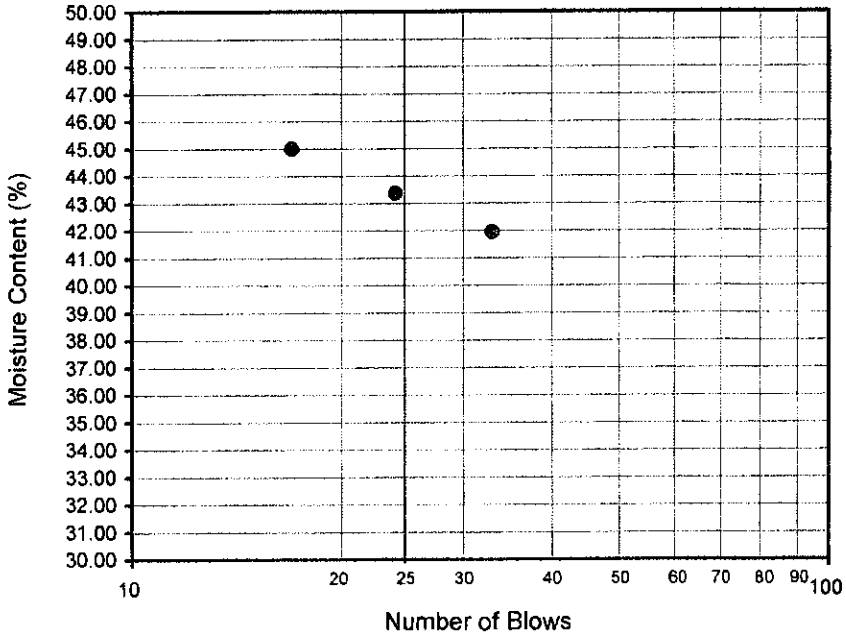


PLATE E-4

ATTERBERG LIMITS

ASTM D 4318-93

Project Name: Redevelopment of Mountain View Golf Course-2121 Mountain View Drive,Corona
Project No. : 6619.16
Boring No. : B-11
Depth (feet): 0-5
Visual Sample Description: Silty Fine Sand with Clay and Gravel (SM)

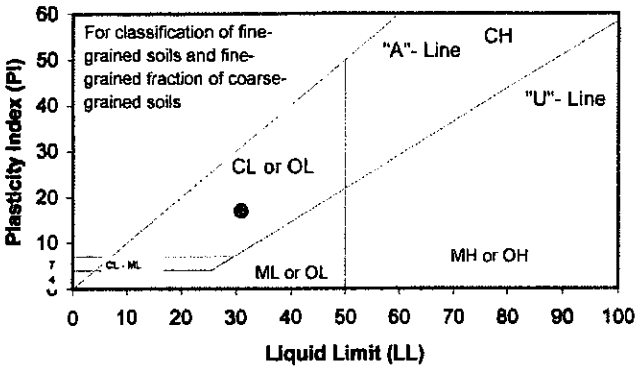
	PLASTIC LIMIT		LIQUID LIMIT			
TEST NO.	1	2	1	2	3	4
Number of Blows [N]			36	27	20	
Container No.	b2	c2	A2	X	C2	
Wet Wt. of Soil + Cont. (gm)	12.68	12.28	17.04	11.89	18.00	
Dry Wt. of Soil + Cont. (gm)	11.65	11.31	15.63	10.58	16.27	
Wt. of Container (gm)	4.25	4.29	10.76	6.25	10.78	
Moisture Content (%) [Wn]	13.92	13.82	28.95	30.25	31.51	

Liquid Limit	**31**
Plastic Limit	**14**
Plasticity Index	**17**
USCS Classification	**CL**

PI at "A" - Line = 0.73(LL-20) = 8.03

One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test

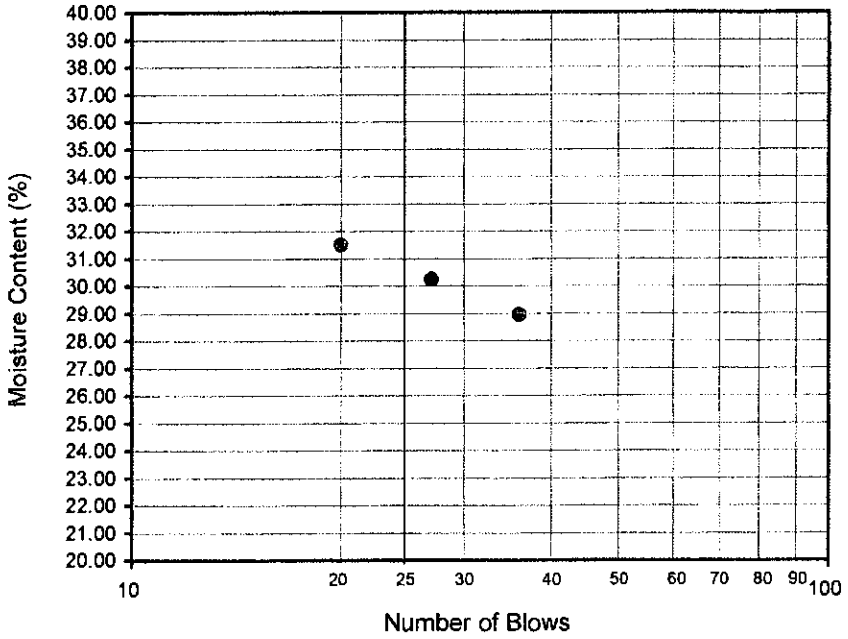


PLATE E-5

ATTERBERG LIMITS

ASTM D 4318-93

Project Name: Redevelopment of Mountain View Golf Course-2121 Mountain View Drive,Corona
Project No. : 6619.16
Boring No. : B-17
Depth (feet): 0-5
Visual Sample Description: Silty Fine to Medium Sand with Clay (SM)

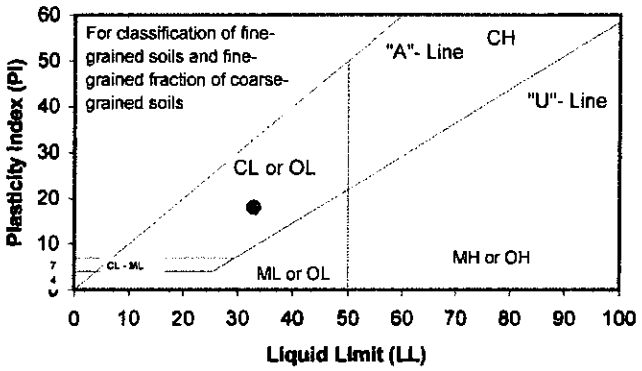
	PLASTIC LIMIT		LIQUID LIMIT			
TEST NO.	1	2	1	2	3	4
Number of Blows [N]			31	23	17	
Container No.	b3	c3	B3	C3	B4	
Wet Wt. of Soil + Cont. (gm)	12.90	13.08	16.65	16.35	16.34	
Dry Wt. of Soil + Cont. (gm)	11.83	11.95	15.34	14.96	15.01	
Wt. of Container (gm)	4.25	4.29	11.20	10.84	11.29	
Moisture Content (%) [Wn]	14.12	14.75	31.64	33.74	35.75	

Liquid Limit	**33**
Plastic Limit	**15**
Plasticity Index	**18**
USCS Classification	**CL**

PI at "A" - Line = 0.73(LL-20) = 9.49

One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test

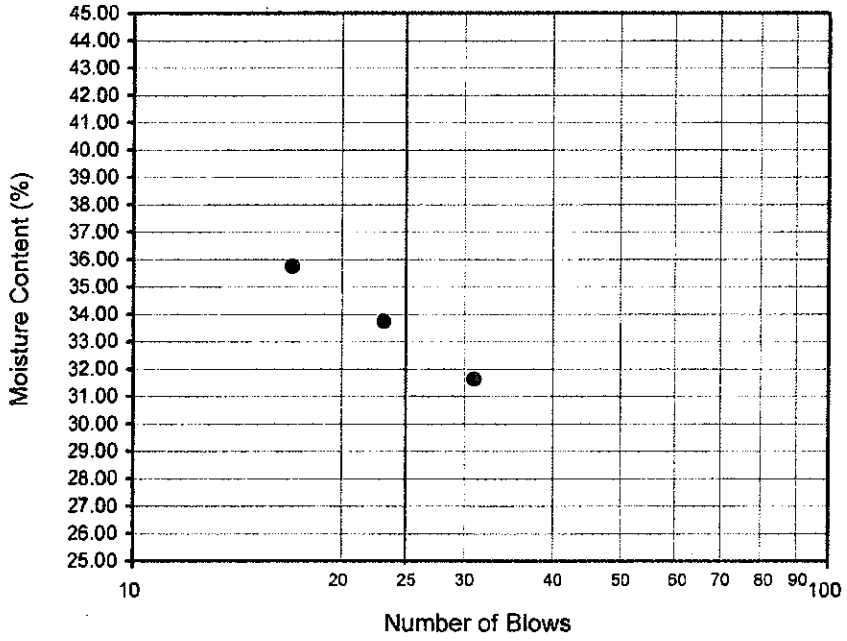


PLATE E-6

APPENDIX B – GENERAL EARTHWORK & GRADING SPECIFICATIONS AND DETAILS

1.0 GENERAL

1.1 Intent: These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the project-specific Geotechnical Report(s) (Geotechnical Report). These Specifications are a part of the recommendations contained in the Geotechnical Report. In case of conflict, the specific recommendations in the Geotechnical Report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the Geotechnical Report.

1.2 The Geotechnical Consultant of Record: Prior to commencement of work, the owner shall employ the Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultant shall be responsible for reviewing the approved Geotechnical Report and accepting the adequacy of the preliminary Geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the Geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required. Subsurface areas to be geotechnically observed, mapped, elevations recorded, and/or tested include natural ground after it has been cleared for receiving fill but before fill is placed, bottoms of all "remedial removal" areas, all key bottoms, and benches made on sloping ground to receive fill.

The Geotechnical Consultant shall observe the moisture-conditions and processing of the subgrade and fill materials and perform relative compaction testing of fill to determine the attained level of compaction. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 The Earthwork Contractor: The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, Geotechnical Report and these Specifications prior to commencement of grading. The

Contractor shall be solely responsible for performing the grading in accordance with the plans and specifications.

The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "spreads" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate observations and tests can be planned and accomplished. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved Geotechnical Report and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified.

2.0 PREPARATION OF AREAS TO BE FILLED

2.1 Clearing and Grubbing: Vegetation, such as brush grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 5 percent of organic matter. All organic materials should be nested prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed.

2.2 Processing: Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory

shall be overexcavated as specified in the following section. Scarification shall continue until soils are broken down and free of large clay lumps or clods and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 Overexcavation: In addition to removals and overexcavations recommended in the approved Geotechnical Report and the grading plan(s), soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 Benching: Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.

2.5 Evaluation/Acceptance of Fill Areas: All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys and benches.

3.0 FILL MATERIAL

3.1 General: Material to be used as fill essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, strong corrosivity, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 Oversize: Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 Import: If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1. of the potential import source. The Geotechnical Consultant shall be notified at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 FILL PLACEMENT AND COMPACTION

4.1 Fill Layers: Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 Fill Moisture Conditioning: Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain relatively uniform moisture content at or slightly over optimum. Maximum dry density and optimum soil moisture content tests shall be performed in accordance with the latest edition of the American Society of Testing and Materials (ASTM) Test Method D1557.

4.3 Compaction of Fill: After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (or relative compaction) per the latest edition of ASTM Test Method D1557. Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 Compaction of Fill Slopes: In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent per the latest edition of ASTM Test Method D1557.

4.5 Compaction Testing: Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces, near areas of high moisture content, and at the fill/bedrock benches).

4.6 Frequency of Compaction Testing: Tests shall be taken as intervals not exceeding 2 feet in vertical rise and/or 500 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 2,000 square feet of slope face and/or each 5 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations: The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established to that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 SUBDRAIN INSTALLATION

Subdrain systems shall be installed in accordance with the approved Geotechnical Report, the grading plan(s), and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 EXCAVATION

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on Geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 TRENCH BACKFILLS

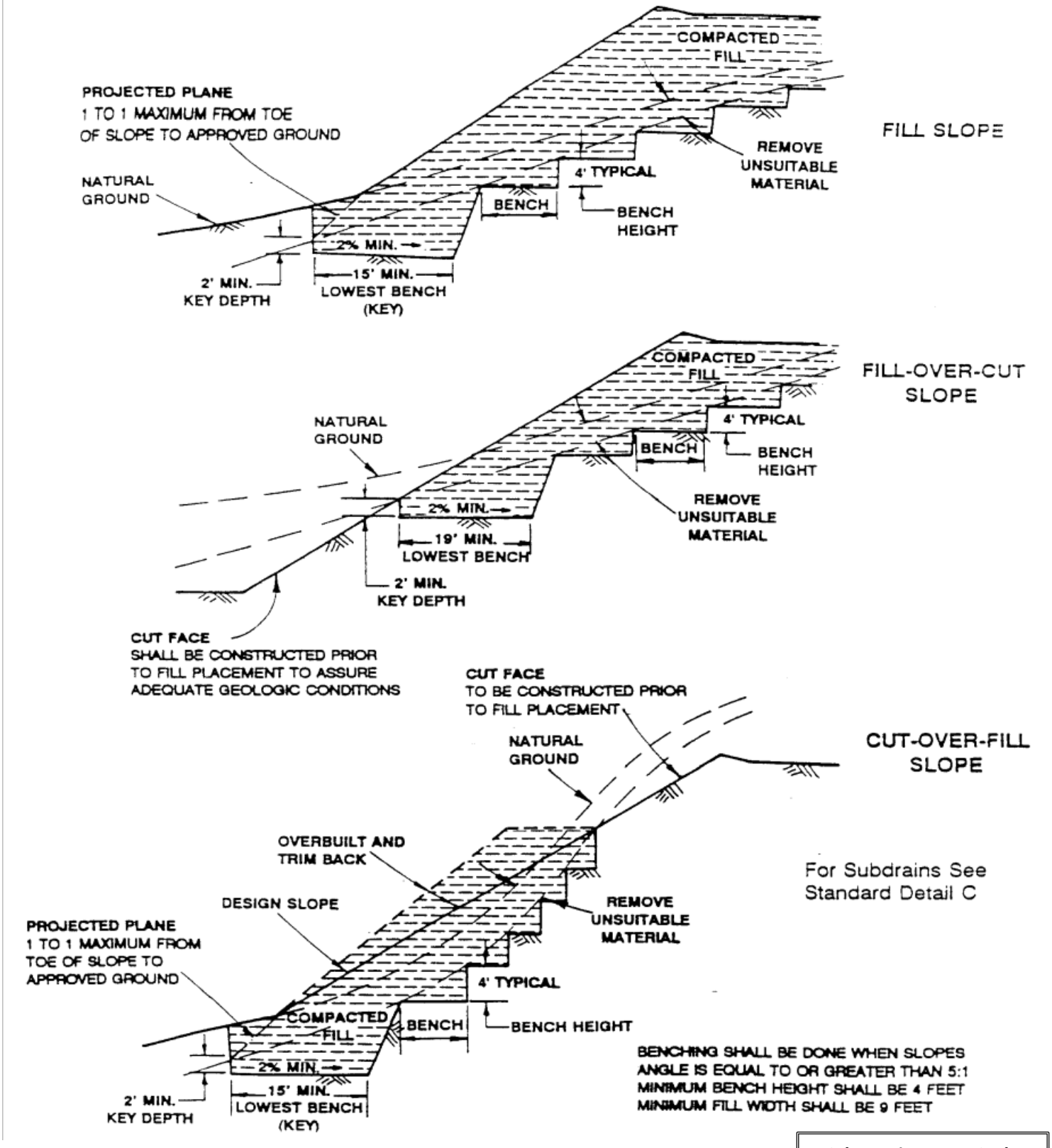
7.1 Safety: The Contractor shall follow all OSHA and Cal/OSHA requirements for safety of trench excavations.

7.2 Bedding and Backfill: All bedding and backfill of utility trenches shall be performed in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material

shall have a Sand Equivalent (Cal Test 217) greater than 30 (SE>30). The bedding shall be placed to 1 foot above the top of the conduit to the surface.

7.3 Lift Thickness: Lift thickness of trench backfill shall not exceed those allowed in the latest edition of Standard Specifications of Public Works Construction (i.e. "Green Book") unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum required relative compaction by his alternative equipment and method.

7.4 Observation and Testing: If acceptable by the Geotechnical Consultant, the jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.



Schematic Not To Scale

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Consulting Geotechnical Engineers

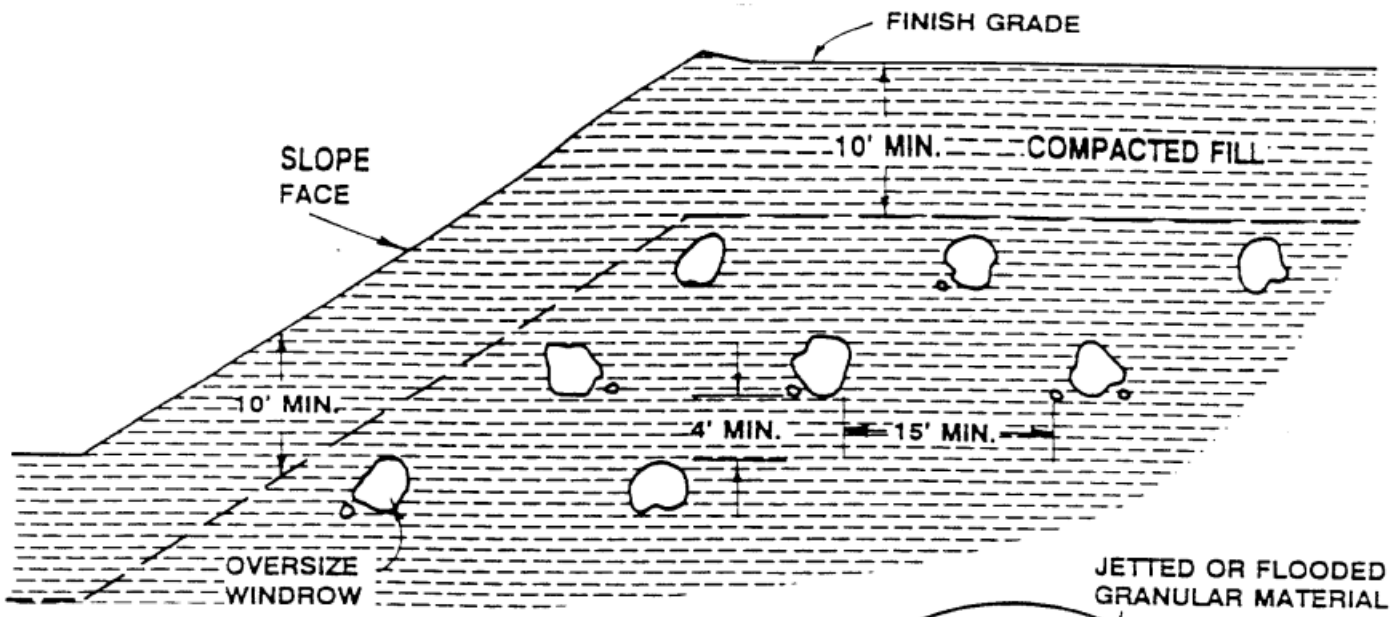
Associated Soils Engineering, Inc.

2860 Walnut Avenue

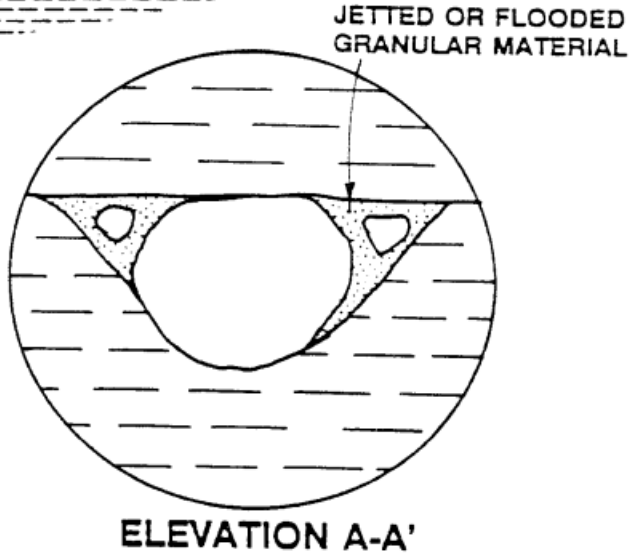
Signal Hill, CA 90755

Tel (562) 426-7990 Fax (562) 426-1842

Project:	**Prop. Residential Development The Trails at Corona**		
Details "A"	**KEYING & BENCHING**		
Proj. No.:	**6619.18.1**	Date:	**November, 2018**

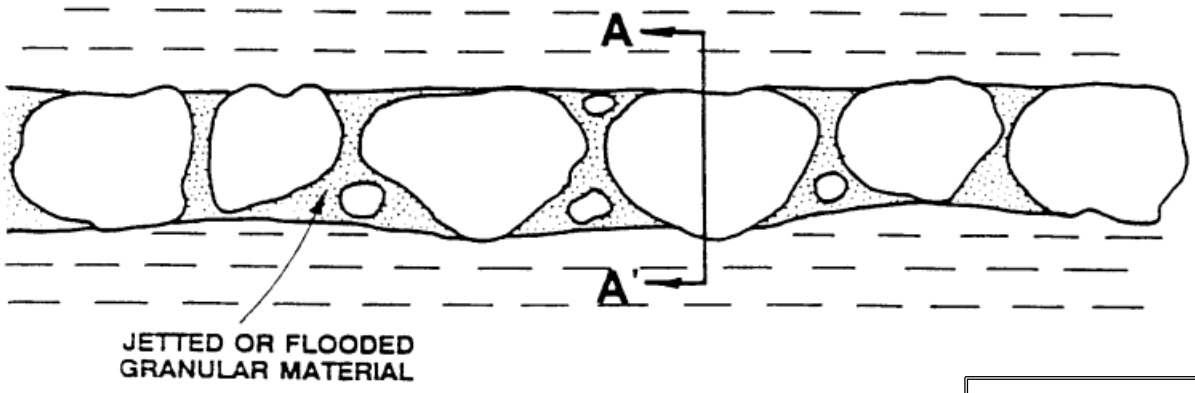


- Oversize rock is larger than 8 inches in largest dimension.
- Excavate a trench in the compacted fill deep enough to bury all the rock.
- Backfill with granular soil jetted or flooded in place to fill all the voids.
- Do not bury rock within 10 feet of finish grade.
- Windrow of buried rock shall be parallel to the finished slope fill.



ELEVATION A-A'

PROFILE ALONG WINDROW



Schematic Not To Scale

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Consulting Geotechnical Engineers

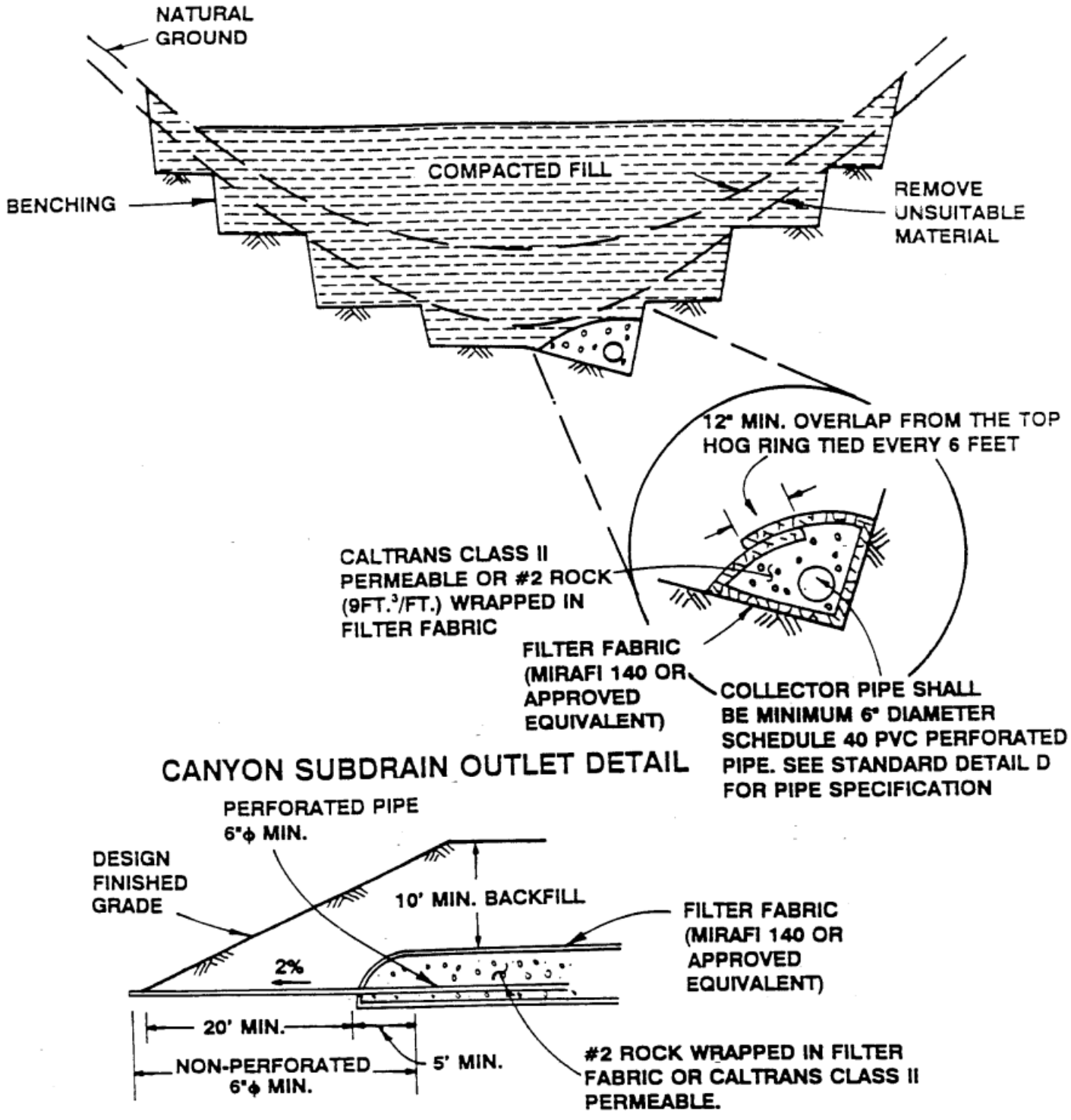
Associated Soils Engineering, Inc.

2860 Walnut Avenue

Signal Hill, CA 90755

Tel (562) 426-7990 Fax (562) 426-1842

Project:	**Prop. Residential Development The Trails at Corona**		
Details "B"	**OVERSIZE ROCK DISPOSAL**		
Proj. No.:	**6619.18.1**	Date:	**November, 2018**



Schematic Not To Scale

ASSOCIATED SOILS ENGINEERING, INC.
Consulting Geotechnical Engineers

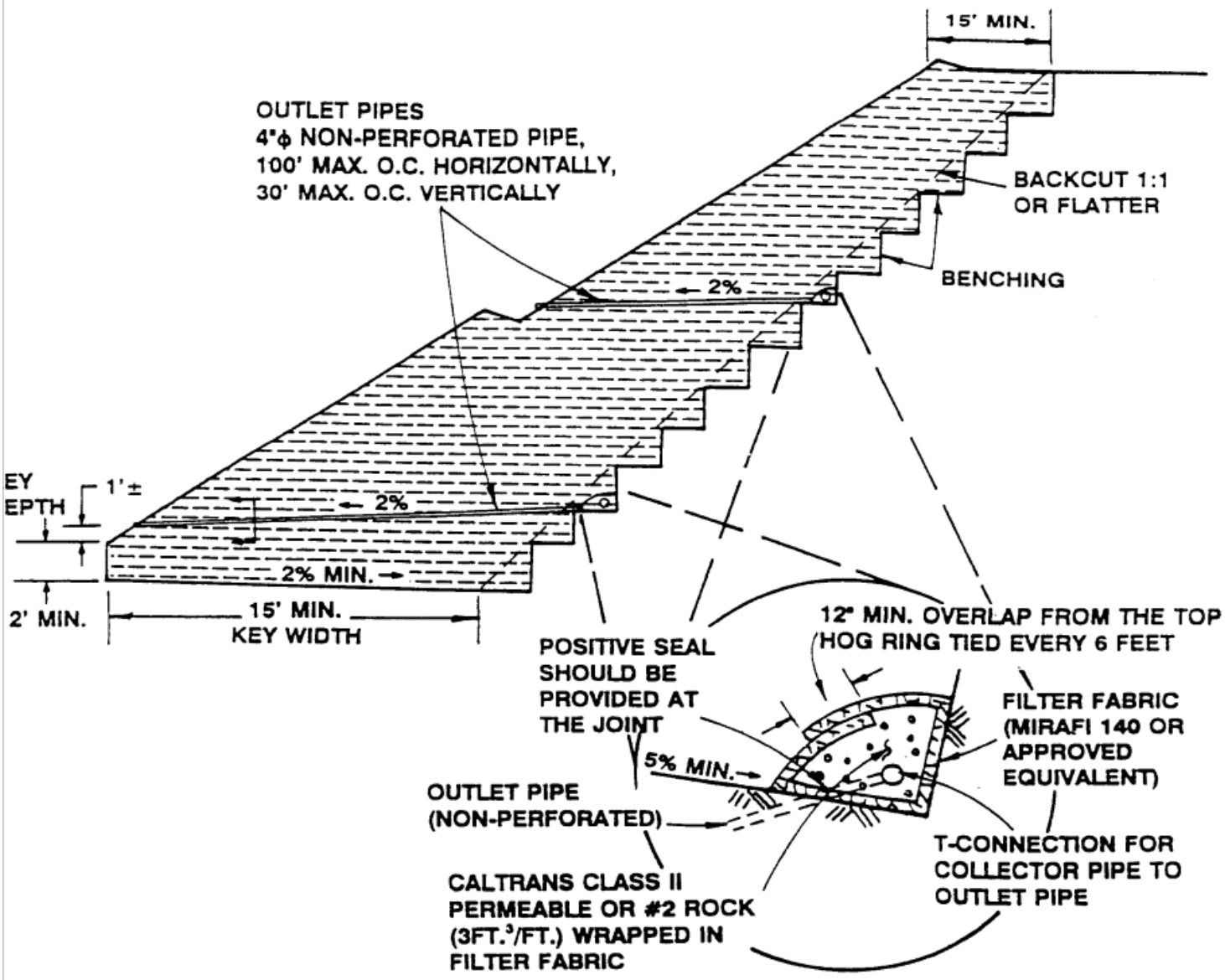
Associated Soils Engineering, Inc.

2860 Walnut Avenue

Signal Hill, CA 90755

Tel (562) 426-7990 Fax (562) 426-1842

Project:	**Prop. Residential Development The Trails at Corona**		
Details "C"	**CANYON SUBDRAINS**		
Proj. No.:	**6619.18.1**	Date:	**November, 2018**



- SUBDRAIN INSTALLATION - Subdrain collector pipe shall be installed with perforations down or, unless otherwise designated by the geotechnical consultant. Outlet pipes shall be non-perforated pipe. The subdrain pipe shall have at least 8 perforations uniformly spaced per foot. Perforation shall be ¼" to ½" if drilled holes are used. All subdrain pipes shall have a gradient at least 2% towards the outlet.

- SUBDRAIN PIPE - Subdrain pipe shall be ASTM D2751, SDR 23.5 or ASTM D1527, Schedule 40, or ASTM D3034, SDR 23.5, Schedule 40 Polyvinyl Chloride Plastic (PVC) pipe.

- All outlet pipe shall be placed in a trench no wider than twice the subdrain pipe. Pipe shall be in soil of SE≥30 jetted or flooded in place except for the outside 5 feet which shall be native soil backfill.

Schematic Not To Scale

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Consulting Geotechnical Engineers

Associated Soils Engineering, Inc.

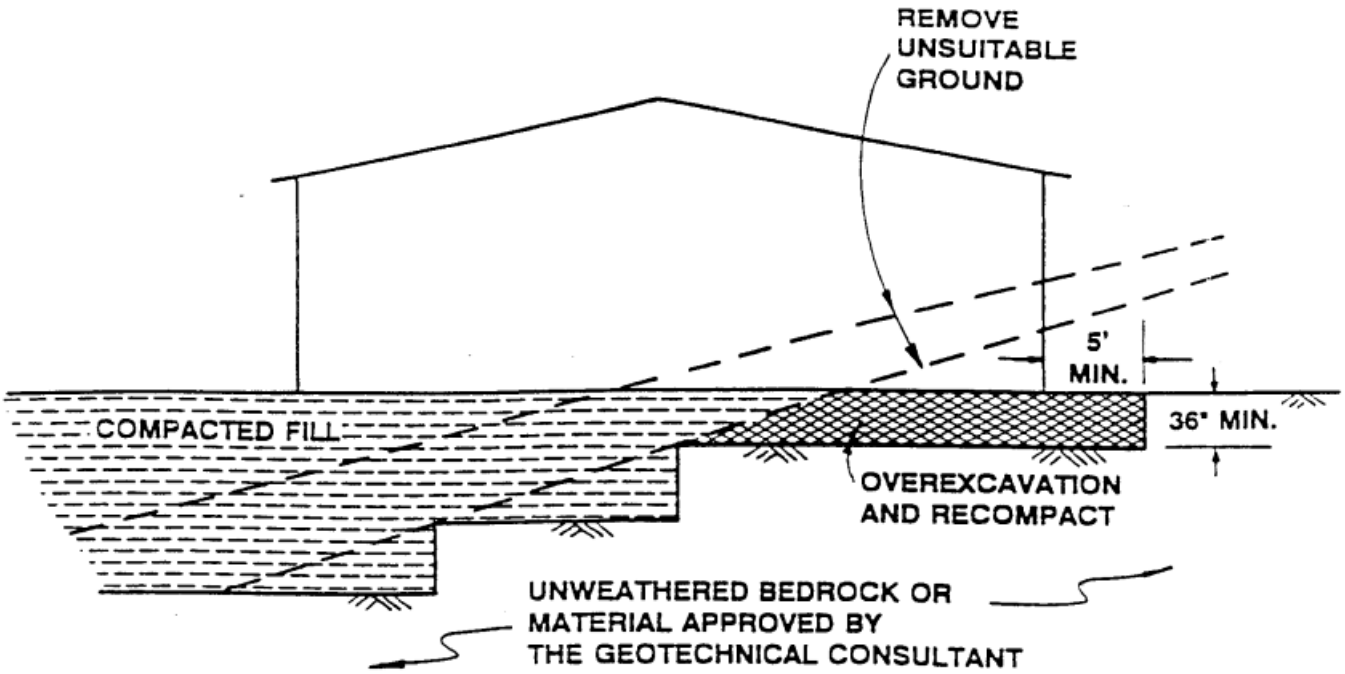
2860 Walnut Avenue

Signal Hill, CA 90755

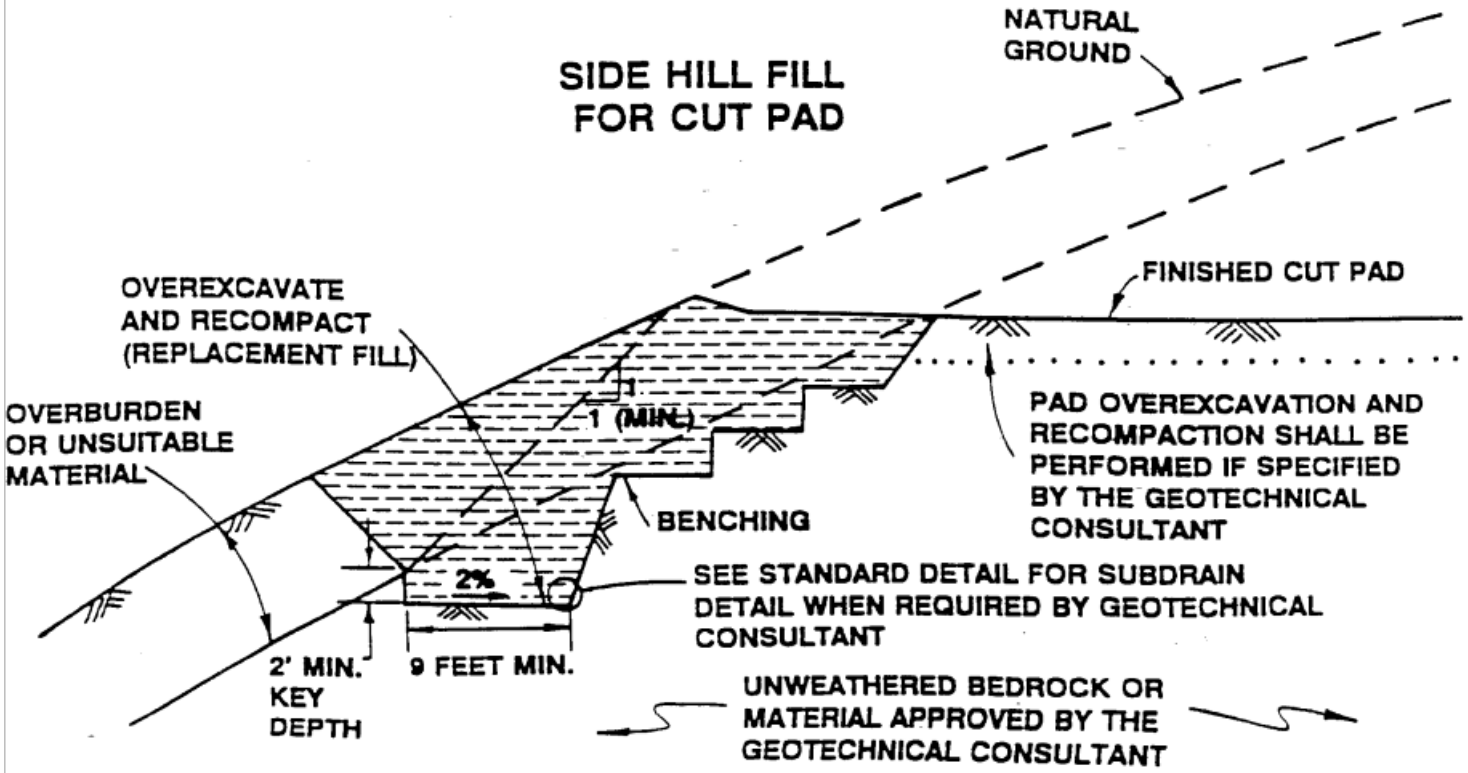
Tel (562) 426-7990 Fax (562) 426-1842

Project:	**Prop. Residential Development The Trails at Corona**		
Details "D"	**BUTTRESS OR REPLACEMENT FILL SUBDRAINS**		
Proj. No.:	**6619.18.1**	Date:	**November, 2018**

CUT AND CUT-FILL LOT



SIDE HILL FILL FOR CUT PAD



Schematic Not To Scale

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Consulting Geotechnical Engineers

Associated Soils Engineering, Inc.

2860 Walnut Avenue

Signal Hill, CA 90755

Tel (562) 426-7990 Fax (562) 426-1842

Project:	**Prop. Residential Development The Trails at Corona**		
Details "E"	**TRANSITION LOT FILLS & SIDE HILL FILLS**		
Proj. No.:	**6619.18.1**	Date:	**November, 2018**

APPENDIX C - LIST OF REFERENCES

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4. United States Geological Survey (USGS), 2002, Geologic Map of the Corona South 7.5' Quadrangle, Riverside and Orange Counties, California, Version 1.0, released January 24.

5. California Division of Mines and Geology, (now California Geological Survey), 2003, Special Studies Zones Official Map, Corona North Quadrangle, released May 1.

6. California Division of Mines and Geology, (now California Geological Survey), 2003, Special Studies Zones Revised Official Map, Corona South Quadrangle, released May 1.

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9. Soil Mechanics Design Manual 7.1 (NAVFAC DM-7.1), 1982, Department of the Navy, Naval Facilities Engineering Command, p. 347.

10. Foundation and Earth Structures Design Manual 7.2 (NAVFAC DM-7.2), 1982, Department of the Navy, Naval Facilities Engineering Command.

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13. 2008 Interactive Deaggregations, Hazards Program, United States Geological Survey, website: http:/eqint.cr.usgs.gov/deaggint/2008/dndez.php.

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15. Minimum Design Loads for Buildings and Other Structures, 2010, American Society of Civil Engineers, ASCE Standard 7-10, 388p.

16. Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary, 2014, published by American Concrete Institute, Farmington Hill, MI, 514 p.

17. Federal Emergency Management Agency, 2008, National Flood Insurance Program, Flood Insurance Rate Map, Riverside County, California and Incorporated Areas, Panel 688 of 3805, Map Number 06065C0688G, effective date August 28.

18. Federal Emergency Management Agency, 2008, National Flood Insurance Program, Flood Insurance Rate Map, Riverside County, California and Incorporated Areas, Panel 1351 of 3805, Map Number 06065C1351G, effective date August 28.

19. Corrosion Guidelines, Version 2.0, November 2012, Published by California Department of Transportation (Caltrans), 44p.

20. Bridge Design Specifications, September 2003, Published by California Department of Transportation (Caltrans).

21. Cao, T., Bryant, W.A. Rowshandel, B., Branum, D., and Wills, C.J., 2003, the Revised 2002 California Probabilistic Seismic Hazard Maps, California Geological Survey.

22. Peterson, M.D., Bryant, W.A., Cramer, C.H., Cao, T., Reichle, M., Frankel, A.D., Lienkaemper, J.J., McCrory, P.A., and Schwartz, D.P., 1996, Probabilistic Seismic Hazard Assessment for the State of California, California Department of Conservation, Division of Mines and Geology, Open-File Report 96-706.

23. Design of Post-Tensioned Slabs-on-Ground, 3rd Edition, 2004, issued by Post-tensioning Institute, 106 p.

24. Standard Requirements for Design of Shallow Concrete Foundations on Expansive Soils, 4th Edition, dated May 2008, issued by Post-tensioning Institute, 25 p.

25. Standard Requirements for Design of Shallow Concrete Foundations on Expansive Soils, 4th Edition, dated May 2008, issued by Post-tensioning Institute, 17 p.

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

Not applicable.

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Not applicable.

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	KWC Engineers	Date	9/6/2024
Designed by	Andre Carrasco	Case No	
Company Project Number/Name	2015.1511.8.13 The Trails PA1		

BMP Identification

BMP NAME / ID: PA 1- Bioretention Basin A1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.86 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Roofs	*122760*	*Roofs*	*1*	*0.89*	*109501.9*			
Dwy	*0*	*Concrete or Asphalt*	*1*	*0.892*	*0*			
Street	*80599*	*Concrete or Asphalt*	*1*	*0.892*	*71894.3*			
Open	*0*	*Natural (D Soil)*	*0.4*	*0.279712*	*0*			
Landscape	*325768*	*Ornamental Landscaping*	*0.1*	*0.110458*	*35983.7*			
	529127	***Total***			**217379.9**	**0.86**	***15578.9***	***15,855***

Notes:

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	A1		Calculated Cells	

Company Name:	KWC Engineers	Date:	9/4/2024
Designed by:	AC	County/City Case No.:	

Design Volume

Enter the area tributary to this feature	A_T=	12.15	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	15,579	ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	40.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.78	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	8,740	ft^2
Proposed Surface Area	A=	8,907	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0.5	%
6" Check Dam Spacing		0	feet

Describe Vegetation: Other

Notes: Total treatment volume provided is equal to 8,907 x 1.78 = 15,855 cu-ft.

Planning Area 1

Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: KWC Engineers — Date: 9/17/2024
Designed by: — Case No:
Company Project Number/Name: 2015.1511.8.13 The Trails PA3

BMP Identification

BMP NAME / ID: PA 3 - Bioretention Basin C1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.86 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Roofs	*133829*	*Roofs*	*1*	*0.89*	*119375.5*			
Dwy	*0*	*Concrete or Asphalt*	*1*	*0.892*	*0*			
Street	*73847*	*Concrete or Asphalt*	*1*	*0.892*	*65871.5*			
Open	*0*	*Natural (D Soil)*	*0.4*	*0.279712*	*0*			
Landscape	*308410*	*Ornamental Landscaping*	*0.1*	*0.110458*	*34066.4*			
	516086	***Total***			**219313.4**	**0.86**	***15717.5***	***16,137***

Notes:

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	C1		Calculated Cells	

Company Name: KWC Engineers | Date: 9/17/2024

Designed by: | County/City Case No.:

Design Volume

Enter the area tributary to this feature	A_T=	11.85	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	15,718	ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	65.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.79	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	8,785	ft^2
Proposed Surface Area	A=	9,015	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0.5	%
6" Check Dam Spacing		0	feet

Describe Vegetation: Other

Notes: Total treatment volume provided is equal to 9,015 x 1.79 = 16,136.85 cu-ft.

Planning Area 3

Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	KWC Engineers	Date	10/9/2023
Designed by	Andre Carrasco	Case No	
Company Project Number/Name	2015.1511.8.13 The Trails PA3		

BMP Identification

BMP NAME / ID: PA 3 - Bioretention Basin C2

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.86 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Roofs	*115814*	*Roofs*	*1*	*0.89*	*103306.1*			
Dwy	*0*	*Concrete or Asphalt*	*1*	*0.892*	*0*			
Street	*53460*	*Concrete or Asphalt*	*1*	*0.892*	*47686.3*			
Open	*0*	*Natural (D Soil)*	*0.4*	*0.279712*	*0*			
Landscape	*233635*	*Ornamental Landscaping*	*0.1*	*0.110458*	*25806.9*			
	402909	***Total***			**176799.3**	**0.86**	***12670.6***	***12,704***

Notes:

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	C2		Calculated Cells	

Company Name:	KWC Engineers	Date:	8/28/2024
Designed by:	AC	County/City Case No.:	

Design Volume

Enter the area tributary to this feature	A_T=	9.25	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	12,671	ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	75.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.79	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	7,076	ft^2
Proposed Surface Area	A=	7,097	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0.5	%
6" Check Dam Spacing		0	feet
Describe Vegetation:		Other	

Notes: Total treatment volume provided is equal to 7,097 x 1.79 = 12,704 cu-ft.

Planning Area 3

Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: KWC Engineers — Date: 5/30/2024
Designed by: Andre Carrasco — Case No:
Company Project Number/Name: 2015.1511.8.13 The Trails PA3

BMP Identification

BMP NAME / ID: PA 3 - Basin C3

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.86 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Roofs	*4173*	*Roofs*	*1*	*0.89*	*3722.3*			
Dwy	*0*	*Concrete or Asphalt*	*1*	*0.892*	*0*			
Street	*16567*	*Concrete or Asphalt*	*1*	*0.892*	*14777.8*			
Open	*0*	*Natural (D Soil)*	*0.4*	*0.279712*	*0*			
Landscape	*113951.2*	*Ornamental Landscaping*	*0.1*	*0.110458*	*12586.8*			
	134691.2		***Total***		**31086.9**	**0.86**	***2227.9***	***2,412***

Notes:

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	C3		Calculated Cells	

Company Name:	KWC Engineers	Date:	8/28/2024
Designed by:	Andre Carrasco	County/City Case No.:	

Design Volume

Enter the area tributary to this feature	A_T=	3.13	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	2,228	ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	30.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.78	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	1,254	ft^2
Proposed Surface Area	A=	1,355	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0.5	%
6" Check Dam Spacing		0	feet
Describe Vegetation:		Other	

Notes: Total treatment volume provided is equal to 1,355 x 1.78 = 2411.9 cu-ft.

Planning Area 3

Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: KWC Engineers
Date: 5/30/2024
Designed by: Andre Carrasco
Case No:
Company Project Number/Name: 2015.1511.8.13 The Trails PA3

BMP Identification

BMP NAME / ID: PA 3 - Bioretention Basin C4

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.86 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Roofs	*0*	*Roofs*	*1*	*0.89*	*0*			
Dwy	*0*	*Concrete or Asphalt*	*1*	*0.892*	*0*			
Street	*10505.6*	*Concrete or Asphalt*	*1*	*0.892*	*9371*			
Open	*0*	*Natural (D Soil)*	*0.4*	*0.279712*	*0*			
Landscape	*96095.6*	*Ornamental Landscaping*	*0.1*	*0.110458*	*10614.5*			
	106601.2	***Total***			**19985.5**	**0.86**	***1432.3***	***1,570***

Notes:

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	C4		Calculated Cells	

Company Name:	KWC Engineers	Date:	8/28/2024
Designed by:	AC	County/City Case No.:	

Design Volume

Enter the area tributary to this feature	A_T=	2.45	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	1,432	ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	30.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.78	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	807	ft^2
Proposed Surface Area	A=	882	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0.5	%
6" Check Dam Spacing		0	feet
Describe Vegetation:		Other	

Notes: Total treatment volume provided is equal to 882 x 1.78 = 1,569.9 cu-ft.

Planning Area 3

Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: KWC Engineers — Date: 5/30/2024
Designed by: Andre Carrasco — Case No:
Company Project Number/Name: 2015.1511.8.13 The Trails PA3

BMP Identification

BMP NAME / ID: PA 3 - MWS Unit C5

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.86 inches

Drainage Management Area Tabulation

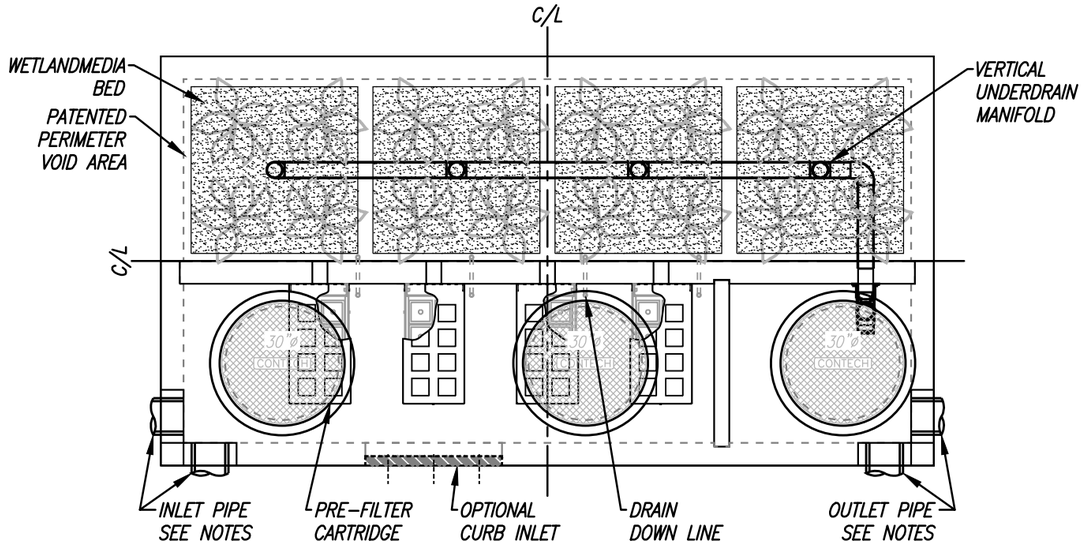
Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Roofs	*183366*	*Roofs*	*1*	*0.89*	*163562.5*			
Dwy	*0*	*Concrete or Asphalt*	*1*	*0.892*	*0*			
Street	*92517*	*Concrete or Asphalt*	*1*	*0.892*	*82525.2*			
Open	*0*	*Natural (D Soil)*	*0.4*	*0.279712*	*0*			
Landscape	*272286.7*	*Ornamental Landscaping*	*0.1*	*0.110458*	*30076.2*			
	548169.7	*Total*			*276163.9*	*0.86*	*19791.7*	*20,303*

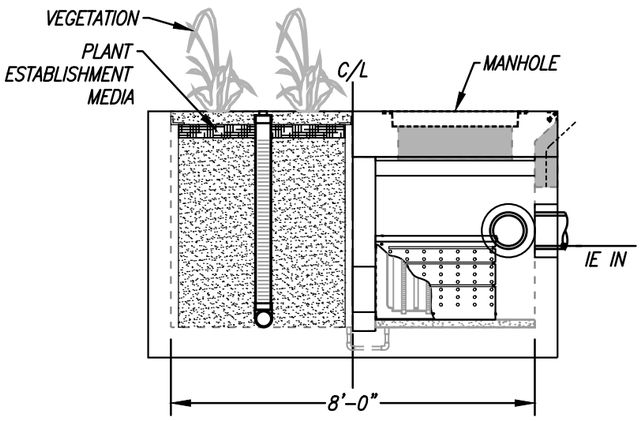
Notes:

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
TREATMENT FLOW (CFS)			
PRETREATMENT LOADING RATE (GPM/SF)			2.1 GPM/SF
WETLAND MEDIA LOADING RATE (GPM/SF)			1.0
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			_____ (CFS)
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
NOTES:			

* PRELIMINARY ONLY - NOT FOR CONSTRUCTION



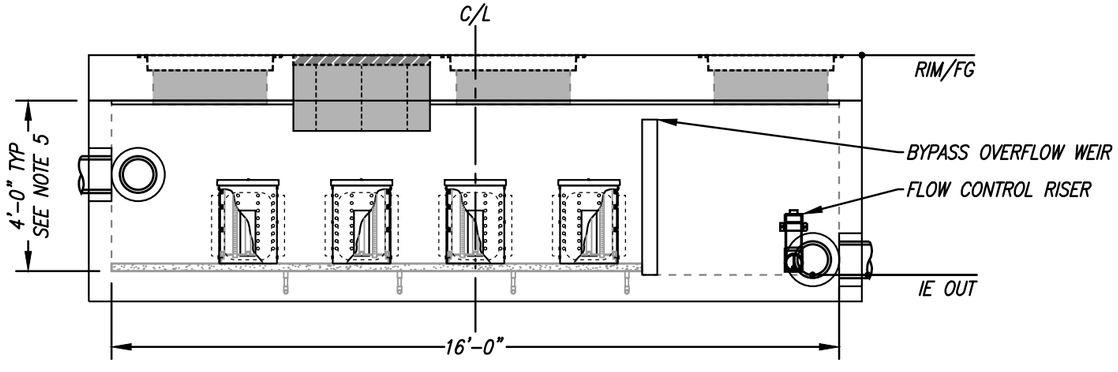
PLAN VIEW



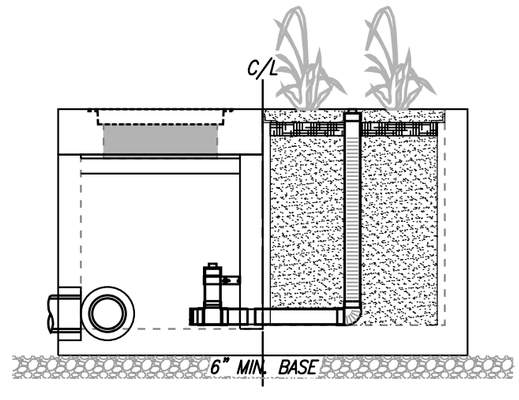
LEFT END VIEW

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURER'S SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
3. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
4. CONTRACTOR RESPONSIBLE FOR CONTACTING CONTECH FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A CONTECH REPRESENTATIVE.
5. VERTICAL HEIGHT VARIES BASED ON SITE SPECIFIC REQUIREMENTS.



ELEVATION VIEW



RIGHT END VIEW

MODULAR WETLANDS
FOR PATENT INFORMATION, GO TO www.ContechES.com/IP

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CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com

MWS-L-8-16-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

8/14/23SCOTT.SERTICH

Flow Based Sizing

The MWS Linear can be used in stand alone applications to meet treatment flow requirements. Since the MWS Linear is the only biofiltration system that can accept inflow pipes several feet below the surface it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.



Treatment Flow Sizing Table

Model #	Dimensions	WetlandMedia Surface Area	Treatment Flow Rate (cfs)
MWS-L-4-4	4' x 4'	23 ft^2	0.052
MWS-L-4-6	4' x 6'	32 ft^2	0.073
MWS-L-4-8	4' x 8'	50 ft^2	0.115
MWS-L-4-13	4' x 13'	63 ft^2	0.144
MWS-L-4-15	4' x 15'	76 ft^2	0.175
MWS-L-4-17	4' x 17'	90 ft^2	0.206
MWS-L-4-19	4' x 19'	103 ft^2	0.237
MWS-L-4-21	4' x 21'	117 ft^2	0.268
MWS-L-8-8	8' x 8'	100 ft^2	0.230
MWS-L-8-12	8' x 12'	151 ft^2	0.346
MWS-L-8-16	8' x 16'	201 ft^2	0.462

Volume Based Sizing

Many states require treatment of a water quality volume and do not offer the option of flow based design. The MWS Linear and its unique horizontal flow makes it the only biofilter that can be used in volume based design installed downstream of ponds, detention basins, and underground storage systems.



Treatment Volume Sizing Table

Model #	Treatment Capacity (cu. ft.) @ 24-Hour Drain Down	Treatment Capacity (cu. ft.) @ 48-Hour Drain Down
MWS-L-4-4	1140	2280
MWS-L-4-6	1600	3200
MWS-L-4-8	2518	5036
MWS-L-4-13	3131	6261
MWS-L-4-15	3811	7623
MWS-L-4-17	4492	8984
MWS-L-4-19	5172	10345
MWS-L-4-21	5853	11706
MWS-L-8-8	5036	10072
MWS-L-8-12	7554	15109
MWS-L-8-16	10073	20145

Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: KWC Engineers — Date: 9/10/2024
Designed by: — Case No:
Company Project Number/Name: 2015.1511.8.13 The Trails PA4

BMP Identification

BMP NAME / ID: PA 4 - Bioretention Basin D1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.86 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Roofs	*54808.1*	*Roofs*	*1*	*0.89*	*48888.8*			
Dwy	*0*	*Concrete or Asphalt*	*1*	*0.892*	*0*			
Street	*35985*	*Concrete or Asphalt*	*1*	*0.892*	*32098.6*			
Open	*0*	*Natural (D Soil)*	*0.4*	*0.279712*	*0*			
Landscape	*95120.3*	*Ornamental Landscaping*	*0.1*	*0.110458*	*10506.8*			
	185913.4	***Total***			**91494.2**	**0.86**	***6557.1***	***7,026***

Notes:

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	D1		Calculated Cells	

Company Name: KWC Engineers Date: 9/10/2024

Designed by: County/City Case No.:

Design Volume

Enter the area tributary to this feature	A_T=	4.26	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	6,557	ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	43.2	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.78	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	3,676	ft^2
Proposed Surface Area	A=	3,947	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0.5	%
6" Check Dam Spacing		0	feet

Describe Vegetation: Other

Notes: Total treatment volume provided is equal to 3,947 x 1.78 = 7,026 cu-ft.

Planning Area 4

Santa Ana Watershed - BMP Design Volume, V_{BMP}	Legend:	Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name KWC Engineers — Date 9/10/2024

Designed by — Case No

Company Project Number/Name 2015.1511.8.13 The Trails PA4

BMP Identification

BMP NAME / ID PA 4 - Bioretention Basin D2

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth,
from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.86 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Roofs	*20553*	*Roofs*	*1*	*0.89*	*18333.3*			
Dwy	*0*	*Concrete or Asphalt*	*1*	*0.892*	*0*			
Street	*20862*	*Concrete or Asphalt*	*1*	*0.892*	*18608.9*			
Open	*0*	*Natural (D Soil)*	*0.4*	*0.279712*	*0*			
Landscape	*55729.2*	*Ornamental Landscaping*	*0.1*	*0.110458*	*6155.7*			
	97144.2	***Total***			**43097.9**	**0.86**	**3088.7**	**3,558**

Notes:

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	D2		Calculated Cells	

Company Name: KWC Engineers | Date: 9/10/2024

Designed by: | County/City Case No.:

Design Volume

Enter the area tributary to this feature	A_T=	2.23	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	3,089	ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	28.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.78	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	1,741	ft^2
Proposed Surface Area	A=	1,999	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0.5	%
6" Check Dam Spacing		0	feet

Describe Vegetation: Other

Notes: Total treatment volume provided is equal to 1,999 x 1.78 = 3,558 cu-ft.

Planning Area 4

Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: KWC Engineers — Date: 9/17/2024
Designed by: — Case No:
Company Project Number/Name: 2015.1511.8.13 The Trails PA4

BMP Identification

BMP NAME / ID: PA 4 - Bioretention Basin D3

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.86 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Roofs	*15985.7*	*Roofs*	*1*	*0.89*	*14259.2*			
Dwy	*0*	*Concrete or Asphalt*	*1*	*0.892*	*0*			
Street	*9338.7*	*Concrete or Asphalt*	*1*	*0.892*	*8330.1*			
Open	*0*	*Natural (D Soil)*	*0.4*	*0.279712*	*0*			
Landscape	*43817.1*	*Ornamental Landscaping*	*0.1*	*0.110458*	*4839.9*			
	69141.5	***Total***			**27429.2**	**0.86**	***1965.8***	***2,490***

Notes:

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	D3		Calculated Cells	

Company Name: KWC Engineers | Date: 9/17/2024

Designed by: | County/City Case No.:

Design Volume

Enter the area tributary to this feature	A_T=	1.59	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	1,966	ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	14.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.75	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	1,124	ft^2
Proposed Surface Area	A=	1,423	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0.5	%
6" Check Dam Spacing		0	feet

Describe Vegetation: Other

Notes: Total treatment volume provided is equal to 1,423 x 1.75 = 2,490.25 cu-ft.

Planning Area 4

Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: KWC Engineers — Date: 9/17/2024
Designed by: — Case No:
Company Project Number/Name: 2015.1511.8.13 The Trails PA4

BMP Identification

BMP NAME / ID: Bioretention Basin D4

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.86 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Roofs	*15985.7*	*Roofs*	*1*	*0.89*	*14259.2*			
Dwy	*0*	*Concrete or Asphalt*	*1*	*0.892*	*0*			
Street	*18957.6*	*Concrete or Asphalt*	*1*	*0.892*	*16910.2*			
Open	*0*	*Natural (D Soil)*	*0.4*	*0.279712*	*0*			
Landscape	*40410.1*	*Ornamental Landscaping*	*0.1*	*0.110458*	*4463.6*			
	75353.4	***Total***			**35633**	**0.86**	***2553.7***	***2,569***

Notes:

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	D4		Calculated Cells	

Company Name: KWC Engineers Date: 9/17/2024

Designed by: County/City Case No.:

Design Volume

Enter the area tributary to this feature	A_T=	1.71	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	2,554	ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	14.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.75	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	1,460	ft^2
Proposed Surface Area	A=	1,468	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0.5	%
6" Check Dam Spacing		0	feet

Describe Vegetation: Other

Notes: Total treatment volume provided is equal to 1,468 x 1.75 = 2,569 cu-ft.

Planning Area 4

Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: KWC Engineers — Date: 9/18/2024
Designed by: — Case No:
Company Project Number/Name: 2015.1511.8.13 The Trails PA5

BMP Identification

BMP NAME / ID: Basin E1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.86 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Roofs	*24851.7*	*Roofs*	*1*	*0.89*	*22167.7*			
Dwy	*0*	*Concrete or Asphalt*	*1*	*0.892*	*0*			
Street	*29540*	*Concrete or Asphalt*	*1*	*0.892*	*26349.7*			
Open	*0*	*Natural (D Soil)*	*0.4*	*0.279712*	*0*			
Landscape	*51369.1*	*Ornamental Landscaping*	*0.1*	*0.110458*	*5674.1*			
	105760.8	*Total*			*54191.5*	*0.86*	*3883.7*	*4,262*

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	KWC Engineers	Date	10/6/2023
Designed by	Andre Carrasco	Case No	
Company Project Number/Name	2015.1511.8.13 The Trails PA5		

BMP Identification

BMP NAME / ID: PA 5 - MWS UNIT E1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity: I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

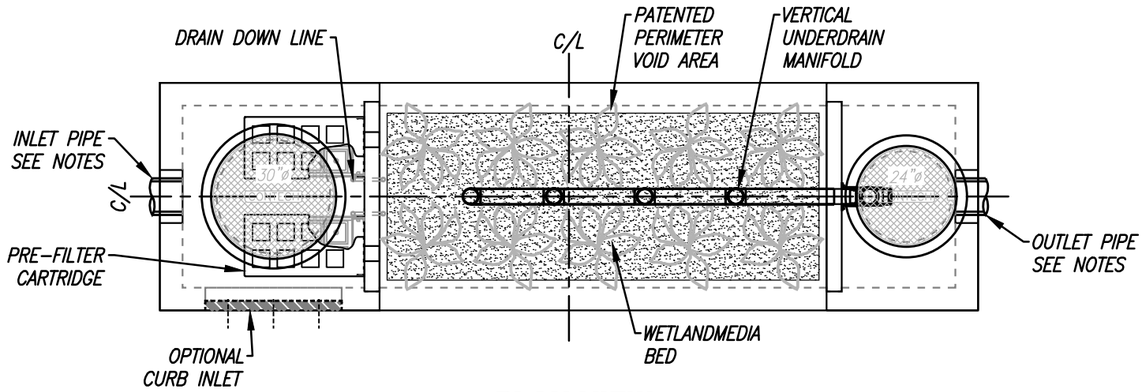
DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
Roofs	*24851.7*	*Roofs*	*1*	*0.89*	*22167.7*			
Dwy	*0*	*Concrete or Asphalt*	*1*	*0.892*	*0*			
Street	*29540*	*Concrete or Asphalt*	*1*	*0.892*	*26349.7*			
Open	*0*	*Natural (D Soil)*	*0.4*	*0.279712*	*0*			
Landscape	*51369.1*	*Ornamental Landscaping*	*0.1*	*0.110458*	*5674.1*			
	105760.8	***Total***			**54191.5**	**0.20**	***0.2***	***0.206***

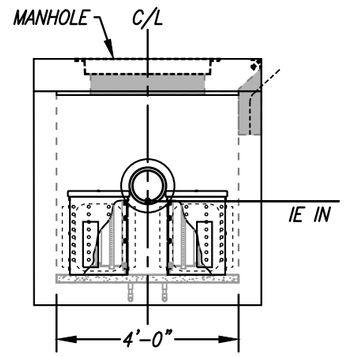
Notes:

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
TREATMENT FLOW (CFS)			
PRETREATMENT LOADING RATE (GPM/SF)			2.1 GPM/SF
WETLAND MEDIA LOADING RATE (GPM/SF)			1.0
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			_____ (CFS)
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
NOTES:			

* PRELIMINARY ONLY - NOT FOR CONSTRUCTION



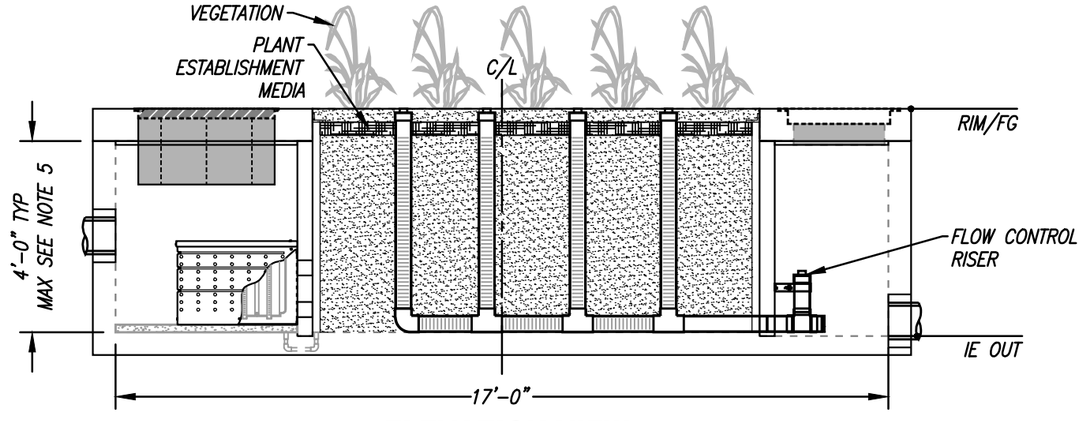
PLAN VIEW



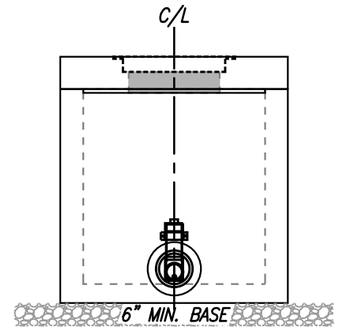
LEFT END VIEW

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURER'S SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
3. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
4. CONTRACTOR RESPONSIBLE FOR CONTACTING CONTECH FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A CONTECH REPRESENTATIVE.
5. VERTICAL HEIGHT VARIES BASED ON SITE SPECIFIC REQUIREMENTS.



ELEVATION VIEW



RIGHT END VIEW

MODULAR WETLANDS
FOR PATENT INFORMATION, GO TO www.ContechES.com/IP

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CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com

MWS-L-4-17-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

1/12/24TIM.GIRARD

User Inputs

Chamber Model:	MC-4500
Outlet Control Structure:	Yes
Project Name:	The Trails PA5
Engineer:	Richard Szutu
Project Location:	California
Measurement Type:	Imperial
Required Storage Volume:	4000 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	12 in.
Design Constraint Dimensions:	(23 ft. x 59 ft.)

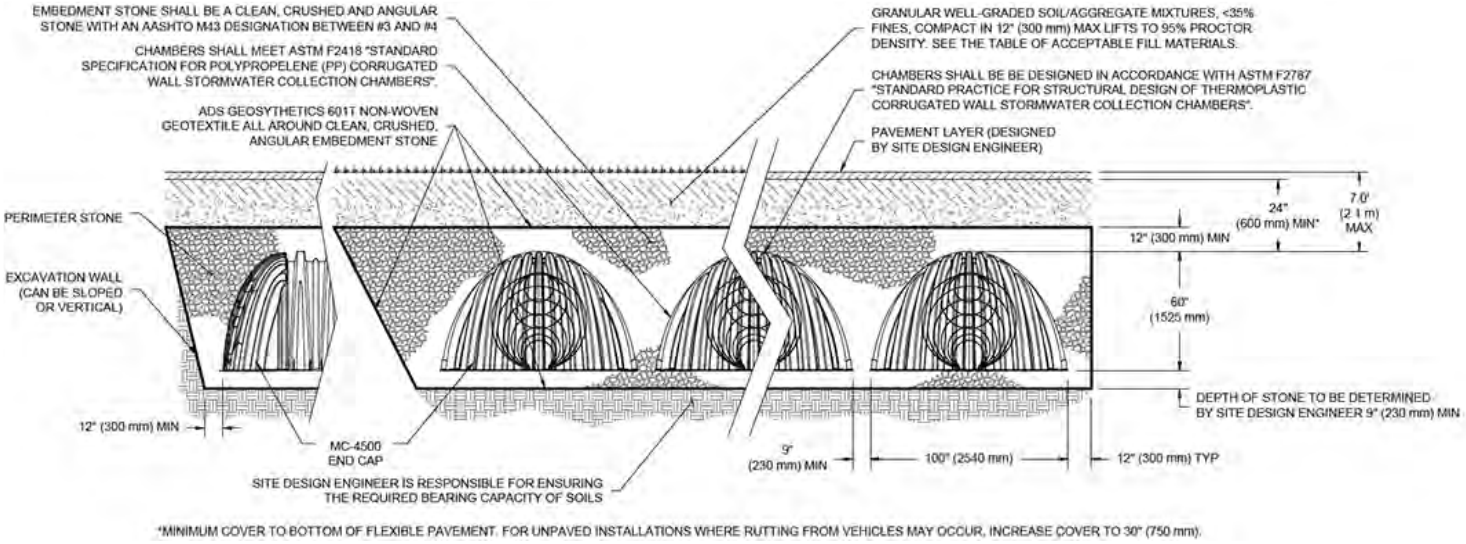
Results

System Volume and Bed Size

Installed Storage Volume:	4331.53 cubic ft.
Storage Volume Per Chamber:	106.50 cubic ft.
Number Of Chambers Required:	21
Number Of End Caps Required:	4
Chamber Rows:	2
Maximum Length:	55.51 ft.
Maximum Width:	20.02 ft.
Approx. Bed Size Required:	1072.16 square ft.
Average Cover Over Chambers:	N/A .

System Components

Amount Of Stone Required:	180 cubic yards
Volume Of Excavation (Not Including Fill):	269 cubic yards
Total Non-woven Geotextile Required:	422 square yards
Woven Geotextile Required (excluding Isolator Row):	30 square yards
Woven Geotextile Required (Isolator Row):	117 square yards
Total Woven Geotextile Required:	146 square yards
Impervious Liner Required:	0 square yards



Santa Ana Watershed - BMP Design Volume, V_{BMP}

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: KWC Engineers — Date: 9/10/2024
Designed by: — Case No:
Company Project Number/Name: 2015.1511.8.13 The Trails PA5

BMP Identification

BMP NAME / ID: PA 5 - Bioretention Basin E2

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.86 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
Roofs	*49368*	*Roofs*	*1*	*0.89*	*44036.3*			
Dwy	*0*	*Concrete or Asphalt*	*1*	*0.892*	*0*			
Street	*46561*	*Concrete or Asphalt*	*1*	*0.892*	*41532.4*			
Open	*0*	*Natural (D Soil)*	*0.4*	*0.279712*	*0*			
Landscape	*152632*	*Ornamental Landscaping*	*0.1*	*0.110458*	*16859.4*			
	248561		***Total***		**102428.1**	**0.86**	***7340.7***	***9,133***

Notes:

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	E2		Calculated Cells	

Company Name: KWC Engineers Date: 9/10/2024

Designed by: County/City Case No.:

Design Volume

Enter the area tributary to this feature	A_T=	5.71	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	7,341	ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	58.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.79	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	4,106	ft^2
Proposed Surface Area	A=	5,102	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0.5	%
6" Check Dam Spacing		0	feet

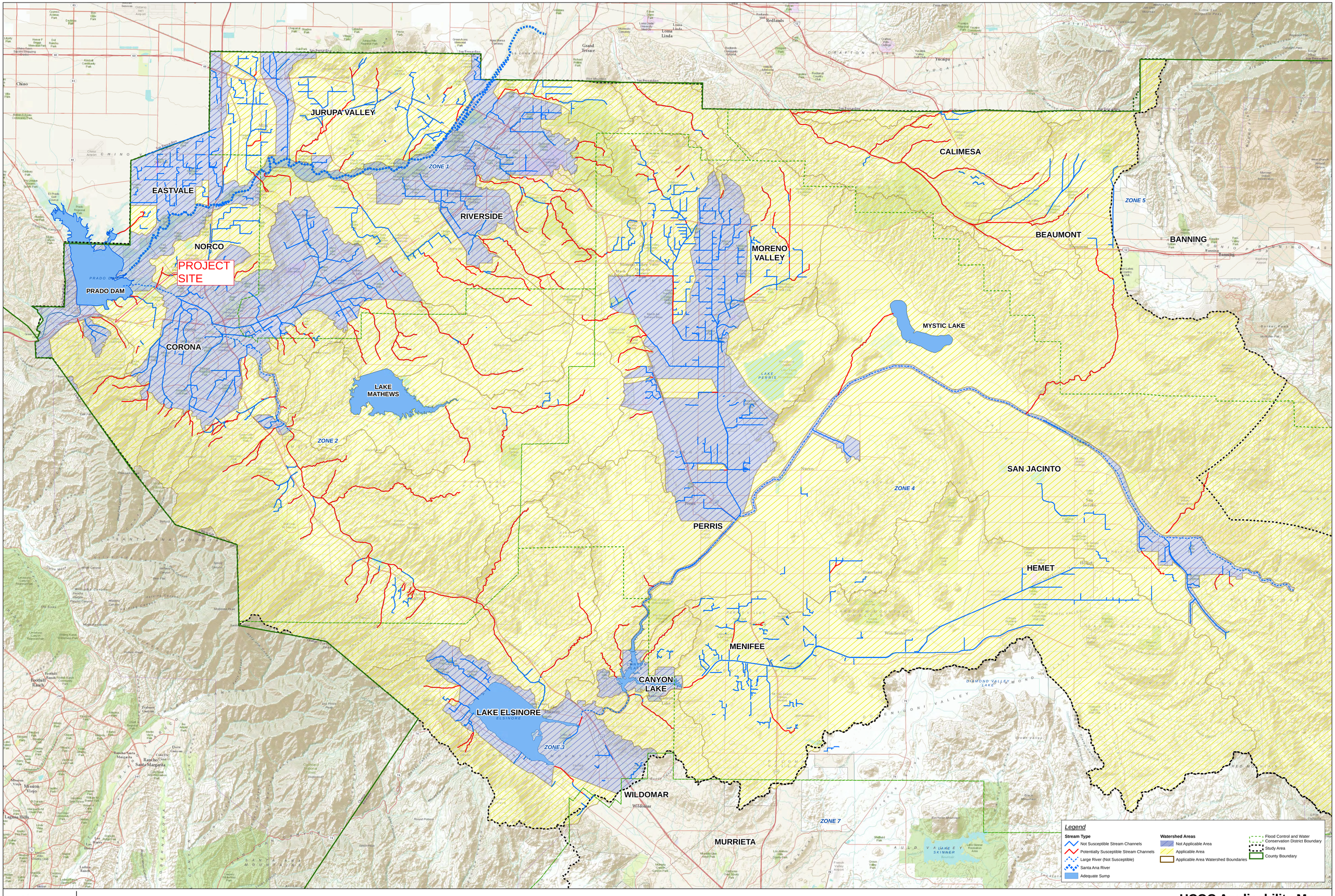
Describe Vegetation: Other

Notes: Total treatment volume provided is equal to 5,102 sq-ft x 1.79 ft = 9,133 cu-ft.

Planning Area 5

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern



HCOC Applicability Map

Hydromodification Susceptibility Documentation Report and Mapping
Riverside County Flood Control and Water Conservation District

Map 2

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004, Version 7.0
Study date 09/12/24 File: 1511P2A24242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6062

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 78.13(Ac.) = 0.122 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 78.13(Ac.) = 0.122 Sq. Mi.
Length along longest watercourse = 12683.00(Ft.)
Length along longest watercourse measured to centroid = 5913.00(Ft.)
Length along longest watercourse = 2.402 Mi.
Length along longest watercourse measured to centroid = 1.120 Mi.
Difference in elevation = 488.30(Ft.)
Slope along watercourse = 203.2819 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.191 Hr.
Lag time = 11.46 Min.
25% of lag time = 2.87 Min.
40% of lag time = 4.58 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
78.13	2.56	200.01

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
78.13	6.76	528.16

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.560(In)
Area Averaged 100-Year Rainfall = 6.760(In)

Point rain (area averaged) = 2.560(In)
Areal adjustment factor = 99.98 %
Adjusted average point rain = 2.560(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
78.130	32.00	0.500

Total Area Entered = 78.13(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)

32.0 16.2 0.870 0.500 0.479 1.000 0.479
Sum (F) = 0.479

Area averaged mean soil loss (F) (In/Hr) = 0.479
Minimum soil loss rate ((In/Hr)) = 0.239
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.528

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	43.626	4.969	3.913
2	0.167	87.252	20.802	16.380
3	0.250	130.878	28.270	22.260
4	0.333	174.504	15.664	12.334
5	0.417	218.130	7.644	6.019
6	0.500	261.756	5.115	4.028
7	0.583	305.382	3.816	3.005
8	0.667	349.008	2.851	2.245
9	0.750	392.634	2.284	1.799
10	0.833	436.260	1.739	1.369
11	0.917	479.886	1.383	1.089
12	1.000	523.512	1.262	0.994
13	1.083	567.138	0.983	0.774
14	1.167	610.764	0.812	0.639
15	1.250	654.390	0.659	0.519
16	1.333	698.016	0.507	0.399
17	1.417	741.642	0.436	0.344
18	1.500	785.268	0.436	0.344
19	1.583	828.894	0.365	0.288
		Sum = 100.000	Sum=	78.740

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.020	0.849	0.011	0.01
2	0.17	0.07	0.020	0.845	0.011	0.01
3	0.25	0.07	0.020	0.842	0.011	0.01
4	0.33	0.10	0.031	0.839	0.016	0.01
5	0.42	0.10	0.031	0.836	0.016	0.01
6	0.50	0.10	0.031	0.832	0.016	0.01
7	0.58	0.10	0.031	0.829	0.016	0.01
8	0.67	0.10	0.031	0.826	0.016	0.01
9	0.75	0.10	0.031	0.823	0.016	0.01
10	0.83	0.13	0.041	0.819	0.022	0.02
11	0.92	0.13	0.041	0.816	0.022	0.02
12	1.00	0.13	0.041	0.813	0.022	0.02
13	1.08	0.10	0.031	0.810	0.016	0.01
14	1.17	0.10	0.031	0.806	0.016	0.01
15	1.25	0.10	0.031	0.803	0.016	0.01
16	1.33	0.10	0.031	0.800	0.016	0.01
17	1.42	0.10	0.031	0.797	0.016	0.01
18	1.50	0.10	0.031	0.794	0.016	0.01
19	1.58	0.10	0.031	0.791	0.016	0.01
20	1.67	0.10	0.031	0.787	0.016	0.01
21	1.75	0.10	0.031	0.784	0.016	0.01
22	1.83	0.13	0.041	0.781	0.022	0.02
23	1.92	0.13	0.041	0.778	0.022	0.02
24	2.00	0.13	0.041	0.775	0.022	0.02
25	2.08	0.13	0.041	0.772	0.022	0.02
26	2.17	0.13	0.041	0.769	0.022	0.02
27	2.25	0.13	0.041	0.765	0.022	0.02
28	2.33	0.13	0.041	0.762	0.022	0.02
29	2.42	0.13	0.041	0.759	0.022	0.02
30	2.50	0.13	0.041	0.756	0.022	0.02

31	2.58	0.17	0.051	0.753	0.027	0.02
32	2.67	0.17	0.051	0.750	0.027	0.02
33	2.75	0.17	0.051	0.747	0.027	0.02
34	2.83	0.17	0.051	0.744	0.027	0.02
35	2.92	0.17	0.051	0.741	0.027	0.02
36	3.00	0.17	0.051	0.738	0.027	0.02
37	3.08	0.17	0.051	0.735	0.027	0.02
38	3.17	0.17	0.051	0.731	0.027	0.02
39	3.25	0.17	0.051	0.728	0.027	0.02
40	3.33	0.17	0.051	0.725	0.027	0.02
41	3.42	0.17	0.051	0.722	0.027	0.02
42	3.50	0.17	0.051	0.719	0.027	0.02
43	3.58	0.17	0.051	0.716	0.027	0.02
44	3.67	0.17	0.051	0.713	0.027	0.02
45	3.75	0.17	0.051	0.710	0.027	0.02
46	3.83	0.20	0.061	0.707	0.032	0.03
47	3.92	0.20	0.061	0.704	0.032	0.03
48	4.00	0.20	0.061	0.701	0.032	0.03
49	4.08	0.20	0.061	0.698	0.032	0.03
50	4.17	0.20	0.061	0.695	0.032	0.03
51	4.25	0.20	0.061	0.692	0.032	0.03
52	4.33	0.23	0.072	0.690	0.038	0.03
53	4.42	0.23	0.072	0.687	0.038	0.03
54	4.50	0.23	0.072	0.684	0.038	0.03
55	4.58	0.23	0.072	0.681	0.038	0.03
56	4.67	0.23	0.072	0.678	0.038	0.03
57	4.75	0.23	0.072	0.675	0.038	0.03
58	4.83	0.27	0.082	0.672	0.043	0.04
59	4.92	0.27	0.082	0.669	0.043	0.04
60	5.00	0.27	0.082	0.666	0.043	0.04
61	5.08	0.20	0.061	0.663	0.032	0.03
62	5.17	0.20	0.061	0.660	0.032	0.03
63	5.25	0.20	0.061	0.657	0.032	0.03
64	5.33	0.23	0.072	0.655	0.038	0.03
65	5.42	0.23	0.072	0.652	0.038	0.03
66	5.50	0.23	0.072	0.649	0.038	0.03
67	5.58	0.27	0.082	0.646	0.043	0.04
68	5.67	0.27	0.082	0.643	0.043	0.04
69	5.75	0.27	0.082	0.640	0.043	0.04
70	5.83	0.27	0.082	0.638	0.043	0.04
71	5.92	0.27	0.082	0.635	0.043	0.04
72	6.00	0.27	0.082	0.632	0.043	0.04
73	6.08	0.30	0.092	0.629	0.049	0.04
74	6.17	0.30	0.092	0.626	0.049	0.04
75	6.25	0.30	0.092	0.624	0.049	0.04
76	6.33	0.30	0.092	0.621	0.049	0.04
77	6.42	0.30	0.092	0.618	0.049	0.04
78	6.50	0.30	0.092	0.615	0.049	0.04
79	6.58	0.33	0.102	0.612	0.054	0.05
80	6.67	0.33	0.102	0.610	0.054	0.05
81	6.75	0.33	0.102	0.607	0.054	0.05
82	6.83	0.33	0.102	0.604	0.054	0.05
83	6.92	0.33	0.102	0.601	0.054	0.05
84	7.00	0.33	0.102	0.599	0.054	0.05
85	7.08	0.33	0.102	0.596	0.054	0.05
86	7.17	0.33	0.102	0.593	0.054	0.05
87	7.25	0.33	0.102	0.591	0.054	0.05
88	7.33	0.37	0.113	0.588	0.059	0.05
89	7.42	0.37	0.113	0.585	0.059	0.05
90	7.50	0.37	0.113	0.582	0.059	0.05
91	7.58	0.40	0.123	0.580	0.065	0.06
92	7.67	0.40	0.123	0.577	0.065	0.06
93	7.75	0.40	0.123	0.574	0.065	0.06
94	7.83	0.43	0.133	0.572	0.070	0.06
95	7.92	0.43	0.133	0.569	0.070	0.06
96	8.00	0.43	0.133	0.567	0.070	0.06
97	8.08	0.50	0.154	0.564	0.081	0.07
98	8.17	0.50	0.154	0.561	0.081	0.07
99	8.25	0.50	0.154	0.559	0.081	0.07
100	8.33	0.50	0.154	0.556	0.081	0.07
101	8.42	0.50	0.154	0.553	0.081	0.07

102	8.50	0.50	0.154	0.551	0.081	0.07
103	8.58	0.53	0.164	0.548	0.086	0.08
104	8.67	0.53	0.164	0.546	0.086	0.08
105	8.75	0.53	0.164	0.543	0.086	0.08
106	8.83	0.57	0.174	0.541	0.092	0.08
107	8.92	0.57	0.174	0.538	0.092	0.08
108	9.00	0.57	0.174	0.535	0.092	0.08
109	9.08	0.63	0.195	0.533	0.103	0.09
110	9.17	0.63	0.195	0.530	0.103	0.09
111	9.25	0.63	0.195	0.528	0.103	0.09
112	9.33	0.67	0.205	0.525	0.108	0.10
113	9.42	0.67	0.205	0.523	0.108	0.10
114	9.50	0.67	0.205	0.520	0.108	0.10
115	9.58	0.70	0.215	0.518	0.114	0.10
116	9.67	0.70	0.215	0.515	0.114	0.10
117	9.75	0.70	0.215	0.513	0.114	0.10
118	9.83	0.73	0.225	0.510	0.119	0.11
119	9.92	0.73	0.225	0.508	0.119	0.11
120	10.00	0.73	0.225	0.506	0.119	0.11
121	10.08	0.50	0.154	0.503	0.081	0.07
122	10.17	0.50	0.154	0.501	0.081	0.07
123	10.25	0.50	0.154	0.498	0.081	0.07
124	10.33	0.50	0.154	0.496	0.081	0.07
125	10.42	0.50	0.154	0.493	0.081	0.07
126	10.50	0.50	0.154	0.491	0.081	0.07
127	10.58	0.67	0.205	0.489	0.108	0.10
128	10.67	0.67	0.205	0.486	0.108	0.10
129	10.75	0.67	0.205	0.484	0.108	0.10
130	10.83	0.67	0.205	0.481	0.108	0.10
131	10.92	0.67	0.205	0.479	0.108	0.10
132	11.00	0.67	0.205	0.477	0.108	0.10
133	11.08	0.63	0.195	0.474	0.103	0.09
134	11.17	0.63	0.195	0.472	0.103	0.09
135	11.25	0.63	0.195	0.470	0.103	0.09
136	11.33	0.63	0.195	0.467	0.103	0.09
137	11.42	0.63	0.195	0.465	0.103	0.09
138	11.50	0.63	0.195	0.463	0.103	0.09
139	11.58	0.57	0.174	0.460	0.092	0.08
140	11.67	0.57	0.174	0.458	0.092	0.08
141	11.75	0.57	0.174	0.456	0.092	0.08
142	11.83	0.60	0.184	0.454	0.097	0.09
143	11.92	0.60	0.184	0.451	0.097	0.09
144	12.00	0.60	0.184	0.449	0.097	0.09
145	12.08	0.83	0.256	0.447	0.135	0.12
146	12.17	0.83	0.256	0.445	0.135	0.12
147	12.25	0.83	0.256	0.442	0.135	0.12
148	12.33	0.87	0.266	0.440	0.141	0.13
149	12.42	0.87	0.266	0.438	0.141	0.13
150	12.50	0.87	0.266	0.436	0.141	0.13
151	12.58	0.93	0.287	0.434	0.151	0.14
152	12.67	0.93	0.287	0.431	0.151	0.14
153	12.75	0.93	0.287	0.429	0.151	0.14
154	12.83	0.97	0.297	0.427	0.157	0.14
155	12.92	0.97	0.297	0.425	0.157	0.14
156	13.00	0.97	0.297	0.423	0.157	0.14
157	13.08	1.13	0.348	0.421	0.184	0.16
158	13.17	1.13	0.348	0.418	0.184	0.16
159	13.25	1.13	0.348	0.416	0.184	0.16
160	13.33	1.13	0.348	0.414	0.184	0.16
161	13.42	1.13	0.348	0.412	0.184	0.16
162	13.50	1.13	0.348	0.410	0.184	0.16
163	13.58	0.77	0.235	0.408	0.124	0.11
164	13.67	0.77	0.235	0.406	0.124	0.11
165	13.75	0.77	0.235	0.404	0.124	0.11
166	13.83	0.77	0.235	0.402	0.124	0.11
167	13.92	0.77	0.235	0.400	0.124	0.11
168	14.00	0.77	0.235	0.398	0.124	0.11
169	14.08	0.90	0.276	0.396	0.146	0.13
170	14.17	0.90	0.276	0.394	0.146	0.13
171	14.25	0.90	0.276	0.392	0.146	0.13
172	14.33	0.87	0.266	0.390	0.141	0.13

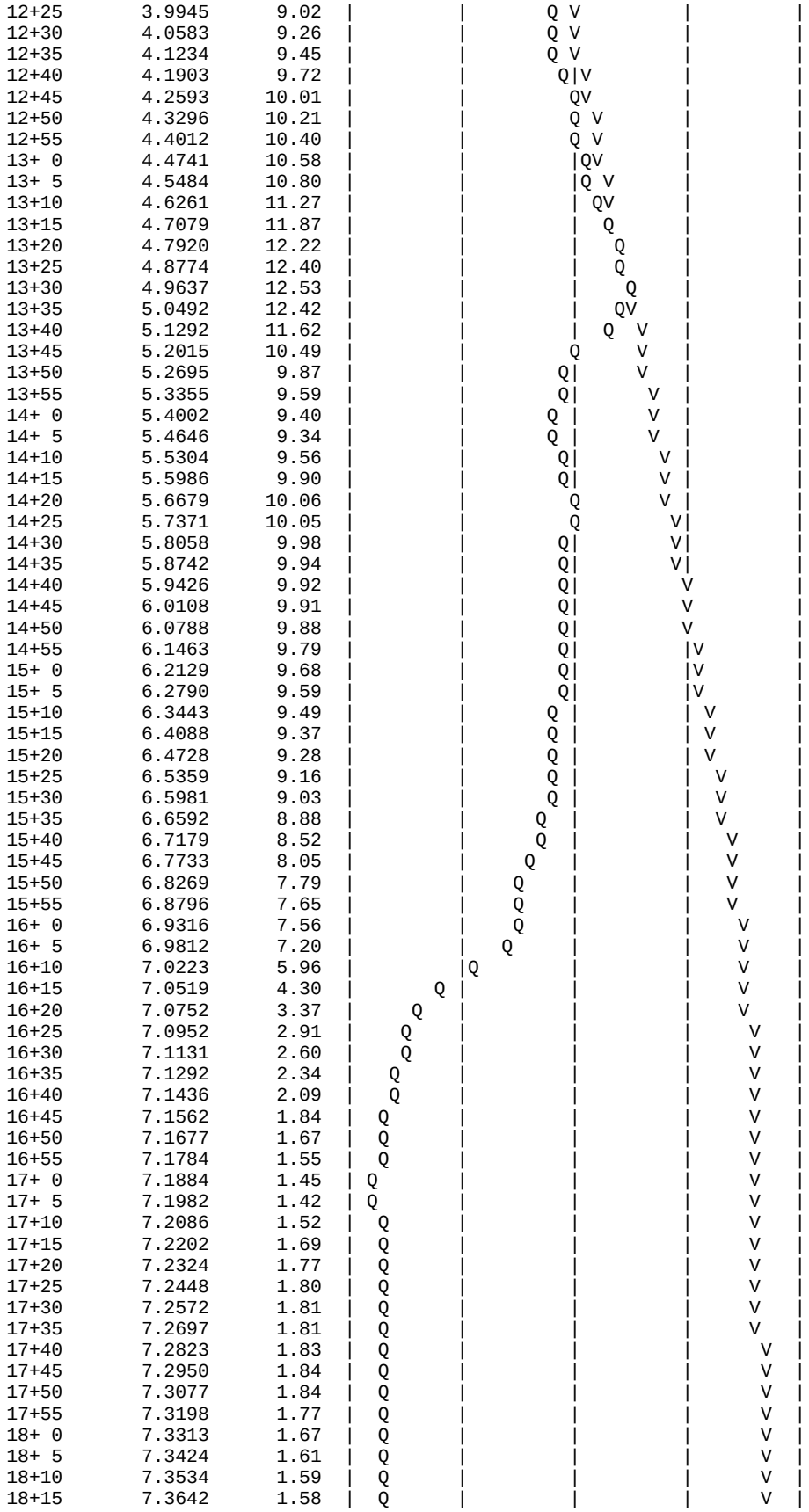
173	14.42	0.87	0.266	0.388	0.141	0.13
174	14.50	0.87	0.266	0.386	0.141	0.13
175	14.58	0.87	0.266	0.384	0.141	0.13
176	14.67	0.87	0.266	0.382	0.141	0.13
177	14.75	0.87	0.266	0.380	0.141	0.13
178	14.83	0.83	0.256	0.378	0.135	0.12
179	14.92	0.83	0.256	0.376	0.135	0.12
180	15.00	0.83	0.256	0.374	0.135	0.12
181	15.08	0.80	0.246	0.372	0.130	0.12
182	15.17	0.80	0.246	0.370	0.130	0.12
183	15.25	0.80	0.246	0.368	0.130	0.12
184	15.33	0.77	0.235	0.366	0.124	0.11
185	15.42	0.77	0.235	0.364	0.124	0.11
186	15.50	0.77	0.235	0.363	0.124	0.11
187	15.58	0.63	0.195	0.361	0.103	0.09
188	15.67	0.63	0.195	0.359	0.103	0.09
189	15.75	0.63	0.195	0.357	0.103	0.09
190	15.83	0.63	0.195	0.355	0.103	0.09
191	15.92	0.63	0.195	0.353	0.103	0.09
192	16.00	0.63	0.195	0.352	0.103	0.09
193	16.08	0.13	0.041	0.350	0.022	0.02
194	16.17	0.13	0.041	0.348	0.022	0.02
195	16.25	0.13	0.041	0.346	0.022	0.02
196	16.33	0.13	0.041	0.344	0.022	0.02
197	16.42	0.13	0.041	0.343	0.022	0.02
198	16.50	0.13	0.041	0.341	0.022	0.02
199	16.58	0.10	0.031	0.339	0.016	0.01
200	16.67	0.10	0.031	0.337	0.016	0.01
201	16.75	0.10	0.031	0.336	0.016	0.01
202	16.83	0.10	0.031	0.334	0.016	0.01
203	16.92	0.10	0.031	0.332	0.016	0.01
204	17.00	0.10	0.031	0.331	0.016	0.01
205	17.08	0.17	0.051	0.329	0.027	0.02
206	17.17	0.17	0.051	0.327	0.027	0.02
207	17.25	0.17	0.051	0.326	0.027	0.02
208	17.33	0.17	0.051	0.324	0.027	0.02
209	17.42	0.17	0.051	0.322	0.027	0.02
210	17.50	0.17	0.051	0.321	0.027	0.02
211	17.58	0.17	0.051	0.319	0.027	0.02
212	17.67	0.17	0.051	0.318	0.027	0.02
213	17.75	0.17	0.051	0.316	0.027	0.02
214	17.83	0.13	0.041	0.314	0.022	0.02
215	17.92	0.13	0.041	0.313	0.022	0.02
216	18.00	0.13	0.041	0.311	0.022	0.02
217	18.08	0.13	0.041	0.310	0.022	0.02
218	18.17	0.13	0.041	0.308	0.022	0.02
219	18.25	0.13	0.041	0.307	0.022	0.02
220	18.33	0.13	0.041	0.305	0.022	0.02
221	18.42	0.13	0.041	0.304	0.022	0.02
222	18.50	0.13	0.041	0.302	0.022	0.02
223	18.58	0.10	0.031	0.301	0.016	0.01
224	18.67	0.10	0.031	0.299	0.016	0.01
225	18.75	0.10	0.031	0.298	0.016	0.01
226	18.83	0.07	0.020	0.297	0.011	0.01
227	18.92	0.07	0.020	0.295	0.011	0.01
228	19.00	0.07	0.020	0.294	0.011	0.01
229	19.08	0.10	0.031	0.292	0.016	0.01
230	19.17	0.10	0.031	0.291	0.016	0.01
231	19.25	0.10	0.031	0.290	0.016	0.01
232	19.33	0.13	0.041	0.288	0.022	0.02
233	19.42	0.13	0.041	0.287	0.022	0.02
234	19.50	0.13	0.041	0.286	0.022	0.02
235	19.58	0.10	0.031	0.284	0.016	0.01
236	19.67	0.10	0.031	0.283	0.016	0.01
237	19.75	0.10	0.031	0.282	0.016	0.01
238	19.83	0.07	0.020	0.280	0.011	0.01
239	19.92	0.07	0.020	0.279	0.011	0.01
240	20.00	0.07	0.020	0.278	0.011	0.01
241	20.08	0.10	0.031	0.277	0.016	0.01
242	20.17	0.10	0.031	0.276	0.016	0.01
243	20.25	0.10	0.031	0.274	0.016	0.01

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244  20.33     0.10      0.031         0.273     0.016         0.01
245  20.42     0.10      0.031         0.272     0.016         0.01
246  20.50     0.10      0.031         0.271     0.016         0.01
247  20.58     0.10      0.031         0.270     0.016         0.01
248  20.67     0.10      0.031         0.269     0.016         0.01
249  20.75     0.10      0.031         0.267     0.016         0.01
250  20.83     0.07      0.020         0.266     0.011         0.01
251  20.92     0.07      0.020         0.265     0.011         0.01
252  21.00     0.07      0.020         0.264     0.011         0.01
253  21.08     0.10      0.031         0.263     0.016         0.01
254  21.17     0.10      0.031         0.262     0.016         0.01
255  21.25     0.10      0.031         0.261     0.016         0.01
256  21.33     0.07      0.020         0.260     0.011         0.01
257  21.42     0.07      0.020         0.259     0.011         0.01
258  21.50     0.07      0.020         0.258     0.011         0.01
259  21.58     0.10      0.031         0.257     0.016         0.01
260  21.67     0.10      0.031         0.256     0.016         0.01
261  21.75     0.10      0.031         0.255     0.016         0.01
262  21.83     0.07      0.020         0.254     0.011         0.01
263  21.92     0.07      0.020         0.254     0.011         0.01
264  22.00     0.07      0.020         0.253     0.011         0.01
265  22.08     0.10      0.031         0.252     0.016         0.01
266  22.17     0.10      0.031         0.251     0.016         0.01
267  22.25     0.10      0.031         0.250     0.016         0.01
268  22.33     0.07      0.020         0.250     0.011         0.01
269  22.42     0.07      0.020         0.249     0.011         0.01
270  22.50     0.07      0.020         0.248     0.011         0.01
271  22.58     0.07      0.020         0.247     0.011         0.01
272  22.67     0.07      0.020         0.247     0.011         0.01
273  22.75     0.07      0.020         0.246     0.011         0.01
274  22.83     0.07      0.020         0.245     0.011         0.01
275  22.92     0.07      0.020         0.245     0.011         0.01
276  23.00     0.07      0.020         0.244     0.011         0.01
277  23.08     0.07      0.020         0.244     0.011         0.01
278  23.17     0.07      0.020         0.243     0.011         0.01
279  23.25     0.07      0.020         0.242     0.011         0.01
280  23.33     0.07      0.020         0.242     0.011         0.01
281  23.42     0.07      0.020         0.241     0.011         0.01
282  23.50     0.07      0.020         0.241     0.011         0.01
283  23.58     0.07      0.020         0.241     0.011         0.01
284  23.67     0.07      0.020         0.240     0.011         0.01
285  23.75     0.07      0.020         0.240     0.011         0.01
286  23.83     0.07      0.020         0.240     0.011         0.01
287  23.92     0.07      0.020         0.240     0.011         0.01
288  24.00     0.07      0.020         0.239     0.011         0.01
    Sum =     100.0                                 Sum =    14.5
      Flood volume = Effective rainfall      1.21(In)
       times area      78.1(Ac.)/[(In)/(Ft.)] =       7.9(Ac.Ft)
      Total soil loss =      1.35(In)
      Total soil loss =     8.799(Ac.Ft)
      Total rainfall =      2.56(In)
      Flood volume =      342641.6 Cubic Feet
      Total soil loss =      383294.0 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     12.529(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0      20.0
 ---------------------------------------------------------------------
   0+ 5       0.0003      0.04  Q         |         |         |         |
   0+10       0.0016      0.20  Q         |         |         |         |
   0+15       0.0044      0.41  Q         |         |         |         |
   0+20       0.0082      0.55  VQ        |         |         |         |
   0+25       0.0130      0.69  VQ        |         |         |         |
   0+30       0.0187      0.83  VQ        |         |         |         |
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0+35      0.0251     0.92  VQ       |         |         |         |
0+40      0.0318     0.97  VQ       |         |         |         |
0+45      0.0387     1.01  V Q      |         |         |         |
0+50      0.0460     1.06  V Q      |         |         |         |
0+55      0.0540     1.16  V Q      |         |         |         |
1+ 0      0.0628     1.28  V Q      |         |         |         |
1+ 5      0.0720     1.34  V Q      |         |         |         |
1+10      0.0810     1.30  V Q      |         |         |         |
1+15      0.0894     1.22  V Q      |         |         |         |
1+20      0.0975     1.18  V Q      |         |         |         |
1+25      0.1056     1.17  V Q      |         |         |         |
1+30      0.1136     1.17  V Q      |         |         |         |
1+35      0.1216     1.16  V Q      |         |         |         |
1+40      0.1296     1.16  V Q      |         |         |         |
1+45      0.1376     1.16  V Q      |         |         |         |
1+50      0.1457     1.17  V Q      |         |         |         |
1+55      0.1543     1.25  V Q      |         |         |         |
2+ 0      0.1637     1.36  V Q      |         |         |         |
2+ 5      0.1734     1.42  V Q      |         |         |         |
2+10      0.1833     1.44  V Q      |         |         |         |
2+15      0.1934     1.46  V Q      |         |         |         |
2+20      0.2036     1.48  |VQ      |         |         |         |
2+25      0.2138     1.48  |VQ      |         |         |         |
2+30      0.2241     1.49  |VQ      |         |         |         |
2+35      0.2345     1.52  |V Q     |         |         |         |
2+40      0.2455     1.60  |V Q     |         |         |         |
2+45      0.2573     1.71  |V Q     |         |         |         |
2+50      0.2696     1.78  |V Q     |         |         |         |
2+55      0.2820     1.81  |V Q     |         |         |         |
3+ 0      0.2946     1.83  |V Q     |         |         |         |
3+ 5      0.3073     1.85  |V Q     |         |         |         |
3+10      0.3201     1.86  |V Q     |         |         |         |
3+15      0.3330     1.87  |V Q     |         |         |         |
3+20      0.3459     1.88  |V Q     |         |         |         |
3+25      0.3589     1.88  |V Q     |         |         |         |
3+30      0.3719     1.89  |V Q     |         |         |         |
3+35      0.3849     1.89  |V Q     |         |         |         |
3+40      0.3980     1.89  | VQ     |         |         |         |
3+45      0.4110     1.90  | VQ     |         |         |         |
3+50      0.4242     1.92  | VQ     |         |         |         |
3+55      0.4380     2.00  | VQ     |         |         |         |
4+ 0      0.4525     2.11  | V Q    |         |         |         |
4+ 5      0.4675     2.17  | V Q    |         |         |         |
4+10      0.4826     2.20  | V Q    |         |         |         |
4+15      0.4979     2.22  | V Q    |         |         |         |
4+20      0.5134     2.25  | V Q    |         |         |         |
4+25      0.5295     2.34  | V Q    |         |         |         |
4+30      0.5464     2.46  | V Q    |         |         |         |
4+35      0.5638     2.52  | V  Q   |         |         |         |
4+40      0.5814     2.56  | V  Q   |         |         |         |
4+45      0.5992     2.58  |  V Q   |         |         |         |
4+50      0.6172     2.62  |  V Q   |         |         |         |
4+55      0.6359     2.71  |  V Q   |         |         |         |
5+ 0      0.6554     2.83  |  V Q   |         |         |         |
5+ 5      0.6751     2.86  |  V Q   |         |         |         |
5+10      0.6940     2.74  |  V Q   |         |         |         |
5+15      0.7116     2.55  |  V Q   |         |         |         |
5+20      0.7286     2.47  |  VQ    |         |         |         |
5+25      0.7458     2.50  |  V Q   |         |         |         |
5+30      0.7636     2.58  |  V Q   |         |         |         |
5+35      0.7818     2.64  |  V Q   |         |         |         |
5+40      0.8007     2.74  |   VQ   |         |         |         |
5+45      0.8203     2.85  |   VQ   |         |         |         |
5+50      0.8404     2.92  |   VQ   |         |         |         |
5+55      0.8607     2.95  |   VQ   |         |         |         |
6+ 0      0.8812     2.97  |   VQ   |         |         |         |
6+ 5      0.9019     3.01  |   V Q  |         |         |         |
6+10      0.9232     3.10  |   V Q  |         |         |         |
6+15      0.9454     3.21  |   V Q  |         |         |         |
6+20      0.9680     3.28  |   V Q  |         |         |         |
6+25      0.9908     3.32  |    VQ  |         |         |         |
```

6+30	1.0138	3.34	VQ				
6+35	1.0371	3.38	VQ				
6+40	1.0610	3.47	VQ				
6+45	1.0857	3.59	V Q				
6+50	1.1109	3.66	V Q				
6+55	1.1364	3.70	V Q				
7+ 0	1.1620	3.72	V Q				
7+ 5	1.1878	3.74	VQ				
7+10	1.2137	3.76	VQ				
7+15	1.2396	3.77	VQ				
7+20	1.2657	3.80	VQ				
7+25	1.2925	3.88	VQ				
7+30	1.3200	4.00	VQ				
7+35	1.3481	4.08	V Q				
7+40	1.3769	4.19	VQ				
7+45	1.4067	4.32	VQ				
7+50	1.4371	4.42	VQ				
7+55	1.4683	4.54	V Q				
8+ 0	1.5005	4.67	V Q				
8+ 5	1.5335	4.79	V Q				
8+10	1.5680	5.00	V Q				
8+15	1.6041	5.25	V Q				
8+20	1.6412	5.39	V Q				
8+25	1.6789	5.47	V Q				
8+30	1.7169	5.52	V Q				
8+35	1.7553	5.58	V Q				
8+40	1.7945	5.69	V Q				
8+45	1.8347	5.83	V Q				
8+50	1.8755	5.93	V Q				
8+55	1.9171	6.05	V Q				
9+ 0	1.9598	6.19	V Q				
9+ 5	2.0033	6.31	V Q				
9+10	2.0482	6.52	V Q				
9+15	2.0948	6.77	V Q				
9+20	2.1425	6.93	V Q				
9+25	2.1914	7.09	V Q				
9+30	2.2413	7.25	V Q				
9+35	2.2921	7.38	V Q				
9+40	2.3439	7.51	V Q				
9+45	2.3967	7.67	V Q				
9+50	2.4502	7.78	V Q				
9+55	2.5047	7.91	V Q				
10+ 0	2.5602	8.06	V Q				
10+ 5	2.6155	8.02	V Q				
10+10	2.6672	7.52	V Q				
10+15	2.7141	6.81	Q				
10+20	2.7583	6.42	Q V				
10+25	2.8013	6.24	Q V				
10+30	2.8434	6.12	Q V				
10+35	2.8856	6.13	Q V				
10+40	2.9301	6.46	Q V				
10+45	2.9779	6.94	Q V				
10+50	3.0275	7.20	QV				
10+55	3.0779	7.32	QV				
11+ 0	3.1288	7.38	QV				
11+ 5	3.1798	7.42	Q V				
11+10	3.2306	7.37	Q V				
11+15	3.2808	7.29	Q V				
11+20	3.3308	7.25	Q V				
11+25	3.3806	7.24	Q V				
11+30	3.4304	7.23	Q V				
11+35	3.4799	7.19	Q V				
11+40	3.5283	7.03	Q V				
11+45	3.5753	6.82	Q V				
11+50	3.6216	6.72	Q V				
11+55	3.6681	6.75	Q V				
12+ 0	3.7151	6.82	Q V				
12+ 5	3.7632	6.99	Q V				
12+10	3.8151	7.55	Q V				
12+15	3.8723	8.30	Q V				
12+20	3.9324	8.73	Q V				



18+20	7.3750	1.57	| Q	|	|	|	V |
18+25	7.3858	1.56	| Q	|	|	|	V |
18+30	7.3965	1.55	| Q	|	|	|	V |
18+35	7.4070	1.53	| Q	|	|	|	V |
18+40	7.4169	1.45	| Q	|	|	|	V |
18+45	7.4261	1.33	| Q	|	|	|	V |
18+50	7.4347	1.25	| Q	|	|	|	V |
18+55	7.4426	1.14	| Q	|	|	|	V |
19+ 0	7.4495	1.01	| Q	|	|	|	V |
19+ 5	7.4561	0.95	|Q	|	|	|	V |
19+10	7.4629	0.99	|Q	|	|	|	V |
19+15	7.4703	1.07	| Q	|	|	|	V |
19+20	7.4780	1.12	| Q	|	|	|	V |
19+25	7.4864	1.22	| Q	|	|	|	V |
19+30	7.4956	1.33	| Q	|	|	|	V |
19+35	7.5050	1.37	| Q	|	|	|	V |
19+40	7.5142	1.33	| Q	|	|	|	V |
19+45	7.5227	1.24	| Q	|	|	|	V |
19+50	7.5308	1.18	| Q	|	|	|	V |
19+55	7.5383	1.08	| Q	|	|	|	V |
20+ 0	7.5449	0.96	|Q	|	|	|	V |
20+ 5	7.5512	0.91	|Q	|	|	|	V |
20+10	7.5578	0.96	|Q	|	|	|	V |
20+15	7.5650	1.05	| Q	|	|	|	V |
20+20	7.5725	1.09	| Q	|	|	|	V |
20+25	7.5801	1.11	| Q	|	|	|	V |
20+30	7.5878	1.12	| Q	|	|	|	V |
20+35	7.5955	1.12	| Q	|	|	|	V |
20+40	7.6033	1.13	| Q	|	|	|	V |
20+45	7.6111	1.13	| Q	|	|	|	V |
20+50	7.6188	1.11	| Q	|	|	|	V |
20+55	7.6259	1.04	| Q	|	|	|	V |
21+ 0	7.6323	0.93	|Q	|	|	|	V |
21+ 5	7.6384	0.89	|Q	|	|	|	V |
21+10	7.6449	0.94	|Q	|	|	|	V |
21+15	7.6519	1.03	| Q	|	|	|	V |
21+20	7.6592	1.06	| Q	|	|	|	V |
21+25	7.6661	1.00	|Q	|	|	|	V |
21+30	7.6723	0.90	|Q	|	|	|	V|
21+35	7.6783	0.87	|Q	|	|	|	V|
21+40	7.6846	0.93	|Q	|	|	|	V|
21+45	7.6916	1.02	| Q	|	|	|	V|
21+50	7.6989	1.05	| Q	|	|	|	V|
21+55	7.7057	0.99	|Q	|	|	|	V|
22+ 0	7.7118	0.89	|Q	|	|	|	V|
22+ 5	7.7177	0.86	|Q	|	|	|	V|
22+10	7.7241	0.92	|Q	|	|	|	V|
22+15	7.7310	1.01	| Q	|	|	|	V|
22+20	7.7382	1.04	| Q	|	|	|	V|
22+25	7.7450	0.98	|Q	|	|	|	V|
22+30	7.7511	0.89	|Q	|	|	|	V|
22+35	7.7569	0.84	|Q	|	|	|	V|
22+40	7.7626	0.82	|Q	|	|	|	V|
22+45	7.7681	0.81	|Q	|	|	|	V|
22+50	7.7736	0.80	|Q	|	|	|	V|
22+55	7.7791	0.79	|Q	|	|	|	V|
23+ 0	7.7844	0.78	|Q	|	|	|	V|
23+ 5	7.7898	0.78	|Q	|	|	|	V|
23+10	7.7952	0.78	|Q	|	|	|	V|
23+15	7.8005	0.77	|Q	|	|	|	V|
23+20	7.8058	0.77	|Q	|	|	|	V|
23+25	7.8111	0.77	|Q	|	|	|	V|
23+30	7.8163	0.77	|Q	|	|	|	V|
23+35	7.8216	0.77	|Q	|	|	|	V|
23+40	7.8269	0.76	|Q	|	|	|	V|
23+45	7.8321	0.76	|Q	|	|	|	V|
23+50	7.8374	0.76	|Q	|	|	|	V|
23+55	7.8426	0.76	|Q	|	|	|	V|
24+ 0	7.8479	0.76	|Q	|	|	|	V|
24+ 5	7.8529	0.72	|Q	|	|	|	V|
24+10	7.8567	0.57	|Q	|	|	|	V|

24+15	7.8592	0.35	Q	|	|	|	V|
24+20	7.8607	0.23	Q	|	|	|	V|
24+25	7.8619	0.17	Q	|	|	|	V|
24+30	7.8629	0.13	Q	|	|	|	V|
24+35	7.8636	0.10	Q	|	|	|	V|
24+40	7.8641	0.08	Q	|	|	|	V|
24+45	7.8646	0.07	Q	|	|	|	V|
24+50	7.8650	0.05	Q	|	|	|	V|
24+55	7.8652	0.04	Q	|	|	|	V|
25+ 0	7.8655	0.03	Q	|	|	|	V|
25+ 5	7.8656	0.02	Q	|	|	|	V|
25+10	7.8658	0.02	Q	|	|	|	V|
25+15	7.8658	0.01	Q	|	|	|	V|
25+20	7.8659	0.01	Q	|	|	|	V|
25+25	7.8660	0.01	Q	|	|	|	V|
25+30	7.8660	0.00	Q	|	|	|	V|

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	**... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE**		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☒ **A.** On-site storm drain inlets	☒ Locations of inlets.	☒ Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	☒ Maintain and periodically repaint or replace inlet markings. ☒ Provide stormwater pollution prevention information to new site owners, lessees, or operators. ☐ See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com ☐ Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
☐ **B.** Interior floor drains and elevator shaft sump pumps		☐ State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.
☐ **C.** Interior parking garages		☐ State that parking garage floor drains will be plumbed to the sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☐ **D1.** Need for future indoor & structural pest control		☐ Note building design features that discourage entry of pests.	☐ Provide Integrated Pest Management information to owners, lessees, and operators.
☒ **D2.** Landscape/ Outdoor Pesticide Use	☐ Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. ☐ Show self-retaining landscape areas, if any. ☒ Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)	State that final landscape plans will accomplish all of the following. ☐ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. ☒ Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. ☒ Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. ☒ Consider using pest-resistant plants, especially adjacent to hardscape. To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	☒ Maintain landscaping using minimum or no pesticides. ☒ See applicable operational BMPs in "What you should know for…..Landscape and Gardening" at http://rcflood.org/stormwater/**Error! Hyperlink reference not valid.** ☒ Provide IPM information to new owners, lessees and operators.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☐ **E.** Pools, spas, ponds, decorative fountains, and other water features.	☐ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)	If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	☐ See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
☐ **F.** Food service	☐ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. ☐ On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	☐ Describe the location and features of the designated cleaning area. ☐ Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	☐ See the brochure, "The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ Provide this brochure to new site owners, lessees, and operators.
☒ **G.** Refuse areas	☒ Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. ☐ If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area. ☐ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	☒ State how site refuse will be handled and provide supporting detail to what is shown on plans. ☐ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	☒ State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
❑ **H.** Industrial processes.	❑ Show process area.	❑ **If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."**	❑ **See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
❑ **I.** Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	❑ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. ❑ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ❑ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for: ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release (CalARP) ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank www.cchealth.org/groups/hazmat/	❑ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **J.** Vehicle and Equipment Cleaning	❑ Show on drawings as appropriate: **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	❑ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ❑ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.** Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ ❑**Car dealerships and similar may rinse cars with water only.**

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **K.** Vehicle/Equipment Repair and Maintenance	❑ Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater. ❑ Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. ❑ Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	❑ State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. ❑ State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. ❑ State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	In the Stormwater Control Plan, note that all of the following restrictions apply to use the site: ❑ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. ❑ No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. ❑ No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment. Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
❑ **L.** Fuel Dispensing Areas	❑ Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. ❑ Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.		❑ The property owner shall dry sweep the fueling area routinely. ❑ See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

[6] The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ **M.** Loading Docks	❑ Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer. ❑ Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. ❑ Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		❑ Move loaded and unloaded items indoors as soon as possible. ❑ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☐ **N.** Fire Sprinkler Test Water		☐ Provide a means to drain fire sprinkler test water to the sanitary sewer.	☐ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
O. Miscellaneous Drain or Wash Water or Other Sources ☐ Boiler drain lines ☐ Condensate drain lines ☐ Rooftop equipment ☐ Drainage sumps ☒ Roofing, gutters, and trim. ☐ Other sources		☐ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ☐ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ☐ Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ☐ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. ☒ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. Include controls for other sources as specified by local reviewer.	

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
☒ **P.** Plazas, sidewalks, and parking lots.			☒ Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

To be included with Final WQMP

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

To be included with Final WQMP.

G.3 - Preliminary Water Report

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PRELIMINARY WATER REPORT

for The Trails at Corona
in the City of Corona,
County of Riverside, California





PREPARED FOR:

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Stephen M. Nielsen, RCE 51070

November 2021

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Section

1
INTRODUCTION

1.1 PURPOSE OF STUDY

The purpose of this report is to discuss the water facility needs of The Trails at Corona project (Project) as it relates to the City of Corona's plans for the domestic water system. More specifically, this report will identify the existing water system in the vicinity of the project, present estimated project water demands, and provide the proposed pipelines needed to support the proposed project and adjacent developments. It will also identify the approximate water distribution line alignments and pipe sizes. The project water demands are based on the proposed land use plan and the City of Corona 2005 Water Master Plan. The analysis presented in this report is based on The Trails Specific Plan Planning Area (PA) 1 through 6 and the tentative tract maps being prepared for each planning area of the project.

1.2 PROJECT DESCRIPTION

The Trails at Corona project is comprised of 105 acres of vacant infill land neighboring the Serfas Club Drive exit of the 91 Freeway, within the City of Corona. **Figure 1-1** provides a location map for the Project. This land was formerly utilized as a golf course and is being repurposed to fill in the residential community. The site is made up of six separate proposed parcels of land. Five of these parcels are located within the County of Riverside's Sphere of Influence and one parcel is located within the City of Corona's Sphere of Influence. However, all of the proposed utility services are to be provided by The City of Corona.

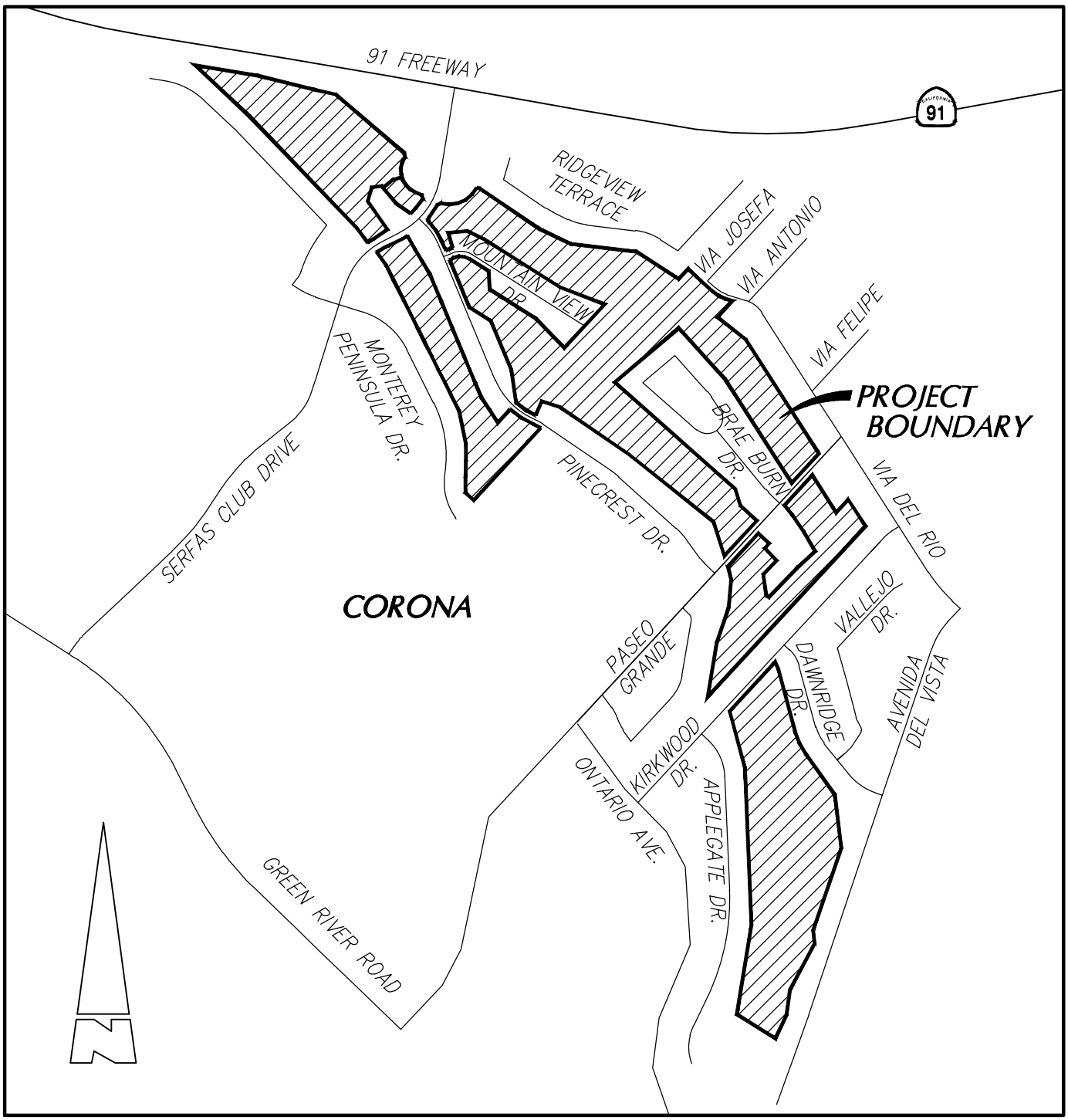
PA 1 and 2 are bound by single-family residential to the south and west, the 91 Freeway to the north, and by Serfas Club Drive to the east. Access for these areas will be from the frontage road off Serfas Club Drive. PA 3 is bound by single-family residential development to the north and south, by Serfas Club Drive to the west, and by Paseo Grande to the east. These two roads will serve as the circulatory access through the PA 3 site. PA 4 is bound by Serfas Club Drive to the west, by Pine Crest Drive to the north, by single-family residential development to the south, and by Cesar Chavez Academy to the east. Serfas Club Drive and Pine Crest Drive will serve as the circulatory access points through the site. PA 5 is bound by single-family residential development to the north, east, and south and by Paseo Grande to the west. Paseo Grande will serve as the primary access for PA 5. PA 6 is bound by Kirkwood Drive to the west and by single-family residential development to the south, east, and north. Kirkwood Drive will serve as the primary access for PA 6. The residential regions surrounding the project within the City of Corona are generally Low Density Residential (2-6 du/ac) and those surrounding the project within Riverside County are generally Medium Density Residential (2-5 du/ac).

The project site consists of sparsely vegetated and otherwise undeveloped land with the exception of a few existing culverts. The site is characterized by relatively flat topography, generally increasing in elevation from the northwest to the southeast. There are very few natural drainage features apart from a small lake on the north side of PA 5 and a natural stream on the east side of PA 6.

The proposed land use for the Project consists of 309 Medium Density Residential lots, 56 Low Density Residential lots, and a 0.78-acre General Commercial lot based on The Trails Specific Plan. The project site is comprised of approximately 105 acres of undeveloped vacant land. **Figure 1-2** provides a regional vicinity map of the area illustrating the location of the project and the developments in the area. **Appendix B** includes the current tentative tract maps for the Trails at Corona project.

1.3 RELATED STUDIES

The City of Corona Water Master Plan, prepared by AKM Consulting Engineers in September 2005, provides a regional study identifying existing and future proposed water supply, storage, and transmission facilities within the City's ultimate service area. The study also presents design criteria to be utilized in evaluating water supply, system pressures, pipeline velocities, fire flow criteria, storage volumes, and pump capacities. The report also provides information on the planning and evaluation criteria that can be applied to determine projected water demands.



LOCATION MAP

NOT TO SCALE

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1880 COMPTON AVENUE, SUITE 100 ● CORONA, CA. 92881-3370 ● 951-734-2130

FIGURE 1-1

J.N. 15.1511.8.18 R:\15\1511\PRELIM\REPORTS\WAT\FIGURES\Figure 1-1 - Location Map.dwg 10/10/2018 11:38

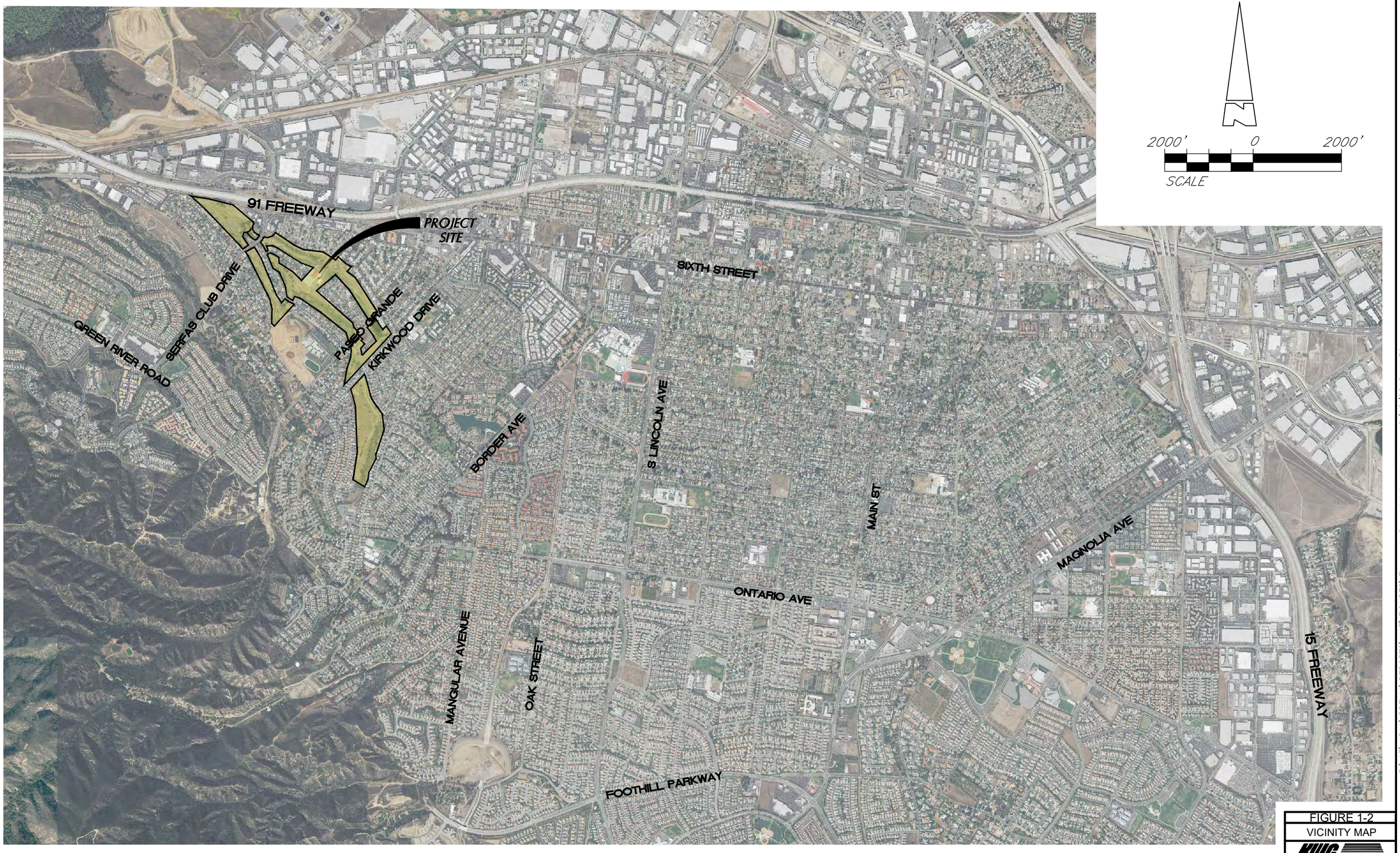


FIGURE 1-2
VICINITY MAP

KWC ENGINEERS

J.N. 15.1511.8.18 R:\15\1511\PRELIM\REPORTS\WAT\FIGURES\Figure 1-2 — Vicinity Map.dwg 10/10/2018 11:39

Section

2
DESIGN CRITERIA

This section presents the design criteria used to evaluate recommended water system improvements required for the Trails at Corona project. The criteria utilized in this study are in accordance with the City of Corona 2005 Water Master Plan, and the 2012 Department of Water and Power (DWP) Design Policy.

2.1 DEMAND FACTORS

The following subsections discuss water duty factors and peaking factors. A water duty factor is used to convert land use into projected water use by applying a factor that varies by land use type.

A peaking factor estimates the variation in demand based on seasonal and diurnal factors. The maximum day demand (MDD) peaking factor converts the average demand to the highest demand day of the year, which typically occurs in late summer when temperatures are high and the weather is dry. The peak hour demand (PHD) peaking factor converts the daily demand to the highest demand experienced during the day, which typically occurs in the morning or at the end of the workday when residential water use is highest.

2.1.1 WATER DUTY FACTORS

The water duty factor used in projecting average day water demands for the project are summarized in **Table 2-1.**

TABLE 2-1

WATER DUTY FACTORS		
Land Use	**Value**	**Unit**
Medium Density Residential	4,000	gpd/ac
Low Density Residential	3,750	gpd/ac
General Commercial	1,610	gpd/ac

2.1.2 PEAKING FACTORS

Per the 2012 DWP Design Policy, the MDD Peaking Factor is 1.8 times the ADD. Factors for PHD vary by pressure zone and are influenced by demographics and the magnitude of demand

within each zone. Per the Water Master Plan, Zone 2 has a Peak Hour factor 1.26 times MDD, and Zone 3 has a Peak Hour factor of 1.60 times MDD.

2.2 PLANNING CRITERIA

The planning criteria are used to evaluate the proposed water system. They are utilized as a check to confirm that adequate service will be provided to the proposed development. The planning criteria used in the evaluation of this project are summarized in **Table 2-2.**

TABLE 2-2

PLANNING CRITERIA		
Description	**Value**	**Unit**
Maximum Pressure	120	psi
Minimum Pressure		
Average Day	60	psi
Peak Hour	40	psi
MDD + Fire Flow	20	psi
Maximum Pipeline Velocity		
Average Day Analysis	5	fps
Maximum Day and Peak Hour Analysis	7	fps
Fire Flow Analysis	12	fps
Fire Fighting Capabilities		
Single Family Residential – 2 hour duration	1,500	gpm
Commercial – 4 hour duration	3,500	gpm
Operational Reservoir Storage Volume	0.5 MDD	-
Residential Fire Suppression Storage Volume	0.18 MG	-
Commercial Fire Suppression Storage Volume	0.84 MG	-
Terminal Storage Volume	10% Reservoir Storage Volume	-

2.3 SYSTEM PRESSURES

The water distribution system has been designed to maintain static pressures between 60 psi and 120 psi as much as possible. These criteria are used to initially divide a project between water service zones. **Appendix C** provides relevant pages from the City's 2011 Water System Atlas, which graphically show the general pressure zone boundaries within the City's service area. The northerly portion of the Trails at Corona project will be served by the existing Zone 2 (905' HWL) water system and the southerly portion of the project will be served by the existing Zone 3 (1060' HWL) pressure zone. **Figure 2-1** presents a water system pressure zone map, identifying the proposed pressure zone boundaries for the Trails at Corona project.

Computer modeling is performed to ensure that adequate residual pressures are obtained under all demand conditions. The system has been designed to yield minimum residual pressures of

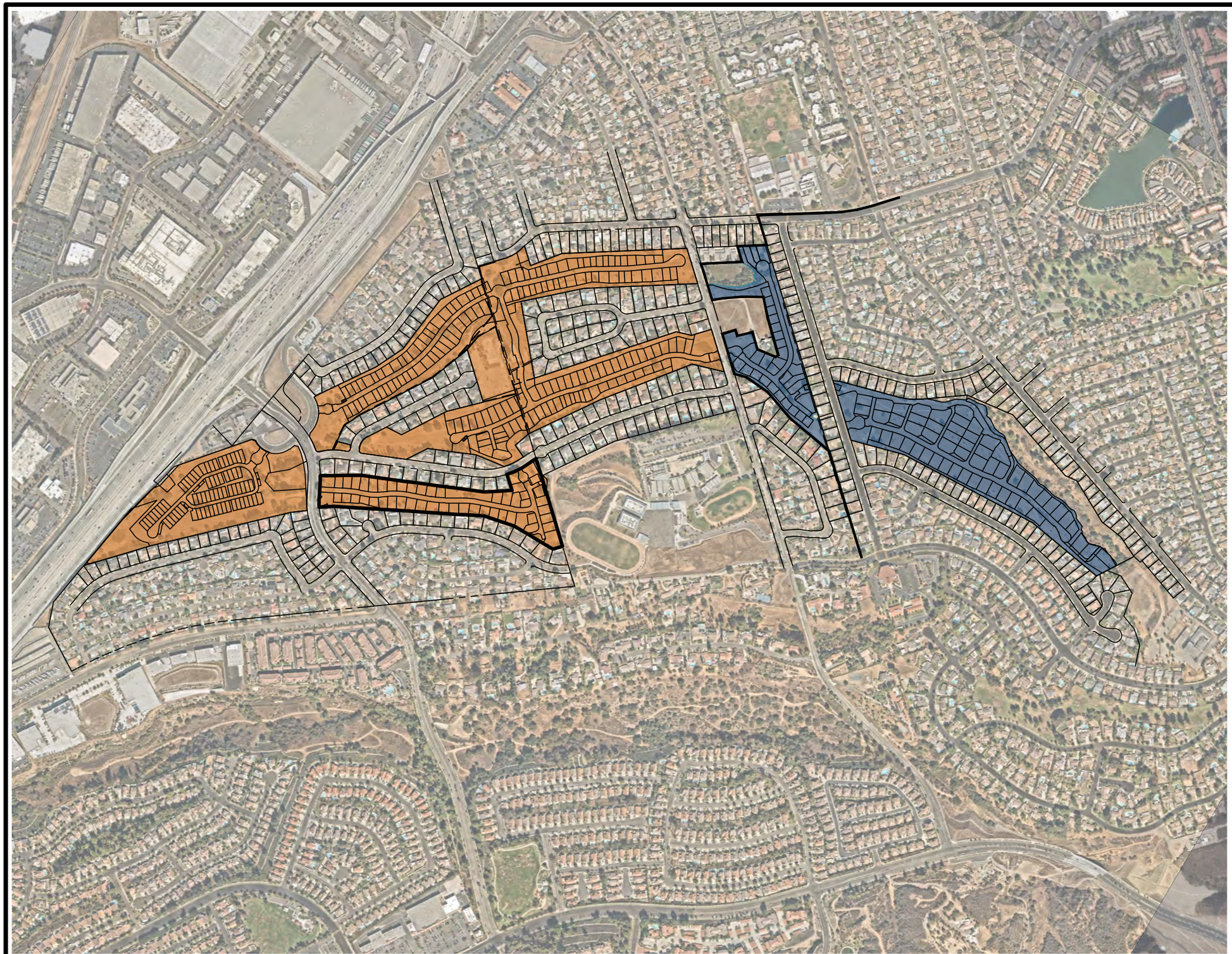
approximately 60 psi during average day demands, 40 psi during peak hour demands, and a minimum of 20 psi during maximum day demand plus fire flow conditions. Head loss in water lines is calculated using the Hazen-Williams equation with a "C" value of 110. Only locations where customers are served need to meet such pressure requirements.

2.4 PIPELINE VELOCITIES

Distribution pipelines are designed for a maximum velocity of 5.0 fps for the ADD non-fire scenarios. The maximum velocity can increase to 7.0 fps for maximum day and peak hour non-fire scenarios. For fire flow scenarios, the pipeline cannot exceed a maximum velocity of 12 fps.

2.5 STORAGE VOLUMES

The total required volume of storage in a water system consists of water for operational storage, fire flow storage and terminal storage. As per the 2005 Water Master Plan, the Trails of Corona project's operational storage and terminal storage is required to be equivalent to 50 percent of the maximum day demand and 10% of the reservoir storage volume, respectively. Fire flow and duration requirements were assumed to be 1,500 gpm for a 2-hour duration for single family residential developments which equals 0.18 MG**.** For commercial, fire flow and duration requirements were assumed to be 3,500 gpm for a 4-hour duration which equals 0.84 MG. Water reservoir storage requirements are evaluated on a zone-by-zone basis.



LEGEND

- PRESSURE ZONE 2 (905' HWL)
- PRESSURE ZONE 3 (1060' HWL)
- ZONE BOUNDARY

700' 0 700'

SCALE IN FEET

THE TRAILS AT CORONA

FIGURE 2-1

THE TRAILS AT CORONA
WATER PRESSURE ZONE MAP

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J.N. 15.1511.8.18/ R:\15\1511\PRELIM\REPORTS\WAT\FIGURES\Figure 2-1 - Pressure Zone Map.dwg 11/04/2021 14:44

Section

3

EXISTING AND PROPOSED MASTER PLAN FACILITIES

This section discusses the existing and proposed master plan water facilities as identified in City of Corona 2005 Water Master Plan report.

3.1 EXISTING FACILITIES

The Trails at Corona project is located in the City of Corona adjacent to the 91 freeway and Serfas Club Drive. The project is in the City's northwestern water service area. The existing water facilities in the vicinity of the project are located within the City's Zone 2 (905' HWL) and Zone 3 (1060' HWL) water service zones. **Figure 3-1** presents a map showing the boundaries of the project and the existing water facilities in the vicinity of the project.

Zones 2 & 3 (905 HWL & 1060 HWL, respectively) make up the majority of the northern portion of the City's water service area. Zone 2 serves elevations from approximately 600 feet to 760 feet (AMSL) and Zone 3 serves elevations from approximately 760 feet to 900 feet AMSL. The Zone 2 area is currently being supplied by the 2.0 MG Mangular Reservoir (905' HWL) which was constructed in 1978 and receives water from the Mangular Blending Cell. This zone is deficient in storage volume, so additional water is supplied from the Zone 3 reservoirs through pressure reducing stations. The Zone 3 area is currently being supplied by the 4.0 MG Sierra Del Oro Reservoir (1060' HWL) which was constructed in 1987 and receives water from the Sierra Del Oro Water Treatment Plant.

3.2 PROPOSED FACILITIES

According to the City of Corona 2005 Water Master Plan, there are no master planned water facilities planned within or adjacent to the proposed project. The proposed project will be constructing water facilities to expand the Zone 2 and Zone 3 service areas to supply water to the proposed development. These water facilities will include a proposed network of primarily 8-inch domestic water lines within the project. Each individual planning area will have one to two points of connections to the City's domestic water system and will connect to the existing distribution system adjusting to each planning area. **Figure 3-2** presents a map showing the water facilities proposed by the project.

THE TRAILS AT CORONA
EXISTING WATER FACILITY PLAN

LEGEND

- X" EXISTING ZONE 2 WATER
- X" EXISTING ZONE 3 WATER
- PLANNING AREA/TRACT BOUNDARY
- ZONE BOUNDARY

CITY OF CORONA
COUNTY OF RIVERSIDE

VIA DEL RIO
PASEO GRANDE
KIRKWOOD DR
STREET "A"
STREET "B"
CYPRESS POINT DR
BRAE BURN DR
OAKLAND HILLS DR
PA 3 BOUNDARY (TTM NO. 37501)
ZONE 2
ZONE 3
RIDGEVIEW TERRACE
STREET "C"
STREET "D"
MOUNTAIN VIEW DR
PINE CREST DR
PA 2 BOUNDARY (TTM NO. 37519)
PA 1 BOUNDARY (TTM NO. 37504)
SERRAS CLUB DRIVE
NORTH MOOR DR
MONTEREY PENINSULA DR
PA 4 BOUNDARY (TTM NO. 37502)
PA 5 BOUNDARY (TTM NO. 37503)
HUMMINGBIRD LN
DAWN RIDGE DR
AVENIDA DEL VISTA
APPLEGATE DR
PA 6 BOUNDARY (TTM NO. 37500)
COUNTY OF RIVERSIDE
CITY OF CORONA

250' 0 250' 500' 750'
SCALE IN FEET

FIGURE 3-1
THE TRAILS AT CORONA
EXISTING WATER FACILITY PLAN

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15.1511.8.18 R:\1511\PRELIM\REPORTS\WATER\FIGURES\Figure 3-1 - Existing Facilities Plan.dwg 11/04/2021 15:33

THE TRAILS AT CORONA
CONCEPTUAL WATER FACILITY PLAN

LEGEND

- X" PROPOSED DOMESTIC WATER (ZONE 2)
- X" PROPOSED DOMESTIC WATER (ZONE 3)
- X" EXISTING ZONE 2 WATER
- X" EXISTING ZONE 3 WATER
- PLANNING AREA/TRACT BOUNDARY
- ZONE BOUNDARY

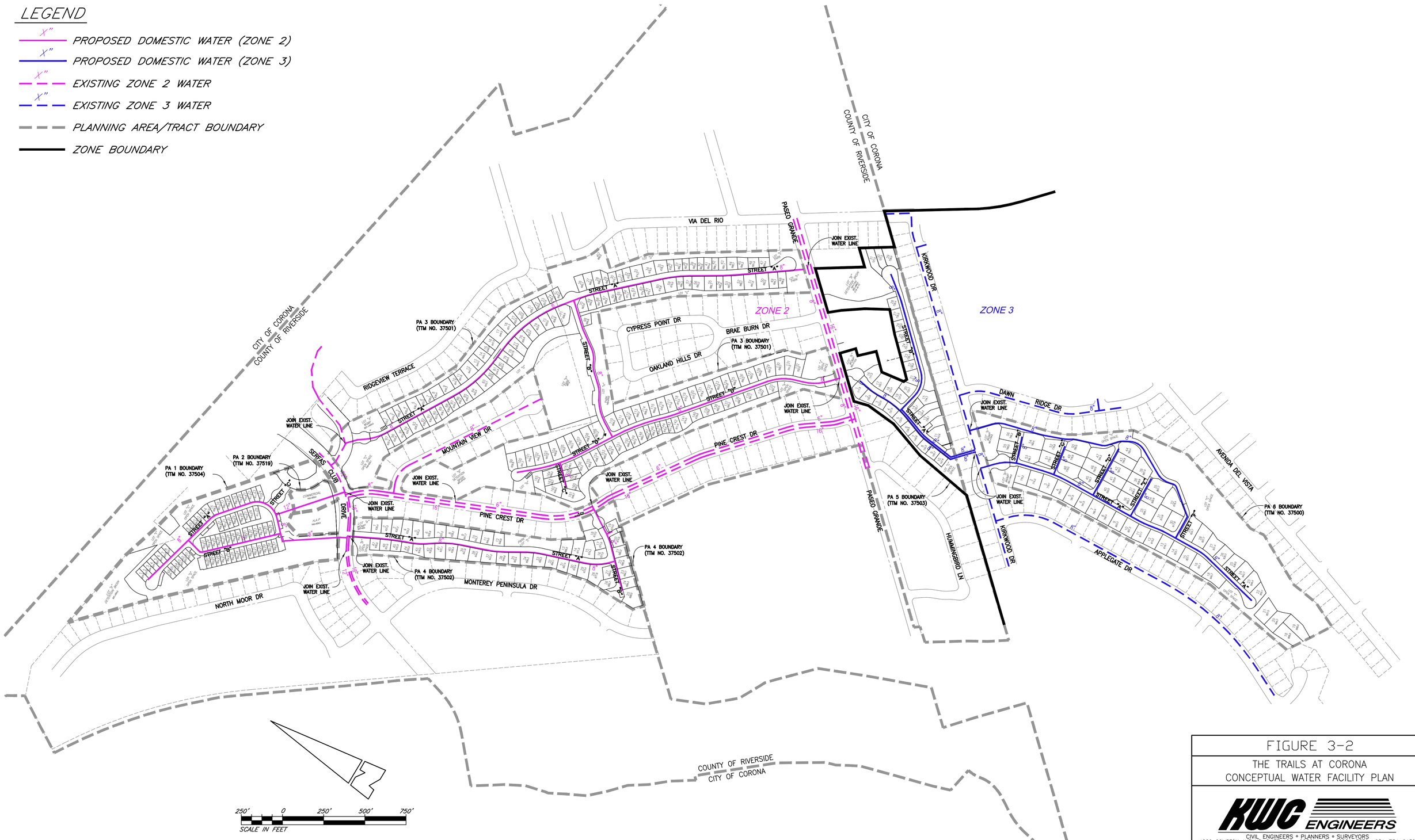


FIGURE 3-2

THE TRAILS AT CORONA
CONCEPTUAL WATER FACILITY PLAN

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15.1511.8.18 R:\15\1511\PRELIM\REPORTS\WAT\FIGURES\Figure 3-2 - Conceptual Water Facility Plan.dwg 11/05/2021 11:52

Section

4

WATER DEMANDS AND SIZING OF FACILITIES

This section provides the projected water demands for The Trails at Corona project and provides the recommended pipe sizes and reservoir storage requirements.

4.1 PROJECTED WATER DEMANDS

The water demand factors were applied to the proposed land uses to determine projected water demands. The project's public landscape areas are going to be irrigated with reclaimed water, so no irrigation demands are included as part of this report. **Table 4-1** summarizes the projected average day, maximum day, and peak hour demands for the project by water service zone. As shown below, the total estimated water demand generated by the Trails at Corona project is approximately 0.27 MGD average day demand, 0.48 MGD maximum day demand, and 0.65 MGD peak hour demand.

TABLE 4-1

Trails at Corona - Water Demand Summary						
Planning Area	**Residential Lots (DU)**	**Area (acres)**	**Water Duty Factor, gpd/ac**	**Average Day Demand (MGD)**	**Maximum Day Demand (MGD)**	**Peak Hour Demand (MGD)**
Zone 2						
PA 1 (TTM 37504)	66	3.92	4,000	0.016	0.028	0.036
PA 2 (TTM 37519)	--	0.78	1,610	0.001	0.002	0.003
PA 3 (TTM 37501)	165	18.38	4,000	0.074	0.132	0.167
PA 4 (TTM 37502)	47	6.20	4,000	0.025	0.045	0.056
Subtotal Zone 2	**278**	**--**		**0.115**	**0.208**	**0.216**
Zone 3						
PA 5 (TTM 37503)	31	4.18	4,000	0.017	0.030	0.048
PA 6 (TTM 37500)	56	13.53	3,750	0.051	0.091	0.146
Subtotal Zone 3	**87**	**--**	**--**	**0.068**	**0.121**	**0.194**
Total	**365**	**--**	**--**	**0.183**	**0.329**	**0.455**

4.2 RESERVOIR STORAGE

Using the projected water demands, **Table 4-2** summarizes the required reservoir storage by water service zone based upon the design criteria outlined in Section 2. The sizing presented in

Table 4-2 is for the Trails at Corona project only and does not include oversizing to accommodate other neighboring developments.

TABLE 4-2

RESERVOIR STORAGE REQUIREMENTS					
Pressure Zone	**Maximum Day Demand (MGD)**	**Required Operational Storage (MG)**	**Required Fire Flow Storage[1] (MG)**	**Required Terminal Storage (MG)**	**Total Required Storage (MG)**
Zone 2	0.208	0.104	0.000	0.010	0.114
Zone 3	0.121	0.061	0.000	0.006	0.067

[1] Fire flow storage is already provided in the existing storage for the zone.

The water storage and system pressures required for the homes within the proposed Zone 2 system will be supplied from the Zone 2 Mangular Reservoir and Zone 3 pressure reducing stations. For Zone 3, the water storage will be supplied from the existing excess storage capacities of the Zone 3 Sierra Del Oro Reservoir. According to Table 7-1 in the 2005 Water Master Plan, there is 7.81 MG of excess storage in the existing Zone 3 System. Some of this excess capacity is being utilized to supply the Zone 2 System, which has a storage deficit of approximately 5.23 MG per the Master Plan. No additional storage facilities are required for the project development.

4.3 WATER SYSTEM MODEL AND RESULTS

The analysis performed to determine the recommended onsite water system for The Trails at Corona project consists of computer modeling that utilizes the Innovyze InfoWater v12.4 program. The solution to the computer model is based upon the planning criteria provided in **Section 2** and the project water system inputs. Numerous demand conditions were calculated to determine the proposed system pressures and recommended line sizes within each service zone. A summary of the assumptions and settings for the ultimate condition steady-state Zone 2 and Zone 3 water system model are as follows:

1) Assumes fixed grade node in Zone 3 water system at Kirkwood Drive and Bern Drive is at 996 feet,
2) Assumes fixed grade node in Zone 2 water system at Paseo Grande and Via Del Rio is at 853 feet.
3) Assumes fixed grade node in Zone 2 water system at Serfas Club Drive and Pine Crest Drive is at 853 feet.

The demand conditions modeled are as follows:

1) Average Day Demand
2) Maximum Day Demand
3) Peak Hour Demand

4) Maximum Day Demand plus 1,500 gpm fire flow at Node J-19 (Zone 3) and Node J-13 (Zone 2). (Note: Critical fire flow model nodes are chosen based on highest elevation and most distant location from supply source.)
5) Maximum Day Demand plus 3,500 gpm fire flow at Node J-5 (Zone 2)

Figure 3-2 presents the Proposed Water Facilities Plan, which illustrates the proposed water facility improvements and their relative sizes based on the water system model results.

4.3.1 ZONE 2 (905' HWL)

The Zone 2 system will serve the northern portion of The Trails at Corona project. **Table 4-3** summarizes the anticipated static pressures within this zone. To model the Zone 2 system, it is assumed that all demands are met from the existing Zone 2 water system. The computer modeling results for the Zone 2 analysis are provided in **Appendix E.** Based on data logger information provided by the City, fixed grade nodes with a water surface elevation of 853' were assumed at the intersection of Serfas Club Drive and Pine Crest Drive, and at the intersection of Paseo Grande and Via Del Rio. The results of the computer analysis indicate that the recommended piping has been sized to adequately serve the project. Residual pressures in excess of 20 psi are obtained during all maximum day demand plus fire flow scenarios. The proposed pipeline velocities are below the 5 fps requirement during the average day demand scenario and below 7 fps during maximum day demand and peak hour demand scenarios. In addition, the velocities in the lines do not exceed 12 fps during a maximum day demand plus fire flow condition.

The major proposed piping in this pressure zone will consist of 8-inch distribution lines provided within the development areas with a 12-inch line to the commercial site (PA 2). The computer modeling in **Appendix E** verifies that adequate service can be provided to the project for all the demand scenarios considered.

4.3.2 ZONE 3 (1060' HWL)

The Zone 3 system will serve the southern portion of The Trails at Corona project. **Table 4-3** summarizes the anticipated static pressures within this zone. To model the Zone 3 system, it is assumed that all demands are met from the existing Zone 3 water system. The computer modeling results for the Zone 3 analysis are provided in **Appendix E.** Based on data logger information provided by the City, a fixed grade node with a water surface elevation of 996' was assumed at the intersection of Kirkwood Drive and Bern Drive. The results of the computer analysis indicate that the recommended piping has been sized to adequately serve the project. Residual pressures in excess of 20 psi are obtained during all maximum day demand plus fire flow scenarios. The proposed pipeline velocities are below the 5 fps requirement during the average day demand scenario and below 7 fps during maximum day demand and peak hour demand scenarios. In addition, the velocities in the lines do not exceed 12 fps during a maximum day demand plus fire flow condition.

The major proposed piping in this pressure zone will consist of 8-inch distribution lines provided within the development areas. The computer modeling in **Appendix E** verifies that adequate service can be provided to the project during the demand scenarios considered.

TABLE 4-3

Water Service Zone Static Pressure Summary						
Planning Area	Lot Elevation (ft)		Static Pressure 100% Tank Level (psi)		Static Pressure 25% Tank Level (psi)	
	Min	Max	Min.	Max.	Min.	Max.
PA 1 (Zone 2)	604	612	127	130	117	120
PA 2 (Zone 2)	628	628	120	120	110	110
PA 3 (Zone 2)	632	703	88	119	77	108
PA 4 (Zone 2)	630	688	94	119	84	109
*PA 5 (Zone 3)	717	748	135	149	125	138
PA 6 (Zone 3)	769	868	83	126	73	116

*Note: PA5 is planned to be part of Zone 3 due to insufficient pressures observed with a Zone 2 connection. All lots having pressures of 80 psi and above will require pressure regulators and shall be noted on construction plans. In addition, the proposed pipe and fittings shall be properly designed and specified on plans to be able to sustain pressures higher than 120 psi.

Section

5
CONCLUSIONS

This section summarizes the water infrastructure required to serve The Trails at Corona project.

5.1 CONCLUSIONS

The Trails at Corona project will be recorded as six separate maps. **Figure 3-2** provided the water system improvements to be constructed for each of the six planning areas. **Table 5-1** summarizes the water infrastructure to be constructed for the build-out condition:

TABLE 5-1

Proposed Trails at Corona Infrastructure Improvements

Project No.	Project Description	Facility Location	Zone	Proposed Pipe Size (inches)	Approx. Length (LF)
1	PA 1 Distribution Waterlines	Onsite/Offsite	2	8 12	2,000 200
2	PA 2 Distribution/Fire Waterlines	Onsite/Offsite	2	8	50*
3	PA 3 Distribution Waterlines	Onsite/Offsite	2	8	6,125
4	PA 4 Distribution Waterlines	Onsite/Offsite	2	8	2,150
5	PA 5 Distribution Waterlines	Onsite/Offsite	3	8	1,750
6	PA 6 Distribution Waterlines	Onsite/Offsite	3	8	4,200

*PA 2 to connect to public loop line constructed for PA 1.

These proposed water system facilities and their approximate locations, alignments, and sizes are consistent with the City's 2005 Water Master Plan and related water system studies in the City's service area. The proposed project onsite water facilities presented in this report are preliminary estimates of the anticipated water facilities necessary to service the project needs.

Appendix

A
REFERENCES

City of Corona Water Master Plan, AKM Consulting Engineers, September 2005.

City of Corona Department of Water and Power Design Policy, November 2012.

Appendix

B

TENTATIVE TRACT MAPS

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37504
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

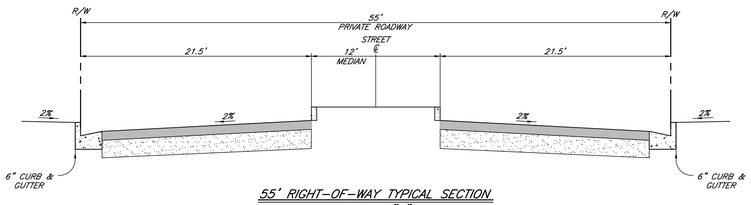
	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT.	FT.
1	2,574	2,574	31	82
2	2,542	2,542	31	82
3	2,542	2,542	31	82
4	2,542	2,542	31	82
5	2,542	2,542	31	82
6	2,542	2,542	31	82
7	2,542	2,542	31	82
8	2,542	2,542	31	82
9	2,542	2,542	31	82
10	2,542	2,542	31	82
11	2,542	2,542	31	82
12	2,542	2,542	31	82
13	2,542	2,542	31	82
14	3,274	3,274	38	82
15	3,268	3,268	39	82
16	2,542	2,542	31	82
17	2,542	2,542	31	82
18	2,542	2,542	31	82
19	2,542	2,542	31	82
20	2,542	2,542	31	82
21	2,542	2,542	31	82
22	2,578	2,578	31	82
23	2,769	2,769	31	85
24	3,067	3,067	31	103
25	2,592	2,592	31	82
26	2,879	2,879	31	83
27	2,542	2,542	31	82
28	2,542	2,542	31	82
29	2,553	2,553	31	82
30	2,575	2,575	31	82
31	2,586	2,586	31	82
32	2,570	2,570	31	82
33	2,542	2,542	31	82
34	2,542	2,542	31	82
35	2,542	2,542	31	82
36	2,542	2,542	31	82
37	2,542	2,542	31	82
38	2,562	2,562	31	82
39	2,522	2,522	31	82
40	2,542	2,542	31	82
41	2,550	2,550	31	82
42	2,566	2,566	31	83
43	2,582	2,582	31	83
44	2,598	2,598	31	44
45	2,613	2,613	31	84
46	2,610	2,610	31	84
47	2,551	2,551	31	82
48	2,542	2,542	31	82
49	2,542	2,542	31	82
50	2,542	2,542	31	82
51	2,542	2,542	31	82
52	2,542	2,542	31	82
53	2,542	2,542	31	82
54	2,542	2,542	31	82
55	2,542	2,542	31	82
56	2,542	2,542	31	82
57	2,542	2,542	31	82
58	2,542	2,542	31	82
59	2,542	2,542	31	82
60	2,542	2,542	31	82
61	2,542	2,542	31	82
62	2,542	2,542	31	82
63	2,541	2,541	31	82
64	2,541	2,541	31	82
65	2,541	2,541	31	82
66	2,538	2,538	31	82
Σ=	170,821	170,821	2,061	5,405
AVG=	2,588	2,588	31	82
MAX=	3,274	3,274	39	103
MIN=	2,522	2,522	31	44

LETTERED LOTS:

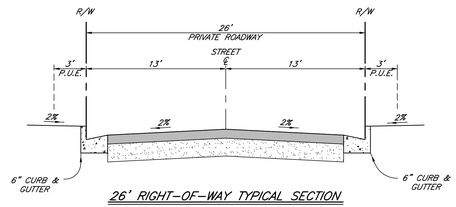
THE TRAILS PA 1 - LETTERED LOTS				
LOT	AREA (SF)	AREA (Acre)	LAND USE	MAINTAINED BY
A	73,942	1.70	OPEN SPACE/TRAIL	H.O.A
B	8,555	0.20	WQMP	H.O.A
C	50,898	1.17	OPEN SPACE/TRAIL	H.O.A
D	182,598	4.19	OPEN SPACE/TRAIL	H.O.A
E	25,329	0.58	OPEN SPACE/TRAIL	H.O.A
F	28,840	0.66	OPEN SPACE/TRAIL	H.O.A
G	17,890	0.41	OPEN SPACE/TRAIL	H.O.A
H	50,103	1.15	PRIVATE STREETS A & B	H.O.A
I	6,953	0.16	PRIVATE ENTRY	H.O.A
TOTAL	445,108	10.22		

STREET LOTS:

THE TRAILS - PA 1 STREET			
	STREET AREA		CL
STREET	SF	AC	FT
A	50,103	1.15	1,663
B			
C	6,953	0.16	203
TOTAL	57,056	1.31	1,866



55' RIGHT-OF-WAY TYPICAL SECTION
STREET "C"
NOT TO SCALE



26' RIGHT-OF-WAY TYPICAL SECTION
STREET "A" & "B"
NOT TO SCALE

LEGEND:

- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (A) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1200 = EXISTING CONTOUR ELEVATION
- 1200 = PROPOSED SURFACE ELEVATION
- 1,378.3 = PROPOSED PAD ELEVATION
- ELEV. = ELEVATION
- FG = FINISH GRADE
- FL = FLOWLINE
- FS = FINISHED SURFACE
- D.G. = DECOMPOSED GRANITE
- L= = LENGTH
- W= = WIDTH
- MIN. = MINIMUM
- PL = PROPERTY LINE
- R/W = RIGHT OF WAY
- GB = GRADE BREAK
- TC = TOP OF CURB
- 45 = LOT NUMBER
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE

GENERAL NOTES

1. PREPARED: OCTOBER 2021
2. SITE ACREAGE:... 14.03 ACRES GROSS
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN

ADJACENT LAND USE:

NORTH: COMMERCIAL
EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID G5

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SBCC, "P474," AND "CNPP." NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PER THAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

LEGAL DESCRIPTION

PARCEL 1:
LOTS "A" OF TRACT NO. 2585, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 47, PAGES 10 THROUGH 14, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THAT PORTION OF LOT "A" CONVEYED TO JOHN R JAHN AND DOROTHY J. JAHN, HUSBAND AND WIFE, AS JOINT TENANTS, BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781, OFFICIAL RECORDS.

ALSO EXCEPT THE PORTION OF SAID LOT "A" OF TRACT NO. 2585, DESCRIBED AS FOLLOWS:

COMMENCING AT THE MOST SOUTHERLY CORNER OF SAID LOT "A";
THENCE NORTHEASTERLY, ALONG THE EASTERLY LINE OF SAID LOT "A", ON A CURVE, CONCAVE, TO THE SOUTHEAST, HAVING A RADIUS OF 344.00 FEET, THROUGH AN ANGLE OF 09° 51' 00", AN ARC LENGTH OF 93.52 FEET (THE INITAL RADIAL LINE BEARS NORTH 37° 10' 20" WEST);
THENCE NORTH 62° 40' 40" EAST, ALONG THE EASTERLY LINE OF SAID LOT "A", 66.89 FEET;
THENCE CONTINUING NORTH 62° 40' 40" EAST, ALONG THE EASTERLY LINE OF SAID LOT "A", 64.29 FEET TO THE BEGINNING OF A CURVE, CONCAVE TO THE NORTHWEST, HAVING A RADIUS OF 456.00 FEET; THENCE NORTHEASTERLY ALONG SAID CURVE, THROUGH AN ANGLE OF 17° 11' 20", AN ARC LENGTH OF
136.80 FEET TO THE MOST EASTERLY CORNER OF LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS;

THENCE NORTH 56° 39' 00" WEST, ALONG THE NORTHEASTERLY LINE OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS, 140.00 FEET TO THE TRUE POINT OF BEGINNING;
THENCE NORTH 40° 39' 00" WEST, 155.00 FEET, MORE OR LESS, TO A POINT THAT BEARS NORTH 82° 39' 00" EAST; FROM THE MOST NORTHERLY CORNER OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE SOUTH 82° 39' 00" WEST, 65.00 FEET, MORE OR LESS TO THE MOST NORTHERLY CORNER OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS; THENCE SOUTH 56° 39' 00" EAST, ALONG THE NORTHEASTERLY LINE OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS TO THE TRUE POINT OF BEGINNING.

ALSO EXCEPT THEREFROM ALL OIL, GAS, MINERALS, AND OTHER HYDROCARBON SUBSTANCES IN AND UNDER SAID LANDS.

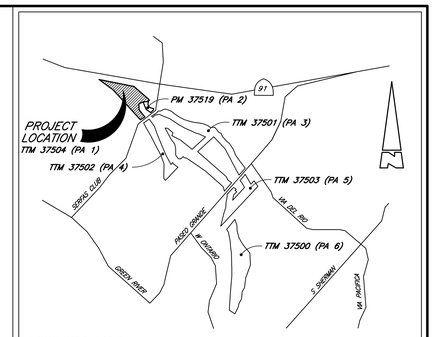
A.P.N. 102-050-006
T.3S, R7W, SECTION 27

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES

GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
PM 37519 (PA 2)	276	14,213	13,937 (FILL)
TTM 37500 (PA 6)	142,030	89,951	52,079 (CUT)
TOTAL	400,827	360,188	40,639 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.



VICINITY MAP
NOT TO SCALE

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

ASSESSOR'S PARCEL NUMBERS:

102-050-006 (PORTION OF)

PROJECT DENSITY:

TOTAL LOT: 66
TOTAL GROSS ACREAGE: 14.03 ACRES
DENSITY = 66 / 14.03 = 4.70 DU/AC

PRELIMINARY EARTHWORK:

RAW CUT: 19,037 C.Y.
RAW FILL: 109,526 C.Y.
NET: 90,489 C.Y.

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A "△". NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□".

2 AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

3 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

5A AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2585, RECORDED MAY 28, 1963 WITH FILING NUMBER 55546 IN RIVERSIDE COUNTY: **TO BE QUITCLAIMED.**

11 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 13, 1963 IN BOOK 3486 OFFICIAL RECORDS, PAGE 481 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED/ABANDONED.**

22 AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 2, 1971 AS INSTRUMENT NO. 72744 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **QUITCLAIM?**

26 EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192432, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE, BLANKET IN NATURE. **TO BE QUITCLAIMED.**

30A EMINENT DOMAIN FEE ACQUISITION BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

30B PERMANENT WALL FOOTING EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY: **TO REMAIN.**

30C TEMPORARY CONSTRUCTION EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	66
TOTAL NUMBER OF REQUIRED PARKING *	165
NUMBER OF ONE CAR GARAGES	0
NUMBER OF TWO OR THREE CAR GARAGES	66
NUMBER OF ONE CAR DRIVEWAY PARKING	0
NUMBER OF TWO CAR DRIVEWAY PARKING	0
NUMBER OF ON STREET PARALLEL PARKING	0
NUMBER OF ONSITE PARKING STALLS	62
TOTAL NUMBER OF PARKING PROVIDED	194

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF WORK CHANGED ON THIS MAP
10/28/21
BY: HC
DATE OF THIS PLOT
10/28/21

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37504
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE


PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

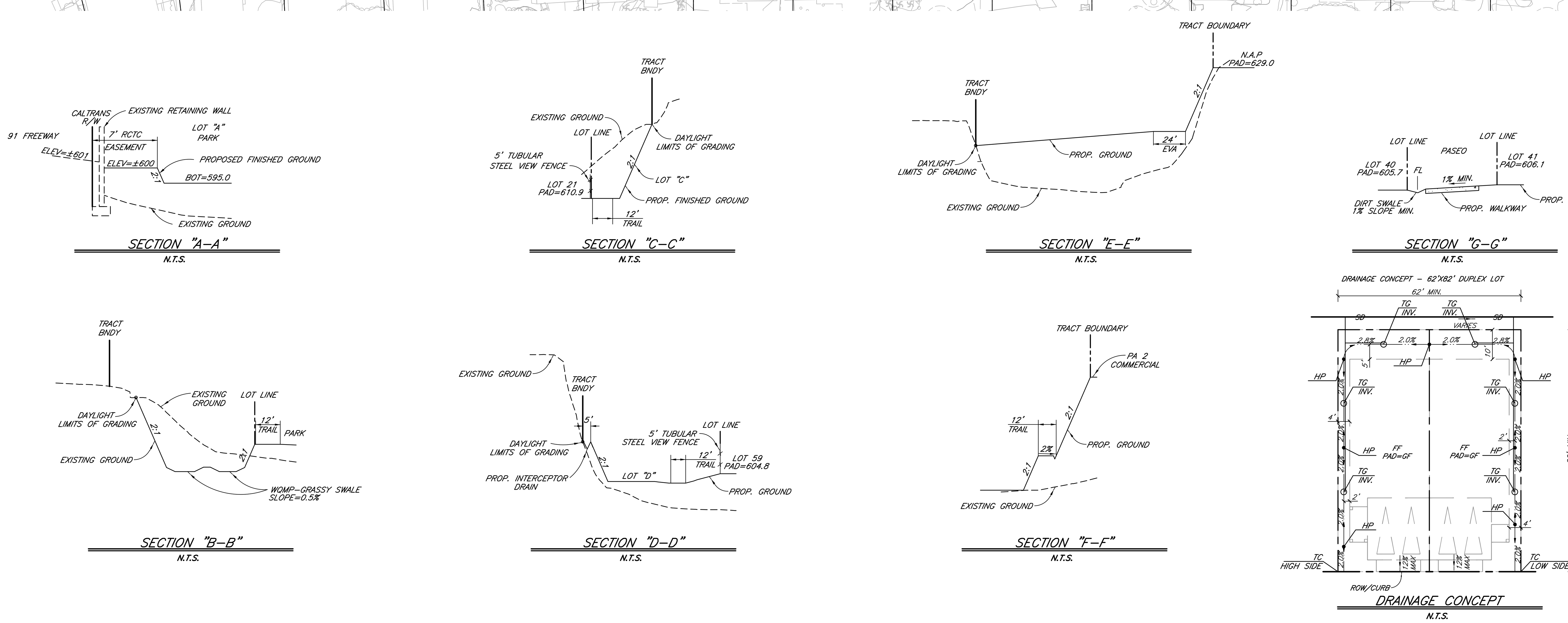
PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100, CORONA, CA. 92881-3370 951-734-2130

SHEET 1 OF 2 SHEETS

JOB NO. 15.1511 P:\15\1511\PREMAPS\TENTVAR\1511_PA 01 TTM 01.dwg 11/3/21 10:21 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37504
IN THE COUNTY OF RIVERSIDE





NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEYARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUIDLING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF LATEST CHANGE TO THIS MAP
10/28/21 BY: HC
DATE OF THIS PLOT
10/28/21

40' 0 40' 80' 120'
SCALE IN FEET

Date	By	REVISIONS	App'd

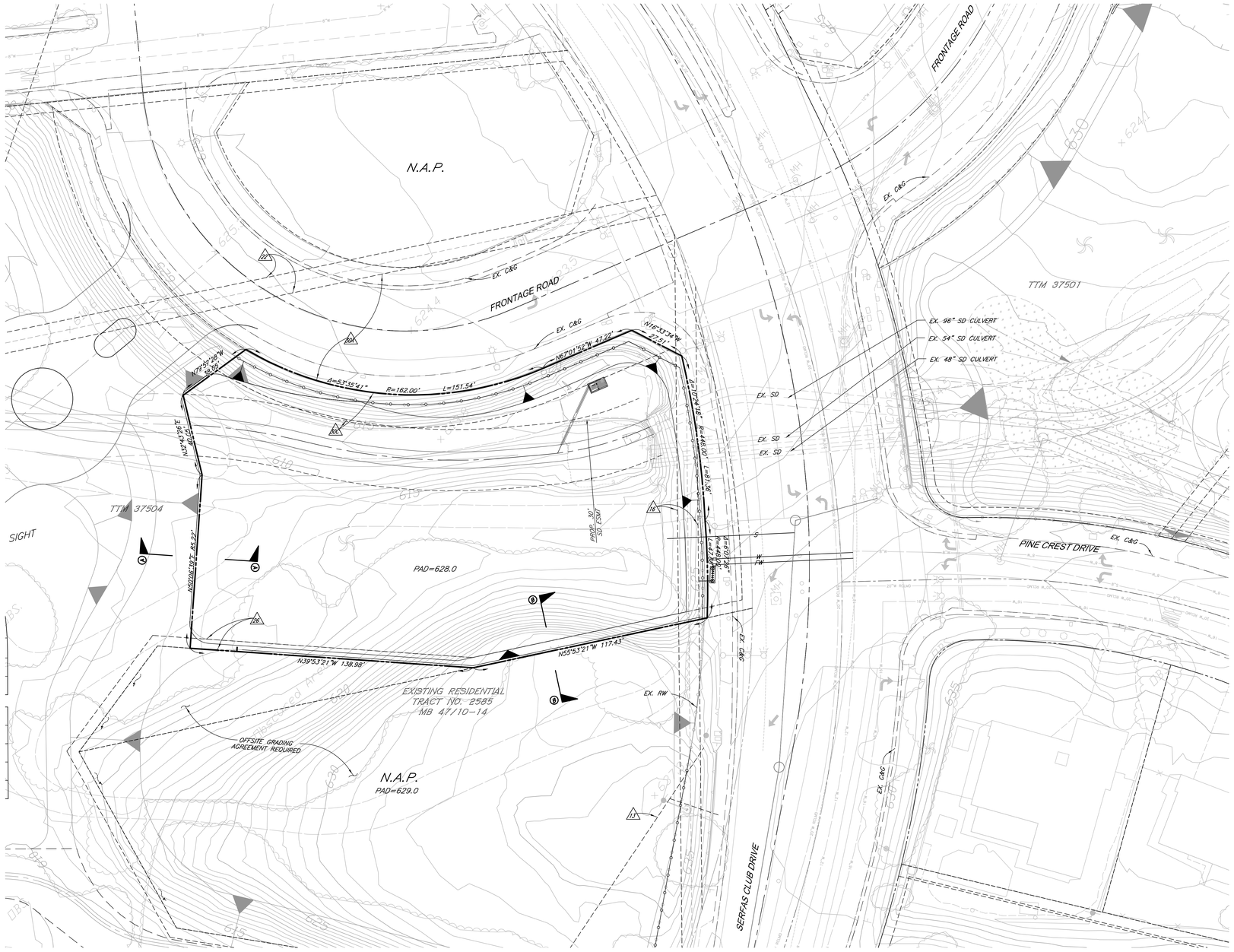
TENTATIVE TRACT MAP NO. 37504
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

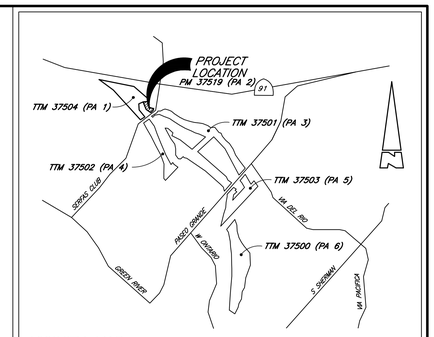
PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881-3370 951-734-2130

SHEET 2 OF 2 SHEETS

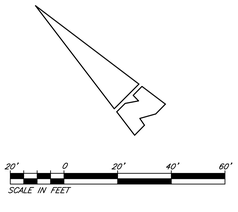
THE TRAILS AT CORONA
PARCEL MAP NO. 37519
IN THE COUNTY OF RIVERSIDE





VICINITY MAP

NOT TO SCALE



GENERAL NOTES

1. PREPARED: OCTOBER 2021
2. SITE ACREAGE:.....0.78 ACRES GROSS, 0.78 ACRES NET
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS PARCEL MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN

ADJACENT LAND USE:

NORTH: COMMERCIAL
WEST: MDR MEDIUM DENSITY RESIDENTIAL
EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, COMMERCIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID G5

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SBCC, "P474," AND "CVHP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN, PER THAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

LEGAL DESCRIPTION

PARCEL 1:
LOTS "A" OF TRACT NO. 2585, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 47, PAGES 10 THROUGH 14, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THAT PORTION OF LOT "A" CONVEYED TO JOHN R JAHN AND DOROTHY J. JAHN, HUSBAND AND WIFE, AS JOINT TENANTS, BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781, OFFICIAL RECORDS.

ALSO EXCEPT THE PORTION OF SAID LOT "A" OF TRACT NO. 2585, DESCRIBED AS FOLLOWS:

COMMENCING AT THE MOST SOUTHERLY CORNER OF SAID LOT "A";
THENCE NORTHEASTERLY, ALONG THE EASTERLY LINE OF SAID LOT "A", ON A CURVE, CONCAVE TO THE SOUTHEAST, HAVING A RADIUS OF 544.00 FEET, THROUGH AN ANGLE OF 09° 51' 00", AN ARC LENGTH OF 93.52 FEET (THE INITIAL RADIAL LINE BEARS NORTH 37° 10' 20" WEST);
THENCE NORTH 62° 40' 40" EAST, ALONG THE EASTERLY LINE OF SAID LOT "A", 66.89 FEET;
THENCE CONTINUING NORTH 62° 40' 40" EAST, ALONG THE EASTERLY LINE OF SAID LOT "A", 64.29 FEET TO THE BEGINNING OF A CURVE, CONCAVE TO THE NORTHWEST, HAVING A RADIUS OF 456.00 FEET; THENCE NORTHEASTERLY ALONG SAID CURVE, THROUGH AN ANGLE OF 17° 11' 20", AN ARC LENGTH OF
136.80 FEET TO THE MOST EASTERLY CORNER OF LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS;

THENCE NORTH 56° 39' 00" WEST, ALONG THE NORTHEASTERLY LINE OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS, 140.00 FEET TO THE TRUE POINT OF BEGINNING;
THENCE NORTH 40° 39' 00" WEST, 155.00 FEET, MORE OR LESS, TO A POINT THAT BEARS NORTH 82° 39' 00" EAST; FROM THE MOST NORTHERLY CORNER OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE SOUTH 82° 39' 00" WEST, 65.00 FEET, MORE OR LESS TO THE MOST NORTHERLY CORNER OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS; THENCE SOUTH 56° 39' 00" EAST, ALONG THE NORTHEASTERLY LINE OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS TO THE TRUE POINT OF BEGINNING.

ALSO EXCEPT THEREFROM ALL OIL, GAS, MINERALS, AND OTHER HYDROCARBON SUBSTANCES IN AND UNDER SAID LANDS.

A.P.N. 102-050-006
T3S, R7W, SECTION 27

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

ASSESSOR'S PARCEL NUMBERS:

102-050-006 (PORTION OF)

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A "△". NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□".

[J] AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **QUITCLAIM?**

[J] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **QUITCLAIM?**

[22] AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 2, 1971 AS INSTRUMENT NO. 72744 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **QUITCLAIM?**

[28] EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

[16] AN EASEMENT IN FAVOR OF THE SOUTHERN CALIFORNIA EDISON COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED MAY 15, 1964 AS INSTRUMENT NO. 60291 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

[30A] EMINENT DOMAIN FEE ACQUISITION BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

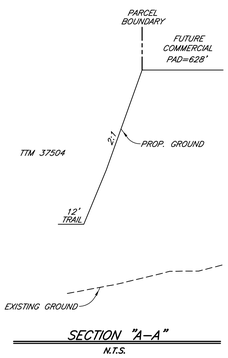
[30A] TEMPORARY CONSTRUCTION EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

ESTIMATED EARTHWORK QUANTITIES:

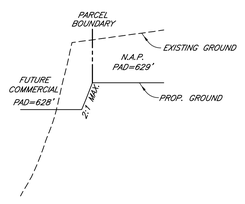
ON-SITE EARTHWORK QUANTITIES

GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
PM 37519 (PA 2)	276	14,213	13,937 (FILL)
TTM 37500 (PA 6)	142,030	89,951	52,079 (CUT)
TOTAL	400,827	360,188	40,639 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.



SECTION "A-A"
N.T.S.



SECTION "B-B"
N.T.S.

LEGEND:

	EASEMENT LINE	AC	ACRES
	EXIST. EASEMENT LINE	C.Y.	CUBIC YARD
[A]	PROPOSED EASEMENT (SEE EASEMENT NOTES)	INV	INVERT
	RETAINING WALL	PIP	PROTECT IN PLACE
	SLOPE		
12"S	EX. SEWER		
12"W	EX. WATER		
TV	EX. TV CONDUIT		
OH	EX. OVERHEAD POWER LINE		
	BUILDING SETBACK LINE		

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No. 78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF LATEST CHANGE TO THIS MAP
10/28/21 BY: HC
DATE OF THIS PLOT
10/28/21

Date	By	REVISIONS	App'd

PARCEL MAP NO. 37519
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

SHEET 1 OF 1 SHEETS

JOB NO. 13.1511.1 P:\13\1511\PREMAPS\TENTMAP\1511 PM 02 TTM 01.dwg 10/22/21 11:48 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37501
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT	FT
1	3,545	3,545	40	89
2	3,928	3,928	45	87
3	3,437	3,437	40	87
4	4,056	3,685	48	84
5	5,547	5,547	70	80
6	2,971	2,971	40	74
7	3,522	3,137	49	73
8	5,224	5,224	70	75
9	5,601	5,601	70	80
10	3,451	3,451	42	82
11	4,297	4,297	55	83
12	6,809	6,809	72	90
13	5,367	5,367	56	94
14	5,373	5,373	56	95
15	3,747	3,747	40	93
16	4,639	4,639	50	92
17	6,959	6,959	82	90
18	6,300	6,300	73	85
19	3,552	3,552	42	84
20	4,364	4,364	53	83
21	5,783	5,783	74	78
22	3,066	3,066	41	73
23	3,599	3,251	50	72
24	2,891	2,891	40	72
25	3,440	3,440	45	75
26	5,221	4,781	53	99
27	5,204	4,784	53	100
28	5,415	5,055	54	100
29	3,400	3,400	49	70
30	3,515	3,058	49	71
31	2,963	2,963	49	78
32	3,878	3,447	50	71
33	5,976	5,363	74	80
34	6,198	5,689	74	83
35	6,067	5,670	75	80
36	3,089	3,089	42	74
37	3,637	3,287	50	72
38	3,020	3,020	42	73
39	3,722	3,344	49	75
40	3,118	3,118	40	78
41	3,736	3,386	48	77
42	3,049	3,049	40	76
43	3,867	3,401	49	77
44	4,956	4,493	63	75
45	4,486	4,173	64	70
46	4,170	3,508	66	64
47	3,779	3,779	65	58
48	4,826	4,826	50	96
49	5,450	4,582	57	95
50	7,202	6,488	76	94
51	6,884	6,247	74	92
52	6,679	6,048	76	88
53	4,413	3,865	51	86
54	3,492	3,492	41	86
55	6,400	6,056	76	86
56	6,196	5,643	75	82
57	3,980	3,434	51	86
58	3,223	3,223	42	76
59	6,343	5,924	76	82
60	6,174	5,638	74	83
61	3,988	3,514	49	80
62	3,165	3,165	40	79
63	3,798	3,396	48	78
64	3,060	3,060	40	76
65	3,743	3,354	48	77
66	3,228	3,228	40	80
67	4,006	3,607	48	82
68	3,384	3,223	40	86
69	4,491	3,560	50	87
70	4,516	4,078	60	80
71	7,917	7,917	76	117
72	5,798	5,114	53	110
73	5,675	5,113	58	98
74	5,454	4,881	53	93
75	5,520	4,957	58	95
76	6,008	5,390	58	105
77	6,139	5,572	53	118
78	6,615	5,972	52	108
79	6,130	5,562	50	123
80	5,501	5,024	50	110
81	4,695	4,695	48	99
82	3,860	3,860	42	91
83	6,195	6,195	74	85
84	6,139	5,832	77	82
85	3,897	3,509	50	76
86	3,178	3,178	41	76
87	3,490	3,490	45	77
88	3,271	3,271	40	82
89	3,974	3,974	45	88
90	3,696	3,696	40	92
91	4,146	4,146	45	92
92	3,564	3,564	40	89
93	5,888	5,888	70	85
94	4,145	3,752	48	85
95	3,679	3,679	40	91
96	4,330	4,330	45	94
97	4,012	4,012	42	93
98	3,845	3,845	65	58
99	5,835	5,221	57	112
100	5,813	5,072	55	104
101	5,696	4,798	51	110
102	6,124	5,105	53	114
103	6,292	5,186	53	116
104	6,379	5,112	54	117
105	6,518	5,192	53	118
106	6,585	5,167	55	119
107	6,177	4,748	53	116
108	6,504	5,001	57	112
109	7,318	5,297	72	106
110	6,881	6,225	65	111
111	5,615	5,177	52	108
112	5,341	4,941	52	103
113	5,203	4,826	52	100
114	5,180	4,830	52	100
115	5,141	4,832	50	101
116	5,653	5,023	54	103
117	5,416	4,831	51	104
118	5,184	4,560	49	104
119	5,291	4,611	50	105
120	5,308	4,630	50	105
121	5,723	4,974	55	102
122	5,639	4,948	55	101
123	5,201	4,550	50	104
124	5,306	4,639	50	105
125	5,293	4,624	50	104
126	5,465	4,847	55	96
127	5,208	4,683	55	93
128	5,568	5,060	59	94
129	6,058	5,459	63	97
130	6,103	5,376	58	108
131	6,917	6,164	60	112
132	5,811	5,114	52	112
133	4,208	4,208	69	60
134	4,455	3,727	72	61
135	4,375	3,723	71	61
136	4,468	3,777	72	62
137	4,243	3,628	66	63
138	4,198	3,583	66	63
139	4,436	3,811	71	62
140	4,597	3,772	72	68
141	5,898	5,248	71	85
142	4,440	3,835	41	91
143	2,788	2,788	33	88
144	3,209	3,209	40	80
145	2,430	2,430	30	80
146	3,460	3,460	41	84
147	2,749	2,749	30	88
148	4,963	4,963	52	96
149	4,680	4,680	46	99
150	4,557	4,557	45	99
151	5,398	4,848	55	98
152	5,400	4,750	50	108
153	5,885	5,122	50	115
154	5,513	4,709	50	104
155	5,295	4,533	56	97
156	5,269	4,544	51	103
157	3,571	2,809	45	92
158	3,902	3,482	40	97
159	3,104	3,104	30	102
160	4,676	3,908	63	91
161	8,474	7,517	72	140
162	6,868	6,641	78	102
163	4,501	4,501	45	100
164	4,658	4,658	49	108
165	7,103	5,506	64	115
TOTAL AREA=	800,853	735,897	8,919	7,060
AVG=	4,854	4,460	54	85
MAX=	8,474	7,917	82	123
MIN=	2,430	2,430	30	58

LETTERED LOTS:

THE TRAILS PA 3 - LETTERED LOTS				
LOT	AREA (SF)	AREA (AC)	LAND USE	MAINTAINED BY
A	21,777	0.50	WQMP	H.O.A
B	125,694	2.89	DETENTION BASIN	COUNTY
C	62,188	1.43	OPEN SPACE/TRAIL	H.O.A
D	129,990	2.98	OPEN SPACE/TRAIL	H.O.A
E	12,569	0.29	OPEN SPACE/TRAIL	H.O.A
F	19,462	0.45	OPEN SPACE/TRAIL	H.O.A
G	38,401	0.88	OPEN SPACE/TRAIL	H.O.A
H	43,698	1.00	OPEN SPACE/TRAIL	H.O.A
I	50,188	1.15	OPEN SPACE/TRAIL	H.O.A
J	27,356	0.63	OPEN SPACE/PARK	H.O.A
K	21,235	0.49	OPEN SPACE/PARK	H.O.A
L	80,773	1.85	OPEN SPACE/TRAIL	H.O.A
M	34,066	0.78	OPEN SPACE/TRAIL	H.O.A
N	11,285	0.26	OPEN SPACE/TRAIL	H.O.A
O	79,071	1.82	OPEN SPACE/TRAIL	H.O.A
P	156,674	3.60	REC. CENTER	H.O.A
Q	231,789	5.32	PRIVATE STREETS	H.O.A
R	6,577	0.15	PRIVATE ENTRY	H.O.A
S	4,591	0.11	PRIVATE ENTRY	H.O.A
TOTAL	1,157,384	26.57		

STREET LOTS:

THE TRAIL PA 3 - STREET			
	STREET AREAS		CL
STREET	SF	AC	FT
A	121,446	2.79	2,944
B	34,751	0.80	876
C	3,936	0.09	171
D	82,825	1.90	2,047
TOTAL	242,957	5.58	6,038

GENERAL NOTES

1. PREPARED: OCTOBER 2021
2. SITE ACREAGE:..... 44.96 ACRES GROSS, 44.84 ACRES NET
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 060065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN.
14. THIS PLANNING AREA IS AN AGE RESTRICTED COMMUNITY.

ADJACENT LAND USE:

WEST: MDR MEDIUM DENSITY RESIDENTIAL
EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID H5 H6, AND G5

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS: "SBCC, "P474", AND "CNPP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PERTHAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

LEGAL DESCRIPTION

PARCEL 1:
LOTS "B", AND "D," OF TRACT NO. 2585, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 42, PAGES 10 THROUGH 14, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY;

EXCEPT THAT PORTION OF LOT "B" OF SAID TRACT NO. 2585, DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHEAST CORNER OF SAID LOT "B"; THENCE SOUTH 15° 31' 50" WEST, ALONG THE EASTERLY LINE OF SAID LOTS "B" AND "J" OF SAID TRACT, A DISTANCE OF 239.17 FEET TO AN ANGLE POINT IN SAID EASTERLY LINE OF SAID LOT "B"; THENCE NORTH 76° 19' 50" WEST, A DISTANCE OF 223.66 FEET, TO AN ANGLE POINT ON THE WESTERLY LINE OF SAID LOT "J";

ALSO EXCEPT THAT PORTION LYING WITHIN THE LAND DESCRIBED IN THE QUITCLAIM DEED TO ROBERT PEASE, A MARRIED MAN, RECORDED APRIL 12, 1972 AS INSTRUMENT NO. 47406, OFFICIAL RECORDS.

ALSO EXCEPT THEREFROM ALL OIL, GAS, MINERALS, AND OTHER HYDROCARBON SUBSTANCES IN AND UNDER SAID LANDS.

APN: 102-050-003 AND 102-112-008
T3S, R7W, SECTION 27

PARCEL 3:
LOT C OF TRACT 2585 AS SHOWN BY MAP ON FILE IN GOOK 47, PAGES 10 TO 14
INCLUSIVE, TOGETHER WITH LOT "E," OF TRACT NO. 2385, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 44, PAGES 59 THROUGH 61, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY;

EXCEPT ALL OIL, GAS, MINERALS AND OTHER HYDROCARBONS SUBSTANCES IN AND UNDER SAID LANDS.

SAID DESCRIPTION IS PURSUANT TO CERTIFICATE OF PARCEL MERGER NO. 990 RECORDED JANUARY 8, 1997 AS INSTRUMENT NO. 5854 OFFICIAL RECORDS.

APNS: 102-050-004 AND 102-160-003
T3S, R7W, SECTION 33

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	165
TOTAL NUMBER OF REQUIRED PARKING *	413
NUMBER OF ONE CAR GARAGES	5
NUMBER OF TWO OR THREE CAR GARAGES	160
NUMBER OF ONE CAR DRIVEWAY PARKING	165
NUMBER OF TWO CAR DRIVEWAY PARKING	0
NUMBER OF ON STREET PARALLEL PARKING	148
NUMBER OF ONSITE PARKING STALLS	8
TOTAL NUMBER OF PARKING PROVIDED	486

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

ASSESSOR'S PARCEL NUMBERS:

102-050-003 102-050-004
102-160-003
102-112-008

PROJECT DENSITY:

TOTAL LOT: 225
TOTAL GROSS ACREAGE: 44.96 ACRES
DENSITY = 225 / 44.96 = 5.00 DU/AC
PA 3 - AGE RESTRICTED COMMUNITY

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 2308125D, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A "△": NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□"

[2] AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[3] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[4] A RIGHT OF WAY AND EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR THE RIGHT TO CONSTRUCT, MAINTAIN, OPERATE, INSPECT, REPAIR, REPLACE AND REMOVE ONE LINE POLES, LINES, CABLES, AND CIRCUITS FOR ANY PURPOSES, RECORDED OCTOBER 21, 1955 IN BOOK 1810 OF OFFICIAL RECORDS, PAGE 365 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED AND THE FACILITY IS TO BE ABANDONED.**

[5] AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2385, RECORDED JULY 31, 1962 WITH FILING NUMBER 71787 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[5A] AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2585, RECORDED MAY 28, 1963 WITH FILING NUMBER 55546 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[6] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 7, 1962 IN BOOK 3217 OF OFFICIAL RECORDS, PAGE 161 OF RIVERSIDE COUNTY. TO BE QUITCLAIMED/RELOCATED.

[7] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 21, 1962 AS INSTRUMENT NO. 88666 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[8] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED OCTOBER 19, 1962 IN BOOK 3243 OFFICIAL RECORDS, PAGE 177 OF RIVERSIDE COUNTY. **TO REMAIN.**

[10] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 AS INSTRUMENT NO. 73238 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[11] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 AS INSTRUMENT NO. 73246 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[12] A RIGHT OF WAY EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 13, 1963 IN BOOK 3486 OFFICIAL RECORDS, PAGE 53 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[14] AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED NOVEMBER 26, 1963 IN BOOK 3542 OFFICIAL RECORDS, PAGE 573 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED/ABANDONED.**

[26] EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

[30C] TEMPORARY CONSTRUCTION EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

UTILITY CONTACTS

WATER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

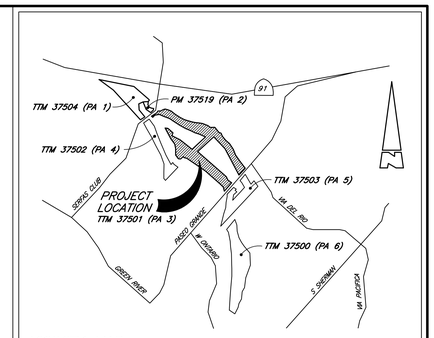
SEWER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

POWER: SOUTHERN CALIFORNIA EDISON CO.
1351 E. FRANCIS
ONTARIO, CA. 91761
(800) 930-8591

GAS: SOUTHERN CALIFORNIA GAS CO.
P.O. BOX 3003
REDLANDS, CA. 92373
(800) 427-2200

PHONE: AT&T
1265 N. VAN BUREN ST., #180
ANAHEIM, CA 92807
(714) 666-5423

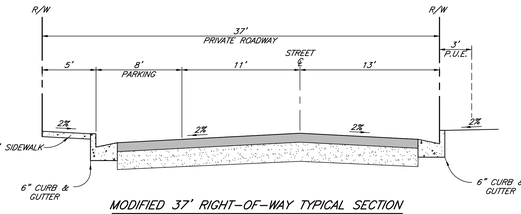
CABLE TV: TIME WARNER CABLE
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
(909) 975-3396



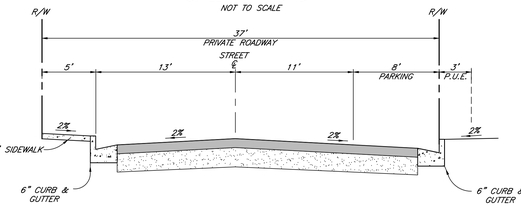
VICINITY MAP
NOT TO SCALE

LEGEND:

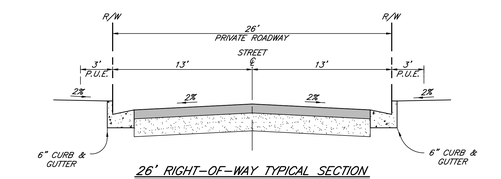
- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (A) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1200 = EXISTING CONTOUR ELEVATION
- 1200 = PROPOSED SURFACE ELEVATION
- 1,378.3 = PROPOSED PAD ELEVATION
- ELEV. = ELEVATION
- FG = FINISH GRADE
- FL = FLOWLINE
- FS = FINISHED SURFACE
- D.G. = DECOMPOSED GRANITE
- L= = LENGTH
- W= = WIDTH
- MIN. = MINIMUM
- PL = PROPERTY LINE
- R/W = RIGHT OF WAY
- GB = GRADE BREAK
- TC = TOP OF CURB
- 45 = LOT NUMBER
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE



MODIFIED 37' RIGHT-OF-WAY TYPICAL SECTION
STREET "A" AND "D"
NOT TO SCALE



MODIFIED 37' RIGHT-OF-WAY TYPICAL SECTION
STREET "B"
NOT TO SCALE



26' RIGHT-OF-WAY TYPICAL SECTION
STREET "C"
NOT TO SCALE

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES

GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
PM 37519 (PA 2)	276	14,213	13,937 (FILL)
TTM 37500 (PA 6)	142,030	89,951	52,079 (CUT)
TOTAL	400,827	360,188	40,639 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF LATEST CHANGE TO THE MAP: 10/28/21 BY: HC
DATE OF THIS PLOT: 10/28/21

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37501
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

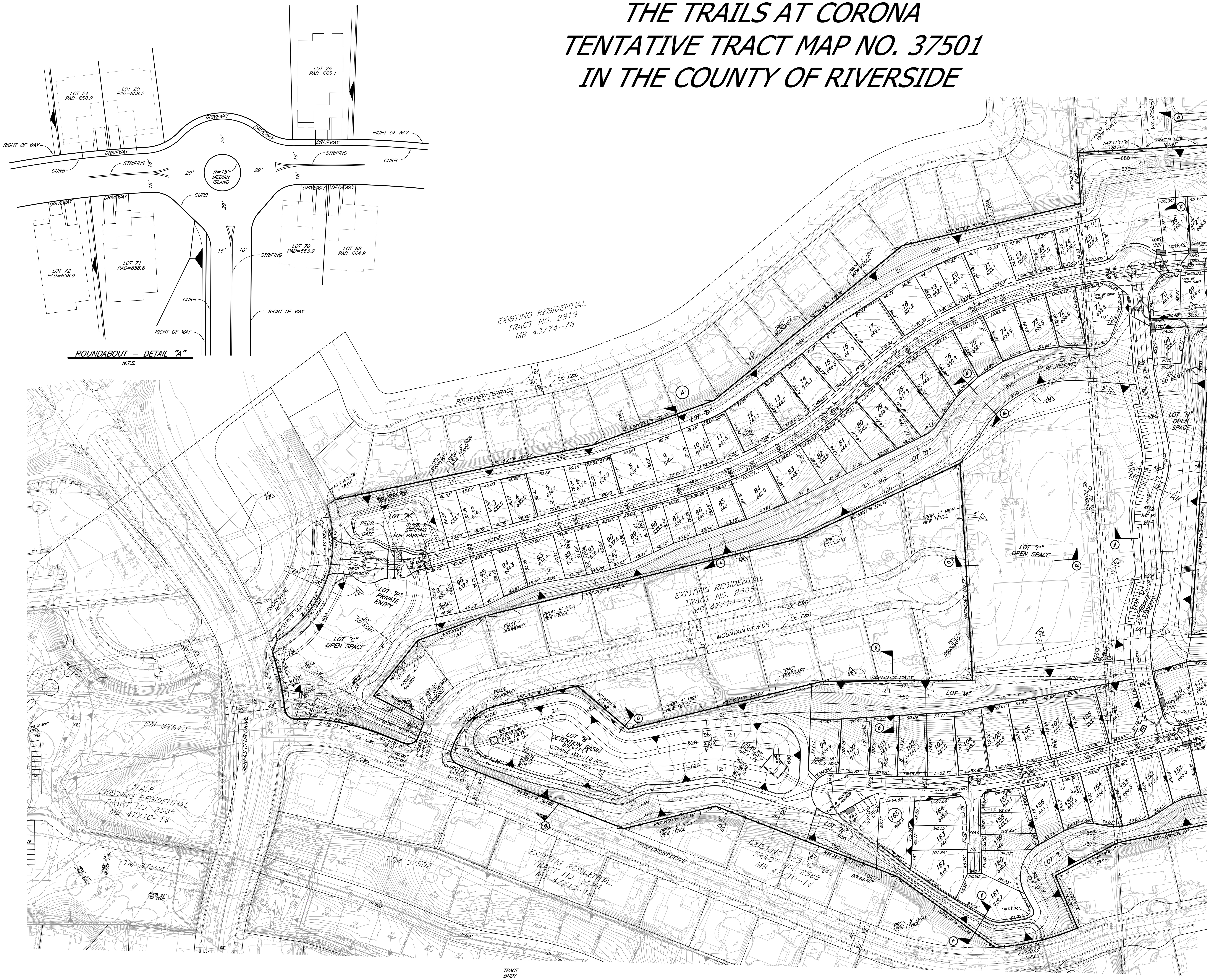
PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

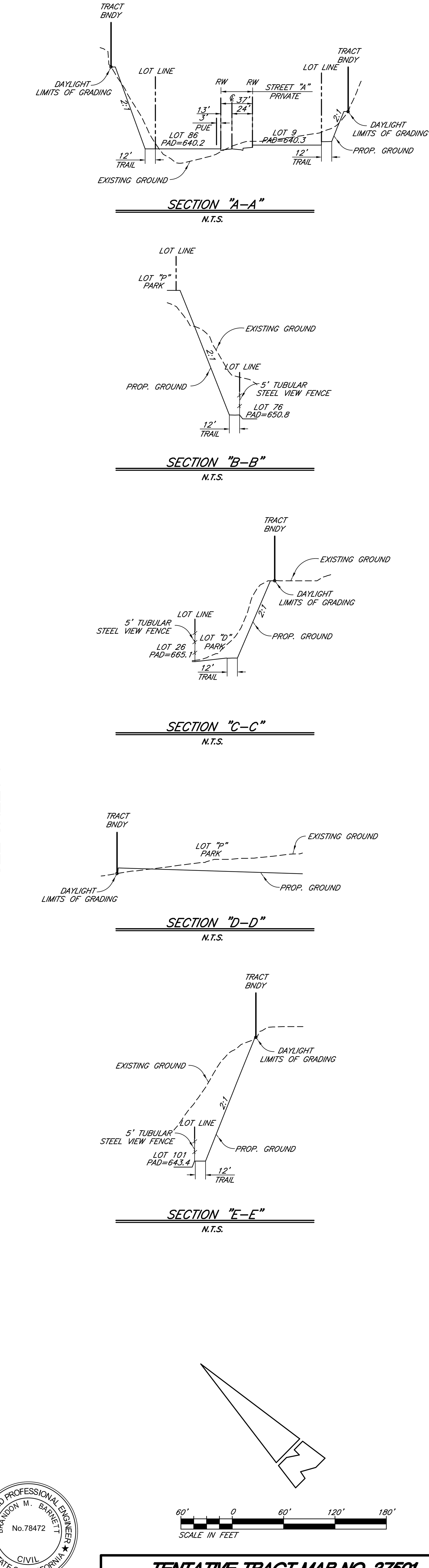
PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

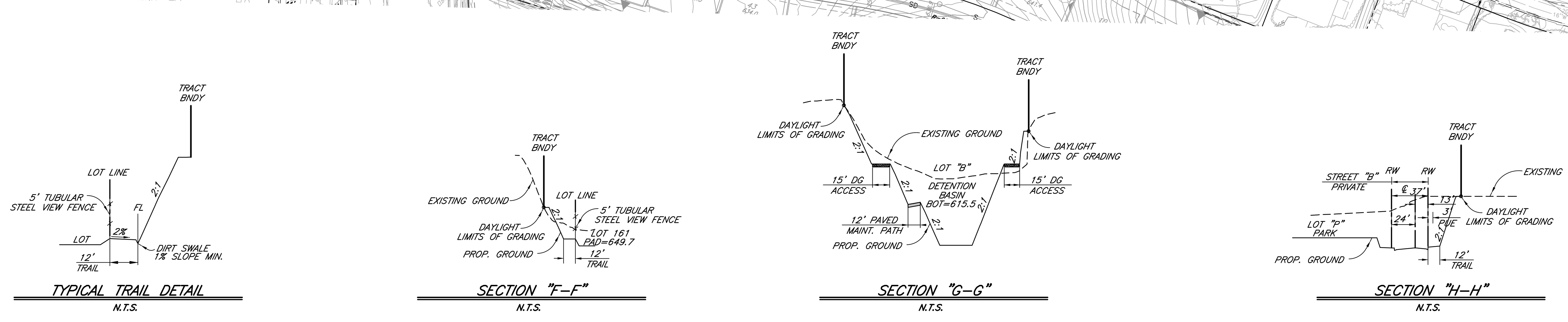
SHEET 1 OF 3 SHEETS

JOB NO. 15.1311.1 R:\15\1311\PRELIM MAPS\EXH\PA3\1311 PA 03 TTM 01.dwg 11/4/21 8:45 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37501
IN THE COUNTY OF RIVERSIDE







60' 0 60' 120' 180'
SCALE IN FEET

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
10/28/21 BY: HC
10/28/21

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37501
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

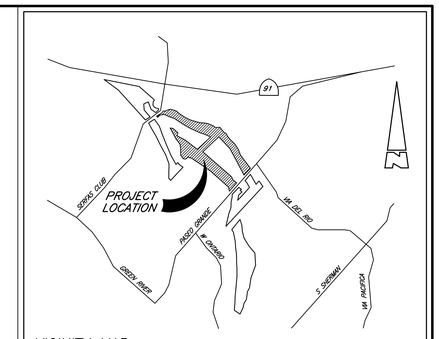
PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS

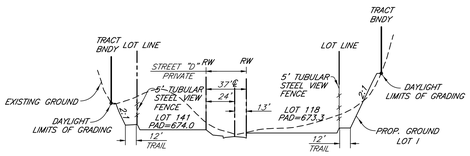
SHEET 2 OF 3 SHEETS

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37501
IN THE COUNTY OF RIVERSIDE

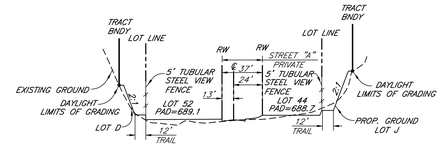




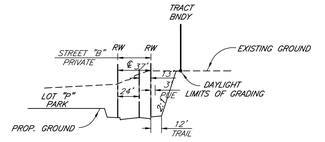
VICINITY MAP
NOT TO SCALE



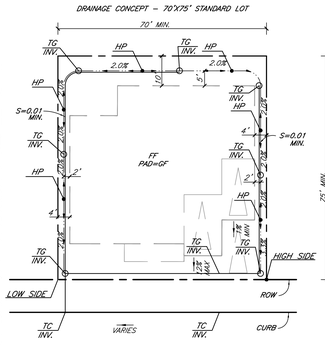
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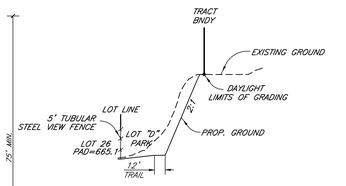
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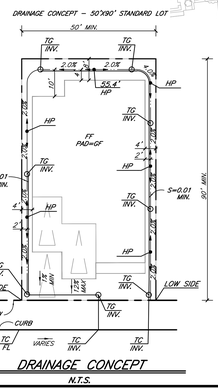
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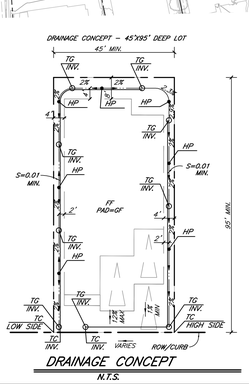
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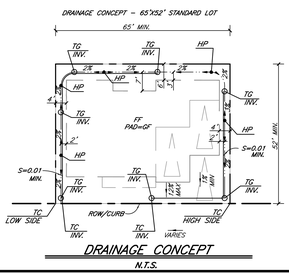
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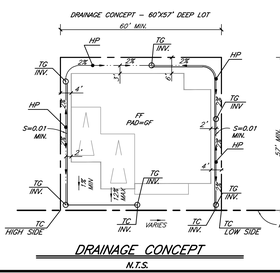
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N.T.S.



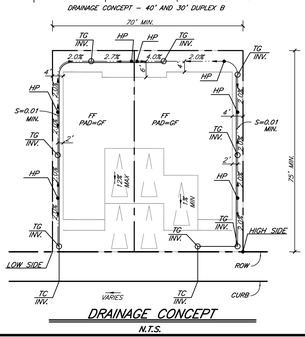
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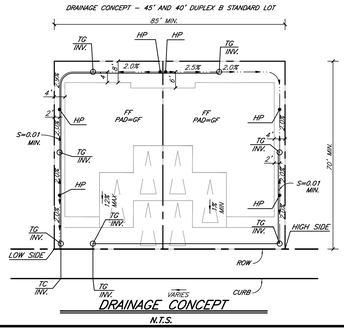
DRAINAGE CONCEPT
N.T.S.



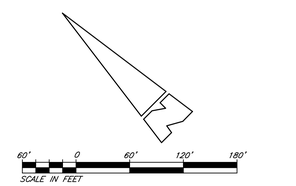
DRAINAGE CONCEPT
N.T.S.



DRAINAGE CONCEPT
N.T.S.



DRAINAGE CONCEPT
N.T.S.



REGISTERED PROFESSIONAL ENGINEER
BRADDON M. BARRETT
No. 78472
CIVIL
STATE OF CALIFORNIA

TIM DATE IDENTIFIER DATE OF LATEST CHANGE TO TMS MAP
10/28/21 BY: HC
DATE OF THIS PLOT
10/28/21

NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX.
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEYARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUILDING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37501
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 104, CORONA, CA 92881-3310 951-734-2130

SHEET 3 OF 3 SHEETS

JOB NO. 15-1511 P:\15\1511\PRELIM MAPS\TENTMAP1511 PA 03 TTM 03.dwg 11/4/21 8:11 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37502
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT	FT
1	5,097	4,273	60	84
2	5,566	4,891	60	89
3	5,973	4,982	63	96
4	6,581	4,902	63	102
5	6,606	4,731	65	100
6	6,449	4,339	70	91
7	5,547	3,728	70	79
8	5,339	3,648	75	72
9	5,181	3,653	72	72
10	5,302	3,571	70	75
11	5,835	3,499	72	80
12	5,359	3,647	67	79
13	6,083	3,880	73	72
14	7,018	4,931	71	100
15	7,107	6,208	70	100
16	4,259	4,259	48	70
17	3,722	3,722	62	57
18	6,166	4,708	63	94
19	3,738	3,738	55	94
20	5,335	5,335	84	75
21	5,637	4,276	66	85
22	5,790	3,631	66	87
23	5,852	3,620	65	90
24	5,954	3,895	64	92
25	11,795	7,355	121	93
26	5,962	5,560	58	110
27	4,944	4,417	75	65
28	10,114	6,354	92	129
29	6,280	4,212	69	82
30	4,942	3,677	61	81
31	4,938	3,634	67	74
32	5,034	3,752	74	70
33	5,942	4,145	79	77
34	5,813	3,778	75	76
35	5,224	3,596	72	75
36	5,032	3,958	73	69
37	6,465	5,124	91	71
38	6,094	4,073	77	79
39	6,580	3,907	75	88
40	6,403	3,990	67	93
41	6,089	3,791	66	91
42	5,512	4,230	61	83
43	4,700	4,350	70	70
44	4,108	3,912	70	59
45	3,968	3,789	64	60
46	4,367	4,367	66	65
47	4,120	4,120	60	68
Σ=	269,922	202,156	3,277	3,863
AVG=	5,743	4,301	70	82
MAX=	11,795	7,355	121	129
MIN=	3,722	3,499	48	57

LETTERED LOTS:

THE TRAILS PA 4 - LETTERED LOTS				
LOT	AREA (SF)	AREA (AC)	LAND USE	MAINTAINED BY
A	9,209	0.21	PARK/WQMP	H.O.A
B	20,435	0.47	PARK/OPEN SPACE	H.O.A
C	29,555	0.68	PARK/OPEN SPACE/H.O.A. SLOPES	H.O.A
D	6,556	0.15	OPEN SPACE	H.O.A
E	859	0.02	OPEN SPACE	H.O.A
F	12,338	0.28	OPEN SPACE	H.O.A
G	430	0.01	H.O.A. SLOPES	H.O.A
H	16,679	0.38	H.O.A. SLOPES	H.O.A
I	75,673	1.74	PRIVATE STREETS	H.O.A
J	5,964	0.14	PRIVATE ENTRY	H.O.A
TOTAL	177,697	4.08		

STREET LOTS:

	STREET AREA		CL
STREET	SF	AC	FT
A	58,408	1.34	1637
B	22,354	0.51	648
Total	80,762	1.85	2285

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES			
GRADING SUMMARY -- RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
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TOTAL	400,827	360,188	40,639 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.

ADJACENT LAND USE:

WEST: MDR MEDIUM DENSITY RESIDENTIAL
EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID H5, H6, AND G5

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SBCC, 7*474", AND "CVPP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PER THAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

UTILITY CONTACTS

WATER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

SEWER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

POWER: SOUTHERN CALIFORNIA EDISON CO.
1351 E. FRANCIS
ONTARIO, CA. 91761
(800) 930-8591

GAS: SOUTHERN CALIFORNIA GAS CO.
P.O. BOX 3003
REDLANDS, CA. 92373
(800) 427-2200

PHONE: AT&T
1265 N. VAN BUREN ST., #180
ANAHEIM, CA 92807
(714) 666-5423

CABLE TV: TIME WARNER CABLE
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
(909) 975-3396

LEGAL DESCRIPTION:

LOT "E" OF TRACT NO. 2585, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 47, PAGES 10 THROUGH 14, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE COUNTY.

EXCEPT FROM SAID LOT "E" OF SAID TRACT NO. 2585, THAT PORTION DESCRIBED AS FOLLOWS:
BEGINNING AT THE MOST EASTERLY CORNER OF LOT 155 OF SAID TRACT NO. 2585; THENCE SOUTHEASTERLY, ALONG THE NORTHEASTERLY LINE OF SAID LOT "E" ON A CURVE, CONCAVE TO THE NORTHEAST, HAVING A RADIUS OF 530.00 FEET, THROUGH AN ANGLE OF 10° 48' 40", AN ARC LENGTH OF 100.00 FEET; THE INITIAL RADIAL LINE BEARS SOUTH 41° 43' 20" WEST; THENCE SOUTH 30° 54' 40" WEST, A DISTANCE OF 115.00 FEET; THENCE NORTH 57° 13' 25" WEST, A DISTANCE OF 132.47 FEET TO THE MOST SOUTHERLY CORNER OF SAID LOT 155; THENCE NORTH 41° 43' 20" EAST, ALONG THE SOUTHEASTERLY LINE OF SAID LOT 155, A DISTANCE OF 122.59 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPT THAT PORTION LYING WITHIN THE LAND DESCRIBED IN THE QUITCLAIM DEED TO ROBERT PEASE, A MARRIED MAN, RECORDED APRIL 12, 1972 AS INSTRUMENT NO. 47406, OFFICIAL RECORDS.

A.P.N. 102-050-008, 102-113-015
T3S, R7W, SECTION 33

GENERAL NOTES

1. PREPARED: OCTOBER 2021
2. SITE ACREAGE:.....10.26 ACRES GROSS, 10.17 ACRES NET
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN
14. THIS PLANNING AREA IS AN AGE RESTRICTED COMMUNITY.

ASSESSOR'S PARCEL NUMBERS:

102-050-008
102-113-015

PROJECT DENSITY:

TOTAL LOT: 47
TOTAL GROSS ACREAGE: 10.26 ACRES
DENSITY = 47 / 10.26 = 4.58 DU/AC
PA 4 - AGE RESTRICTED COMMUNITY

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.
PLOTTABLE EASEMENTS ARE INDICATED BY A "△". NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□"

[2] AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[J] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

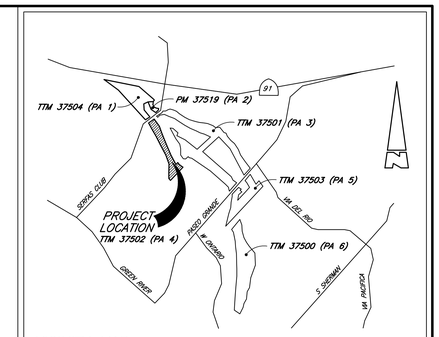
[5A] AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2585, RECORDED MAY 28, 1963 WITH FILING NUMBER 55546 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[10] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 AS INSTRUMENT NO. 73238 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[28] EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

LEGEND:

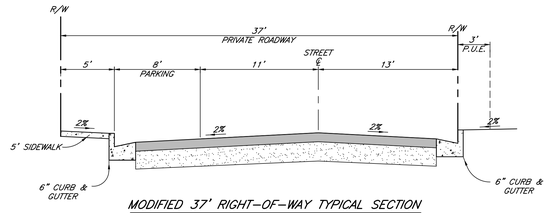
- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (A) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1200 = EXISTING CONTOUR ELEVATION
- 1200 = PROPOSED SURFACE ELEVATION
- 1378.3 = PROPOSED PAD ELEVATION
- ELEV. = ELEVATION
- FG = FINISH GRADE
- FL = FLOWLINE
- FS = FINISHED SURFACE
- D.G. = DECOMPOSED GRANITE
- L= = LENGTH
- W= = WIDTH
- MIN. = MINIMUM
- PL = PROPERTY LINE
- R/W = RIGHT OF WAY
- GB = GRADE BREAK
- TC = TOP OF CURB
- 45 = LOT NUMBER
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE



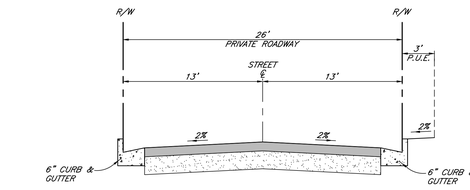
VICINITY MAP
NOT TO SCALE

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	47
TOTAL NUMBER OF REQUIRED PARKING *	118
NUMBER OF ONE CAR GARAGES	0
NUMBER OF TWO OR THREE CAR GARAGES	47
NUMBER OF ZERO CAR DRIVEWAY PARKING	13
NUMBER OF ONE CAR DRIVEWAY PARKING	34
NUMBER OF ON STREET PARAILLEL PARKING	38
NUMBER OF ONSITE PARKING STALLS	0
TOTAL NUMBER OF PARKING PROVIDED	166

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT



MODIFIED 37' RIGHT-OF-WAY TYPICAL SECTION
STREET "A" & "B"
NOT TO SCALE



26' RIGHT-OF-WAY TYPICAL SECTION
STREET "B"
NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DAY OF 2021 TENTATIVE TRACT MAP
10/28/21 BY: HC
DAY OF 20XX FINAL MAP
10/28/21

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37502
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

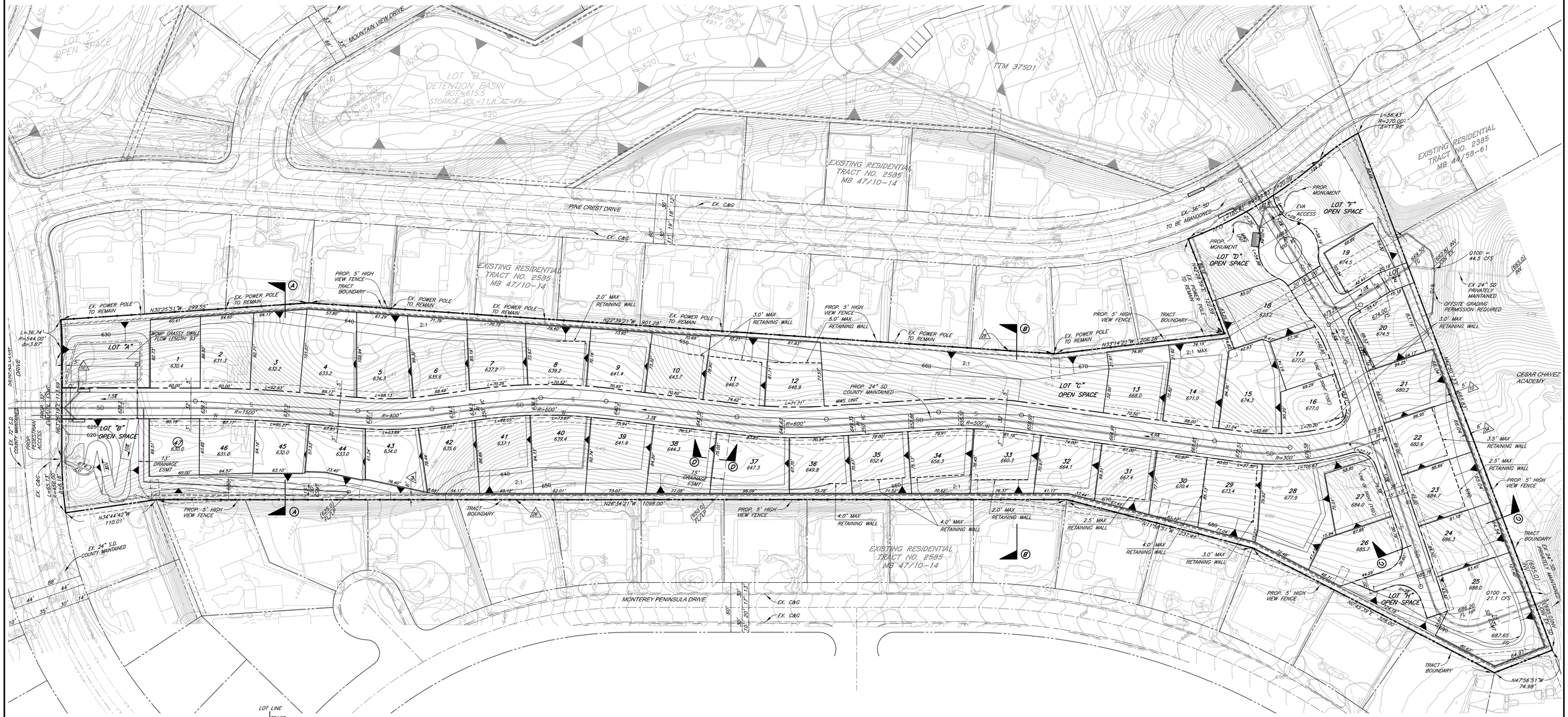
PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

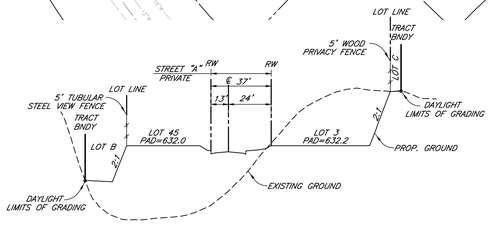
PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

SHEET 1 OF 2 SHEETS

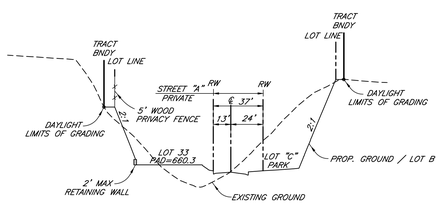
JOB NO. 15.1511.1 R:\15\1511\PRELIM MAPS\TENTPA41511 PA 04 TTM 01.dwg 11/29/21 9:36 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37502
IN THE COUNTY OF RIVERSIDE

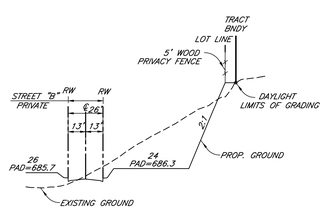




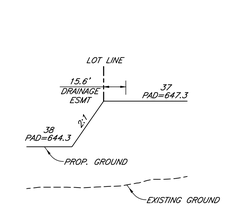
SECTION "A–A"
N.T.S.



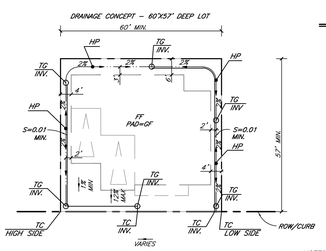
SECTION "B–B"
N.T.S.



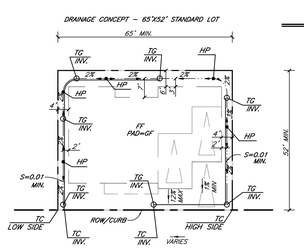
SECTION "C–C"
N.T.S.



SECTION "D–D"
N.T.S.

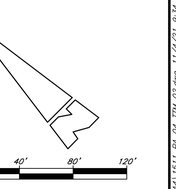


TYPICAL LOT DRAINAGE
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.

NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX.
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEYARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUILDING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING



REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BANNOT
No. 78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER (LAST DIGIT OF YEAR, MONTH, DAY TTM WAS SIGNED)
10/28/21 BY: HC
DATE OF THIS PLOT
10/28/21

TENTATIVE TRACT MAP NO. 37502
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100, CORONA, CA. 92881-3310 951-734-2130

SHEET 2 OF 2 SHEETS

Date	By	REVISIONS	App'd

JOB NO. 13.1311 P:\13\1311\PRELIM\MAPS\TENTMAP1311 Pg 2a TTM 02.dwg 11/4/21 8:34 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37503
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

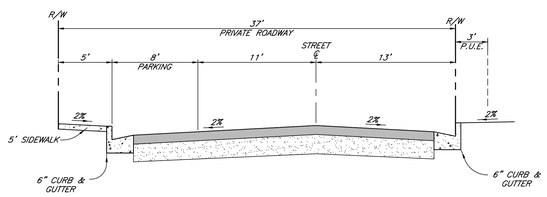
	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT	FT
1	5,850	5,141	78	83
2	5,335	4,780	76	73
3	4,619	3,728	76	63
4	4,851	3,890	84	62
5	4,818	3,989	78	62
6	4,364	3,869	68	60
7	4,621	3,648	76	60
8	4,313	4,002	66	63
9	4,180	3,881	65	63
10	3,878	3,878	60	64
11	11,573	6,917	117	110
12	8,220	5,421	54	148
13	7,563	5,923	45	176
14	5,023	5,023	58	97
15	7,733	5,343	65	105
16	7,538	4,712	68	73
17	7,309	4,436	72	100
18	7,833	4,712	70	111
19	5,371	4,822	88	65
20	6,137	5,511	87	94
21	6,536	5,212	83	75
22	4,632	4,188	60	77
23	4,601	4,287	60	77
24	4,797	4,239	63	76
25	4,926	4,108	65	75
26	4,700	3,600	65	72
27	4,768	3,597	71	67
28	4,564	4,115	71	64
29	8,115	5,206	67	116
30	5,596	5,315	45	126
31	7,536	7,238	47	168
Σ=	181,900	144,729	2,148	2,725
AVG=	5,868	4,669	69	88
MAX=	11,573	7,238	117	176
MIN=	3,878	3,597	45	60

LETTERED LOTS:

THE TRAILS PAS - LETTERED LOTS			
LOT	AREA (SF)	AREA (Acre)	LAND USE
A	21,782	0.50	WQMP
B	78,135	1.79	DETENTION BASIN/H.O.A. SLOPE/ PARK
C	38,797	0.89	OPEN SPACE/SLOPE/TRAILS
D	8,386	0.19	OPEN SPACE/SLOPE/TRAILS
E	30,368	0.70	OPEN SPACE/SLOPE/TRAILS
F	28,768	0.66	OPEN SPACE/SLOPE/TRAILS
G	477	0.01	SLOPE
H	67,406	1.55	PRIVATE STREETS
I	5,911	0.14	PRIVATE ENTRY
TOTAL	280,029	6.43	

STREET LOTS:

	Street Area		CL
Street	sqft	acre	Ft.
A	33,392	0.77	899
B	39,924	0.92	897
Total	73,316	1.68	1,796



37' RIGHT-OF-WAY TYPICAL SECTION

NOT TO SCALE

STREET "A", "B"

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY; REPORT NO. 23061250, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A "△". NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□"

2 AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

3 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 782 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

4D AN EASEMENT IN FAVOR OF R. A. WATT COMPANY, INC. FOR DRAINAGE FACILITIES AND INCIDENTAL PURPOSES, RECORDED APRIL 2, 1969 AS INSTRUMENT NO. 32422 AND AS INSTRUMENT NO. 32423 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

4E EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

LEGAL DESCRIPTION:

THAT PORTION OF LOT 3 OF TRINIDAD YORBA TRACT, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 2, PAGE 22 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE COUNTY.

EXCEPT THAT PORTION OF SAID LAND CONVEYED TO KENNETH E. GRIFFIN, A MARRIED MAN AND JOHN R. GRIFFIN, A MARRIED MAN, BY DEED RECORDED JUNE 20, 1963 AS INSTRUMENT NO. 64373, OFFICIAL RECORDS.

ALSO EXCEPT THE FOLLOWING DESCRIBED PARCEL:

BEGINNING AT A POINT ON THE SOUTHEASTERLY LINE OF PASEO GRANDE, 66.00 FEET IN WIDTH, AS CONVEYED TO THE COUNTY OF RIVERSIDE, BY DEED RECORDED JANUARY 15, 1962 IN BOOK 3057, PAGE 574 OF OFFICIAL RECORDS, WHICH BEARS SOUTH 42° 02' 10" WEST, ALONG THE SOUTHEASTERLY LINE OF SAID PASEO GRANDE, A DISTANCE OF 397.90 FEET FROM THE SOUTHERLY LINE OF YORBA HEIGHTS, UNIT NO. 1, AS SHOWN BY MAP ON FILE IN BOOK 22, PAGE 5 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE SOUTH 40° 19' 20" EAST, A DISTANCE OF 82.73 FEET;
THENCE SOUTH 35° 57' 50" EAST, A DISTANCE OF 142.00 FEET;
THENCE SOUTH 29° 57' 50" EAST, A DISTANCE OF 151.00 FEET;
THENCE SOUTH 47° 02' 10" WEST, A DISTANCE OF 151.00 FEET;
THENCE SOUTH 43° 12' 10" WEST, A DISTANCE OF 287.00 FEET;
THENCE NORTH 65° 27' 50" WEST, A DISTANCE OF 22.00 FEET;
THENCE NORTH 08° 37' 50" WEST, A DISTANCE OF 125.91 FEET;
THENCE NORTH 43° 12' 10" EAST, A DISTANCE OF 141.74 FEET;
THENCE NORTH 44° 57' 50" WEST, A DISTANCE OF 130.50 FEET;
THENCE NORTH 42° 02' 10" EAST, A DISTANCE OF 45.00 FEET;
THENCE NORTH 47° 57' 50" WEST, A DISTANCE OF 100.00 FEET TO THE SOUTHEASTERLY LINE OF SAID PASEO GRANDE;
THENCE NORTH 42° 02' 10" EAST, ALONG THE SOUTHEASTERLY LINE OF SAID PASEO GRANDE, A DISTANCE OF 258.07 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPT THAT PORTION OF SAID LAND CONVEYED TO REED SPRINKLE, A MARRIED MAN, BY DEED RECORDED JUNE 14, 1965 AS INSTRUMENT NO. 68567, OFFICIAL RECORDS.

A.P.N. 102-192-017, 102-203-007
T3S, R7W, SECTION 33

GENERAL NOTES

1. PREPARED: OCTOBER 2021
2. SITE ACREAGE:.....10.60 ACRES GROSS, 9.26 ACRES NET
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN
14. THIS PLANNING AREA IS AN AGE RESTRICTED COMMUNITY.

LEGEND:

- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (A) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1200 = EXISTING CONTOUR ELEVATION
- 1200 = PROPOSED SURFACE ELEVATION
- 1378.3 = PROPOSED PAD ELEVATION
- ELEV. = ELEVATION
- FG = FINISH GRADE
- FL = FLOWLINE
- FS = FINISHED SURFACE
- D.G. = DECOMPOSED GRANITE
- L= = LENGTH
- W= = WIDTH
- MIN. = MINIMUM
- PL = PROPERTY LINE
- R/W = RIGHT OF WAY
- GB = GRADE BREAK
- TC = TOP OF CURB
- 45 = LOT NUMBER
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE

ADJACENT LAND USE:

WEST: MDR MEDIUM DENSITY RESIDENTIAL

EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SBCC, "P474.1" AND "CHPP" HADJ83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PERTHAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID H6 AND J6

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

UTILITY CONTACTS

WATER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

SEWER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
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POWER: SOUTHERN CALIFORNIA EDISON CO.
1351 E. FRANCIS
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(800) 930-8591

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PHONE: AT&T
1265 N. VAN BUREN ST., #180
ANAHEIM, CA 92807
(714) 666-5423

CABLE TV: TIME WARNER CABLE
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
(909) 975-3396

ASSESSOR'S PARCEL NUMBERS:

102-192-017
102-203-007

PROJECT DENSITY

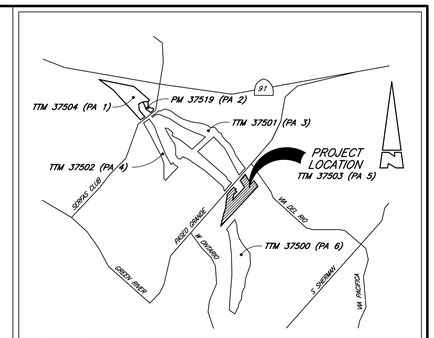
TOTAL LOT: 31
TOTAL GROSS ACREAGE: 10.60 ACRES
DENSITY = 31 / 10.60 = 2.92 DU/AC
PA 5 - AGE RESTRICTED COMMUNITY

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES

GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
PM 37519 (PA 2)	276	14,213	13,937 (FILL)
TTM 37500 (PA 6)	142,030	89,951	52,079 (CUT)
TOTAL	400,827	360,188	40,639 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.



VICINITY MAP

NOT TO SCALE

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE 227
CORONA DEL MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	31
TOTAL NUMBER OF REQUIRED PARKING *	78
NUMBER OF ONE CAR GARAGES	0
NUMBER OF TWO OR THREE CAR GARAGES	31
NUMBER OF ONE CAR DRIVEWAY PARKING	31
NUMBER OF TWO CAR DRIVEWAY PARKING	0
NUMBER OF ON STREET PARALLEL PARKING	41
NUMBER OF ONSITE PARKING STALLS	0
TOTAL NUMBER OF PARKING PROVIDED	134

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4805 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE of LATEST CHANGE to THE MAP
10/28/21 BY: HC
DATE OF THIS PLOT
10/28/21

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37503
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

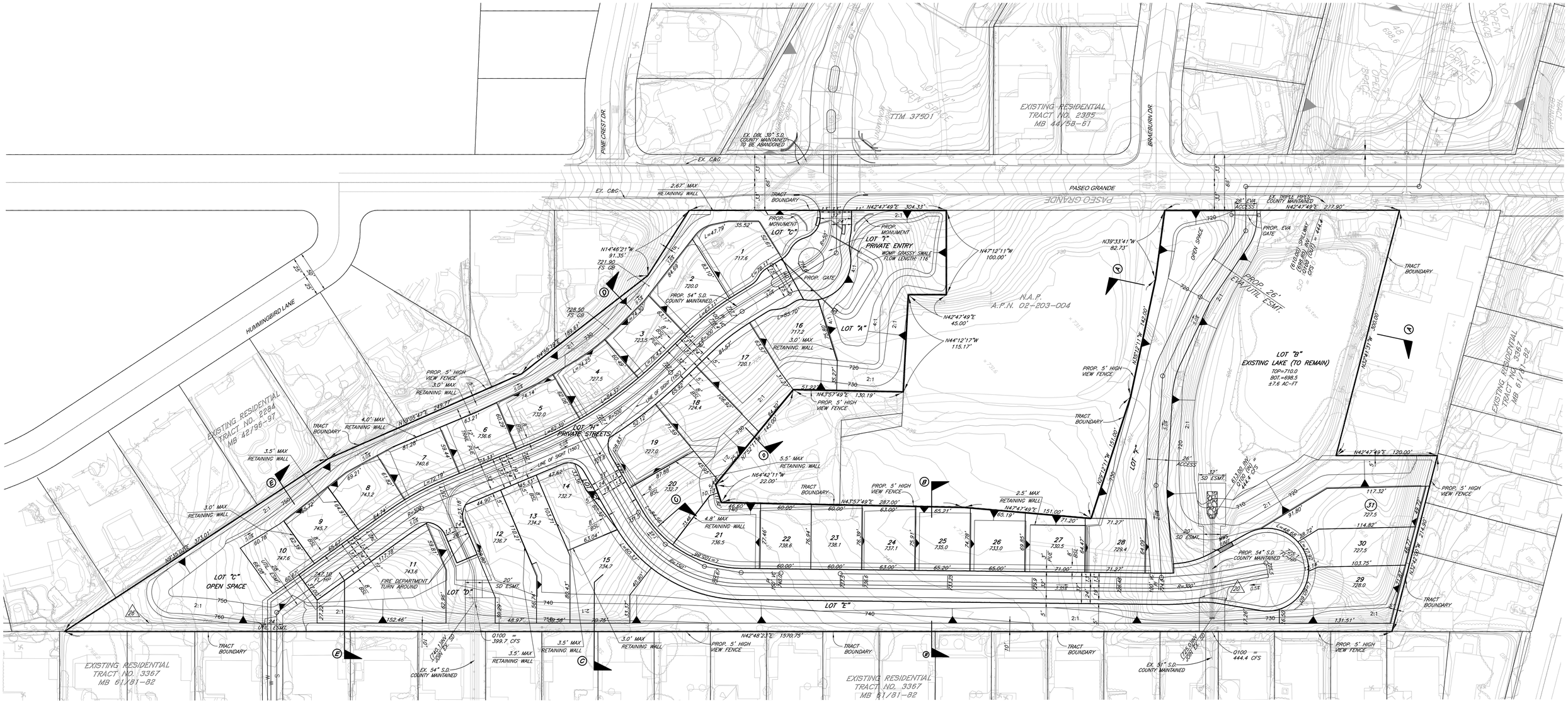
PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

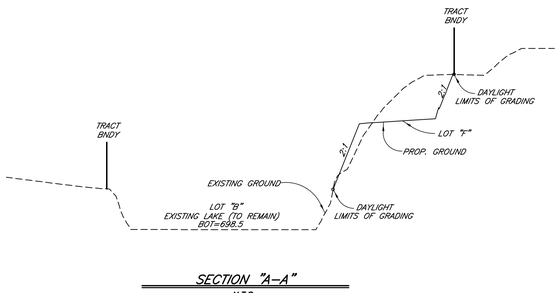
PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881-3370 951-734-2130

SHEET 1 OF 2 SHEETS

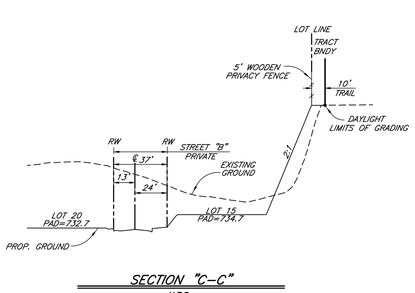
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THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37503
IN THE COUNTY OF RIVERSIDE

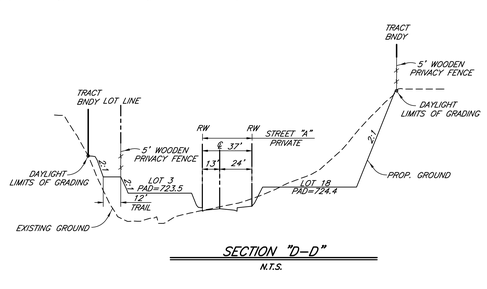




SECTION "A–A"
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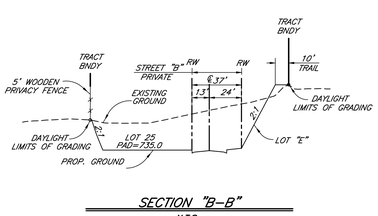


SECTION "C–C"
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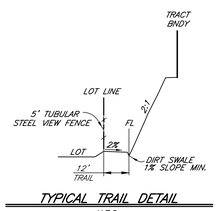


SECTION "D–D"
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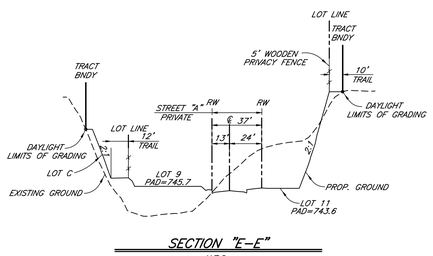
NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX.
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEYARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUILDING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING



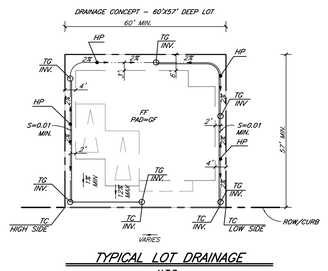
SECTION "B–B"
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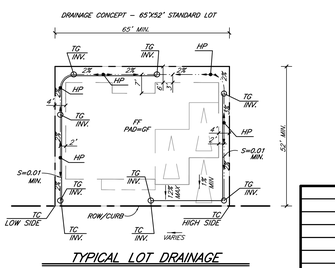
TYPICAL TRAIL DETAIL
N.T.S.



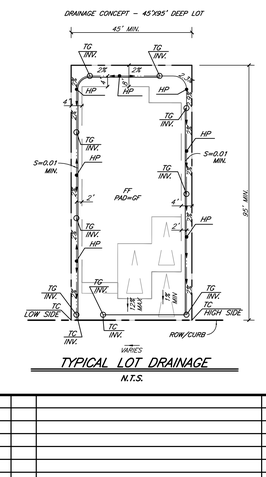
SECTION "E–E"
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.

REGISTERED PROFESSIONAL ENGINEER BRANNON M. BANNETT No.78472 CIVIL STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF MAJOR CHANGE TO TTM MAP
10/28/21 BY: BWP
DATE OF TTM FILE
10/28/21

40' 0 40' 80' 120'
SCALE IN FEET

TENTATIVE TRACT MAP NO. 37503
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY: KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

Date	By	REVISIONS	App'd

SHEET 2 OF 2 SHEETS

JOB NO. 15131.1 R1 15131 PRELIMMAPS\TENTMAS\15131 PA 05 TTM 02.dwg 11/04/21 10:39 AM

DPR18-XXX

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37500
IN THE CITY OF CORONA

NUMBERED LOTS:

	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT	FT
1	7,962	6,793	79	100
2	8,389	7,010	81	103
3	9,165	7,787	86	106
4	8,645	7,418	82	104
5	8,100	6,917	79	102
6	8,147	7,023	79	102
7	8,143	6,954	79	102
8	76,774	75,671	79	101
9	8,027	6,829	79	100
10	7,934	6,631	79	100
11	7,877	6,417	79	100
12	7,936	6,725	79	103
13	8,218	6,990	79	105
14	8,344	7,178	79	104
15	8,266	7,093	79	104
16	8,338	5,876	103	98
17	10,292	7,829	123	81
18	9,851	7,437	158	75
19	11,631	10,130	167	72
20	11,454	9,040	75	116
21	9,990	6,425	90	122
22	11,109	11,109	75	99
23	6,481	5,277	78	110
24	8,846	7,492	78	121
25	9,603	8,270	78	116
26	9,105	7,879	79	109
27	8,648	7,336	90	113
28	9,557	8,215	82	127
29	10,357	8,729	79	142
30	11,274	10,620	80	115
31	8,966	7,061	82	120
32	9,711	9,711	110	160
33	12,895	10,648	89	118
34	10,767	8,991	78	119
35	9,315	6,159	77	118
36	10,656	10,656	66	110
37	7,686	7,686	66	110
38	7,236	7,236	67	108
39	7,263	7,263	86	107
40	9,095	6,286	88	129
41	10,924	9,143	66	130
42	8,513	6,703	67	130
43	8,725	7,034	65	131
44	8,376	6,064	86	135
45	11,095	11,095	66	115
46	8,642	8,642	70	130
47	9,029	9,029	114	138
48	13,669	10,625	82	136
49	10,934	9,039	65	138
50	8,925	5,851	56	140
51	10,799	10,799	70	105
52	7,726	7,726	85	110
53	9,318	7,523	66	130
54	10,734	8,732	85	129
55	11,505	11,505	74	113
56	8,232	8,232	73	113
Σ=	589,202	514,538	4,631	6,374
AVG=	10,521	9,188	83	114
MAX=	76,774	75,671	167	160
MIN=	6,481	5,277	56	72

LETTERED LOTS:

THE TRAILS PA 6 - LETTERED LOTS				
LOT	AREA (SF)	AREA (AC)	LAND USE	MAINTAINED BY
A	21,305	0.49	WQMP	H.O.A
B	14,996	0.34	WQMP	H.O.A
C	276,432	6.35	OPEN SPACE/TRAIL	H.O.A
D	1,871	0.04	OPEN SPACE	H.O.A
E	2,075	0.05	OPEN SPACE	H.O.A
F	2,535	0.06	OPEN SPACE	H.O.A
G	2,120	0.05	OPEN SPACE	H.O.A
H	76,774	1.76	OPEN SPACE/TRAIL	H.O.A
I	56,547	1.30	OPEN SPACE/TRAIL	H.O.A
J	99,349	2.28	PRIVATE STREETS	H.O.A
K	10,099	0.23	PRIVATE ENTRY	H.O.A
TOTAL	564,104	12.95		

STREET LOTS:

	STREET AREA		CL
STREET	SF	AC	FT
A	81,227	1.86	1,892
B	4,666	0.11	184
C	4,531	0.10	207
D	7,842	0.18	357
E	5,651	0.13	313
F	5,531	0.13	216
TOTAL	109,448	2.51	3,169

PROJECT TOTALS		
	SF	ACRES
TOTAL PROJECT AREA	1,084,778	24.90
TOTAL AREA DISTURBED	833,629	19.14
TOTAL AREA TO REMAIN NATURAL	251,149	5.76

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES

GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
PM 37519 (PA 2)	276	14,213	13,937 (FILL)
TTM 37500 (PA 6)	142,030	89,951	52,079 (CUT)
TOTAL	400,827	360,188	40,639 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A "△"; NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□".

2 AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY; **TO BE QUITCLAIMED.**

3 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

15 AN EASEMENT IN FAVOR OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT FOR DRAINAGE AND INCIDENTAL PURPOSES, RECORDED MAY 11, 1964 IN BOOK 3689 OFFICIAL RECORDS, PAGE 344 OF RIVERSIDE COUNTY; **TO REMAIN.**

17 AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 14, 1965 AS INSTRUMENT NO. 105591 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY; **TO REMAIN.**

18 AN EASEMENT IN FAVOR OF THE CITY OF CORONA FOR STORM DRAIN FACILITIES AND INCIDENTAL PURPOSES, RECORDED MAY 2, 1966 AS INSTRUMENT NO. 45735 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

19 A DEDICATION TO THE CITY OF CORONA ALL CONSTRUCTION AND DEVELOPMENT RIGHTS IN AND TO PARCEL 5, SUBJECT TO EXCEPTIONS AND RESERVATION TO K.A. WATT COMPANY AND ITS SUCCESSORS, OF ALL DEVELOPMENT AND CONSTRUCTION RIGHTS IN AND TO SAID PROPERTY FOR GOLF COURSE, COUNTY CLUB, OR OTHER RECREATIONAL PURPOSES, RECORDED AUGUST 7, 1968 AS INSTRUMENT NO. 76374 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY; BLANKET IN NATURE. **TO BE QUITCLAIMED.**

28 EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 182437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SRCC, "P474" AND "CVPP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PER THAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORMERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

PROPERTY OWNERSHIP INFORMATION:

APNS: 103-020-007, 103-020-008, 103-020-009, 103-020-010, & 103-020-011.

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

LEGAL DESCRIPTION:

THAT PORTION OF LOTS 1 AND 2 OF THE TRINIDAD YORBA TRACT, IN THE CITY OF CORONA, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 2, PAGE 22 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE COUNTY.

UTILITY CONTACTS

WATER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

SEWER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

POWER: SOUTHERN CALIFORNIA EDISON CO.
1351 E. FRANCIS
ONTARIO, CA. 91761
(800) 930-8591

GAS: SOUTHERN CALIFORNIA GAS CO.
P.O. BOX 3003
REDLANDS, CA. 92373
(800) 427-2200

PHONE: AT&T
1265 N. VAN BUREN ST., #180
ANAHEIM, CA 92807
(714) 666-5423

CABLE TV: TIME WARNER CABLE
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
(909) 975-3396

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	56
TOTAL NUMBER OF REQUIRED PARKING *	140
NUMBER OF ONE CAR GARAGES	0
NUMBER OF TWO OR THREE CAR GARAGES	56
NUMBER OF ONE CAR DRIVEWAY PARKING	0
NUMBER OF TWO CAR DRIVEWAY PARKING	56
NUMBER OF ON STREET PARALLEL PARKING	35
NUMBER OF ONSITE PARKING STALLS	0
TOTAL NUMBER OF PARKING PROVIDED	203

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE 227
CORONA DEL MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

GENERAL NOTES:

1. PREPARED: OCTOBER 2021

2. TOTAL PROJECT GROSS ACREAGE IS 24.90 ACRES.

3. ACREAGE SUMMARY

ITEM	ACREAGE	PERCENT
A. LOT GROSS AREA (1-56 LOTS)	13.53	54.3%
B. DRAINAGE (WQMP/DEBRIS/DETENTION)	0.83	3.3%
C. STREETS (ROW-ROW)	2.44	9.8%
D. H.O.A. MAINTAINED SLOPES/OPEN	2.33	9.4%
E. OPEN SPACE (NATURAL)	5.77	23.2%
TOTAL	24.90	100.0%

4. PROPOSED NO. OF DWELLING UNITS: 56 LOTS.

5. PROPOSED PROJECT DENSITY: 2.25 DU/AC.

6. EXISTING GENERAL PLAN DESIGNATION: LOW DENSITY RESIDENTIAL (3-6 DU/AC)

7. PROPOSED GENERAL PLAN DESIGNATION: LOW DENSITY RESIDENTIAL (3-6 DU/AC)

8. EXISTING LAND USE: OPEN SPACE

9. PROPOSED LAND USE: SINGLE FAMILY RESIDENTIAL

10. EXISTING ZONING: A-AGRICULTURAL

11. PROPOSED ZONING: R-1-7.2 SINGLE FAMILY RESIDENTIAL

12. ADJACENT LAND USE:
NORTH:
GENERAL PLAN - LOW DENSITY RESIDENTIAL (3-6 DU/AC)
ZONING - R-1-7.2 SINGLE FAMILY RESIDENTIAL
EXISTING USE - SINGLE FAMILY RESIDENTIAL
SOUTH:
GENERAL PLAN - LOW DENSITY RESIDENTIAL (3-6 DU/AC)
ZONING - R-1-7.2 SINGLE FAMILY RESIDENTIAL
EXISTING USE - SINGLE FAMILY RESIDENTIAL
EAST:
GENERAL PLAN - LOW DENSITY RESIDENTIAL (3-6 DU/AC)
ZONING - R-1-7.2 SINGLE FAMILY RESIDENTIAL
EXISTING USE - SINGLE FAMILY RESIDENTIAL
WEST:
GENERAL PLAN - LOW DENSITY RESIDENTIAL (3-6 DU/AC)
ZONING - R-1-7.2 SINGLE FAMILY RESIDENTIAL
EXISTING USE - SINGLE FAMILY RESIDENTIAL

13. SOURCE OF TOPOGRAPHY IS AERIAL TOPOGRAPHY FLOWN ON AUGUST 17, 2017 BY INLAND AERIAL SURVEYS, INC.

14. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE.

15. ALL EXISTING EASEMENTS AND IRREVOCABLE OFFERS OF DEDICATION THAT AFFECT THE PROPERTY BEING SUBDIVIDED ARE SHOWN ON THIS TENTATIVE TRACT MAP.

16. ALL EXISTING EASEMENTS ARE TO REMAIN IN THEIR DESIGNATED LOCATIONS UNLESS NOTED OTHERWISE.

17. SCHOOL DISTRICT: CORONA-NORCO SCHOOL DISTRICT

18. STREETS GRADES: 1.0% MINIMUM, 8.2% MAXIMUM.

19. ALL CONC. GUTTERS AND SWALES SHALL HAVE A MINIMUM GRADE OF: 1.0%

20. ALL A.C. PAVING SHALL HAVE A MINIMUM GRADE OF: 1.0%

21. CONCRETE PAVEMENT SHALL BE PROVIDED FOR ALL ROADWAYS THAT HAVE STREET GRADES EXCEEDING 10% OR AS APPROVED BY THE CITY OF CORONA.

22. CURB FRONTAGE AT CUL-DE-SACS AND KNUCKLES SHALL BE A MINIMUM OF 45 FEET.

23. ESTIMATED DISTURBED AREA FOR THE PROJECT SITE IS 19.14 ACRES, COMPRISING OF 76.87% OF THE TOTAL PROJECT AREA.

24. ALL SLOPES ADJACENT TO STREET R.O.W. TO BE MAINTAINED BY H.O.A. OR AS IDENTIFIED HEREON.

25. ALL SLOPES SHOWN HEREON ARE 2:1 MAXIMUM UNLESS OTHERWISE NOTED.

26. ALL SLOPES ARE PRIVATE UNLESS THEY ARE WITHIN A LETTERED H.O.A. MAINTAINED LOT.

27. ALL MAJOR SLOPES OR COMMON AREAS, OPEN SPACE, PRIVATE DRAINAGE FACILITIES, ROAD ACCESS EASEMENTS, AND ANY OTHER COMMON AMENITIES SHALL BE MAINTAINED BY A HOMEOWNERS ASSOCIATION OR ESTABLISHED SUBJECT TO CURRENT STATE LAWS AND BE SUBJECT TO THE APPROVAL OF THE CITY OF CORONA WHO SHALL REVIEW ALL CC & R'S AND RULES FOR THEIR CC & R'S, HOMEOWNERS ASSOCIATION DOCUMENTS AND ALL DOCUMENTS TO CONVEY TITLE TO THE HOMEOWNERS ASSOCIATION.

28. FENCING SHALL BE INSTALLED ON SITE AS NECESSARY TO RESTRICT PUBLIC ACCESS TO PROPOSED OPEN SPACE AREAS. REFER TO WALL AND FENCE PLAN FOR LOCATIONS.

29. THERE ARE NO KNOWN ACTIVE EARTHQUAKE FAULTS IMPACTING THE PROJECT SITE. REFER TO SOILS REPORT FOR ADDITIONAL INFORMATION.

30. DRAINAGE SYSTEM WILL BE DEVELOPED IN ACCORDANCE WITH THE CITY OF CORONA AND RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT STANDARDS AND SPECIFICATIONS. DRAINAGE ON THIS SITE WILL BE CONVEYED BY MEANS OF A STORM DRAIN SYSTEM CONSISTING OF VARYING SIZES OF STORM DRAIN PIPES. STORM FLOWS TRIBUTARY TO THE SITE SHALL BE INTERCEPTED AND CONVEYED AROUND THE SITE VIA THE STORM DRAIN SYSTEMS SHOWN HEREON. ALL STORM DRAIN SHOWN HEREON ARE PRELIMINARY.

31. PROPOSED WQMP BASINS MAY BE MAINTAINED BY FUTURE HOA OR CFD FORMED SPECIFICALLY FOR DEVELOPMENT. THE MAINLINE STORM DRAIN, INLETS, AND OUTLET STRUCTURES SHALL BE PUBLICLY MAINTAINED VIA A PROPOSED DEDICATED DRAINAGE EASEMENT.

32. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0686G AND 06065C1315G.

33. THE SUBJECT PROPERTY IS NOT WITHIN A SPECIAL FIRE HAZARD ZONE.

34. THE SUBJECT PROPERTY IS WITHIN A SANTA ANA RIVER WATERSHED.

35. ALL PARTIES HAVING A BENEFICIARY INTEREST IN THE PROPERTY BEING SUBDIVIDED ARE AWARE OF AND CONSENT TO THE FILING OF THIS TENTATIVE TRACT MAP.

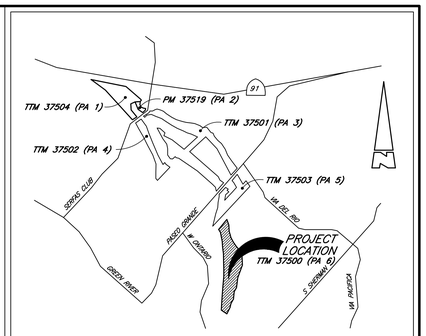
STATEMENT OF PREPARER

I HEREBY STATE THAT THIS MAP WAS PREPARED UNDER MY SUPERVISION AND THAT THE OWNER OF RECORD HAS KNOWLEDGE OF AND CONSENTS TO THE FILING OF THIS MAP.

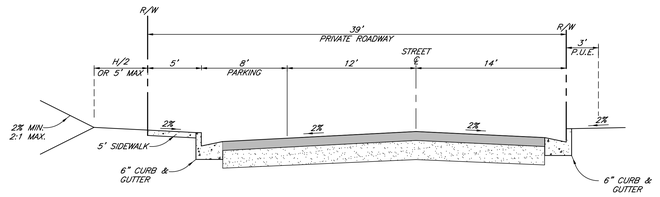
_____ DATE _____
BRANDON M. BARNETT, P.E.

LEGEND:

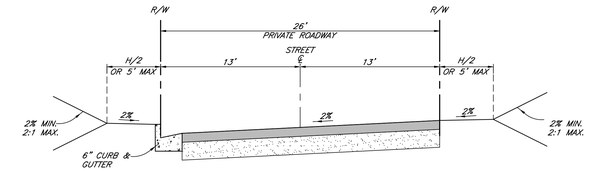
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- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (A) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1200 = EXISTING CONTOUR ELEVATION
- 1200 = PROPOSED SURFACE ELEVATION
- 1378.3 = PROPOSED PAD ELEVATION
- ELEV. = ELEVATION
- FG = FINISH GRADE
- FL = FLOWLINE
- FS = FINISHED SURFACE
- D.G. = DECOMPOSED GRANITE
- L= = LENGTH
- W= = WIDTH
- MIN. = MINIMUM
- PL = PROPERTY LINE
- R/W = RIGHT OF WAY
- GB = GRADE BREAK
- TC = TOP OF CURB
- 45 = LOT NUMBER
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE



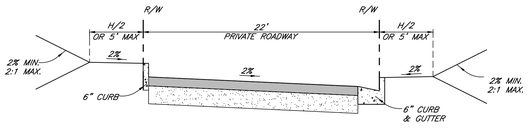
VICINITY MAP
NOT TO SCALE



39' RIGHT-OF-WAY TYPICAL SECTION
STREET "A"
NOT TO SCALE



MODIFIED PRIVATE WAY
STREET "B", "F"
NOT TO SCALE



MODIFIED PRIVATE COURT
STREET "C", "D", "E"
NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF LATEST CHANGE TO THIS MAP
10/28/21 BY: BWP
DATE OF THIS PLOT
10/28/21

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37500
THE TRAILS AT CORONA
CITY OF CORONA

PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

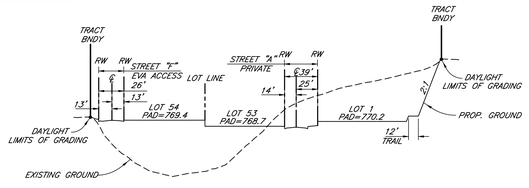
PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881-3370 951-734-2130

SHEET 1 OF 2 SHEETS

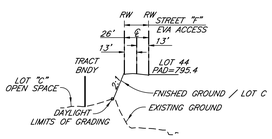
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DPR18-XXX

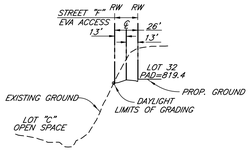
THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37500
IN THE CITY OF CORONA



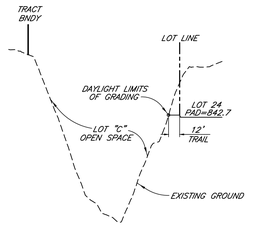
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N.T.S.



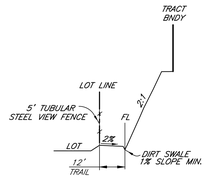
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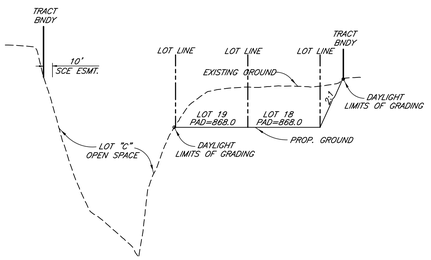
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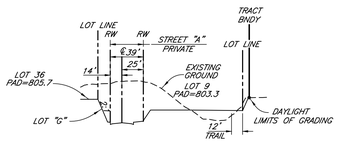
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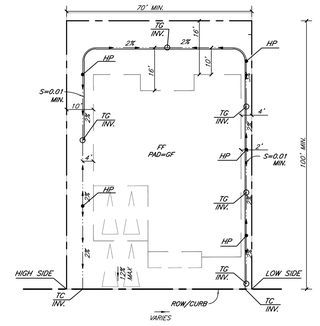
TYPICAL TRAIL DETAIL
N.T.S.



SECTION "E–E"
N.T.S.

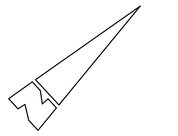


SECTION "F–F"
N.T.S.



NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEYARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUDLING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING

TYPICAL LOT DRAINAGE
N.T.S.



REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER (MO. OF LATEST CHANGE TO TTM MAP)
10/28/21 BY: BWP
SOIL OF THIS PLOT
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THE TRAILS AT CORONA
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1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

SHEET 2 OF 2 SHEETS

J:\JOB NO_15-131-1 PI\15-131-1 PRELIM MAPS\TENT MAP\15-131-1 PA 106 TTM 02.dwg 11/4/21 11:35 AM

Appendix

C

CITY OF CORONA WATER SYSTEM ATLAS AND PRESSURE ZONE MAP

RIVERSIDE FREEWAY 91

WARDLOW RD

RESEARCH DR

NORTHMOOR DR

COLONIAL DR

MONTEREY PENINSULA DR

PALISADES DR

PEBBLE BEACH CT

BROADMOOR CT

SAINT ANDREWS CT

OAKMONT CT

JUNIPER DR

DOGWOOD DR

TIMBER DR

TIMEG DR

2771 2703 2652 2616 2683 3075 3035 3015 3100 3050 3000 2950 2900 2850 2800 2785 3141 3129 3125 3121 3133 3117 3113 3109 3105 3101 3130 3134 3136 3140 3138 3085 3065 3051 3041 3031 3021 3015 3009 3001 2995 2975 2955 2945 2935 2921 3090 3080 3070 3060 3050 3040 3030 3020 3010 3000 2990 2970 2950 2930 3108 3110 3114 3120 3118 3091 3039 3029 3019 641 651 661 671 681 691 2581 2571 2551 2541 2531 2523 2511 2501 2493 2489 2481 2469 2459 2451 2441 2431 2421 2411 2401 2586 2593 2583 2573 2563 2553 2545 2537 2533 2525 2515 2505 2497 2491 2479 2471 2465 2455 2447 2437 2594 2584 2574 2564 2554 2546 2536 2530 2520 2510 2502 2492 2482 2474 2466 2456 650 660 670 710 720 730 740 750 760 770 780 790 711 721 741 751 771

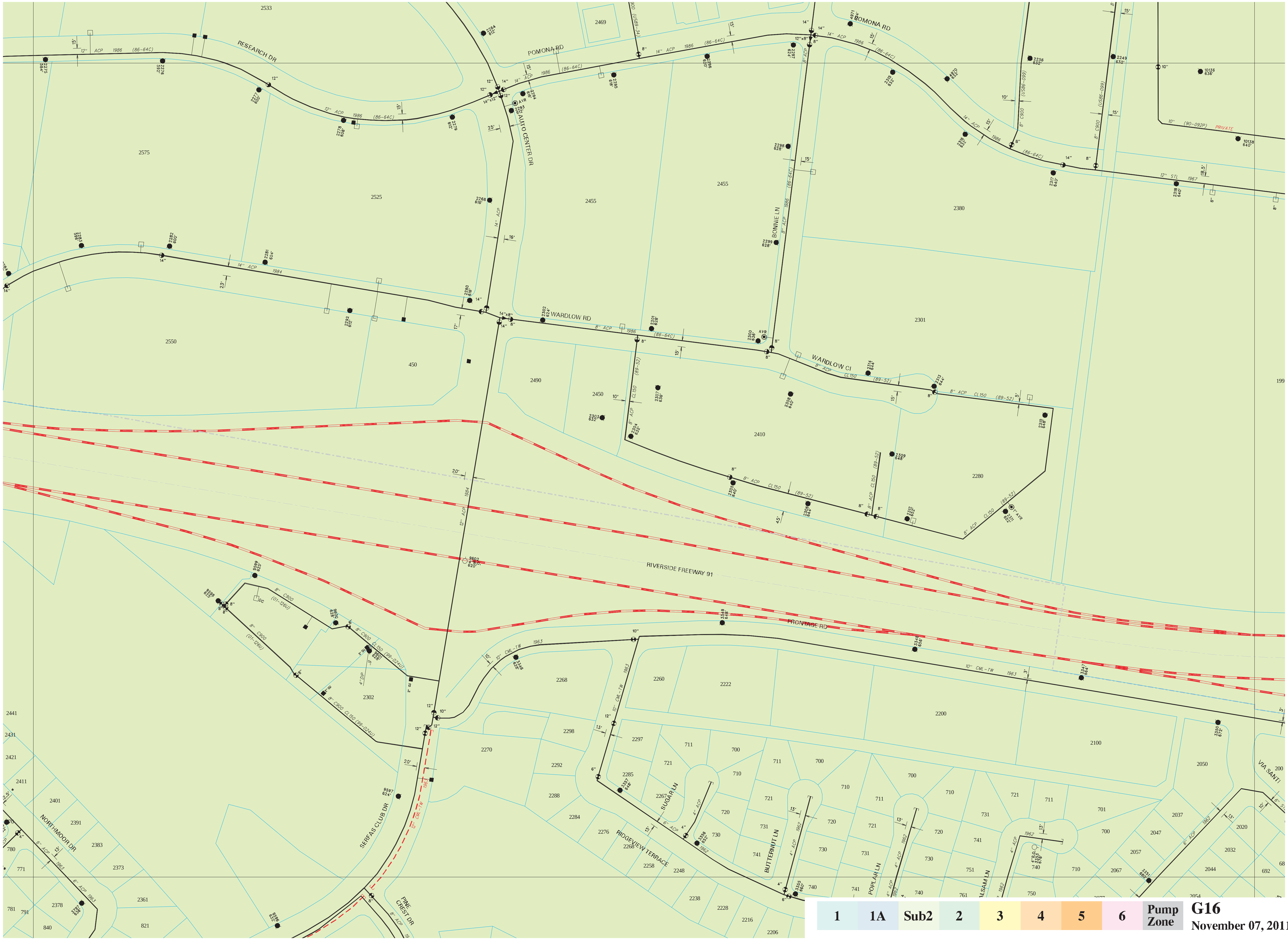
1	1A	Sub2	2	3	4	5	6	Pump Zone

F16

November 07, 2011

1	1A	Sub2	2	3	4	5	6	Pump Zone

F17
November 07, 2011



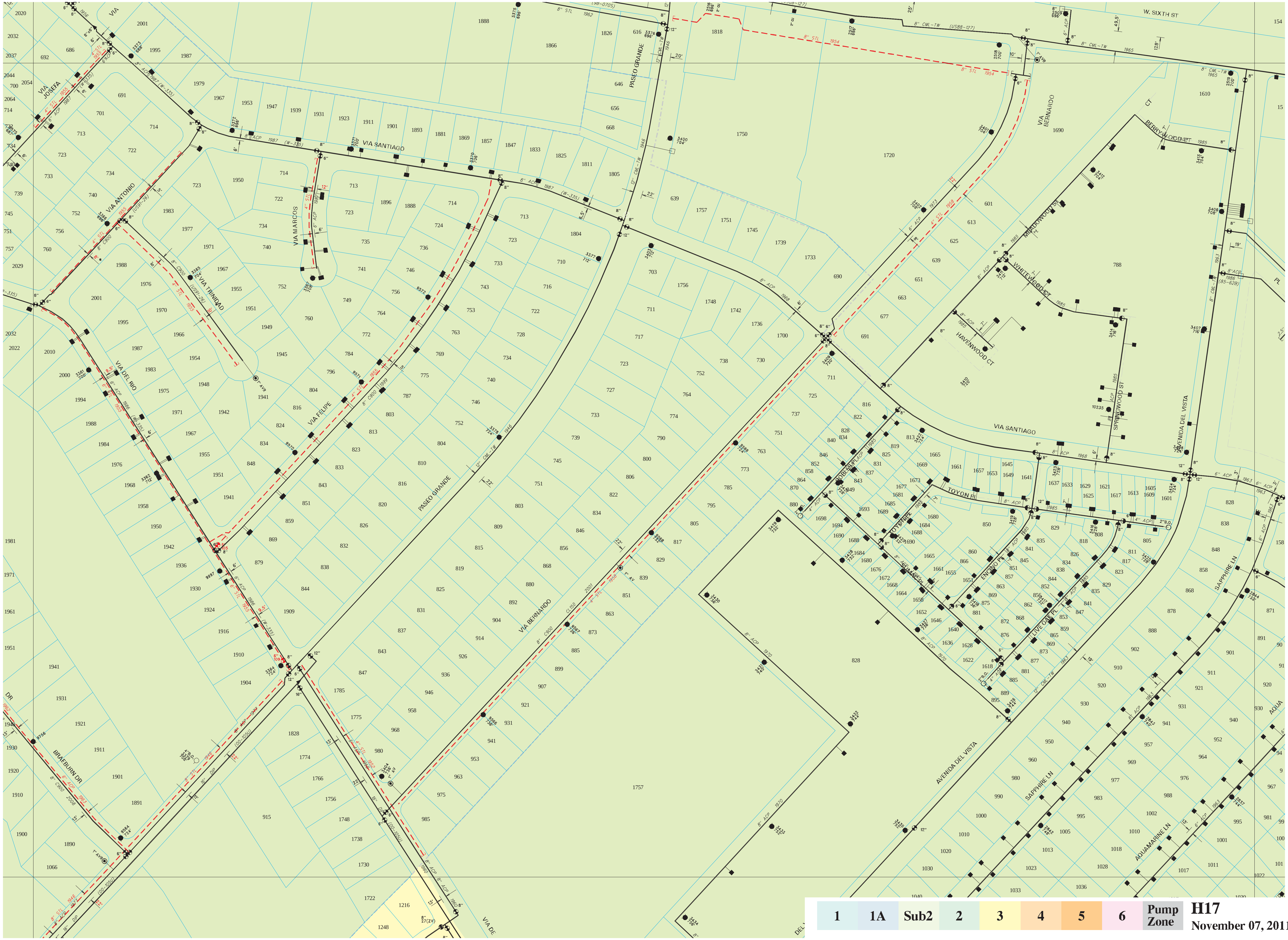
1	1A	Sub2	2	3	4	5	6	Pump Zone

G16
November 07, 2011

1	1A	Sub2	2	3	4	5	6	Pump Zone

G17
November 07, 2011

RANCHO CORONA DR
PINE CREST DR
PRIVATE 8" CMP
PASEO GRANDE
LAS FOSAS RD
HILLTOP CI
W UMIAHIH AV
HUMMINGBIRD LN
KIRKWOOD DR
APPLEGATE DR
MANITOBA CI
TANGLEWOOD DR
WHITEOAK LN
TIMPROSE DR
6" ACP 1976
8" ACP 1977
8" ACP 1982
8" ACP 1983
8" ACP 1975
8" STL 1946
12" DIP (86-089)
16" DIP (85-114)
8" CMP (88-092) ZONE 3
1 1A Sub2 2 3 4 5 6 Pump Zone
G18
November 07, 2011



1	1A	Sub2	2	3	4	5	6	Pump Zone

H17
November 07, 2011

VIA DEL RIO
AVENIDA DEL VISTA
SAPPHIRE LN
AQUAMARINE LN
BERYL LN
JADESTONE LN
BEPIN DR
KIRKWOOD DR
VALLEJO DR
EL TORO CI
BLUEBIRD LN
SUNRISE WY
SUNNYCOVE
CROWN VIEW DR
DAWN RIDGE DR
DAWN HORSE DR
VALLEJO CT
CHALGROVE DR
SUNKIST CI
PAGE CI
CALL W
CAMELOT DR
ADV SYSTEM OPERATIONS STATION

1	1A	Sub2	2	3	4	5	6	Pump Zone

H18
November 07, 2011

DAWN RIDGE DR
BRENTWOOD DR
LARK LN
MERRYWOOD LN
SPRING LN
LIND TERRACE
LONGVIEW DR
RAINBOW RIDGE
CAROLWOOD DR
ADRIENNE DR
SUNSET LN
ANGUS DELL VISTA
CHALGROVE DR
DOWNING CT
BORDER AV
BAIRD ST
KEELER ST
BRENTWOOD CI
KROONEN DR
24" CMC WELL COLLECTION LINE (IN - 80')

1	1A	Sub2	2	3	4	5	6	Pump Zone

H19
November 07, 2011

Appendix

D

ULTIMATE CONDITION MODEL DEMANDS AND MAP

THE TRAILS AT CORONA - ZONE 2 WATER DEMAND SUMMARY				
Node No.	Tributary Area (ac)	Average Day Demand (gpm)	Maximum Day Demand (gpm)	Peak Hour Demand (gpm)
J-1	1.19	3.29	5.93	7.47
J-2	1.67	4.64	8.35	10.52
J-3	1.06	2.96	5.32	6.71
J-5	0.78	0.87	1.57	1.98
J-6	2.72	7.56	13.62	17.16
J-7	3.48	9.66	17.38	21.90
J-8	2.45	6.81	12.25	15.44
J-9	2.79	7.74	13.93	17.55
J-10	2.52	6.99	12.59	15.86
J-11	3.00	8.33	14.99	18.89
J-12	3.38	9.38	16.88	21.27
J-13	1.88	5.21	9.38	11.81
J-14	2.38	6.60	11.89	14.98
Total:	**29.28**	**80.04**	**144.07**	**181.53**

THE TRAILS AT CORONA - ZONE 3 WATER DEMAND SUMMARY				
Node No.	Tributary Area (ac)	Average Day Demand (gpm)	Maximum Day Demand (gpm)	Peak Hour Demand (gpm)
J-15	1.52	4.22	7.60	12.17
J-16	2.66	7.39	13.30	21.27
J-17	3.42	8.91	16.05	25.67
J-18	4.85	12.63	22.73	36.37
J-19	5.26	13.69	24.65	39.44
Total:	**17.71**	**46.85**	**84.32**	**134.92**

Note:

1) Average Day Demand based on 4,000 gpd/ac for MDR, and 1,610 gpd/ac for GCC, 3,750 gpd/ac for LDR
2) Maximum Day Demand is 1.8 ADD
3) Peak Hour Demand is 1.26xMDD for Zone 2 and 1.60xMDD for Zone 3

THE TRAILS AT CORONA
WATER NODE DEMAND AREAS

LEGEND

- 8" PROPOSED DOMESTIC WATER (ZONE 2)
- 8" PROPOSED DOMESTIC WATER (ZONE 3)
- 12" EXISTING ZONE 2 WATER (905 HWL)
- 12" EXISTING ZONE 3 WATER (1060 HWL)
- PLANNING AREA/TRACT BOUNDARY
- TRIBUTARY AREA
- ZONE BOUNDARY

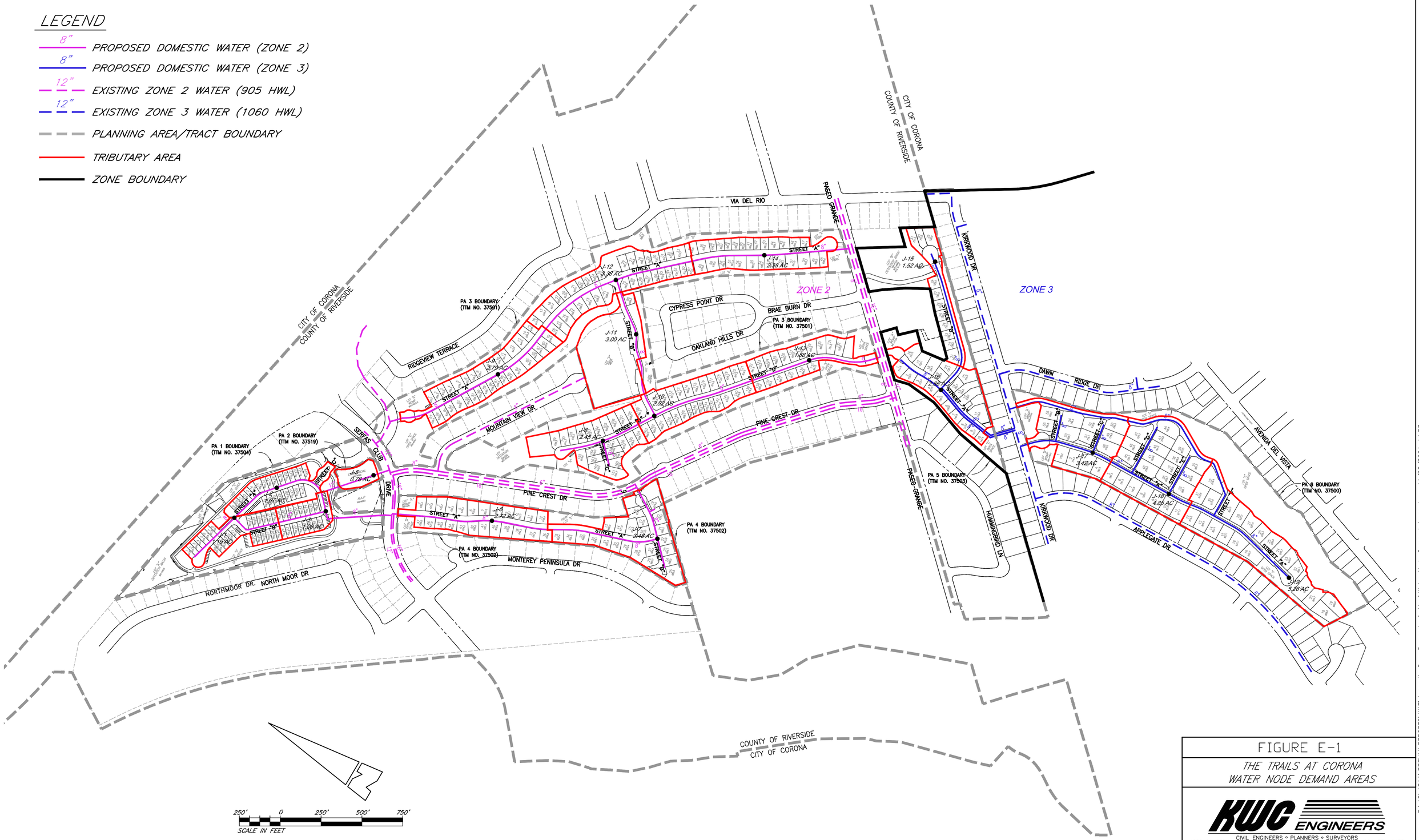


FIGURE E-1

THE TRAILS AT CORONA
WATER NODE DEMAND AREAS

KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 • CORONA, CA. 92881-3370 • 951-734-2130

15.1511.8.18 R:\15\1511\PRELIM\REPORTS\WAT\Appendix D - Demands & Map\Water Node Demand Areas.dwg 11/08/2021 14:53

Appendix

E

ULTIMATE CONDITION HYDRAULIC ANALYSIS AND NODE AND PIPE DIAGRAM

ADD
ZONE 2 & 3 WATER SYSTEM ANALYSIS

Junction Pressures @ Steady State Analysis

Node	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)	
J-1	3.29	598.94	852.98	110.07	
J-10	6.99	658.90	852.96	84.09	
J-101	0.00	612.00	853.00	104.42	
J-102	0.00	719.00	853.00	58.06	
J-103	0.00	658.00	852.98	84.48	
J-104	0.00	716.00	852.98	59.35	
J-105	0.00	738.00	853.00	49.83	<-Ex Node
J-106	0.00	738.00	852.98	49.82	<-Ex Node
J-107	0.00	712.00	853.00	61.10	
J-108	0.00	703.00	852.98	64.98	
J-109	0.00	751.00	995.89	106.11	
J-11	8.33	674.66	852.97	77.26	
J-110	0.00	783.00	995.89	92.24	
J-111	0.00	740.00	995.91	110.89	
J-112	0.00	736.00	995.94	112.63	
J-115	0.00	668.00	852.98	80.15	
J-116	0.00	626.00	852.98	98.35	
J-117	0.00	618.00	852.98	101.82	
J-118	0.00	641.00	852.98	91.85	
J-119	0.00	618.00	852.98	101.82	
J-12	9.38	696.41	852.97	67.84	
J-120	0.00	614.00	852.98	103.55	
J-121	0.00	620.00	852.98	100.95	
J-122	0.00	610.00	852.98	105.28	
J-123	0.00	626.00	852.98	98.35	
J-124	0.00	696.00	852.98	68.02	
J-125	0.00	714.00	853.00	60.23	
J-126	0.00	614.00	852.98	103.55	
J-127	0.00	612.00	852.98	104.42	
J-128	0.00	602.46	852.98	108.55	
J-129	0.00	602.09	852.98	108.71	
J-13	5.21	690.73	852.97	70.30	
J-130	0.00	605.86	852.98	107.08	
J-131	0.00	605.22	852.98	107.35	
J-132	0.00	600.67	852.98	109.33	
J-133	0.00	601.84	852.98	108.82	
J-135	0.00	604.92	852.98	107.48	
J-136	0.00	675.32	852.97	76.97	
J-137	0.00	673.91	852.97	77.58	
J-138	0.00	681.89	852.98	74.13	
J-14	6.61	681.55	852.97	74.28	
J-140	0.00	801.80	995.88	84.09	

Junction Pressures @ Steady State Analysis

Node	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
J-142	0.00	761.95	995.88	101.36
J-143	0.00	763.26	995.88	100.80
J-144	0.00	786.25	995.88	90.83
J-145	0.00	788.99	995.88	89.64
J-147	0.00	774.14	995.88	96.08
J-15	4.22	721.39	995.89	118.94
J-150	0.00	677.60	852.98	75.99
J-151	0.00	645.36	852.96	89.95
J-16	7.39	724.50	995.89	117.59
J-161	0.00	597.67	852.98	110.63
J-162	0.00	636.17	852.96	93.94
J-163	0.00	671.49	852.97	78.63
J-17	8.92	772.72	995.88	96.70
J-172	0.00	730.00	996.00	115.26
J-173	0.00	610.27	853.00	105.17
J-174	0.00	733.67	995.89	113.62
J-175	0.00	708.00	852.98	62.82
J-176	0.00	621.41	853.00	100.35
J-179	0.00	617.86	852.98	101.87
J-18	12.63	798.28	995.88	85.62
J-184	0.00	724.50	995.89	117.59
J-186	0.00	746.00	995.89	108.28
J-188	0.00	814.00	995.88	78.81
J-189	0.00	744.00	995.90	109.15
J-19	13.69	845.00	995.88	65.37
J-190	0.00	752.00	995.89	105.68
J-191	0.00	752.00	995.89	105.68
J-193	0.00	708.86	995.89	124.37
J-194	0.00	814.00	995.88	78.81
J-195	0.00	618.00	852.98	101.82
J-196	0.00	636.00	852.99	94.02
J-2	4.64	603.40	852.98	108.14
J-201	0.00	835.40	995.88	69.53
J-202	0.00	607.50	852.98	106.37
J-203	0.00	605.67	852.98	107.16
J-3	2.96	602.43	852.98	108.56
J-5	0.87	624.00	852.98	99.22
J-6	7.57	633.03	852.98	95.30
J-7	9.66	676.17	852.98	76.61
J-8	6.81	643.99	852.96	90.55
J-9	7.74	634.82	852.97	94.52

Pipe Report @ Steady State Analysis

ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)	Status	Flow Reversal Count
P-1	J-101	J-173	360.87	16.00	110.00	-44.72	0.07	0.00	0.00	Open	0.00
P-100	J-194	J-188	3.61	8.00	110.00	8.34	0.05	0.00	0.00	Open	0.00
P-101	J-194	J-201	402.70	8.00	110.00	6.85	0.04	0.00	0.00	Open	0.00
P-102	J-195	J-119	253.67	12.00	110.00	-26.30	0.07	0.00	0.00	Open	0.00
P-103	J-5	J-195	67.24	12.00	110.00	-4.71	0.01	0.00	0.00	Open	0.00
P-104	J-196	J-101	2590.88	16.00	110.00	-44.72	0.07	0.01	0.00	Open	0.00
P-105	J-127	J-196	657.00	12.00	110.00	-44.72	0.13	0.01	0.01	Open	0.00
P-107	J-201	J-19	208.44	8.00	110.00	6.85	0.04	0.00	0.00	Open	0.00
P-108	J-188	J-19	606.44	8.00	110.00	6.85	0.04	0.00	0.00	Open	0.00
P-109	J-202	J-131	85.94	8.00	110.00	5.00	0.03	0.00	0.00	Open	0.00
P-11	J-115	J-116	1104.15	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-111	J-119	J-3	419.35	8.00	110.00	7.06	0.05	0.00	0.00	Open	0.00
P-112	J-203	J-202	74.22	8.00	110.00	5.00	0.03	0.00	0.00	Open	0.00
P-113	J-5	J-203	385.13	12.00	110.00	3.83	0.01	0.00	0.00	Open	0.00
P-12	J-117	J-116	298.36	8.00	110.00	6.06	0.04	0.00	0.00	Open	0.00
P-13	J-116	J-118	381.88	8.00	110.00	6.06	0.04	0.00	0.00	Open	0.00
P-14	J-118	J-103	844.16	8.00	110.00	6.06	0.04	0.00	0.00	Open	0.00
P-15	J-117	J-195	4.98	12.00	110.00	-21.59	0.06	0.00	0.00	Open	0.00
P-17	J-120	J-121	158.75	12.00	110.00	15.53	0.04	0.00	0.00	Open	0.00
P-18	J-122	J-120	324.60	12.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-19	J-121	J-123	317.27	12.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-2	J-103	J-104	1673.36	8.00	110.00	0.21	0.00	0.00	0.00	Open	0.00
P-20	J-124	J-175	188.18	8.00	110.00	15.67	0.10	0.00	0.01	Open	0.00
P-21	J-125	J-124	315.47	8.00	110.00	35.33	0.23	0.02	0.05	Open	0.00
P-22	J-126	J-127	359.21	12.00	110.00	-44.72	0.13	0.00	0.01	Open	0.00
P-23	J-119	J-126	88.23	12.00	110.00	-44.72	0.13	0.00	0.01	Open	0.00
P-24	J-128	J-129	76.42	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-25	J-130	J-131	80.98	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00

P-26	J-132	J-133	131.45	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-27	J-2	J-135	118.58	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-28	J-136	J-137	102.76	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-29	J-138	J-7	184.09	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-3	J-102	J-105	309.74	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-30	J-140	J-18	278.98	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-31	J-109	J-142	222.68	8.00	110.00	20.06	0.13	0.00	0.02	Open	0.00
P-32	J-142	J-143	193.32	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-33	J-144	J-145	338.71	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-34	J-17	J-147	202.17	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-37	J-7	J-6	1026.24	8.00	110.00	-3.80	0.02	0.00	0.00	Open	0.00
P-38	J-151	J-8	157.55	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-39	J-108	J-13	458.22	8.00	110.00	15.88	0.10	0.01	0.01	Open	0.00
P-4	J-104	J-106	330.74	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-40	J-12	J-11	320.26	8.00	110.00	11.46	0.07	0.00	0.01	Open	0.00
P-41	J-137	J-11	492.37	8.00	110.00	-1.23	0.01	0.00	0.00	Open	0.00
P-43	J-1	J-3	684.83	8.00	110.00	-2.94	0.02	0.00	0.00	Open	0.00
P-44	J-142	J-17	237.25	8.00	110.00	20.06	0.13	0.00	0.02	Open	0.00
P-45	J-17	J-144	269.42	8.00	110.00	11.14	0.07	0.00	0.01	Open	0.00
P-46	J-144	J-18	260.62	8.00	110.00	11.14	0.07	0.00	0.01	Open	0.00
P-47	J-18	J-188	305.23	8.00	110.00	-1.49	0.01	0.00	0.00	Open	0.00
P-48	J-16	J-186	421.47	8.00	110.00	-7.39	0.05	0.00	0.00	Open	0.00
P-5	J-107	J-102	1269.85	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-50	J-1	J-161	210.99	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-51	J-132	J-1	356.33	8.00	110.00	0.36	0.00	0.00	0.00	Open	0.00
P-52	J-2	J-129	80.09	8.00	110.00	0.36	0.00	0.00	0.00	Open	0.00
P-53	J-3	J-203	130.87	8.00	110.00	1.17	0.01	0.00	0.00	Open	0.00
P-54	J-129	J-132	83.52	8.00	110.00	0.36	0.00	0.00	0.00	Open	0.00
P-55	J-131	J-2	82.29	8.00	110.00	5.00	0.03	0.00	0.00	Open	0.00
P-56	J-7	J-150	172.21	8.00	110.00	-5.86	0.04	0.00	0.00	Open	0.00
P-57	J-150	J-103	190.52	8.00	110.00	-5.86	0.04	0.00	0.00	Open	0.00
P-58	J-8	J-162	272.61	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-59	J-10	J-8	349.58	8.00	110.00	6.81	0.04	0.00	0.00	Open	0.00
P-6	J-108	J-104	242.63	8.00	110.00	-0.21	0.00	0.00	0.00	Open	0.00
P-60	J-137	J-163	185.24	8.00	110.00	1.23	0.01	0.00	0.00	Open	0.00
P-61	J-163	J-10	244.72	8.00	110.00	3.14	0.02	0.00	0.00	Open	0.00
P-62	J-11	J-163	302.89	8.00	110.00	1.90	0.01	0.00	0.00	Open	0.00
P-63	J-12	J-14	926.72	8.00	110.00	-13.05	0.08	0.01	0.01	Open	0.00
P-64	J-121	J-9	728.88	8.00	110.00	15.53	0.10	0.01	0.01	Open	0.00
P-68	J-6	J-119	615.98	8.00	110.00	-11.37	0.07	0.00	0.01	Open	0.00
P-69	J-9	J-12	939.27	8.00	110.00	7.79	0.05	0.00	0.00	Open	0.00
P-7	J-109	J-110	620.72	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-70	J-13	J-10	993.71	8.00	110.00	10.67	0.07	0.01	0.01	Open	0.00
P-71	J-14	J-124	518.39	8.00	110.00	-19.66	0.13	0.01	0.02	Open	0.00
P-72	J-112	J-172	690.71	8.00	110.00	-46.85	0.30	0.06	0.09	Open	0.00
P-75	RES-1001	J-125	47.58	12.00	110.00	35.33	0.10	0.00	0.01	Open	0.00
P-76	J-173	J-176	306.99	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-77	RES-1002	J-173	13.99	12.00	110.00	44.73	0.13	0.00	0.01	Open	0.00
P-79	J-172	RES-1000	9.98	12.00	110.00	-46.85	0.13	0.00	0.01	Open	0.00
P-8	J-111	J-189	222.86	8.00	110.00	46.85	0.30	0.02	0.09	Open	0.00
P-80	J-174	J-15	492.28	8.00	110.00	4.22	0.03	0.00	0.00	Open	0.00
P-81	J-175	J-108	502.56	8.00	110.00	15.67	0.10	0.01	0.01	Open	0.00
P-83	J-176	J-102	3213.78	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-85	J-117	J-179	5.22	12.00	110.00	15.53	0.04	0.00	0.00	Open	0.00
P-87	J-179	J-120	189.28	12.00	110.00	15.53	0.04	0.00	0.00	Open	0.00
P-89	J-189	J-194	1752.45	8.00	110.00	15.18	0.10	0.02	0.01	Open	0.00
P-9	J-112	J-111	301.59	8.00	110.00	46.85	0.30	0.03	0.09	Open	0.00
P-91	J-184	J-190	576.29	8.00	110.00	-4.22	0.03	0.00	0.00	Open	0.00
P-92	J-186	J-191	163.14	8.00	110.00	-7.39	0.05	0.00	0.00	Open	0.00
P-94	J-189	J-190	128.28	8.00	110.00	31.67	0.20	0.01	0.04	Open	0.00
P-95	J-190	J-191	4.08	8.00	110.00	27.45	0.18	0.00	0.04	Open	0.00
P-96	J-191	J-109	105.46	8.00	110.00	20.06	0.13	0.00	0.02	Open	0.00
P-97	J-184	J-174	371.56	8.00	110.00	4.22	0.03	0.00	0.00	Open	0.00
P-98	J-193	J-16	323.29	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00

Tank Results @ Steady State Analysis

ID	Flow (gpm)	Elevation (ft)
RES-1000	-46.85	996.00
RES-1001	-35.33	853.00
RES-1002	-44.73	853.00

MDD
ZONE 2 & 3 WATER SYSTEM ANALYSIS

Junction Pressures @ Steady State Analysis

Node	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)	
J-1	5.93	598.94	852.94	110.06	
J-10	12.59	658.90	852.90	84.06	
J-101	0.00	612.00	853.00	104.42	
J-102	0.00	719.00	853.00	58.06	
J-103	0.00	658.00	852.93	84.46	
J-104	0.00	716.00	852.93	59.33	
J-105	0.00	738.00	853.00	49.83	<-Ex Node
J-106	0.00	738.00	852.93	49.80	<-Ex Node
J-107	0.00	712.00	853.00	61.10	
J-108	0.00	703.00	852.93	64.96	
J-109	0.00	751.00	995.67	106.01	
J-11	14.99	674.66	852.90	77.23	
J-110	0.00	783.00	995.67	92.15	
J-111	0.00	740.00	995.75	110.81	
J-112	0.00	736.00	995.82	112.58	
J-115	0.00	668.00	852.94	80.13	
J-116	0.00	626.00	852.94	98.33	
J-117	0.00	618.00	852.94	101.80	
J-118	0.00	641.00	852.93	91.83	
J-119	0.00	618.00	852.94	101.80	
J-12	16.88	696.41	852.90	67.81	
J-120	0.00	614.00	852.94	103.53	
J-121	0.00	620.00	852.94	100.93	
J-122	0.00	610.00	852.94	105.26	
J-123	0.00	626.00	852.94	98.33	
J-124	0.00	696.00	852.95	68.01	
J-125	0.00	714.00	853.00	60.23	
J-126	0.00	614.00	852.94	103.53	
J-127	0.00	612.00	852.95	104.41	
J-128	0.00	602.46	852.94	108.53	
J-129	0.00	602.09	852.94	108.69	
J-13	9.38	690.73	852.91	70.27	
J-130	0.00	605.86	852.94	107.06	
J-131	0.00	605.22	852.94	107.34	
J-132	0.00	600.67	852.94	109.31	
J-133	0.00	601.84	852.94	108.80	
J-135	0.00	604.92	852.94	107.47	
J-136	0.00	675.32	852.90	76.94	
J-137	0.00	673.91	852.90	77.55	
J-138	0.00	681.89	852.93	74.11	
J-14	11.89	681.55	852.92	74.26	
J-140	0.00	801.80	995.63	83.99	

Junction Pressures @ Steady State Analysis

Node	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
J-142	0.00	761.95	995.66	101.26
J-143	0.00	763.26	995.66	100.70
J-144	0.00	786.25	995.64	90.73
J-145	0.00	788.99	995.64	89.54
J-147	0.00	774.14	995.64	95.98
J-15	7.60	721.39	995.67	118.85
J-150	0.00	677.60	852.93	75.97
J-151	0.00	645.36	852.89	89.92
J-16	13.30	724.50	995.67	117.50
J-161	0.00	597.67	852.94	110.61
J-162	0.00	636.17	852.89	93.91
J-163	0.00	671.49	852.90	78.60
J-17	16.05	772.72	995.64	96.59
J-172	0.00	730.00	996.00	115.26
J-173	0.00	610.27	853.00	105.17
J-174	0.00	733.67	995.67	113.52
J-175	0.00	708.00	852.94	62.80
J-176	0.00	621.41	853.00	100.35
J-179	0.00	617.86	852.94	101.86
J-18	22.73	798.28	995.63	85.51
J-184	0.00	724.50	995.67	117.50
J-186	0.00	746.00	995.67	108.18
J-188	0.00	814.00	995.63	78.70
J-189	0.00	744.00	995.69	109.06
J-19	24.65	845.00	995.63	65.27
J-190	0.00	752.00	995.67	105.58
J-191	0.00	752.00	995.67	105.58
J-193	0.00	708.86	995.67	124.27
J-194	0.00	814.00	995.63	78.70
J-195	0.00	618.00	852.94	101.80
J-196	0.00	636.00	852.98	94.02
J-2	8.35	603.40	852.94	108.12
J-201	0.00	835.40	995.63	69.43
J-202	0.00	607.50	852.94	106.35
J-203	0.00	605.67	852.94	107.14
J-3	5.32	602.43	852.94	108.54
J-5	1.57	624.00	852.94	99.20
J-6	13.62	633.03	852.93	95.28
J-7	17.38	676.17	852.93	76.59
J-8	12.25	643.99	852.89	90.52
J-9	13.93	634.82	852.91	94.50

Pipe Report @ Steady State Analysis

ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)	Status	Flow Reversal Count
P-1	J-101	J-173	360.87	16.00	110.00	-80.50	0.13	0.00	0.01	Open	0.00
P-100	J-194	J-188	3.61	8.00	110.00	15.00	0.10	0.00	0.02	Open	0.00
P-101	J-194	J-201	402.70	8.00	110.00	12.33	0.08	0.00	0.01	Open	0.00
P-102	J-195	J-119	253.67	12.00	110.00	-47.34	0.13	0.00	0.01	Open	0.00
P-103	J-5	J-195	67.24	12.00	110.00	-8.47	0.02	0.00	0.00	Open	0.00
P-104	J-196	J-101	2590.88	16.00	110.00	-80.50	0.13	0.02	0.01	Open	0.00
P-105	J-127	J-196	657.00	12.00	110.00	-80.50	0.23	0.02	0.03	Open	0.00
P-107	J-201	J-19	208.44	8.00	110.00	12.33	0.08	0.00	0.01	Open	0.00
P-108	J-188	J-19	606.44	8.00	110.00	12.32	0.08	0.00	0.01	Open	0.00
P-109	J-202	J-131	85.94	8.00	110.00	9.00	0.06	0.00	0.00	Open	0.00
P-11	J-115	J-116	1104.15	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-111	J-119	J-3	419.35	8.00	110.00	12.70	0.08	0.00	0.01	Open	0.00
P-112	J-203	J-202	74.22	8.00	110.00	9.00	0.06	0.00	0.00	Open	0.00
P-113	J-5	J-203	385.13	12.00	110.00	6.90	0.02	0.00	0.00	Open	0.00
P-12	J-117	J-116	298.36	8.00	110.00	10.91	0.07	0.00	0.01	Open	0.00
P-13	J-116	J-118	381.88	8.00	110.00	10.91	0.07	0.00	0.01	Open	0.00
P-14	J-118	J-103	844.16	8.00	110.00	10.91	0.07	0.00	0.01	Open	0.00
P-15	J-117	J-195	4.98	12.00	110.00	-38.86	0.11	0.00	0.01	Open	0.00
P-17	J-120	J-121	158.75	12.00	110.00	27.95	0.08	0.00	0.00	Open	0.00
P-18	J-122	J-120	324.60	12.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-19	J-121	J-123	317.27	12.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-2	J-103	J-104	1673.36	8.00	110.00	0.37	0.00	0.00	0.00	Open	0.00
P-20	J-124	J-175	188.18	8.00	110.00	28.21	0.18	0.01	0.03	Open	0.00
P-21	J-125	J-124	315.47	8.00	110.00	63.59	0.41	0.05	0.15	Open	0.00
P-22	J-126	J-127	359.21	12.00	110.00	-80.50	0.23	0.01	0.03	Open	0.00
P-23	J-119	J-126	88.23	12.00	110.00	-80.50	0.23	0.00	0.03	Open	0.00
P-24	J-128	J-129	76.42	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-25	J-130	J-131	80.98	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00

P-26	J-132	J-133	131.45	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-27	J-2	J-135	118.58	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-28	J-136	J-137	102.76	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-29	J-138	J-7	184.09	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-3	J-102	J-105	309.74	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-30	J-140	J-18	278.98	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-31	J-109	J-142	222.68	8.00	110.00	36.10	0.23	0.01	0.05	Open	0.00
P-32	J-142	J-143	193.32	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-33	J-144	J-145	338.71	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-34	J-17	J-147	202.17	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-37	J-7	J-6	1026.24	8.00	110.00	-6.84	0.04	0.00	0.00	Open	0.00
P-38	J-151	J-8	157.55	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-39	J-108	J-13	458.22	8.00	110.00	28.58	0.18	0.02	0.03	Open	0.00
P-4	J-104	J-106	330.74	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-40	J-12	J-11	320.26	8.00	110.00	20.63	0.13	0.01	0.02	Open	0.00
P-41	J-137	J-11	492.37	8.00	110.00	-2.22	0.01	0.00	0.00	Open	0.00
P-43	J-1	J-3	684.83	8.00	110.00	-5.28	0.03	0.00	0.00	Open	0.00
P-44	J-142	J-17	237.25	8.00	110.00	36.10	0.23	0.01	0.05	Open	0.00
P-45	J-17	J-144	269.42	8.00	110.00	20.05	0.13	0.00	0.02	Open	0.00
P-46	J-144	J-18	260.62	8.00	110.00	20.05	0.13	0.00	0.02	Open	0.00
P-47	J-18	J-188	305.23	8.00	110.00	-2.68	0.02	0.00	0.00	Open	0.00
P-48	J-16	J-186	421.47	8.00	110.00	-13.30	0.08	0.00	0.01	Open	0.00
P-5	J-107	J-102	1269.85	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-50	J-1	J-161	210.99	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-51	J-132	J-1	356.33	8.00	110.00	0.65	0.00	0.00	0.00	Open	0.00
P-52	J-2	J-129	80.09	8.00	110.00	0.65	0.00	0.00	0.00	Open	0.00
P-53	J-3	J-203	130.87	8.00	110.00	2.10	0.01	0.00	0.00	Open	0.00
P-54	J-129	J-132	83.52	8.00	110.00	0.65	0.00	0.00	0.00	Open	0.00
P-55	J-131	J-2	82.29	8.00	110.00	9.00	0.06	0.00	0.00	Open	0.00
P-56	J-7	J-150	172.21	8.00	110.00	-10.54	0.07	0.00	0.01	Open	0.00
P-57	J-150	J-103	190.52	8.00	110.00	-10.54	0.07	0.00	0.01	Open	0.00
P-58	J-8	J-162	272.61	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-59	J-10	J-8	349.58	8.00	110.00	12.25	0.08	0.00	0.01	Open	0.00
P-6	J-108	J-104	242.63	8.00	110.00	-0.37	0.00	0.00	0.00	Open	0.00
P-60	J-137	J-163	185.24	8.00	110.00	2.22	0.01	0.00	0.00	Open	0.00
P-61	J-163	J-10	244.72	8.00	110.00	5.64	0.04	0.00	0.00	Open	0.00
P-62	J-11	J-163	302.89	8.00	110.00	3.43	0.02	0.00	0.00	Open	0.00
P-63	J-12	J-14	926.72	8.00	110.00	-23.49	0.15	0.02	0.02	Open	0.00
P-64	J-121	J-9	728.88	8.00	110.00	27.95	0.18	0.02	0.03	Open	0.00
P-68	J-6	J-119	615.98	8.00	110.00	-20.46	0.13	0.01	0.02	Open	0.00
P-69	J-9	J-12	939.27	8.00	110.00	14.02	0.09	0.01	0.01	Open	0.00
P-7	J-109	J-110	620.72	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-70	J-13	J-10	993.71	8.00	110.00	19.20	0.12	0.02	0.02	Open	0.00
P-71	J-14	J-124	518.39	8.00	110.00	-35.38	0.23	0.03	0.05	Open	0.00
P-72	J-112	J-172	690.71	8.00	110.00	-84.33	0.54	0.18	0.26	Open	0.00
P-75	RES-1001	J-125	47.58	12.00	110.00	63.59	0.18	0.00	0.02	Open	0.00
P-76	J-173	J-176	306.99	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-77	RES-1002	J-173	13.99	12.00	110.00	80.50	0.23	0.00	0.03	Open	0.00
P-79	J-172	RES-1000	9.98	12.00	110.00	-84.33	0.24	0.00	0.04	Open	0.00
P-8	J-111	J-189	222.86	8.00	110.00	84.33	0.54	0.06	0.26	Open	0.00
P-80	J-174	J-15	492.28	8.00	110.00	7.60	0.05	0.00	0.00	Open	0.00
P-81	J-175	J-108	502.56	8.00	110.00	28.21	0.18	0.02	0.03	Open	0.00
P-83	J-176	J-102	3213.78	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-85	J-117	J-179	5.22	12.00	110.00	27.95	0.08	0.00	0.00	Open	0.00
P-87	J-179	J-120	189.28	12.00	110.00	27.95	0.08	0.00	0.00	Open	0.00
P-89	J-189	J-194	1752.45	8.00	110.00	27.33	0.17	0.06	0.03	Open	0.00
P-9	J-112	J-111	301.59	8.00	110.00	84.33	0.54	0.08	0.26	Open	0.00
P-91	J-184	J-190	576.29	8.00	110.00	-7.60	0.05	0.00	0.00	Open	0.00
P-92	J-186	J-191	163.14	8.00	110.00	-13.30	0.08	0.00	0.01	Open	0.00
P-94	J-189	J-190	128.28	8.00	110.00	57.00	0.36	0.02	0.12	Open	0.00
P-95	J-190	J-191	4.08	8.00	110.00	49.40	0.32	0.00	0.10	Open	0.00
P-96	J-191	J-109	105.46	8.00	110.00	36.10	0.23	0.01	0.05	Open	0.00
P-97	J-184	J-174	371.56	8.00	110.00	7.60	0.05	0.00	0.00	Open	0.00
P-98	J-193	J-16	323.29	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00

Tank Results @ Steady State Analysis

ID	Flow (gpm)	Elevation (ft)
RES-1000	-84.33	996.00
RES-1001	-63.59	853.00
RES-1002	-80.50	853.00

PHD
ZONE 2 & 3 WATER SYSTEM ANALYSIS

Junction Pressures @ Steady State Analysis

Node	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)	
J-1	7.47	598.94	852.90	110.04	
J-10	15.86	658.90	852.84	84.03	
J-101	0.00	612.00	852.99	104.42	
J-102	0.00	719.00	853.00	58.06	
J-103	0.00	658.00	852.89	84.45	
J-104	0.00	716.00	852.89	59.31	
J-105	0.00	738.00	853.00	49.83	<-Ex Node
J-106	0.00	738.00	852.89	49.78	<-Ex Node
J-107	0.00	712.00	853.00	61.10	
J-108	0.00	703.00	852.89	64.95	
J-109	0.00	751.00	995.21	105.81	
J-11	18.89	674.66	852.84	77.21	
J-110	0.00	783.00	995.21	91.95	
J-111	0.00	740.00	995.39	110.66	
J-112	0.00	736.00	995.58	112.48	
J-115	0.00	668.00	852.90	80.12	
J-116	0.00	626.00	852.90	98.32	
J-117	0.00	618.00	852.90	101.78	
J-118	0.00	641.00	852.90	91.82	
J-119	0.00	618.00	852.91	101.79	
J-12	21.27	696.41	852.85	67.79	
J-120	0.00	614.00	852.90	103.52	
J-121	0.00	620.00	852.90	100.92	
J-122	0.00	610.00	852.90	105.25	
J-123	0.00	626.00	852.90	98.32	
J-124	0.00	696.00	852.93	68.00	
J-125	0.00	714.00	853.00	60.23	
J-126	0.00	614.00	852.91	103.52	
J-127	0.00	612.00	852.93	104.40	
J-128	0.00	602.46	852.90	108.52	
J-129	0.00	602.09	852.90	108.68	
J-13	11.82	690.73	852.87	70.25	
J-130	0.00	605.86	852.90	107.04	
J-131	0.00	605.22	852.90	107.32	
J-132	0.00	600.67	852.90	109.29	
J-133	0.00	601.84	852.90	108.78	
J-135	0.00	604.92	852.90	107.45	
J-136	0.00	675.32	852.84	76.92	
J-137	0.00	673.91	852.84	77.53	
J-138	0.00	681.89	852.89	74.09	
J-14	14.98	681.55	852.88	74.24	
J-140	0.00	801.80	995.13	83.77	

Junction Pressures @ Steady State Analysis

Node	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
J-142	0.00	761.95	995.18	101.06
J-143	0.00	763.26	995.18	100.49
J-144	0.00	786.25	995.14	90.51
J-145	0.00	788.99	995.14	89.32
J-147	0.00	774.14	995.15	95.76
J-15	12.17	721.39	995.21	118.65
J-150	0.00	677.60	852.89	75.95
J-151	0.00	645.36	852.84	89.90
J-16	21.27	724.50	995.21	117.30
J-161	0.00	597.67	852.90	110.59
J-162	0.00	636.17	852.84	93.88
J-163	0.00	671.49	852.84	78.58
J-17	25.67	772.72	995.15	96.38
J-172	0.00	730.00	996.00	115.26
J-173	0.00	610.27	853.00	105.17
J-174	0.00	733.67	995.21	113.33
J-175	0.00	708.00	852.92	62.79
J-176	0.00	621.41	853.00	100.35
J-179	0.00	617.86	852.90	101.84
J-18	36.37	798.28	995.13	85.29
J-184	0.00	724.50	995.22	117.30
J-186	0.00	746.00	995.22	107.99
J-188	0.00	814.00	995.13	78.48
J-189	0.00	744.00	995.26	108.87
J-19	39.44	845.00	995.12	65.05
J-190	0.00	752.00	995.22	105.39
J-191	0.00	752.00	995.22	105.39
J-193	0.00	708.86	995.21	124.07
J-194	0.00	814.00	995.13	78.48
J-195	0.00	618.00	852.90	101.78
J-196	0.00	636.00	852.96	94.01
J-2	10.52	603.40	852.90	108.11
J-201	0.00	835.40	995.12	69.21
J-202	0.00	607.50	852.90	106.33
J-203	0.00	605.67	852.90	107.13
J-3	6.70	602.43	852.90	108.53
J-5	1.98	624.00	852.90	99.18
J-6	17.16	633.03	852.89	95.27
J-7	21.90	676.17	852.89	76.57
J-8	15.43	643.99	852.84	90.49
J-9	17.55	634.82	852.86	94.48

Pipe Report @ Steady State Analysis

ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)	Status	Flow Reversal Count
P-1	J-101	J-173	360.87	16.00	110.00	-101.42	0.16	0.00	0.01	Open	0.00
P-100	J-194	J-188	3.61	8.00	110.00	24.00	0.15	0.00	0.03	Open	0.00
P-101	J-194	J-201	402.70	8.00	110.00	19.72	0.13	0.01	0.02	Open	0.00
P-102	J-195	J-119	253.67	12.00	110.00	-59.64	0.17	0.00	0.02	Open	0.00
P-103	J-5	J-195	67.24	12.00	110.00	-10.67	0.03	0.00	0.00	Open	0.00
P-104	J-196	J-101	2590.88	16.00	110.00	-101.42	0.16	0.03	0.01	Open	0.00
P-105	J-127	J-196	657.00	12.00	110.00	-101.42	0.29	0.03	0.05	Open	0.00
P-107	J-201	J-19	208.44	8.00	110.00	19.72	0.13	0.00	0.02	Open	0.00
P-108	J-188	J-19	606.44	8.00	110.00	19.72	0.13	0.01	0.02	Open	0.00
P-109	J-202	J-131	85.94	8.00	110.00	11.34	0.07	0.00	0.01	Open	0.00
P-11	J-115	J-116	1104.15	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-111	J-119	J-3	419.35	8.00	110.00	16.00	0.10	0.00	0.01	Open	0.00
P-112	J-203	J-202	74.22	8.00	110.00	11.34	0.07	0.00	0.01	Open	0.00
P-113	J-5	J-203	385.13	12.00	110.00	8.69	0.02	0.00	0.00	Open	0.00
P-12	J-117	J-116	298.36	8.00	110.00	13.75	0.09	0.00	0.01	Open	0.00
P-13	J-116	J-118	381.88	8.00	110.00	13.75	0.09	0.00	0.01	Open	0.00
P-14	J-118	J-103	844.16	8.00	110.00	13.75	0.09	0.01	0.01	Open	0.00
P-15	J-117	J-195	4.98	12.00	110.00	-48.97	0.14	0.00	0.01	Open	0.00
P-17	J-120	J-121	158.75	12.00	110.00	35.22	0.10	0.00	0.01	Open	0.00
P-18	J-122	J-120	324.60	12.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-19	J-121	J-123	317.27	12.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-2	J-103	J-104	1673.36	8.00	110.00	0.47	0.00	0.00	0.00	Open	0.00
P-20	J-124	J-175	188.18	8.00	110.00	35.54	0.23	0.01	0.05	Open	0.00
P-21	J-125	J-124	315.47	8.00	110.00	80.12	0.51	0.07	0.23	Open	0.00
P-22	J-126	J-127	359.21	12.00	110.00	-101.42	0.29	0.02	0.05	Open	0.00
P-23	J-119	J-126	88.23	12.00	110.00	-101.42	0.29	0.00	0.05	Open	0.00
P-24	J-128	J-129	76.42	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-25	J-130	J-131	80.98	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00

P-26	J-132	J-133	131.45	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-27	J-2	J-135	118.58	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-28	J-136	J-137	102.76	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-29	J-138	J-7	184.09	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-3	J-102	J-105	309.74	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-30	J-140	J-18	278.98	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-31	J-109	J-142	222.68	8.00	110.00	57.75	0.37	0.03	0.13	Open	0.00
P-32	J-142	J-143	193.32	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-33	J-144	J-145	338.71	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-34	J-17	J-147	202.17	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-37	J-7	J-6	1026.24	8.00	110.00	-8.62	0.06	0.00	0.00	Open	0.00
P-38	J-151	J-8	157.55	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-39	J-108	J-13	458.22	8.00	110.00	36.01	0.23	0.02	0.05	Open	0.00
P-4	J-104	J-106	330.74	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-40	J-12	J-11	320.26	8.00	110.00	26.00	0.17	0.01	0.03	Open	0.00
P-41	J-137	J-11	492.37	8.00	110.00	-2.80	0.02	0.00	0.00	Open	0.00
P-43	J-1	J-3	684.83	8.00	110.00	-6.65	0.04	0.00	0.00	Open	0.00
P-44	J-142	J-17	237.25	8.00	110.00	57.75	0.37	0.03	0.13	Open	0.00
P-45	J-17	J-144	269.42	8.00	110.00	32.08	0.20	0.01	0.04	Open	0.00
P-46	J-144	J-18	260.62	8.00	110.00	32.08	0.20	0.01	0.04	Open	0.00
P-47	J-18	J-188	305.23	8.00	110.00	-4.29	0.03	0.00	0.00	Open	0.00
P-48	J-16	J-186	421.47	8.00	110.00	-21.27	0.14	0.01	0.02	Open	0.00
P-5	J-107	J-102	1269.85	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-50	J-1	J-161	210.99	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-51	J-132	J-1	356.33	8.00	110.00	0.82	0.01	0.00	0.00	Open	0.00
P-52	J-2	J-129	80.09	8.00	110.00	0.82	0.01	0.00	0.00	Open	0.00
P-53	J-3	J-203	130.87	8.00	110.00	2.65	0.02	0.00	0.00	Open	0.00
P-54	J-129	J-132	83.52	8.00	110.00	0.82	0.01	0.00	0.00	Open	0.00
P-55	J-131	J-2	82.29	8.00	110.00	11.34	0.07	0.00	0.01	Open	0.00
P-56	J-7	J-150	172.21	8.00	110.00	-13.28	0.08	0.00	0.01	Open	0.00
P-57	J-150	J-103	190.52	8.00	110.00	-13.28	0.08	0.00	0.01	Open	0.00
P-58	J-8	J-162	272.61	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-59	J-10	J-8	349.58	8.00	110.00	15.43	0.10	0.00	0.01	Open	0.00
P-6	J-108	J-104	242.63	8.00	110.00	-0.47	0.00	0.00	0.00	Open	0.00
P-60	J-137	J-163	185.24	8.00	110.00	2.80	0.02	0.00	0.00	Open	0.00
P-61	J-163	J-10	244.72	8.00	110.00	7.11	0.05	0.00	0.00	Open	0.00
P-62	J-11	J-163	302.89	8.00	110.00	4.31	0.03	0.00	0.00	Open	0.00
P-63	J-12	J-14	926.72	8.00	110.00	-29.60	0.19	0.03	0.04	Open	0.00
P-64	J-121	J-9	728.88	8.00	110.00	35.22	0.22	0.04	0.05	Open	0.00
P-68	J-6	J-119	615.98	8.00	110.00	-25.78	0.16	0.02	0.03	Open	0.00
P-69	J-9	J-12	939.27	8.00	110.00	17.66	0.11	0.01	0.01	Open	0.00
P-7	J-109	J-110	620.72	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-70	J-13	J-10	993.71	8.00	110.00	24.19	0.15	0.03	0.03	Open	0.00
P-71	J-14	J-124	518.39	8.00	110.00	-44.58	0.28	0.04	0.08	Open	0.00
P-72	J-112	J-172	690.71	8.00	110.00	-134.92	0.86	0.42	0.61	Open	0.00
P-75	RES-1001	J-125	47.58	12.00	110.00	80.12	0.23	0.00	0.03	Open	0.00
P-76	J-173	J-176	306.99	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-77	RES-1002	J-173	13.99	12.00	110.00	101.42	0.29	0.00	0.05	Open	0.00
P-79	J-172	RES-1000	9.98	12.00	110.00	-134.92	0.38	0.00	0.09	Open	0.00
P-8	J-111	J-189	222.86	8.00	110.00	134.92	0.86	0.14	0.61	Open	0.00
P-80	J-174	J-15	492.28	8.00	110.00	12.17	0.08	0.00	0.01	Open	0.00
P-81	J-175	J-108	502.56	8.00	110.00	35.54	0.23	0.03	0.05	Open	0.00
P-83	J-176	J-102	3213.78	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-85	J-117	J-179	5.22	12.00	110.00	35.22	0.10	0.00	0.00	Open	0.00
P-87	J-179	J-120	189.28	12.00	110.00	35.22	0.10	0.00	0.01	Open	0.00
P-89	J-189	J-194	1752.45	8.00	110.00	43.73	0.28	0.13	0.08	Open	0.00
P-9	J-112	J-111	301.59	8.00	110.00	134.92	0.86	0.18	0.61	Open	0.00
P-91	J-184	J-190	576.29	8.00	110.00	-12.17	0.08	0.00	0.01	Open	0.00
P-92	J-186	J-191	163.14	8.00	110.00	-21.27	0.14	0.00	0.02	Open	0.00
P-94	J-189	J-190	128.28	8.00	110.00	91.19	0.58	0.04	0.30	Open	0.00
P-95	J-190	J-191	4.08	8.00	110.00	79.02	0.50	0.00	0.22	Open	0.00
P-96	J-191	J-109	105.46	8.00	110.00	57.75	0.37	0.01	0.13	Open	0.00
P-97	J-184	J-174	371.56	8.00	110.00	12.17	0.08	0.00	0.01	Open	0.00
P-98	J-193	J-16	323.29	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00

Tank Results @ Steady State Analysis

ID	Flow (gpm)	Elevation (ft)
RES-1000	-134.92	996.00
RES-1001	-80.12	853.00
RES-1002	-101.42	853.00

MDD+FIRE @ J-19 & J-136
ZONE 2 & 3 WATER SYSTEM ANALYSIS

Junction Pressures @ Steady State Analysis

Node	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)	
J-1	5.93	598.94	848.68	108.21	
J-10	12.59	658.90	830.98	74.56	
J-101	0.00	612.00	852.77	104.33	
J-102	0.00	719.00	852.97	58.05	
J-103	0.00	658.00	847.79	82.24	
J-104	0.00	716.00	844.87	55.84	
J-105	0.00	738.00	852.97	49.82	<-Ex Node
J-106	0.00	738.00	844.87	46.31	<-Ex Node
J-107	0.00	712.00	852.97	61.08	
J-108	0.00	703.00	844.45	61.29	
J-109	0.00	751.00	920.84	73.59	
J-11	14.99	674.66	829.92	67.27	
J-110	0.00	783.00	920.84	59.72	
J-111	0.00	740.00	938.01	85.80	
J-112	0.00	736.00	955.61	95.16	
J-115	0.00	668.00	848.47	78.20	
J-116	0.00	626.00	848.47	96.40	
J-117	0.00	618.00	848.63	99.93	
J-118	0.00	641.00	848.26	89.80	
J-119	0.00	618.00	848.91	100.05	
J-12	16.88	696.41	837.25	61.02	
J-120	0.00	614.00	848.45	101.59	
J-121	0.00	620.00	848.30	98.92	
J-122	0.00	610.00	848.45	103.32	
J-123	0.00	626.00	848.30	96.32	
J-124	0.00	696.00	846.98	65.42	
J-125	0.00	714.00	852.88	60.18	
J-126	0.00	614.00	849.10	101.87	
J-127	0.00	612.00	849.90	103.08	
J-128	0.00	602.46	848.67	106.68	
J-129	0.00	602.09	848.67	106.84	
J-13	9.38	690.73	840.11	64.73	
J-130	0.00	605.86	848.66	105.21	
J-131	0.00	605.22	848.66	105.48	
J-132	0.00	600.67	848.67	107.46	
J-133	0.00	601.84	848.67	106.95	
J-135	0.00	604.92	848.67	105.61	
J-136	1500.00	675.32	819.71	62.56	
J-137	0.00	673.91	825.12	65.52	
J-138	0.00	681.89	847.94	71.95	
J-14	11.89	681.55	843.39	70.12	
J-140	0.00	801.80	904.28	44.40	

Junction Pressures @ Steady State Analysis

Node	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
J-142	0.00	761.95	917.04	67.20
J-143	0.00	763.26	917.04	66.63
J-144	0.00	786.25	908.56	53.00
J-145	0.00	788.99	908.56	51.81
J-147	0.00	774.14	912.99	60.16
J-15	7.60	721.39	922.70	87.23
J-150	0.00	677.60	847.87	73.78
J-151	0.00	645.36	830.97	80.43
J-16	13.30	724.50	922.63	85.85
J-161	0.00	597.67	848.68	108.76
J-162	0.00	636.17	830.97	84.41
J-163	0.00	671.49	828.90	68.21
J-17	16.05	772.72	912.99	60.78
J-172	0.00	730.00	995.92	115.22
J-173	0.00	610.27	852.97	105.16
J-174	0.00	733.67	922.70	81.91
J-175	0.00	708.00	846.29	59.92
J-176	0.00	621.41	852.97	100.33
J-179	0.00	617.86	848.63	99.99
J-18	22.73	798.28	904.28	45.93
J-184	0.00	724.50	922.71	85.88
J-186	0.00	746.00	922.63	76.54
J-188	0.00	814.00	899.52	37.06
J-189	0.00	744.00	925.00	78.43
J-19	1524.65	845.00	890.36	19.65
J-190	0.00	752.00	922.71	73.97
J-191	0.00	752.00	922.64	73.94
J-193	0.00	708.86	922.63	92.63
J-194	0.00	814.00	899.52	37.06
J-195	0.00	618.00	848.64	99.94
J-196	0.00	636.00	851.36	93.31
J-2	8.35	603.40	848.67	106.27
J-201	0.00	835.40	893.48	25.17
J-202	0.00	607.50	848.66	104.50
J-203	0.00	605.67	848.66	105.29
J-3	5.32	602.43	848.70	106.71
J-5	1.57	624.00	848.64	97.34
J-6	13.62	633.03	848.50	93.36
J-7	17.38	676.17	847.94	74.43
J-8	12.25	643.99	830.97	81.02
J-9	13.93	634.82	843.33	90.35

Pipe Report @ Steady State Analysis

ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)	Status	Flow Reversal Count
P-1	J-101	J-173	360.87	16.00	110.00	-787.34	1.26	0.20	0.55	Open	0.00
P-100	J-194	J-188	3.61	8.00	110.00	-12.70	0.08	0.00	0.02	Open	0.00
P-101	J-194	J-201	402.70	8.00	110.00	760.73	4.86	6.04	15.00	Open	0.00
P-102	J-195	J-119	253.67	12.00	110.00	-525.73	1.49	0.27	1.05	Open	0.00
P-103	J-5	J-195	67.24	12.00	110.00	99.61	0.28	0.00	0.05	Open	0.00
P-104	J-196	J-101	2590.88	16.00	110.00	-787.34	1.26	1.42	0.55	Open	0.00
P-105	J-127	J-196	657.00	12.00	110.00	-787.34	2.23	1.46	2.22	Open	0.00
P-107	J-201	J-19	208.44	8.00	110.00	760.73	4.86	3.13	15.00	Open	0.00
P-108	J-188	J-19	606.44	8.00	110.00	763.92	4.88	9.17	15.12	Open	0.00
P-109	J-202	J-131	85.94	8.00	110.00	-13.67	0.09	0.00	0.01	Open	0.00
P-11	J-115	J-116	1104.15	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-111	J-119	J-3	419.35	8.00	110.00	120.78	0.77	0.21	0.50	Open	0.00
P-112	J-203	J-202	74.22	8.00	110.00	-13.67	0.09	0.00	0.01	Open	0.00
P-113	J-5	J-203	385.13	12.00	110.00	-101.18	0.29	0.02	0.05	Open	0.00
P-12	J-117	J-116	298.36	8.00	110.00	128.16	0.82	0.17	0.55	Open	0.00
P-13	J-116	J-118	381.88	8.00	110.00	128.16	0.82	0.21	0.55	Open	0.00
P-14	J-118	J-103	844.16	8.00	110.00	128.16	0.82	0.47	0.55	Open	0.00
P-15	J-117	J-195	4.98	12.00	110.00	-625.34	1.77	0.01	1.45	Open	0.00
P-17	J-120	J-121	158.75	12.00	110.00	497.18	1.41	0.15	0.95	Open	0.00
P-18	J-122	J-120	324.60	12.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-19	J-121	J-123	317.27	12.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-2	J-103	J-104	1673.36	8.00	110.00	237.98	1.52	2.92	1.74	Open	0.00
P-20	J-124	J-175	188.18	8.00	110.00	355.41	2.27	0.69	3.66	Open	0.00
P-21	J-125	J-124	315.47	8.00	110.00	856.75	5.47	5.90	18.69	Open	0.00
P-22	J-126	J-127	359.21	12.00	110.00	-787.34	2.23	0.80	2.22	Open	0.00
P-23	J-119	J-126	88.23	12.00	110.00	-787.34	2.23	0.20	2.22	Open	0.00
P-24	J-128	J-129	76.42	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-25	J-130	J-131	80.98	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00

P-26	J-132	J-133	131.45	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-27	J-2	J-135	118.58	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-28	J-136	J-137	102.76	8.00	110.00	-1500.00	9.57	5.42	52.74	Open	0.00
P-29	J-138	J-7	184.09	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-3	J-102	J-105	309.74	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-30	J-140	J-18	278.98	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-31	J-109	J-142	222.68	8.00	110.00	815.40	5.20	3.80	17.06	Open	0.00
P-32	J-142	J-143	193.32	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-33	J-144	J-145	338.71	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-34	J-17	J-147	202.17	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-37	J-7	J-6	1026.24	8.00	110.00	-127.20	0.81	0.56	0.55	Open	0.00
P-38	J-151	J-8	157.55	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-39	J-108	J-13	458.22	8.00	110.00	593.39	3.79	4.34	9.47	Open	0.00
P-4	J-104	J-106	330.74	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-40	J-12	J-11	320.26	8.00	110.00	955.82	6.10	7.33	22.89	Open	0.00
P-41	J-137	J-11	492.37	8.00	110.00	-602.20	3.84	4.79	9.73	Open	0.00
P-43	J-1	J-3	684.83	8.00	110.00	-27.95	0.18	0.02	0.03	Open	0.00
P-44	J-142	J-17	237.25	8.00	110.00	815.40	5.20	4.05	17.06	Open	0.00
P-45	J-17	J-144	269.42	8.00	110.00	799.35	5.10	4.43	16.44	Open	0.00
P-46	J-144	J-18	260.62	8.00	110.00	799.34	5.10	4.28	16.44	Open	0.00
P-47	J-18	J-188	305.23	8.00	110.00	776.61	4.96	4.76	15.58	Open	0.00
P-48	J-16	J-186	421.47	8.00	110.00	-13.30	0.08	0.00	0.01	Open	0.00
P-5	J-107	J-102	1269.85	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-50	J-1	J-161	210.99	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-51	J-132	J-1	356.33	8.00	110.00	-22.02	0.14	0.01	0.02	Open	0.00
P-52	J-2	J-129	80.09	8.00	110.00	-22.02	0.14	0.00	0.02	Open	0.00
P-53	J-3	J-203	130.87	8.00	110.00	87.51	0.56	0.04	0.27	Open	0.00
P-54	J-129	J-132	83.52	8.00	110.00	-22.02	0.14	0.00	0.02	Open	0.00
P-55	J-131	J-2	82.29	8.00	110.00	-13.67	0.09	0.00	0.01	Open	0.00
P-56	J-7	J-150	172.21	8.00	110.00	109.82	0.70	0.07	0.42	Open	0.00
P-57	J-150	J-103	190.52	8.00	110.00	109.82	0.70	0.08	0.42	Open	0.00
P-58	J-8	J-162	272.61	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-59	J-10	J-8	349.58	8.00	110.00	12.25	0.08	0.00	0.01	Open	0.00
P-6	J-108	J-104	242.63	8.00	110.00	-237.98	1.52	0.42	1.74	Open	0.00
P-60	J-137	J-163	185.24	8.00	110.00	-897.80	5.73	3.78	20.38	Open	0.00
P-61	J-163	J-10	244.72	8.00	110.00	-559.17	3.57	2.08	8.48	Open	0.00
P-62	J-11	J-163	302.89	8.00	110.00	338.62	2.16	1.01	3.35	Open	0.00
P-63	J-12	J-14	926.72	8.00	110.00	-489.44	3.12	6.14	6.63	Open	0.00
P-64	J-121	J-9	728.88	8.00	110.00	497.18	3.17	4.97	6.82	Open	0.00
P-68	J-6	J-119	615.98	8.00	110.00	-140.82	0.90	0.41	0.66	Open	0.00
P-69	J-9	J-12	939.27	8.00	110.00	483.25	3.08	6.08	6.47	Open	0.00
P-7	J-109	J-110	620.72	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-70	J-13	J-10	993.71	8.00	110.00	584.01	3.73	9.13	9.19	Open	0.00
P-71	J-14	J-124	518.39	8.00	110.00	-501.33	3.20	3.59	6.93	Open	0.00
P-72	J-112	J-172	690.71	8.00	110.00	-1584.33	10.11	40.31	58.36	Open	0.00
P-75	RES-1001	J-125	47.58	12.00	110.00	856.75	2.43	0.12	2.59	Open	0.00
P-76	J-173	J-176	306.99	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-77	RES-1002	J-173	13.99	12.00	110.00	787.34	2.23	0.03	2.22	Open	0.00
P-79	J-172	RES-1000	9.98	12.00	110.00	-1584.33	4.49	0.08	8.10	Open	0.00
P-8	J-111	J-189	222.86	8.00	110.00	1584.33	10.11	13.01	58.36	Open	0.00
P-80	J-174	J-15	492.28	8.00	110.00	7.60	0.05	0.00	0.00	Open	0.00
P-81	J-175	J-108	502.56	8.00	110.00	355.41	2.27	1.84	3.66	Open	0.00
P-83	J-176	J-102	3213.78	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-85	J-117	J-179	5.22	12.00	110.00	497.18	1.41	0.00	0.95	Open	0.00
P-87	J-179	J-120	189.28	12.00	110.00	497.18	1.41	0.18	0.95	Open	0.00
P-89	J-189	J-194	1752.45	8.00	110.00	748.04	4.77	25.48	14.54	Open	0.00
P-9	J-112	J-111	301.59	8.00	110.00	1584.33	10.11	17.60	58.36	Open	0.00
P-91	J-184	J-190	576.29	8.00	110.00	-7.60	0.05	0.00	0.00	Open	0.00
P-92	J-186	J-191	163.14	8.00	110.00	-13.30	0.08	0.00	0.01	Open	0.00
P-94	J-189	J-190	128.28	8.00	110.00	836.30	5.34	2.29	17.87	Open	0.00
P-95	J-190	J-191	4.08	8.00	110.00	828.70	5.29	0.07	17.58	Open	0.00
P-96	J-191	J-109	105.46	8.00	110.00	815.40	5.20	1.80	17.06	Open	0.00
P-97	J-184	J-174	371.56	8.00	110.00	7.60	0.05	0.00	0.00	Open	0.00
P-98	J-193	J-16	323.29	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00

Tank Results @ Steady State Analysis

ID	Flow (gpm)	Elevation (ft)
RES-1000	-1584.33	996.00
RES-1001	-856.75	853.00
RES-1002	-787.34	853.00

MDD+FIRE @ J-19 & J-13
ZONE 2 & 3 WATER SYSTEM ANALYSIS

Junction Pressures @ Steady State Analysis

Node	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)	
J-1	5.93	598.94	849.01	108.35	
J-10	12.59	658.90	837.16	77.24	
J-101	0.00	612.00	852.79	104.33	
J-102	0.00	719.00	852.97	58.05	
J-103	0.00	658.00	847.07	81.93	
J-104	0.00	716.00	840.75	54.05	
J-105	0.00	738.00	852.97	49.82	<-Ex Node
J-106	0.00	738.00	840.75	44.52	<-Ex Node
J-107	0.00	712.00	852.97	61.08	
J-108	0.00	703.00	839.83	59.29	
J-109	0.00	751.00	920.84	73.59	
J-11	14.99	674.66	840.35	71.79	
J-110	0.00	783.00	920.84	59.72	
J-111	0.00	740.00	938.01	85.80	
J-112	0.00	736.00	955.61	95.16	
J-115	0.00	668.00	848.60	78.26	
J-116	0.00	626.00	848.60	96.45	
J-117	0.00	618.00	848.98	100.08	
J-118	0.00	641.00	848.13	89.75	
J-119	0.00	618.00	849.19	100.17	
J-12	16.88	696.41	843.29	63.64	
J-120	0.00	614.00	848.88	101.78	
J-121	0.00	620.00	848.81	99.14	
J-122	0.00	610.00	848.88	103.51	
J-123	0.00	626.00	848.81	96.54	
J-124	0.00	696.00	846.59	65.25	
J-125	0.00	714.00	852.87	60.17	
J-126	0.00	614.00	849.37	101.99	
J-127	0.00	612.00	850.11	103.17	
J-128	0.00	602.46	849.00	106.83	
J-129	0.00	602.09	849.00	106.99	
J-13	1509.38	690.73	829.15	59.98	
J-130	0.00	605.86	849.00	105.35	
J-131	0.00	605.22	849.00	105.63	
J-132	0.00	600.67	849.00	107.60	
J-133	0.00	601.84	849.00	107.10	
J-135	0.00	604.92	849.00	105.76	
J-136	0.00	675.32	839.59	71.18	
J-137	0.00	673.91	839.59	71.79	
J-138	0.00	681.89	847.39	71.71	
J-14	11.89	681.55	845.34	70.97	
J-140	0.00	801.80	904.28	44.40	

Junction Pressures @ Steady State Analysis

Node	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
J-142	0.00	761.95	917.04	67.20
J-143	0.00	763.26	917.04	66.63
J-144	0.00	786.25	908.56	53.00
J-145	0.00	788.99	908.56	51.81
J-147	0.00	774.14	912.99	60.16
J-15	7.60	721.39	922.70	87.23
J-150	0.00	677.60	847.24	73.50
J-151	0.00	645.36	837.15	83.10
J-16	13.30	724.50	922.63	85.85
J-161	0.00	597.67	849.01	108.90
J-162	0.00	636.17	837.15	87.09
J-163	0.00	671.49	839.30	72.71
J-17	16.05	772.72	912.99	60.78
J-172	0.00	730.00	995.92	115.22
J-173	0.00	610.27	852.97	105.16
J-174	0.00	733.67	922.70	81.91
J-175	0.00	708.00	844.75	59.25
J-176	0.00	621.41	852.97	100.34
J-179	0.00	617.86	848.97	100.14
J-18	22.73	798.28	904.28	45.93
J-184	0.00	724.50	922.71	85.88
J-186	0.00	746.00	922.63	76.54
J-188	0.00	814.00	899.52	37.06
J-189	0.00	744.00	925.00	78.43
J-19	1524.65	845.00	890.36	19.65
J-190	0.00	752.00	922.71	73.97
J-191	0.00	752.00	922.64	73.94
J-193	0.00	708.86	922.63	92.63
J-194	0.00	814.00	899.52	37.06
J-195	0.00	618.00	848.98	100.08
J-196	0.00	636.00	851.47	93.36
J-2	8.35	603.40	849.00	106.42
J-201	0.00	835.40	893.48	25.17
J-202	0.00	607.50	849.00	104.64
J-203	0.00	605.67	849.00	105.44
J-3	5.32	602.43	849.03	106.85
J-5	1.57	624.00	848.98	97.49
J-6	13.62	633.03	848.45	93.34
J-7	17.38	676.17	847.39	74.19
J-8	12.25	643.99	837.15	83.70
J-9	13.93	634.82	846.29	91.63

Pipe Report @ Steady State Analysis

ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)	Status	Flow Reversal Count
P-1	J-101	J-173	360.87	16.00	110.00	-757.59	1.21	0.18	0.51	Open	0.00
P-100	J-194	J-188	3.61	8.00	110.00	-12.70	0.08	0.00	0.02	Open	0.00
P-101	J-194	J-201	402.70	8.00	110.00	760.73	4.86	6.04	15.00	Open	0.00
P-102	J-195	J-119	253.67	12.00	110.00	-458.17	1.30	0.21	0.81	Open	0.00
P-103	J-5	J-195	67.24	12.00	110.00	84.50	0.24	0.00	0.04	Open	0.00
P-104	J-196	J-101	2590.88	16.00	110.00	-757.59	1.21	1.32	0.51	Open	0.00
P-105	J-127	J-196	657.00	12.00	110.00	-757.59	2.15	1.36	2.07	Open	0.00
P-107	J-201	J-19	208.44	8.00	110.00	760.73	4.86	3.13	15.00	Open	0.00
P-108	J-188	J-19	606.44	8.00	110.00	763.92	4.88	9.17	15.12	Open	0.00
P-109	J-202	J-131	85.94	8.00	110.00	-10.37	0.07	0.00	0.00	Open	0.00
P-11	J-115	J-116	1104.15	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-111	J-119	J-3	419.35	8.00	110.00	105.67	0.67	0.16	0.39	Open	0.00
P-112	J-203	J-202	74.22	8.00	110.00	-10.37	0.07	0.00	0.01	Open	0.00
P-113	J-5	J-203	385.13	12.00	110.00	-86.07	0.24	0.01	0.04	Open	0.00
P-12	J-117	J-116	298.36	8.00	110.00	198.70	1.27	0.37	1.25	Open	0.00
P-13	J-116	J-118	381.88	8.00	110.00	198.70	1.27	0.48	1.25	Open	0.00
P-14	J-118	J-103	844.16	8.00	110.00	198.70	1.27	1.05	1.25	Open	0.00
P-15	J-117	J-195	4.98	12.00	110.00	-542.67	1.54	0.01	1.12	Open	0.00
P-17	J-120	J-121	158.75	12.00	110.00	343.96	0.98	0.08	0.48	Open	0.00
P-18	J-122	J-120	324.60	12.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-19	J-121	J-123	317.27	12.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-2	J-103	J-104	1673.36	8.00	110.00	361.46	2.31	6.33	3.78	Open	0.00
P-20	J-124	J-175	188.18	8.00	110.00	603.91	3.85	1.84	9.78	Open	0.00
P-21	J-125	J-124	315.47	8.00	110.00	886.50	5.66	6.28	19.91	Open	0.00
P-22	J-126	J-127	359.21	12.00	110.00	-757.59	2.15	0.74	2.07	Open	0.00
P-23	J-119	J-126	88.23	12.00	110.00	-757.59	2.15	0.18	2.07	Open	0.00
P-24	J-128	J-129	76.42	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-25	J-130	J-131	80.98	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00

P-26	J-132	J-133	131.45	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-27	J-2	J-135	118.58	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-28	J-136	J-137	102.76	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-29	J-138	J-7	184.09	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-3	J-102	J-105	309.74	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-30	J-140	J-18	278.98	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-31	J-109	J-142	222.68	8.00	110.00	815.40	5.20	3.80	17.06	Open	0.00
P-32	J-142	J-143	193.32	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-33	J-144	J-145	338.71	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-34	J-17	J-147	202.17	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-37	J-7	J-6	1026.24	8.00	110.00	-180.13	1.15	1.07	1.04	Open	0.00
P-38	J-151	J-8	157.55	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-39	J-108	J-13	458.22	8.00	110.00	965.36	6.16	10.68	23.32	Open	0.00
P-4	J-104	J-106	330.74	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-40	J-12	J-11	320.26	8.00	110.00	583.85	3.73	2.94	9.19	Open	0.00
P-41	J-137	J-11	492.37	8.00	110.00	-223.55	1.43	0.76	1.55	Open	0.00
P-43	J-1	J-3	684.83	8.00	110.00	-24.66	0.16	0.02	0.03	Open	0.00
P-44	J-142	J-17	237.25	8.00	110.00	815.40	5.20	4.05	17.06	Open	0.00
P-45	J-17	J-144	269.42	8.00	110.00	799.35	5.10	4.43	16.44	Open	0.00
P-46	J-144	J-18	260.62	8.00	110.00	799.34	5.10	4.28	16.44	Open	0.00
P-47	J-18	J-188	305.23	8.00	110.00	776.61	4.96	4.76	15.58	Open	0.00
P-48	J-16	J-186	421.47	8.00	110.00	-13.30	0.08	0.00	0.01	Open	0.00
P-5	J-107	J-102	1269.85	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-50	J-1	J-161	210.99	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-51	J-132	J-1	356.33	8.00	110.00	-18.72	0.12	0.01	0.02	Open	0.00
P-52	J-2	J-129	80.09	8.00	110.00	-18.72	0.12	0.00	0.02	Open	0.00
P-53	J-3	J-203	130.87	8.00	110.00	75.69	0.48	0.03	0.21	Open	0.00
P-54	J-129	J-132	83.52	8.00	110.00	-18.72	0.12	0.00	0.02	Open	0.00
P-55	J-131	J-2	82.29	8.00	110.00	-10.37	0.07	0.00	0.01	Open	0.00
P-56	J-7	J-150	172.21	8.00	110.00	162.75	1.04	0.15	0.86	Open	0.00
P-57	J-150	J-103	190.52	8.00	110.00	162.75	1.04	0.16	0.86	Open	0.00
P-58	J-8	J-162	272.61	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-59	J-10	J-8	349.58	8.00	110.00	12.25	0.08	0.00	0.01	Open	0.00
P-6	J-108	J-104	242.63	8.00	110.00	-361.45	2.31	0.92	3.78	Open	0.00
P-60	J-137	J-163	185.24	8.00	110.00	223.55	1.43	0.29	1.55	Open	0.00
P-61	J-163	J-10	244.72	8.00	110.00	568.86	3.63	2.14	8.76	Open	0.00
P-62	J-11	J-163	302.89	8.00	110.00	345.30	2.20	1.05	3.47	Open	0.00
P-63	J-12	J-14	926.72	8.00	110.00	-270.70	1.73	2.05	2.21	Open	0.00
P-64	J-121	J-9	728.88	8.00	110.00	343.96	2.20	2.51	3.45	Open	0.00
P-68	J-6	J-119	615.98	8.00	110.00	-193.75	1.24	0.73	1.19	Open	0.00
P-69	J-9	J-12	939.27	8.00	110.00	330.03	2.11	3.00	3.19	Open	0.00
P-7	J-109	J-110	620.72	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-70	J-13	J-10	993.71	8.00	110.00	-544.02	3.47	8.01	8.06	Open	0.00
P-71	J-14	J-124	518.39	8.00	110.00	-282.59	1.80	1.24	2.40	Open	0.00
P-72	J-112	J-172	690.71	8.00	110.00	-1584.33	10.11	40.31	58.36	Open	0.00
P-75	RES-1001	J-125	47.58	12.00	110.00	886.50	2.51	0.13	2.76	Open	0.00
P-76	J-173	J-176	306.99	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-77	RES-1002	J-173	13.99	12.00	110.00	757.59	2.15	0.03	2.06	Open	0.00
P-79	J-172	RES-1000	9.98	12.00	110.00	-1584.33	4.49	0.08	8.10	Open	0.00
P-8	J-111	J-189	222.86	8.00	110.00	1584.33	10.11	13.01	58.36	Open	0.00
P-80	J-174	J-15	492.28	8.00	110.00	7.60	0.05	0.00	0.00	Open	0.00
P-81	J-175	J-108	502.56	8.00	110.00	603.91	3.85	4.92	9.78	Open	0.00
P-83	J-176	J-102	3213.78	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-85	J-117	J-179	5.22	12.00	110.00	343.96	0.98	0.00	0.47	Open	0.00
P-87	J-179	J-120	189.28	12.00	110.00	343.96	0.98	0.09	0.48	Open	0.00
P-89	J-189	J-194	1752.45	8.00	110.00	748.04	4.77	25.48	14.54	Open	0.00
P-9	J-112	J-111	301.59	8.00	110.00	1584.33	10.11	17.60	58.36	Open	0.00
P-91	J-184	J-190	576.29	8.00	110.00	-7.60	0.05	0.00	0.00	Open	0.00
P-92	J-186	J-191	163.14	8.00	110.00	-13.30	0.08	0.00	0.01	Open	0.00
P-94	J-189	J-190	128.28	8.00	110.00	836.30	5.34	2.29	17.87	Open	0.00
P-95	J-190	J-191	4.08	8.00	110.00	828.70	5.29	0.07	17.58	Open	0.00
P-96	J-191	J-109	105.46	8.00	110.00	815.40	5.20	1.80	17.06	Open	0.00
P-97	J-184	J-174	371.56	8.00	110.00	7.60	0.05	0.00	0.00	Open	0.00
P-98	J-193	J-16	323.29	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00

Tank Results @ Steady State Analysis

ID	Flow (gpm)	Elevation (ft)
RES-1000	-1584.33	996.00
RES-1001	-886.50	853.00
RES-1002	-757.59	853.00

MDD+FIRE @ J-5
ZONE 2 & 3 WATER SYSTEM ANALYSIS

Junction Pressures @ Steady State Analysis

Node	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)	
J-1	5.93	598.94	814.96	93.60	
J-10	12.59	658.90	832.59	75.26	
J-101	0.00	612.00	851.11	103.61	
J-102	0.00	719.00	852.74	57.95	
J-103	0.00	658.00	820.68	70.49	
J-104	0.00	716.00	832.22	50.36	
J-105	0.00	738.00	852.74	49.72	<-Ex Node
J-106	0.00	738.00	832.22	40.82	<-Ex Node
J-107	0.00	712.00	852.74	60.98	
J-108	0.00	703.00	833.89	56.71	
J-109	0.00	751.00	995.67	106.01	
J-11	14.99	674.66	832.36	68.33	
J-110	0.00	783.00	995.67	92.15	
J-111	0.00	740.00	995.75	110.81	
J-112	0.00	736.00	995.82	112.58	
J-115	0.00	668.00	816.82	64.48	
J-116	0.00	626.00	816.82	82.68	
J-117	0.00	618.00	815.88	85.74	
J-118	0.00	641.00	818.02	76.70	
J-119	0.00	618.00	819.11	87.14	
J-12	16.88	696.41	832.20	58.84	
J-120	0.00	614.00	816.13	87.58	
J-121	0.00	620.00	816.33	85.07	
J-122	0.00	610.00	816.13	89.32	
J-123	0.00	626.00	816.33	82.47	
J-124	0.00	696.00	842.13	63.32	
J-125	0.00	714.00	852.78	60.13	
J-126	0.00	614.00	820.73	89.58	
J-127	0.00	612.00	827.33	93.30	
J-128	0.00	602.46	814.74	91.98	
J-129	0.00	602.09	814.74	92.14	
J-13	9.38	690.73	833.45	61.84	
J-130	0.00	605.86	814.67	90.48	
J-131	0.00	605.22	814.67	90.75	
J-132	0.00	600.67	814.79	92.78	
J-133	0.00	601.84	814.79	92.27	
J-135	0.00	604.92	814.70	90.90	
J-136	0.00	675.32	832.42	68.07	
J-137	0.00	673.91	832.42	68.68	
J-138	0.00	681.89	820.33	59.99	
J-14	11.89	681.55	838.46	67.99	
J-140	0.00	801.80	995.63	83.99	

Junction Pressures @ Steady State Analysis

Node	Demand (gpm)	Elevation (ft)	Hydraulic Grade (ft)	Pressure (psi)
J-142	0.00	761.95	995.66	101.26
J-143	0.00	763.26	995.66	100.70
J-144	0.00	786.25	995.64	90.73
J-145	0.00	788.99	995.64	89.54
J-147	0.00	774.14	995.64	95.98
J-15	7.60	721.39	995.67	118.85
J-150	0.00	677.60	820.50	61.92
J-151	0.00	645.36	832.59	81.13
J-16	13.30	724.50	995.67	117.50
J-161	0.00	597.67	814.96	94.15
J-162	0.00	636.17	832.59	85.11
J-163	0.00	671.49	832.44	69.74
J-17	16.05	772.72	995.64	96.59
J-172	0.00	730.00	996.00	115.26
J-173	0.00	610.27	852.74	105.06
J-174	0.00	733.67	995.67	113.52
J-175	0.00	708.00	839.88	57.14
J-176	0.00	621.41	852.74	100.24
J-179	0.00	617.86	815.88	85.80
J-18	22.73	798.28	995.63	85.51
J-184	0.00	724.50	995.67	117.50
J-186	0.00	746.00	995.67	108.18
J-188	0.00	814.00	995.63	78.70
J-189	0.00	744.00	995.69	109.06
J-19	24.65	845.00	995.63	65.27
J-190	0.00	752.00	995.67	105.58
J-191	0.00	752.00	995.67	105.58
J-193	0.00	708.86	995.67	124.27
J-194	0.00	814.00	995.63	78.70
J-195	0.00	618.00	815.86	85.73
J-196	0.00	636.00	839.39	88.13
J-2	8.35	603.40	814.70	91.56
J-201	0.00	835.40	995.63	69.43
J-202	0.00	607.50	814.63	89.75
J-203	0.00	605.67	814.60	90.53
J-3	5.32	602.43	815.33	92.25
J-5	3501.57	624.00	814.15	82.39
J-6	13.62	633.03	819.52	80.81
J-7	17.38	676.17	820.33	62.46
J-8	12.25	643.99	832.59	81.72
J-9	13.93	634.82	823.10	81.58

Pipe Report @ Steady State Analysis

ID	From Node	To Node	Length (ft)	Diameter (in)	Roughness	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/kft)	Status	Flow Reversal Count
P-1	J-101	J-173	360.87	16.00	110.00	-2465.20	3.93	1.63	4.52	Open	0.00
P-100	J-194	J-188	3.61	8.00	110.00	15.00	0.10	0.00	0.02	Open	0.00
P-101	J-194	J-201	402.70	8.00	110.00	12.33	0.08	0.00	0.01	Open	0.00
P-102	J-195	J-119	253.67	12.00	110.00	-2028.85	5.76	3.25	12.80	Open	0.00
P-103	J-5	J-195	67.24	12.00	110.00	-2943.33	8.35	1.71	25.50	Open	0.00
P-104	J-196	J-101	2590.88	16.00	110.00	-2465.20	3.93	11.72	4.52	Open	0.00
P-105	J-127	J-196	657.00	12.00	110.00	-2465.20	6.99	12.07	18.36	Open	0.00
P-107	J-201	J-19	208.44	8.00	110.00	12.33	0.08	0.00	0.01	Open	0.00
P-108	J-188	J-19	606.44	8.00	110.00	12.32	0.08	0.00	0.01	Open	0.00
P-109	J-202	J-131	85.94	8.00	110.00	-112.05	0.72	0.04	0.43	Open	0.00
P-11	J-115	J-116	1104.15	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-111	J-119	J-3	419.35	8.00	110.00	577.84	3.69	3.78	9.01	Open	0.00
P-112	J-203	J-202	74.22	8.00	110.00	-112.05	0.72	0.03	0.43	Open	0.00
P-113	J-5	J-203	385.13	12.00	110.00	-558.24	1.58	0.45	1.17	Open	0.00
P-12	J-117	J-116	298.36	8.00	110.00	-327.52	2.09	0.94	3.15	Open	0.00
P-13	J-116	J-118	381.88	8.00	110.00	-327.52	2.09	1.20	3.15	Open	0.00
P-14	J-118	J-103	844.16	8.00	110.00	-327.52	2.09	2.66	3.15	Open	0.00
P-15	J-117	J-195	4.98	12.00	110.00	914.48	2.59	0.01	2.93	Open	0.00
P-17	J-120	J-121	158.75	12.00	110.00	-586.96	1.67	0.20	1.29	Open	0.00
P-18	J-122	J-120	324.60	12.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-19	J-121	J-123	317.27	12.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-2	J-103	J-104	1673.36	8.00	110.00	-500.01	3.19	11.54	6.89	Open	0.00
P-20	J-124	J-175	188.18	8.00	110.00	672.19	4.29	2.24	11.93	Open	0.00
P-21	J-125	J-124	315.47	8.00	110.00	1178.89	7.52	10.65	33.76	Open	0.00
P-22	J-126	J-127	359.21	12.00	110.00	-2465.20	6.99	6.60	18.36	Open	0.00
P-23	J-119	J-126	88.23	12.00	110.00	-2465.20	6.99	1.62	18.36	Open	0.00
P-24	J-128	J-129	76.42	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-25	J-130	J-131	80.98	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00

P-26	J-132	J-133	131.45	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-27	J-2	J-135	118.58	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-28	J-136	J-137	102.76	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-29	J-138	J-7	184.09	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-3	J-102	J-105	309.74	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-30	J-140	J-18	278.98	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-31	J-109	J-142	222.68	8.00	110.00	36.10	0.23	0.01	0.05	Open	0.00
P-32	J-142	J-143	193.32	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-33	J-144	J-145	338.71	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-34	J-17	J-147	202.17	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-37	J-7	J-6	1026.24	8.00	110.00	155.11	0.99	0.81	0.79	Open	0.00
P-38	J-151	J-8	157.55	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-39	J-108	J-13	458.22	8.00	110.00	172.17	1.10	0.44	0.96	Open	0.00
P-4	J-104	J-106	330.74	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-40	J-12	J-11	320.26	8.00	110.00	-122.96	0.78	0.16	0.51	Open	0.00
P-41	J-137	J-11	492.37	8.00	110.00	54.21	0.35	0.06	0.11	Open	0.00
P-43	J-1	J-3	684.83	8.00	110.00	-126.33	0.81	0.37	0.54	Open	0.00
P-44	J-142	J-17	237.25	8.00	110.00	36.10	0.23	0.01	0.05	Open	0.00
P-45	J-17	J-144	269.42	8.00	110.00	20.05	0.13	0.00	0.02	Open	0.00
P-46	J-144	J-18	260.62	8.00	110.00	20.05	0.13	0.00	0.02	Open	0.00
P-47	J-18	J-188	305.23	8.00	110.00	-2.68	0.02	0.00	0.00	Open	0.00
P-48	J-16	J-186	421.47	8.00	110.00	-13.30	0.08	0.00	0.01	Open	0.00
P-5	J-107	J-102	1269.85	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-50	J-1	J-161	210.99	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-51	J-132	J-1	356.33	8.00	110.00	-120.40	0.77	0.18	0.49	Open	0.00
P-52	J-2	J-129	80.09	8.00	110.00	-120.40	0.77	0.04	0.49	Open	0.00
P-53	J-3	J-203	130.87	8.00	110.00	446.19	2.85	0.73	5.58	Open	0.00
P-54	J-129	J-132	83.52	8.00	110.00	-120.40	0.77	0.04	0.49	Open	0.00
P-55	J-131	J-2	82.29	8.00	110.00	-112.05	0.72	0.04	0.43	Open	0.00
P-56	J-7	J-150	172.21	8.00	110.00	-172.49	1.10	0.17	0.96	Open	0.00
P-57	J-150	J-103	190.52	8.00	110.00	-172.49	1.10	0.18	0.96	Open	0.00
P-58	J-8	J-162	272.61	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-59	J-10	J-8	349.58	8.00	110.00	12.25	0.08	0.00	0.01	Open	0.00
P-6	J-108	J-104	242.63	8.00	110.00	500.02	3.19	1.67	6.89	Open	0.00
P-60	J-137	J-163	185.24	8.00	110.00	-54.21	0.35	0.02	0.11	Open	0.00
P-61	J-163	J-10	244.72	8.00	110.00	-137.95	0.88	0.16	0.63	Open	0.00
P-62	J-11	J-163	302.89	8.00	110.00	-83.74	0.53	0.08	0.25	Open	0.00
P-63	J-12	J-14	926.72	8.00	110.00	-494.81	3.16	6.27	6.76	Open	0.00
P-64	J-121	J-9	728.88	8.00	110.00	-586.96	3.75	6.76	9.28	Open	0.00
P-68	J-6	J-119	615.98	8.00	110.00	141.49	0.90	0.41	0.67	Open	0.00
P-69	J-9	J-12	939.27	8.00	110.00	-600.89	3.84	9.10	9.69	Open	0.00
P-7	J-109	J-110	620.72	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-70	J-13	J-10	993.71	8.00	110.00	162.79	1.04	0.86	0.86	Open	0.00
P-71	J-14	J-124	518.39	8.00	110.00	-506.70	3.23	3.66	7.07	Open	0.00
P-72	J-112	J-172	690.71	8.00	110.00	-84.34	0.54	0.18	0.26	Open	0.00
P-75	RES-1001	J-125	47.58	12.00	110.00	1178.89	3.34	0.22	4.68	Open	0.00
P-76	J-173	J-176	306.99	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-77	RES-1002	J-173	13.99	12.00	110.00	2465.20	6.99	0.26	18.37	Open	0.00
P-79	J-172	RES-1000	9.98	12.00	110.00	-84.34	0.24	0.00	0.04	Open	0.00
P-8	J-111	J-189	222.86	8.00	110.00	84.34	0.54	0.06	0.26	Open	0.00
P-80	J-174	J-15	492.28	8.00	110.00	7.60	0.05	0.00	0.00	Open	0.00
P-81	J-175	J-108	502.56	8.00	110.00	672.19	4.29	5.99	11.93	Open	0.00
P-83	J-176	J-102	3213.78	16.00	110.00	0.00	0.00	0.00	0.00	Open	0.00
P-85	J-117	J-179	5.22	12.00	110.00	-586.96	1.67	0.01	1.29	Open	0.00
P-87	J-179	J-120	189.28	12.00	110.00	-586.96	1.67	0.24	1.29	Open	0.00
P-89	J-189	J-194	1752.45	8.00	110.00	27.33	0.17	0.06	0.03	Open	0.00
P-9	J-112	J-111	301.59	8.00	110.00	84.34	0.54	0.08	0.26	Open	0.00
P-91	J-184	J-190	576.29	8.00	110.00	-7.60	0.05	0.00	0.00	Open	0.00
P-92	J-186	J-191	163.14	8.00	110.00	-13.30	0.08	0.00	0.01	Open	0.00
P-94	J-189	J-190	128.28	8.00	110.00	57.00	0.36	0.02	0.12	Open	0.00
P-95	J-190	J-191	4.08	8.00	110.00	49.40	0.32	0.00	0.09	Open	0.00
P-96	J-191	J-109	105.46	8.00	110.00	36.10	0.23	0.01	0.05	Open	0.00
P-97	J-184	J-174	371.56	8.00	110.00	7.60	0.05	0.00	0.00	Open	0.00
P-98	J-193	J-16	323.29	8.00	110.00	0.00	0.00	0.00	0.00	Open	0.00

Tank Results @ Steady State Analysis

ID	Flow (gpm)	Elevation (ft)
RES-1000	-84.34	996.00
RES-1001	-1178.89	853.00
RES-1002	-2465.20	853.00

Legend

Junction
- <all other values>

TYPE
- Active
- Domain
- Inactive

Reservoir
- <all other values>

TYPE
- Active
- Domain
- Inactive

Pipe
- <all other values>

TYPE
- Active
- Domain
- Inactive

N

0 125 250 500 Feet

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Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri

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G.4 - Preliminary Wastewater Report

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PRELIMINARY WASTEWATER REPORT

for The TRAILS AT CORONA
in the City of Corona,
County of Riverside, California





PREPARED FOR :

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November 2021

Stephen M. Nielsen, RCE 51070

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Section

1
INTRODUCTION

1.1 PURPOSE OF STUDY

The Trails at Corona project (Project) is located within the City of Corona Department of Water and Power Sphere of Influence for sewer service. The purpose of this report is to evaluate the impacts of the Trails at Corona project on the City of Corona Department of Water and Power Sewer Master Plan facilities. More specifically the Project will be served by the trunk sewer lines within Sewershed 10. This report will provide information regarding flow projections to the current and ultimate sewer system and recommend sewer facilities to support the Project. The analysis presented in this report is based on the current proposed land use plan for The Trails Specific Plan Planning Area (PA) 1 through 6 and the tentative tract maps being prepared for each planning area of the project.

1.2 PROJECT DESCRIPTION

The Trails at Corona project is comprised of 105 acres of vacant infill land neighboring the Serfas Club Drive exit of the 91 Freeway, within the City of Corona. **Figure 1-1** provides a location map for the Project. This land was formerly utilized as a golf course and is being repurposed to fill in the residential community. The site is made up of six separate proposed parcels of land. Five of these parcels are located within the County of Riverside's Sphere of Influence and one parcel is located within the City of Corona's Sphere of Influence. However, all of the proposed utility services are to be provided by The City of Corona. Many of the existing developments surrounding the project do no utilize City sewer services, however the Project proposes to connect to the City public sewer system.

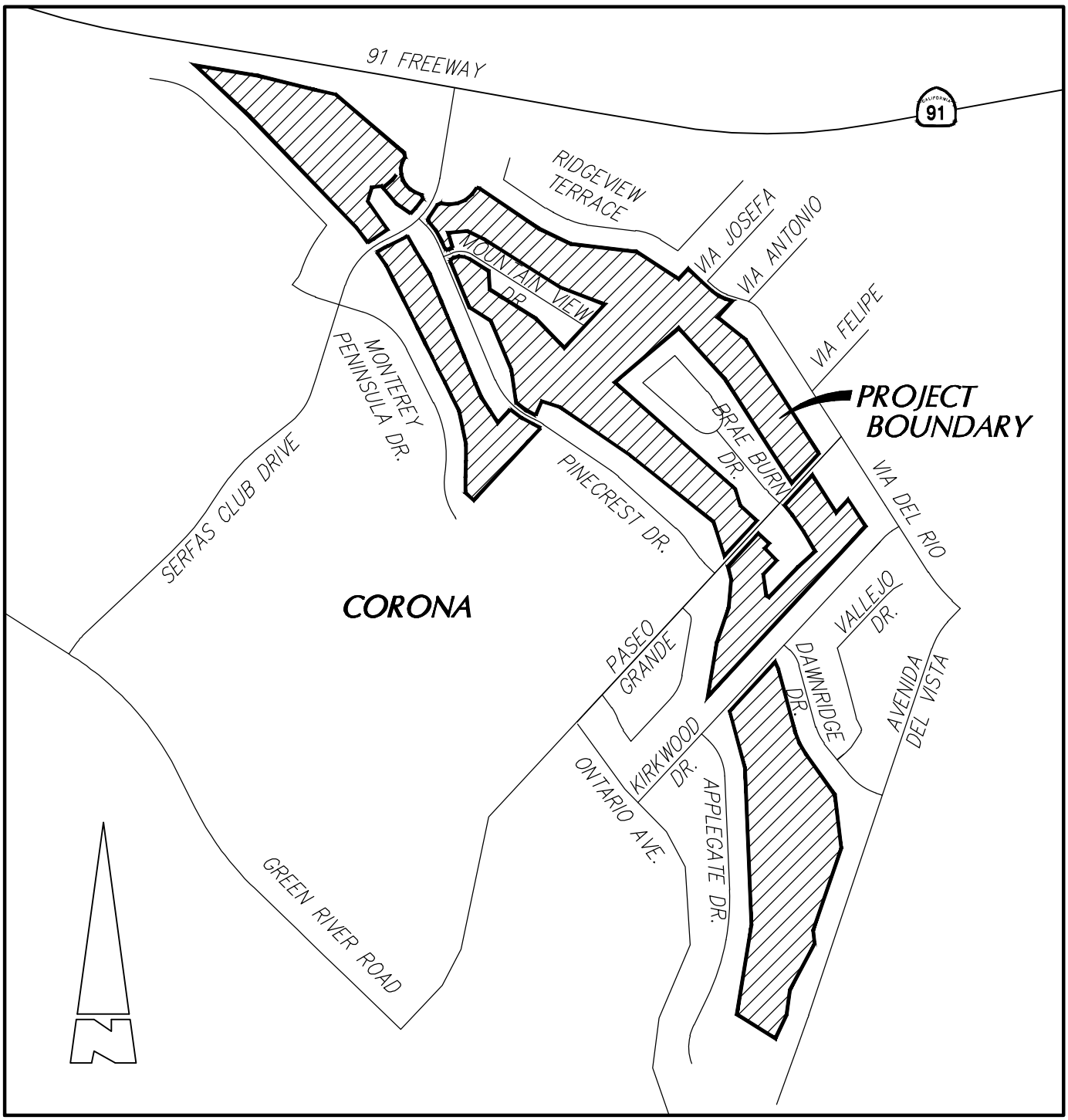
PA 1 and 2 are bound by single-family residential development to the south and west, the 91 Freeway to the north, and by Serfas Club Drive to the east. Access for these areas will be from the frontage road off Serfas Club Drive. PA 3 is bound by single-family residential development to the north and south and by Serfas Club Drive to the west and by Paseo Grande to the east. These two roads will serve as the circulatory access through the PA 3 site. PA 4 is bound by Serfas Club Drive to the west, by Pine Crest Drive to the north, by single-family residential development to the south, and by Cesar Chavez Academy to the east. Serfas Club Drive and Pine Crest Drive will serve as the circulatory access points through the site. PA 5 is bound by single-family residential development to the north, east, and south and by Paseo Grande to the west. Paseo Grande will serve as the primary access for PA 5. PA 6 is bound by Kirkwood Drive to the west and by single-family residential to the south, east, and north. Kirkwood Drive will serve as the primary access for PA 6. The residential regions surrounding the project within the City of Corona are generally Low Density Residential (2-6 du/ac) and those surrounding the project within Riverside County are generally Medium Density Residential (2-5 du/ac).

The project site consists of sparsely vegetated and otherwise undeveloped land with the exception of a few existing culverts. The site is characterized by relatively flat topography, generally increasing in elevation from the northwest to the southeast. There are very few natural drainage features apart from a small lake on the north side of Planning Area 5 and a natural stream on the east side of Planning Area 6.

The proposed land use plan for the Project consists of 309 Medium Density Residential lots, 56 Low Density Residential lots, and a 0.78-acre General Commercial lot based on The Trails Specific Plan. The project site is comprised of approximately 105 acres of undeveloped vacant land. **Figure 1-2** provides a map of the area illustrating the location of the project relative to existing development in the area. **Appendix B** includes the current tentative tract maps for the Trails at Corona project.

1.3 RELATED STUDIES

The City of Corona 2005 Sewer Master Plan, prepared by AKM Consulting Engineers, provides a regional study identifying existing and proposed major sewer facilities within the City's ultimate service area. The master plan study also presents design criteria to be utilized in sizing gravity sewer lines, sewer lift stations, and force mains; as well as information on the City's sewer generation rates that can be applied to determine projected average and peak wastewater flows. The master plan reports also identifies deficiencies in the City's Sewer System and discusses the City's future planned Capital Improvement Projects to mitigate these system deficiencies.



LOCATION MAP

NOT TO SCALE

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1880 COMPTON AVENUE, SUITE 100 ● CORONA, CA. 92881-3370 ● 951-734-2130

FIGURE 1-1

J.N. 15.1511.8.17/ R:\15\1511\PRELIM\REPORTS\SEW\Figures\FIGURE 1-1 - Location Map.dwg 09/26/2018 15:36



FIGURE 1-2
VICINITY MAP

KWC ENGINEERS
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J.N. 15.1511.8.17 R:\15\1511\PRELIM\REPORTS\SEW\Figures\FIGURE 1-2 — Vicinity Map.dwg 09/26/2018 15:35

Section

2

DESIGN CRITERIA AND PROJECTED SEWAGE FLOWS

This section presents the design criteria used to estimate the sewage flows and evaluate the recommended sewer system improvements required for the Trails at Corona project, and surrounding tributary areas within the sewershed 10 drainage area. **Appendix C** provides a map of the existing sewershed boundaries. The criteria utilized in this study are in accordance with the September 2005 City of Corona Sewer Master Plan and the 2012 City's Department of Water and Power Design Policy.

2.1 SEWAGE FLOWS

The sewage generation factors used to estimate the average daily flows for the project and surrounding tributary area are listed in **Table 2-1**.

TABLE 2-1

Recommended Unit Sewage Generation Factors			
Land Use category	**Existing Unit Flow Factor (gpd/ac)**	**Ultimate Unit Flow Factor (gpd/ac)**	**Residential Flow Factors (gpd/du)**
Rural Residential 1 (0.2 to 0.5 du/ac)	150	150	300
Rural Residential 2 (1 du/ac)	300	300	300
Residential Estate (1-3 du/ac)	500	500	300
Residential Low Density (3-6 du/ac)	1,000	1,000	270
Low Medium Density (6-8 du/ac)	1,200	1,200	270
Medium Density (6-15 du/ac)	1,700	1,700	240
High Density (15-36 du/ac)	2,000	2,000	200
Mixed Use	700	700	-
Commercial Business District	1,000	1,050	-
General Community Commercial	1,000	1,050	-
Office Professional	1,200	1,260	-
General Industrial	1,100	1,155	-
Institutional	800	800	-
Open Space/Recreation	130	130	-

To convert average dry weather daily flows to peak dry weather flows, the following formula was used:

Peak Dry Weather Flow = 1.95 * (Average Flow in cfs)$^{0.92}$

Based on the 2005 Sewer Master Plan, it is recommended to use the larger of the values from the two equations below used to estimate peak wet weather flow:

Peak Wet Weather Flow (PWWF) = 2.50 * (Average Flow in cfs)

OR

Peak Wet Weather Flow (PWWF) = 1.265 * (PDWF in cfs)

2.2 GRAVITY SEWERS

All gravity sewers have been designed to convey peak flow. **Table 2-2** lists the maximum d/D peak dry weather flow for proposed and existing gravity sewer lines. All proposed pipes are designed with a d/D less than or equal to 0.50 at peak dry weather flows. Manning's Equation with an "n" value of 0.013 was used to size all gravity sewers. All new sewers were designed to maintain a minimum velocity of two feet per second at design capacity to prevent the deposition of solids. To minimize excessive wear and tear of the pipe, pipes shall be designed to not exceed a maximum velocity of 8 feet per second. All pipes will have a minimum of 7 feet of cover. **Table 2-3** lists the minimum slope requirements for various pipe sizes. When minimum velocities are not able to be met, minimum pipe slopes shall be maintained.

TABLE 2-2

d/D Criteria	
Pipe Size	**Max d/D Peak Dry Weather Flow**
Existing 10-inch diameter or smaller	0.64
Existing 12-inch diameter or larger	0.70
Proposed 10-inch diameter or smaller	0.50
Proposed 12-inch diameter or larger	0.67

TABLE 2-3

Minimum Slope Requirements	
Sewer Pipe Size (in)	**S (ft\ft)**
8	0.0040
10	0.0025
12	0.0020
15	0.0012
18	0.0010
21	0.0008
24	0.0007

2.3 FORCE MAINS

All force main sewers will be designed to convey peak wet weather flow. Hazen-Williams Coefficient "C" value of 130 was used to size all force main sewers. All force mains were designed to maintain a minimum velocity of 4.0 feet per second at the minimum design pumping capacity to prevent the deposition of solids. To minimize excessive wear and tear of the pipe, pipes shall be designed to not exceed a maximum velocity of 6.0 feet per second.

2.4 LIFT STATIONS

All lift stations should be sized to accommodate the influent peak wet weather flows and based upon a 60 percent pump efficiency and 90 percent motor efficiency unless manufacturer specifications recommend otherwise. A minimum of two pumps of equal size should be provided to provide adequate standby capacity if one pump is out of service. Pumps should be able to pass 3-inch minimum solids. The wet well should be sized to limit the number of pump cycles to no more than 6 per hour. It is expected that the lift station will be equipped with submersible pumps in a wet well, a separate meter/valve vault, above ground pump controls housed in an enclosure, telemetry (dialer system at a minimum), and a backup diesel generator.

2.5 PROJECTED SEWAGE FLOWS

Table 2-4 shows the calculated values for Average Dry Weather Flow (ADWF) and the Peak Dry Weather Flow (PDWF) for the Trails at Corona project. Calculations are based on the proposed land use plan and sewer generation factors in Table 2-1. The estimated peak dry weather flow for the Trails at Corona project based on the City's peak flow equation is approximately 0.6708 cfs.

TABLE 2-4

Trails at Corona - Projected Sewage Flows

Project Sewer Drainage Area[1]	Tributary Sewershed	Land Use	Quantity	Unit Flow Factor	ADWF		PDWF	
					MGD	CFS	MGD	CFS
A[2]	10	MDR	66 units	240 gpd/unit	0.0158	0.0245	0.0416	0.0643
B	10	GCC	0.78 ac	1,050 gpd/ac	0.0008	0.0013	0.0027	0.0042
C	10	MDR	35 units	240 gpd/unit	0.0084	0.0130	0.0232	0.0359
D	10	MDR	12 units	240 gpd/unit	0.0029	0.0045	0.0087	0.0134
E	10	MDR	107 units	240 gpd/unit	0.0257	0.0397	0.0648	0.1003
F	10	MDR	89 units	240 gpd/unit	0.0214	0.0330	0.0547	0.0846
G	10	LDR	56 units	270 gpd/unit	0.0151	0.0234	0.0398	0.0616
	Total				**0.0901**	**0.1394**	**0.2057**	**0.3182**

[1] Refer to Sewer Node Demand Areas exhibit in Appendix C. Sewer drainage area IDs coincide with area IDs in Table 2-4

[2] This area requires a lift station with pumps designed to convey a PWWF of 37 gpm. The design pump flow rate is 160 gpm to achieve a velocity of 4.0 fps in a 4-inch force main.

2.6 ULTIMATE SEWAGE FLOWS

Portions of the Coronita area surrounding the project are not currently utilizing City sewer services because they are not within the City limits. The City of Corona has plans to ultimately convert Coronita from private septic tanks to City sewer services. When analyzing the impact of The Trails of Corona on the ultimate sewer system, it is necessary to consider the future flows contributed from the existing developments in Coronita. **Table 2-5** shows the calculated flows for the areas in Coronita to be converted to City sewer services.

TABLE 2-5

Coronita - Projected Sewage Flows								
Project Sewer Drainage Area[1]	Tributary Sewershed	Land Use	Quantity	Unit Flow Factor	ADWF		PDWF	
					MGD	CFS	MGD	CFS
F	10	LDR	43	270 gpd/unit	0.0116	0.0180	0.0312	0.0483
H	10	LDR	323	270 gpd/unit	0.0872	0.1349	0.1996	0.3088
		GCC	6.73	1,050 gpd/ac	0.0071	0.0109	0.0197	0.0305
I[2]	10	LDR	138	270 gpd/unit	0.0373	0.0576	0.0994	0.1538
J[3]	10	LDR	74	270 gpd/unit	0.0200	0.0309	0.0651	0.1007
K[4]	10	LDR	119	270 gpd/unit	0.0321	0.0497	0.0797	0.1232
L[4]	10	LDR	39	270 gpd/unit	0.0105	0.0163	0.0285	0.0442
	Total				**0.2058**	**0.3184**	**0.4753**	**0.7354**

[1] Refer to Exhibit C-1 in Appendix C for the location of sewer drainage areas.
[2] This area requires a lift station with pumps sized to deliver the PWWF for 23 homes. The pumped flow is the peak flow.
[3] This area requires a lift station with pumps designed to deliver PWWF for all homes. The pumped flow is the peak flow.
[4] Not tributary to project area, however future flows will have downstream impact.

Section

3

EXISTING AND PROPOSED WASTEWATER FACILITIES

This section discusses the existing and proposed wastewater facilities as identified in City of Corona's 2005 Sewer Master Plan dated September 2005 for The Trails at Corona project area. The Trails at Corona project's sewer contributions are tributary to the City's Sewershed 10 which are tributary to Waste Water Treatment Plant No. 1 (WWTP1).

3.1 EXISTING SEWER FACILITIES

The Trails at Corona project is located in the City of Corona Department of Water and Power sewer sphere of influence. Planning Areas 1 through 5 are in sewershed 10 and will connect into the existing sewer system in Serfas Club Drive and Pine Crest Drive. Planning Area 6, located on Kirkwood Drive, is on the edge of Sewershed 10 and 14. Sewershed 14 has a large number of existing deficient pipes located downstream of The Trails at Corona project, near WWTP 1. Because of this, it was decided that PA 6 will connect to the proposed sewer system in PA 5 and drain via the existing trunk sewer system to WWTP 1 via Sewershed 10. The current treatment capacity of WWTP 1 is 11.5 MGD with an expected future reliable treatment capacity of 14.5 MGD with improvements. The project's proposed sewer flows will tie into the City's existing trunk sewer system at Serfas Club Drive, Pine Crest Drive, and Frontage Road. **Figure 3-1** shows the existing sewer facilities in the vicinity of the project.

Sewershed 10 is the most westerly sewershed extending from Kirkwood Drive to the westerly edge of the city limits, and from the northerly service area boundary to the southerly City limits, including the Corona Airport. This area includes five sewer lift stations. The Airport Lift Station collects flows generated at the municipal airport and pumps them directly to the WWTP 1. The Ahmanson, Green River, and Prado Sewer Lift Stations serve the westerly portion of the sewershed. The Sierra Del Oro Lift Station collects the flows generated by a portion of the Sierra Del Oro development, as well as flows from the tributary areas of Ahmanson, Green River, and Prado lift stations. It pumps the wastewater easterly along SR-91 to the gravity system that flows to WWTP 1 via the 21-inch Railroad Trunk Sewer.

3.2 CAPITAL IMPROVEMENT PROJECTS

In anticipation of the increased sewer flows associated with future developments throughout the City of Corona, the Department of Water and Power has proposed a number of Capital Improvement Projects to address deficiencies in the existing gravity sewer system. According to the 2005 Sewer Master Plan, there are three future planned Capital Improvement Projects relevant which have been identified as CIP Project P-6, P-10, and P-19.

CIP Project P-6 will replace 12-inch, 18-inch, and 21-inch sewer lines from Palisades Drive to WTTP-1 that has a d/D varying between 0.75 to full. CIP Project P-10 will replace 8-inch and 10-inch sewers within Avenida Del Vista, Sixth Street, and Smith Avenue which have been identified to have a d/D varying between 0.65 and full under peak dry weather conditions. CIP Project P-19 will replace an 8-inch sewer in Kirkwood Drive that has a d/D ratio of 0.75 under ultimate conditions. **Table 3-1** identifies these deficient pipe segments and provides their approximate locations.

TABLE 3-1

2005 Sewer Master Plan Deficient Pipelines - Downstream of Trails at Corona Project						
Pipe Segment	**Existing Pipe Diameter (in)**	**Existing Pipe Length (ft)**	**Existing Pipe Slope (ft/ft)**	**Existing Peak Dry Weather Flow (cfs)**	**Existing Velocity (ft/s)**	**Existing Peak Dry Weather d/D**
Avenida Del Vista						
2694	10	113	0.0042	1.1582	2.922	0.68
2662	10	363	0.0044	1.1669	2.955	0.68
6th Street						
1941	12	354	0.0017	1.9034	2.423	1.00
Smith Avenue						
1764	10	96	0.0203	2.3763	6.314	0.65
1748	10	253	0.0211	2.3915	6.423	0.65
1701	10	253	0.0202	2.4204	6.323	0.66
1658	10	403	0.0213	2.4269	6.463	0.65
1582	10	127	0.0206	2.4307	6.381	0.66
4984	10	257	0.0194	2.4467	6.237	0.68
1498	10	395	0.0202	2.4772	6.356	0.67
1406	10	319	0.0200	2.4837	6.331	0.68
1305	10	76	0.0170	2.5746	5.946	0.74
1291	10	106	0.0188	2.5751	6.208	0.71
1270	10	290	0.0196	2.6013	6.325	0.71
1062	10	148	0.0328	3.2918	8.146	0.69
979	10	301	0.0300	3.3124	7.859	0.72

3.3 PROPOSED SEWER FACILITIES

The analysis of projected sewage flows for The Trails at Corona project and its estimated sewer contribution to the overall WWTP 1 peak flow treatment volume is consistent with the wastewater facilities identified with the City of Corona 2005 Sewer Master Plan. As previously stated, the project site is broken up into 6 separate planning areas. Each planning area is comprised of one or more sewer drainage areas.

Drainage Area A is comprised of Planning Area 1, which is made up of 65 proposed MDR lots. This planning area drains to a proposed lift station on the northwestern corner of the site. Wastewater will be pumped from the lift station, via force main to a proposed manhole on the southeastern side of the site. Wastewater flows will then be conveyed by a proposed gravity main in Serfas Club Drive until it reaches existing sewer manhole 1-21-10005 near the intersection of Serfas Club Drive and Pine Crest Drive. The estimated PDWF and PWWF for Drainage Area A

is 0.0643 cfs and 0.0813 cfs, respectively. The lift station is proposed to have a capacity of 160 gpm to provide a velocity of 4.0 fps in a 4-inch force main.

Drainage Area B consists of Planning Area 2, a proposed 0.78 acre commercial site. This area will drain via 4-inch sewer lateral to a proposed sewer line in Serfas Club Drive. The proposed line in Serfas Club Drive will convey sewerage flows form the surrounding planning areas and connect to existing Node 1-21-10005 in Serfas Club Drive. The PDWF for Drainage Area B is approximately 0.0042 cfs.

Drainage Area C consists of 35 proposed MDR lots in Planning Area 4. Sewerage flows from this area will be conveyed by gravity main to the proposed gravity sewer line in Serfas Club Drive, where it ultimately will connect to existing manhole Node 1-21-10005 near the intersection of Serfas Club Drive and Pinecrest Drive. The estimated PDWF for Drainage Area C is 0.0359 cfs.

Drainage Area D consists of 12 proposed MDR lots in Planning Area 4. This area will connect to the existing sewer system in Pine Crest Drive at existing node 1-21-10013. The approximate PDWF for Drainage Area D is 0.0134 cfs.

Drainage Area E is made up of 107 MDR lots in Planning Areas 3 and 5. This proposed sewer network will connect to the existing sewer line in Frontage Road, which is ultimately connects to the existing sewer line Serfas Club Drive. The PDWF for Drainage Area E is approximately 0.1003 cfs.

Drainage Area F consists of 89 proposed MDR lots in Planning Areas 3 and 5. This drainage area will connect to the existing sewer line in Pine Crest Drive. The PDWF for this area is approximately 0.0846 cfs.

Drainage Area G is composed of 56 LDR lots in Planning Area 6. This drainage area will cross Kirkwood Drive to Connect to the proposed Planning Area 5 sewer system. The PDWF is approximately 0.0616 cfs and is tributary to the existing manhole 1-21-10005 near the intersection of Serfas Club Drive and Pine Crest Drive.

All onsite sewer facilities are sized for 8-inch gravity sewer lines which are to be constructed within the street right-of-way or dedicated utility easements. The pipe capacity of an 8-inch gravity sewer line is sufficient to accommodate the flows within the project site based on the projected sewer flows within Section 2. **Figure 3-2** shows the preliminary sewer layout for The Trails at Corona project.

The sewer flows from Drainage Area A will be pumped to a proposed gravity sewer manhole located at the southeastern portion of PA 1. The proposed public maintained lift station will be designed to accommodate a PWWF of 0.0813 cfs or 37 gpm, but will be oversized to a capacity of 160 gpm to provide a velocity of 4.0 fps in a 4-inch force main. The pump station design configuration will consist of two slide rail mounted submersible pumps installed in a 5 foot inside diameter wet well. The two pumps of equal pumping capacity will be provided to provide adequate standby capacity if one pump is out of service. The lift station facilities (i.e. wet well, meter/valve vault, above ground pump controls, telemetry, and back generator shall be designed in accordance

with City requirements. Preliminary sizing calculations for the proposed lift station and force main piping are provided in **Appendix E**.

3.4 ULTIMATE SEWER FACILITIES

City sewer services are currently not provided to the community of Coronita, which surrounds The Trails at Corona project. The 2005 City of Corona Sewer Master Plan notes that the developments in this area have exhibited poor septic tank performance and will eventually be converted to operate on a city-maintained gravity sewer system. The City has requested that this project also analyze and plan for the future connection of the homes within Coronita into the City's sewer system. Coronita is also tributary to Sewershed 10, so it is necessary to include the future flows from this existing area in addition to proposed flows from The Trails project for the ultimate condition analysis. **Appendix C** shows the existing developments that are currently on septic and will be converted to City sewer services and notes what amount of flow is attributed to each drainage area. Future pipeline construction and connections from the Coronita will be determined by the City when the need arises.

3.5 OFFSITE DOWNSTREAM SEWER ANALYSIS

To analyze the offsite sewer impacts, a hydraulic analysis was performed along the downstream trunk sewer system from the project's sewer connection points to the WWTP 1 near Railroad Street. The sewer modeling data contained in the 2005 Sewer Master Plan was used for the analysis data on the sewer collection system. An existing condition model was provided by the City using the updated 2005 sewer flows. A post-project and ultimate condition model were then created by adding the proposed and ultimate peak sewer flows to the collection system at their respective connection points. The sewer model was modeled utilizing the Innovyze InfoSewer v7.6 sewer modeling software. The results of the sewer model are provided in Appendix D and are from the 2019 sewer study prepared for the project. The sewer flow projections based on this current study have gone down slightly so the findings from the 2019 study remain valid.

Table 3-3 shows existing downstream pipeline segments that are considered deficient in the existing, post-project, and ultimate conditions. The existing deficient pipelines total 71 LF of 42-inch pipe, 240 LF of 21-inch pipe, 2500 LF of 18-inch pipe, and 156 LF of 12-inch pipe. The post project condition will create an additional 546 LF of deficient existing 21-inch pipe. The ultimate condition will create an additional 380 LF of deficient existing 21-inch pipe and 1,152 LF of deficient existing 8-inch pipe. These pipelines are considered deficient based on the City's maximum d/D criteria and will eventually be required to be replaced with larger capacity pipelines. The City will need to assess fair share contributions from The Trails development as well as timing for construction of these deficient pipelines needed to support development of The Trails project.

TABLE 3-3

Deficient Pipelines – Down Stream of The Trails at Corona and Coronita

Pipe Model ID	U/S Node ID	D/S Node ID	Pipe Dia. (in)	Length (ft)	Slope (ft/ft)	Ex. Peak Flow (cfs)	Post Project Peak Flow (cfs)	Ult. Peak Flow (cfs)	Ex. Peak Flow d/D	Post Project Peak Flow d/D	Ult. Peak Flow d/D	% of Ult. Flow Contrib. by The Trails†
1-21-1539	1-21-10-07590	1-21-10-07550	8.00	199.00	0.02	0.05	0.71	1.27	0.12	0.46	0.67	54.14%
1-21-1586	1-21-10-07630	1-21-10-07590	8.00	290.65	0.01	0.04	0.70	1.26	0.12	0.52	0.78	54.16%
1-21-1646	1-21-10-07610	1-21-10-07630	8.00	304.04	0.01	0.04	0.70	1.26	0.13	0.55	1.00	54.16%
1-21-1670	1-21-10-07580	1-21-10-07610	8.00	160.00	0.01	0.02	0.68	1.24	0.08	0.54	1.00	54.28%
1-21-4979	1-21-10-07350	1-21-10-07230	8.00	198.50	0.01	0.06	0.72	1.28	0.14	0.50	0.74	54.10%
1-21-1159	1-21-10-07870	1-21-10-08180	21.00	380.28	0.00	4.53	5.11	5.71	0.64	0.70	0.76	49.61%
1-21-1167	1-21-10-07670	1-21-10-07870	21.00	280.09	0.00	4.53	5.11	5.71	0.66	0.72	0.80	49.61%
1-21-1184	1516	1-21-10-07570	21.00	265.63	0.00	4.51	5.10	5.69	0.68	0.75	1.00	49.61%
1-21-5983	1-21-10-08180	1-21-10-08330	21.00	200.58	0.00	4.53	5.11	5.71	1.00	1.00	1.00	49.61%
2203	1-21-10-07470	1516	21.00	40.00	0.00	4.51	5.10	5.69	1.00	1.00	1.00	49.61%
1-21-984	1-21-10-08320	1-21-10-08410	42.00	71.25	0.00	20.26	20.85	21.44	0.80	1.00	1.00	49.62%
1-21-1502	1-21-10-07030	1-21-10-07080	18.00	350.00	0.00	4.42	4.42	4.53	0.80	0.80	1.00	0.00%*
1-21-1525	1-21-10-06580	1-21-10-06760	18.00	294.00	0.00	4.42	4.42	4.53	1.00	1.00	1.00	0.00%*
1-21-1535	1-21-10-06440	1-21-10-06580	18.00	203.02	0.00	4.42	4.42	4.53	1.00	1.00	1.00	0.00%*
1-21-1553	1-21-10-06210	1-21-10-06440	18.00	350.00	0.00	4.42	4.42	4.53	0.80	0.80	1.00	0.00%*
1-21-1640	1-21-10-05860	1-21-10-06100	18.00	277.87	0.00	4.41	4.41	4.52	0.77	0.77	0.79	0.00%*
1-21-1660	1-21-10-05090	1-21-10-05200	18.00	161.58	0.00	4.41	4.41	4.52	0.78	0.78	0.80	0.00%*
1-21-1664	1-21-10-05200	1-21-10-05560	18.00	350.31	0.00	4.41	4.41	4.52	0.77	0.77	0.79	0.00%*
1-21-1743	1-21-10-05650	1-21-10-05500	12.00	156.09	0.00	1.43	1.43	1.55	0.76	0.76	1.00	0.00%*
1-21-7440	1-21-10-06760	1-21-10-06910	18.00	350.00	0.00	4.42	4.42	4.53	1.00	1.00	1.00	0.00%*
1-21-7441	1-21-10-06910	1-21-10-07030	18.00	162.00	0.00	4.42	4.42	4.53	1.00	1.00	1.00	0.00%*

*Note: These pipeline segments are not downstream of The Trails at Corona project. A portion of the ultimate wastewater flow from the existing Coronita community is tributary to these segments, and is analyzed as part of this report.

†$\%\ of\ Ult.\ Flow = \frac{Post\ Project\ Flow - Ex\ Flow}{Ult.\ Flow - Ex.\ Flow}$

THE TRAILS AT CORONA
EXISTING SEWER FACILITY PLAN

LEGEND

8" EXISTING SEWER

PLANNING AREA/TRACT BOUNDARY

CITY OF CORONA
COUNTY OF RIVERSIDE

PASEO GRANDE

VIA DEL RIO

PA 5 BOUNDARY (TTM NO. 37503)

KIRKWOOD DR.

STREET "A"

CYPRESS POINT DR

BRAE BURN DR

PA 3 BOUNDARY (TTM NO. 37501)

OAKLAND HILLS DR

STREET "B"

RIDGEVIEW TERRACE

MOUNTAIN VIEW DR

STREET "C"

STREET "D"

PINE CREST DR

JOIN EXIST. SEWER

DAWN RIDGE DR

PA 6 BOUNDARY (TTM NO. 37500)

AVENIDA DEL VISTA

APPLEGATE DR

PA 2 BOUNDARY (TTM NO. 37519)

PA 1 BOUNDARY (TTM NO. 37504)

SERRAS CLUB DRIVE

NORTH MOOR DR

MONTEREY PENINSULA DR

PA 4 BOUNDARY (TTM NO. 37502)

HUMMINGBIRD LN

COUNTY OF RIVERSIDE
CITY OF CORONA

250' 0 250' 500' 750'
SCALE IN FEET

FIGURE 3-1

THE TRAILS AT CORONA
EXISTING SEWER FACILITY PLAN

KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 • CORONA, CA. 92881-3370 • 951-734-2130

12.1344.121 R:\1511\1511\PRELIM\REPORTS\SEW\Figures\FIGURE 3-1 - Existing Facility Plan.dwg 11/08/2021 05:51

THE TRAILS AT CORONA
CONCEPTUAL SEWER FACILITY PLAN

LEGEND

- 8" PROPOSED SEWER
- 8" PROPOSED FORCE MAIN SEWER
- 8" EXISTING SEWER
- PLANNING AREA/TRACT BOUNDARY

CITY OF CORONA
COUNTY OF RIVERSIDE

CITY OF CORONA
COUNTY OF RIVERSIDE

VIA DEL RIO
PASEO GRANDE
KIRKWOOD DR.
PA 5 BOUNDARY (TTM NO. 37503)
STREET "A"
PA 3 BOUNDARY (TTM NO. 37501)
CYPRESS POINT DR
BRAE BURN DR
OAKLAND HILLS DR
STREET "B"
RIDGEVIEW TERRACE
STREET "D"
MOUNTAIN VIEW DR
PINE CREST DR
STREET "C"
JOIN EXIST. SEWER
DAWN RIDGE DR
PA 6 BOUNDARY (TTM NO. 37500)
AVENIDA DEL VISTA
APPLEGATE DR
PA 2 BOUNDARY (TTM NO. 37519)
PA 1 BOUNDARY (TTM NO. 37504)
SERRAS CLUB DRIVE
PA 4 BOUNDARY (TTM NO. 37502)
MONTEREY PENINSULA DR
HUMMINGBIRD LN
PROP. 4" FORCEMAIN
PROP. LIFT STATION 160 GPM (FIRM PUMP CAPACITY)
NORTH MOOR DR

COUNTY OF RIVERSIDE
CITY OF CORONA

250' 0 250' 500' 750'
SCALE IN FEET

FIGURE 3-2
THE TRAILS AT CORONA
CONCEPTUAL SEWER FACILITY PLAN

KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 • CORONA, CA. 92881-3370 • 951-734-2130

12.1344.21 R:\12\1511\PRELIM\REPORTS\SEW\Figures\FIGURE 3-2 - Conceptual Sewer Facility Plan.dwg 11/08/2021 09:57

Section

4
CONCLUSIONS

The Trails at Corona project will require the following Sewer Infrastructure to be constructed and improved:

Trails at Corona Ultimate Build-out and Improvements

- Construction of 8-inch onsite gravity sewer lines within each planning area of the project;
- Construction of 160 gpm Sewer Lift Station and 4-inch force main within PA 1.
- Construction of offsite 8-inch gravity sewer lines from onsite sewer system to existing sewer system connection points; and
- Potential mitigation of downstream trunk sewer impacts as a result of the sewer contributions from The Trails at Corona Project. The City will need to assess fair share contributions from The Trails development as well as timing for construction of these deficient pipelines needed to support development of The Trails project.

The City of Corona 2005 Sewer Master Plan estimates that the area of Coronita that contains The Trails of Corona project will produce an ADWF of approximately 0.2766 cfs, or a PDWF of approximately 0.5978 cfs. The estimated PDWF for the same area according to this preliminary report is 0.9503 cfs, which is 1.6 times the original estimate. This is likely due to the fact that the Trails at Corona project was not considered at the time of the 2005 City of Corona Sewer Master Plan. The estimated PDWF for The Trails at Corona project alone is 0.3182 cfs. Wastewater Treatment Plant 1 currently has a treatment capacity of 11.5 MGD, and a future treatment capacity of 14.5 MGD with improvements. Wastewater Treatment Plant 1 will be able to accommodate the anticipated sewer flows from the project. The proposed Trails at Corona onsite sewer facilities presented in this report are preliminary estimates of the anticipated sewer facilities necessary to service the project needs. All of the sewer facilities will be designed to the City of Corona Department of Water and Power latest Design Policy and Standards.

Appendix

A
REFERENCES

City of Corona Sewer Master Plan, AKM Consulting Engineers, September 2005.

City of Corona Department of Water and Power Design Policy, November 2012.

Appendix

B

THE TRAILS AT CORONA TENTATIVE TRACT MAPS

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37504
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

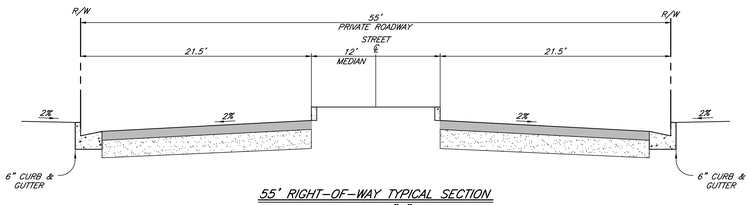
	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT.	FT.
1	2,574	2,574	31	82
2	2,542	2,542	31	82
3	2,542	2,542	31	82
4	2,542	2,542	31	82
5	2,542	2,542	31	82
6	2,542	2,542	31	82
7	2,542	2,542	31	82
8	2,542	2,542	31	82
9	2,542	2,542	31	82
10	2,542	2,542	31	82
11	2,542	2,542	31	82
12	2,542	2,542	31	82
13	2,542	2,542	31	82
14	3,274	3,274	38	82
15	3,268	3,268	39	82
16	2,542	2,542	31	82
17	2,542	2,542	31	82
18	2,542	2,542	31	82
19	2,542	2,542	31	82
20	2,542	2,542	31	82
21	2,542	2,542	31	82
22	2,578	2,578	31	82
23	2,769	2,769	31	85
24	3,067	3,067	31	103
25	2,592	2,592	31	82
26	2,879	2,879	31	83
27	2,542	2,542	31	82
28	2,542	2,542	31	82
29	2,553	2,553	31	82
30	2,575	2,575	31	82
31	2,586	2,586	31	82
32	2,570	2,570	31	82
33	2,542	2,542	31	82
34	2,542	2,542	31	82
35	2,542	2,542	31	82
36	2,542	2,542	31	82
37	2,542	2,542	31	82
38	2,562	2,562	31	82
39	2,522	2,522	31	82
40	2,542	2,542	31	82
41	2,550	2,550	31	82
42	2,566	2,566	31	83
43	2,582	2,582	31	83
44	2,598	2,598	31	44
45	2,613	2,613	31	84
46	2,610	2,610	31	84
47	2,551	2,551	31	82
48	2,542	2,542	31	82
49	2,542	2,542	31	82
50	2,542	2,542	31	82
51	2,542	2,542	31	82
52	2,542	2,542	31	82
53	2,542	2,542	31	82
54	2,542	2,542	31	82
55	2,542	2,542	31	82
56	2,542	2,542	31	82
57	2,542	2,542	31	82
58	2,542	2,542	31	82
59	2,542	2,542	31	82
60	2,542	2,542	31	82
61	2,542	2,542	31	82
62	2,542	2,542	31	82
63	2,541	2,541	31	82
64	2,541	2,541	31	82
65	2,541	2,541	31	82
66	2,538	2,538	31	82
Σ=	170,821	170,821	2,061	5,405
AVG=	2,588	2,588	31	82
MAX=	3,274	3,274	39	103
MIN=	2,522	2,522	31	44

LETTERED LOTS:

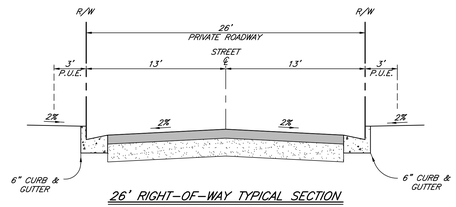
THE TRAILS PA 1 - LETTERED LOTS				
LOT	AREA (SF)	AREA (Acre)	LAND USE	MAINTAINED BY
A	73,942	1.70	OPEN SPACE/TRAIL	H.O.A
B	8,555	0.20	WQMP	H.O.A
C	50,898	1.17	OPEN SPACE/TRAIL	H.O.A
D	182,598	4.19	OPEN SPACE/TRAIL	H.O.A
E	25,329	0.58	OPEN SPACE/TRAIL	H.O.A
F	28,840	0.66	OPEN SPACE/TRAIL	H.O.A
G	17,890	0.41	OPEN SPACE/TRAIL	H.O.A
H	50,103	1.15	PRIVATE STREETS A & B	H.O.A
I	6,953	0.16	PRIVATE ENTRY	H.O.A
TOTAL	445,108	10.22		

STREET LOTS:

THE TRAILS - PA 1 STREET			
	STREET AREA		CL
STREET	SF	AC	FT
A	50,103	1.15	1,663
B			
C	6,953	0.16	203
TOTAL	57,056	1.31	1,866



55' RIGHT-OF-WAY TYPICAL SECTION
STREET "C"
NOT TO SCALE



26' RIGHT-OF-WAY TYPICAL SECTION
STREET "A" & "B"
NOT TO SCALE

LEGEND:

- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (A) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1200 = EXISTING CONTOUR ELEVATION
- 1200 = PROPOSED SURFACE ELEVATION
- 1,378.3 = PROPOSED PAD ELEVATION
- ELEV. = ELEVATION
- FG = FINISH GRADE
- FL = FLOWLINE
- FS = FINISHED SURFACE
- D.G. = DECOMPOSED GRANITE
- L= = LENGTH
- W= = WIDTH
- MIN. = MINIMUM
- PL = PROPERTY LINE
- R/W = RIGHT OF WAY
- GB = GRADE BREAK
- TC = TOP OF CURB
- 45 = LOT NUMBER
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE

GENERAL NOTES

1. PREPARED: OCTOBER 2021
2. SITE ACREAGE:... 14.03 ACRES GROSS
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN

ADJACENT LAND USE:

NORTH: COMMERCIAL
EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID G5

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SBCC, "P474," AND "CNPP." NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PER THAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

LEGAL DESCRIPTION

PARCEL 1:
LOTS "A" OF TRACT NO. 2585, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 47, PAGES 10 THROUGH 14, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THAT PORTION OF LOT "A" CONVEYED TO JOHN R JAHN AND DOROTHY J. JAHN, HUSBAND AND WIFE, AS JOINT TENANTS, BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781, OFFICIAL RECORDS.

ALSO EXCEPT THE PORTION OF SAID LOT "A" OF TRACT NO. 2585, DESCRIBED AS FOLLOWS:

COMMENCING AT THE MOST SOUTHERLY CORNER OF SAID LOT "A";
THENCE NORTHEASTERLY, ALONG THE EASTERLY LINE OF SAID LOT "A", ON A CURVE, CONCAVE, TO THE SOUTHEAST, HAVING A RADIUS OF 344.00 FEET, THROUGH AN ANGLE OF 09° 51' 00", AN ARC LENGTH OF 93.52 FEET (THE INITAL RADIAL LINE BEARS NORTH 37° 10' 20" WEST);
THENCE NORTH 62° 40' 40" EAST, ALONG THE EASTERLY LINE OF SAID LOT "A", 66.89 FEET;
THENCE CONTINUING NORTH 62° 40' 40" EAST, ALONG THE EASTERLY LINE OF SAID LOT "A", 64.29 FEET TO THE BEGINNING OF A CURVE, CONCAVE TO THE NORTHWEST, HAVING A RADIUS OF 456.00 FEET; THENCE NORTHEASTERLY ALONG SAID CURVE, THROUGH AN ANGLE OF 17° 11' 20", AN ARC LENGTH OF
136.80 FEET TO THE MOST EASTERLY CORNER OF LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS;

THENCE NORTH 56° 39' 00" WEST, ALONG THE NORTHEASTERLY LINE OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS, 140.00 FEET TO THE TRUE POINT OF BEGINNING;
THENCE NORTH 40° 39' 00" WEST, 155.00 FEET, MORE OR LESS, TO A POINT THAT BEARS NORTH 82° 39' 00" EAST; FROM THE MOST NORTHERLY CORNER OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE SOUTH 82° 39' 00" WEST, 65.00 FEET, MORE OR LESS TO THE MOST NORTHERLY CORNER OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS; THENCE SOUTH 56° 39' 00" EAST, ALONG THE NORTHEASTERLY LINE OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS TO THE TRUE POINT OF BEGINNING.

ALSO EXCEPT THEREFROM ALL OIL, GAS, MINERALS, AND OTHER HYDROCARBON SUBSTANCES IN AND UNDER SAID LANDS.

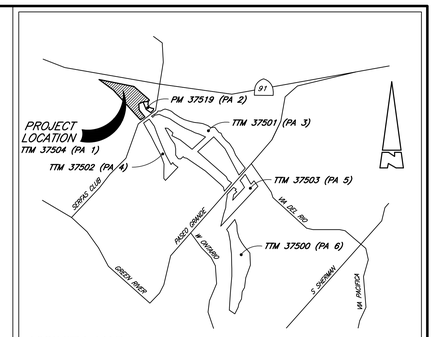
A.P.N. 102-050-006
T.3S, R7W, SECTION 27

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES

GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
PM 37519 (PA 2)	276	14,213	13,937 (FILL)
TTM 37500 (PA 6)	142,030	89,951	52,079 (CUT)
TOTAL	400,827	360,188	40,639 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.



VICINITY MAP
NOT TO SCALE

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

ASSESSOR'S PARCEL NUMBERS:

102-050-006 (PORTION OF)

PROJECT DENSITY:

TOTAL LOT: 66
TOTAL GROSS ACREAGE: 14.03 ACRES
DENSITY = 66 / 14.03 = 4.70 DU/AC

PRELIMINARY EARTHWORK:

RAW CUT: 19,037 C.Y.
RAW FILL: 109,526 C.Y.
NET: 90,489 C.Y.

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A "△". NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□".

2 AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

3 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

5A AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2585, RECORDED MAY 28, 1963 WITH FILING NUMBER 55546 IN RIVERSIDE COUNTY: **TO BE QUITCLAIMED.**

11 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 13, 1963 IN BOOK 3486 OFFICIAL RECORDS, PAGE 481 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED/ABANDONED.**

22 AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 2, 1971 AS INSTRUMENT NO. 72744 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **QUITCLAIM?**

26 EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192432, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE, BLANKET IN NATURE. **TO BE QUITCLAIMED.**

30A EMINENT DOMAIN FEE ACQUISITION BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

30B PERMANENT WALL FOOTING EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY: **TO REMAIN.**

30C TEMPORARY CONSTRUCTION EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	66
TOTAL NUMBER OF REQUIRED PARKING *	165
NUMBER OF ONE CAR GARAGES	0
NUMBER OF TWO OR THREE CAR GARAGES	66
NUMBER OF ONE CAR DRIVEWAY PARKING	0
NUMBER OF TWO CAR DRIVEWAY PARKING	0
NUMBER OF ON STREET PARALLEL PARKING	0
NUMBER OF ONSITE PARKING STALLS	62
TOTAL NUMBER OF PARKING PROVIDED	194

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF WORK CHANGED ON THIS MAP
10/28/21
BY: HC
DATE OF THIS PLOT
10/28/21

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37504
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE


PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

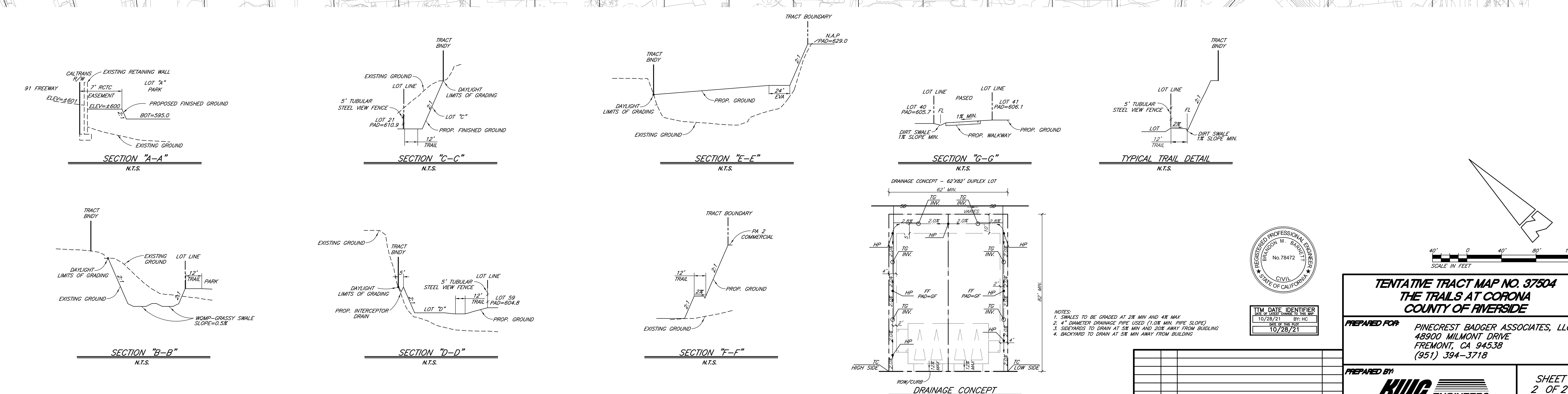
PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100, CORONA, CA. 92881-3370 951-734-2130

SHEET 1 OF 2 SHEETS

JOB NO. 15.1511 P:\15\1511\PREMAPS\TENTVAR\1511_PA 01 TTM 01.dwg 11/3/21 10:21 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37504
IN THE COUNTY OF RIVERSIDE





TENTATIVE TRACT MAP NO. 37504
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

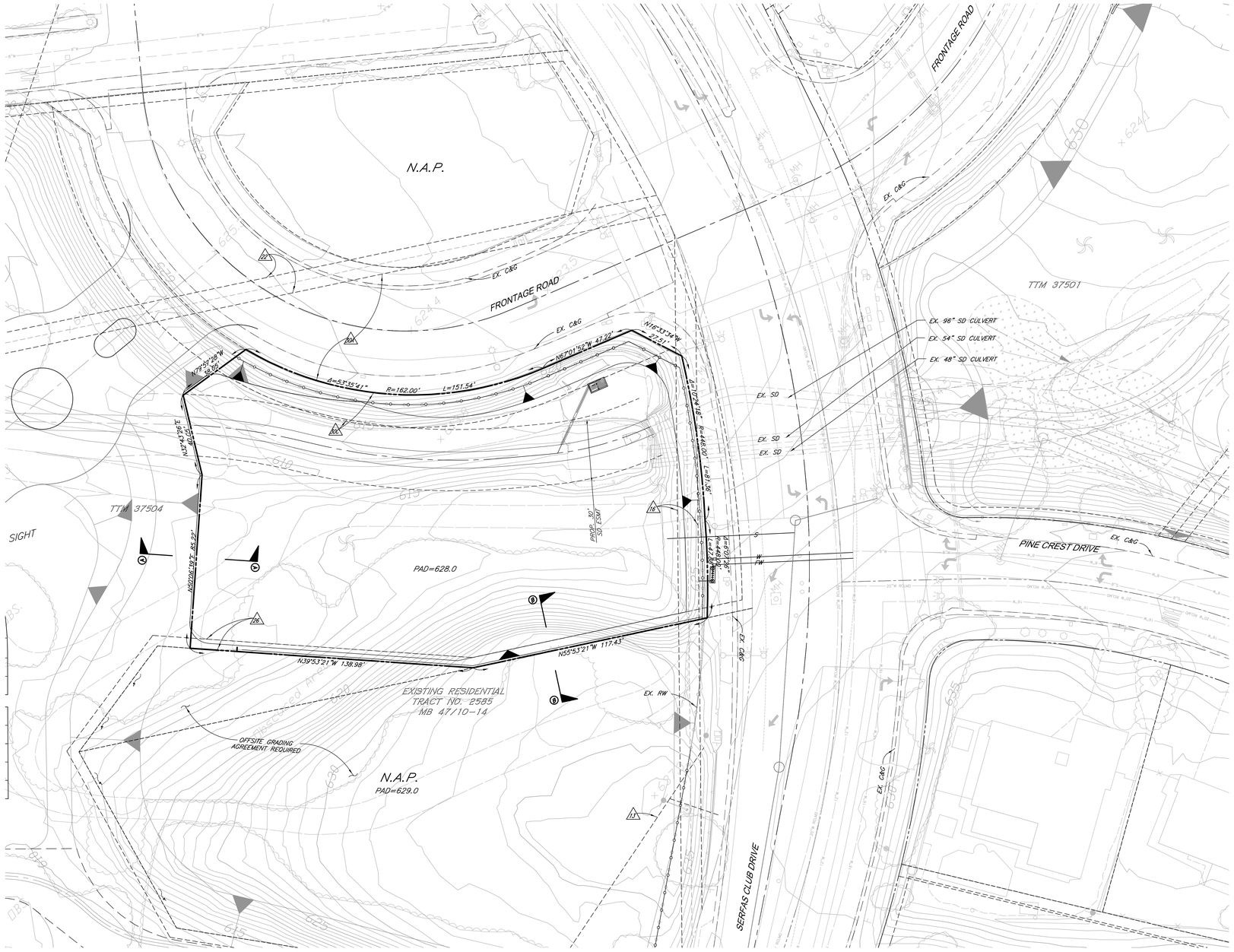
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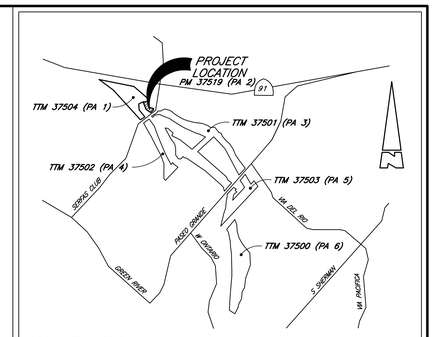
PREPARED BY: KWC ENGINEERS

SHEET 2 OF 2 SHEETS

Date	By	REVISIONS	App'd

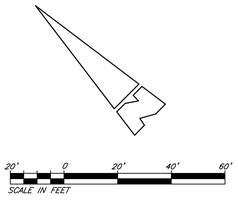
THE TRAILS AT CORONA
PARCEL MAP NO. 37519
IN THE COUNTY OF RIVERSIDE





VICINITY MAP

NOT TO SCALE



GENERAL NOTES

1. PREPARED: OCTOBER 2021
2. SITE ACREAGE:.....0.78 ACRES GROSS, 0.78 ACRES NET
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS PARCEL MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN

ADJACENT LAND USE:

NORTH: COMMERCIAL
WEST: MDR MEDIUM DENSITY RESIDENTIAL
EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, COMMERCIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID G5

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SBCC, "P474," AND "CVHP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN, PER THAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

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EXCEPT THAT PORTION OF LOT "A" CONVEYED TO JOHN R JAHN AND DOROTHY J. JAHN, HUSBAND AND WIFE, AS JOINT TENANTS, BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781, OFFICIAL RECORDS.

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THENCE NORTH 62° 40' 40" EAST, ALONG THE EASTERLY LINE OF SAID LOT "A", 66.89 FEET;
THENCE CONTINUING NORTH 62° 40' 40" EAST, ALONG THE EASTERLY LINE OF SAID LOT "A", 64.29 FEET TO THE BEGINNING OF A CURVE, CONCAVE TO THE NORTHWEST, HAVING A RADIUS OF 456.00 FEET; THENCE NORTHEASTERLY ALONG SAID CURVE, THROUGH AN ANGLE OF 17° 11' 20", AN ARC LENGTH OF
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THENCE NORTH 40° 39' 00" WEST, 155.00 FEET, MORE OR LESS, TO A POINT THAT BEARS NORTH 82° 39' 00" EAST; FROM THE MOST NORTHERLY CORNER OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE SOUTH 82° 39' 00" WEST, 65.00 FEET, MORE OR LESS TO THE MOST NORTHERLY CORNER OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS; THENCE SOUTH 56° 39' 00" EAST, ALONG THE NORTHEASTERLY LINE OF SAID LAND CONVEYED BY DEED RECORDED JUNE 18, 1965 AS INSTRUMENT NO. 70781 OF OFFICIAL RECORDS TO THE TRUE POINT OF BEGINNING.

ALSO EXCEPT THEREFROM ALL OIL, GAS, MINERALS, AND OTHER HYDROCARBON SUBSTANCES IN AND UNDER SAID LANDS.

A.P.N. 102-050-006
T3S, R7W, SECTION 27

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

ASSESSOR'S PARCEL NUMBERS:

102-050-006 (PORTION OF)

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A "△". NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□".

[J] AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **QUITCLAIM?**

[J] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **QUITCLAIM?**

[22] AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 2, 1971 AS INSTRUMENT NO. 72744 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **QUITCLAIM?**

[28] EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

[16] AN EASEMENT IN FAVOR OF THE SOUTHERN CALIFORNIA EDISON COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED MAY 15, 1964 AS INSTRUMENT NO. 60291 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

[30A] EMINENT DOMAIN FEE ACQUISITION BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

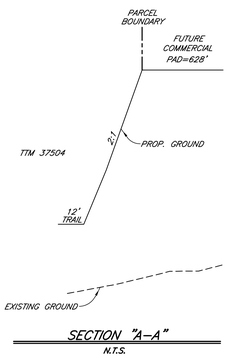
[30A] TEMPORARY CONSTRUCTION EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

ESTIMATED EARTHWORK QUANTITIES:

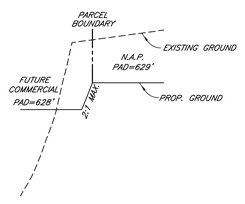
ON-SITE EARTHWORK QUANTITIES

GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
PM 37519 (PA 2)	276	14,213	13,937 (FILL)
TTM 37500 (PA 6)	142,030	89,951	52,079 (CUT)
TOTAL	400,827	360,188	40,639 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.



SECTION "A-A"
N.T.S.



SECTION "B-B"
N.T.S.

LEGEND:

	EASEMENT LINE	AC	ACRES
	EXIST. EASEMENT LINE	C.Y.	CUBIC YARD
[A]	PROPOSED EASEMENT (SEE EASEMENT NOTES)	INV	INVERT
	RETAINING WALL	PIP	PROTECT IN PLACE
	SLOPE		
12"S	EX. SEWER		
12"W	EX. WATER		
TV	EX. TV CONDUIT		
OH	EX. OVERHEAD POWER LINE		
	BUILDING SETBACK LINE		

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No. 78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF LATEST CHANGE TO THIS MAP
10/28/21 BY: HC
DATE OF THIS PLOT
10/28/21

Date	By	REVISIONS	App'd

PARCEL MAP NO. 37519
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

SHEET 1 OF 1 SHEETS

JOB NO. 13.1511.1 P:\13\1511\PREMAPS\TENTMAP\1511 PM 02 TTM 01.dwg 10/22/21 11:48 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37501
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT	FT
1	3,545	3,545	40	89
2	3,928	3,928	45	87
3	3,437	3,437	40	87
4	4,056	3,685	48	84
5	5,547	5,547	70	80
6	2,971	2,971	40	74
7	3,522	3,137	49	73
8	5,224	5,224	70	75
9	5,601	5,601	70	80
10	3,451	3,451	42	82
11	4,297	4,297	55	83
12	6,809	6,809	72	90
13	5,367	5,367	56	94
14	5,373	5,373	56	95
15	3,747	3,747	40	93
16	4,639	4,639	50	92
17	6,959	6,959	82	90
18	6,300	6,300	73	85
19	3,552	3,552	42	84
20	4,364	4,364	53	83
21	5,783	5,783	74	78
22	3,066	3,066	41	73
23	3,599	3,251	50	72
24	2,891	2,891	40	72
25	3,440	3,440	45	75
26	5,221	4,781	53	99
27	5,204	4,784	53	100
28	5,415	5,055	54	100
29	3,400	3,400	49	70
30	3,515	3,058	49	71
31	2,963	2,963	49	78
32	3,878	3,447	50	71
33	5,976	5,363	74	80
34	6,198	5,689	74	83
35	6,067	5,670	75	80
36	3,089	3,089	42	74
37	3,637	3,287	50	72
38	3,020	3,020	42	73
39	3,722	3,344	49	75
40	3,118	3,118	40	78
41	3,736	3,386	48	77
42	3,049	3,049	40	76
43	3,867	3,401	49	77
44	4,956	4,493	63	75
45	4,486	4,173	64	70
46	4,170	3,508	66	64
47	3,779	3,779	65	58
48	4,826	4,826	50	96
49	5,450	4,582	57	95
50	7,202	6,488	76	94
51	6,884	6,247	74	92
52	6,679	6,048	76	88
53	4,413	3,865	51	86
54	3,492	3,492	41	86
55	6,400	6,056	76	86
56	6,196	5,643	75	82
57	3,980	3,434	51	86
58	3,223	3,223	42	76
59	6,343	5,924	76	82
60	6,174	5,638	74	83
61	3,988	3,514	49	80
62	3,165	3,165	40	79
63	3,798	3,396	48	78
64	3,060	3,060	40	76
65	3,743	3,354	48	77
66	3,228	3,228	40	80
67	4,006	3,607	48	82
68	3,384	3,223	40	86
69	4,491	3,560	50	87
70	4,516	4,078	60	80
71	7,917	7,917	76	117
72	5,798	5,114	53	110
73	5,675	5,113	58	98
74	5,454	4,881	53	93
75	5,520	4,957	58	95
76	6,008	5,390	58	105
77	6,139	5,572	53	118
78	6,615	5,972	52	108
79	6,130	5,562	50	123
80	5,501	5,024	50	110
81	4,695	4,695	48	99
82	3,860	3,860	42	91
83	6,195	6,195	74	85
84	6,139	5,832	77	82
85	3,897	3,509	50	76
86	3,178	3,178	41	76
87	3,490	3,490	45	77
88	3,271	3,271	40	82
89	3,974	3,974	45	88
90	3,696	3,696	40	92
91	4,146	4,146	45	92
92	3,564	3,564	40	89
93	5,888	5,888	70	85
94	4,145	3,752	48	85
95	3,679	3,679	40	91
96	4,330	4,330	45	94
97	4,012	4,012	42	93
98	3,845	3,845	65	58
99	5,835	5,221	57	112
100	5,813	5,072	55	104
101	5,696	4,798	51	110
102	6,124	5,105	53	114
103	6,292	5,186	53	116
104	6,379	5,112	54	117
105	6,518	5,192	53	118
106	6,585	5,167	55	119
107	6,177	4,748	53	116
108	6,504	5,001	57	112
109	7,318	5,297	72	106
110	6,881	6,225	65	111
111	5,615	5,177	52	108
112	5,341	4,941	52	103
113	5,203	4,826	52	100
114	5,180	4,830	52	100
115	5,141	4,832	50	101
116	5,653	5,023	54	103
117	5,416	4,831	51	104
118	5,184	4,560	49	104
119	5,291	4,611	50	105
120	5,308	4,630	50	105
121	5,723	4,974	55	102
122	5,639	4,948	55	101
123	5,201	4,550	50	104
124	5,306	4,639	50	105
125	5,293	4,624	50	104
126	5,465	4,847	55	96
127	5,208	4,683	55	93
128	5,568	5,060	59	94
129	6,058	5,459	63	97
130	6,103	5,376	58	108
131	6,917	6,164	60	112
132	5,811	5,114	52	112
133	4,208	4,208	69	60
134	4,455	3,727	72	61
135	4,375	3,723	71	61
136	4,468	3,777	72	62
137	4,243	3,628	66	63
138	4,198	3,583	66	63
139	4,436	3,811	71	62
140	4,597	3,772	72	68
141	5,898	5,248	71	85
142	4,440	3,835	41	91
143	2,788	2,788	33	88
144	3,209	3,209	40	80
145	2,430	2,430	30	80
146	3,460	3,460	41	84
147	2,749	2,749	30	88
148	4,963	4,963	52	96
149	4,680	4,680	46	99
150	4,557	4,557	45	99
151	5,398	4,848	55	98
152	5,400	4,750	50	108
153	5,885	5,122	50	115
154	5,513	4,709	50	104
155	5,295	4,533	56	97
156	5,269	4,544	51	103
157	3,571	2,809	45	92
158	3,902	3,482	40	97
159	3,104	3,104	30	102
160	4,676	3,908	63	91
161	8,474	7,517	72	140
162	6,868	6,641	78	102
163	4,501	4,501	45	100
164	4,658	4,658	49	108
165	7,103	5,506	64	115
TOTAL AREA=	800,853	735,897	8,919	7,060
AVG=	4,854	4,460	54	85
MAX=	8,474	7,917	82	123
MIN=	2,430	2,430	30	58

LETTERED LOTS:

THE TRAILS PA 3 - LETTERED LOTS				
LOT	AREA (SF)	AREA (AC)	LAND USE	MAINTAINED BY
A	21,777	0.50	WQMP	H.O.A
B	125,694	2.89	DETENTION BASIN	COUNTY
C	62,188	1.43	OPEN SPACE/TRAIL	H.O.A
D	129,990	2.98	OPEN SPACE/TRAIL	H.O.A
E	12,569	0.29	OPEN SPACE/TRAIL	H.O.A
F	19,462	0.45	OPEN SPACE/TRAIL	H.O.A
G	38,401	0.88	OPEN SPACE/TRAIL	H.O.A
H	43,698	1.00	OPEN SPACE/TRAIL	H.O.A
I	50,188	1.15	OPEN SPACE/TRAIL	H.O.A
J	27,356	0.63	OPEN SPACE/PARK	H.O.A
K	21,235	0.49	OPEN SPACE/PARK	H.O.A
L	80,773	1.85	OPEN SPACE/TRAIL	H.O.A
M	34,066	0.78	OPEN SPACE/TRAIL	H.O.A
N	11,285	0.26	OPEN SPACE/TRAIL	H.O.A
O	79,071	1.82	OPEN SPACE/TRAIL	H.O.A
P	156,674	3.60	REC. CENTER	H.O.A
Q	231,789	5.32	PRIVATE STREETS	H.O.A
R	6,577	0.15	PRIVATE ENTRY	H.O.A
S	4,591	0.11	PRIVATE ENTRY	H.O.A
TOTAL	1,157,384	26.57		

STREET LOTS:

THE TRAIL PA 3 - STREET			
	STREET AREAS		CL
STREET	SF	AC	FT
A	121,446	2.79	2,944
B	34,751	0.80	876
C	3,936	0.09	171
D	82,825	1.90	2,047
TOTAL	242,957	5.58	6,038

GENERAL NOTES

1. PREPARED: OCTOBER 2021
2. SITE ACREAGE:..... 44.96 ACRES GROSS, 44.84 ACRES NET
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 060065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN.
14. THIS PLANNING AREA IS AN AGE RESTRICTED COMMUNITY.

ADJACENT LAND USE:

WEST: MDR MEDIUM DENSITY RESIDENTIAL
EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID H5 H6, AND G5

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS: "SBCC, "P474", AND "CNPP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PERTHAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

LEGAL DESCRIPTION

PARCEL 1:
LOTS "B", AND "D," OF TRACT NO. 2585, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 42, PAGES 10 THROUGH 14, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY;

EXCEPT THAT PORTION OF LOT "B" OF SAID TRACT NO. 2585, DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHEAST CORNER OF SAID LOT "B"; THENCE SOUTH 15° 31' 50" WEST, ALONG THE EASTERLY LINE OF SAID LOTS "B" AND "J" OF SAID TRACT, A DISTANCE OF 239.17 FEET TO AN ANGLE POINT IN SAID EASTERLY LINE OF SAID LOT "B"; THENCE NORTH 76° 19' 50" WEST, A DISTANCE OF 223.66 FEET, TO AN ANGLE POINT ON THE WESTERLY LINE OF SAID LOT "J";

ALSO EXCEPT THAT PORTION LYING WITHIN THE LAND DESCRIBED IN THE QUITCLAIM DEED TO ROBERT PEASE, A MARRIED MAN, RECORDED APRIL 12, 1972 AS INSTRUMENT NO. 47406, OFFICIAL RECORDS.

ALSO EXCEPT THEREFROM ALL OIL, GAS, MINERALS, AND OTHER HYDROCARBON SUBSTANCES IN AND UNDER SAID LANDS.

APN: 102-050-003 AND 102-112-008
T3S, R7W, SECTION 27

PARCEL 3:
LOT C OF TRACT 2585 AS SHOWN BY MAP ON FILE IN GOOK 47, PAGES 10 TO 14
INCLUSIVE, TOGETHER WITH LOT "E," OF TRACT NO. 2385, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 44, PAGES 59 THROUGH 61, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY;

EXCEPT ALL OIL, GAS, MINERALS AND OTHER HYDROCARBONS SUBSTANCES IN AND UNDER SAID LANDS.

SAID DESCRIPTION IS PURSUANT TO CERTIFICATE OF PARCEL MERGER NO. 990 RECORDED JANUARY 8, 1997 AS INSTRUMENT NO. 5854 OFFICIAL RECORDS.

APNS: 102-050-004 AND 102-160-003
T3S, R7W, SECTION 33

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	165
TOTAL NUMBER OF REQUIRED PARKING *	413
NUMBER OF ONE CAR GARAGES	5
NUMBER OF TWO OR THREE CAR GARAGES	160
NUMBER OF ONE CAR DRIVEWAY PARKING	165
NUMBER OF TWO CAR DRIVEWAY PARKING	0
NUMBER OF ON STREET PARALLEL PARKING	148
NUMBER OF ONSITE PARKING STALLS	8
TOTAL NUMBER OF PARKING PROVIDED	486

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

ASSESSOR'S PARCEL NUMBERS:

102-050-003 102-050-004
102-160-003
102-112-008

PROJECT DENSITY:

TOTAL LOT: 225
TOTAL GROSS ACREAGE: 44.96 ACRES
DENSITY = 225 / 44.96 = 5.00 DU/AC
PA 3 - AGE RESTRICTED COMMUNITY

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 2308125D, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A "△": NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□"

[2] AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[3] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[4] A RIGHT OF WAY AND EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR THE RIGHT TO CONSTRUCT, MAINTAIN, OPERATE, INSPECT, REPAIR, REPLACE AND REMOVE ONE LINE POLES, LINES, CABLES, AND CIRCUITS FOR ANY PURPOSES, RECORDED OCTOBER 21, 1955 IN BOOK 1810 OF OFFICIAL RECORDS, PAGE 365 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED AND THE FACILITY IS TO BE ABANDONED.**

[5] AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2385, RECORDED JULY 31, 1962 WITH FILING NUMBER 71787 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[5A] AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2585, RECORDED MAY 28, 1963 WITH FILING NUMBER 55546 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[6] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 7, 1962 IN BOOK 3217 OF OFFICIAL RECORDS, PAGE 161 OF RIVERSIDE COUNTY. TO BE QUITCLAIMED/RELOCATED.

[7] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 21, 1962 AS INSTRUMENT NO. 88666 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[8] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED OCTOBER 19, 1962 IN BOOK 3243 OFFICIAL RECORDS, PAGE 177 OF RIVERSIDE COUNTY. **TO REMAIN.**

[10] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 AS INSTRUMENT NO. 73238 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[11] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 AS INSTRUMENT NO. 73246 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[12] A RIGHT OF WAY EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 13, 1963 IN BOOK 3486 OFFICIAL RECORDS, PAGE 53 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[14] AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED NOVEMBER 26, 1963 IN BOOK 3542 OFFICIAL RECORDS, PAGE 573 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED/ABANDONED.**

[26] EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

[30C] TEMPORARY CONSTRUCTION EASEMENT BY RIVERSIDE COUNTY TRANSPORTATION COMMISSION FOR FREEWAY CONSTRUCTION AND EXPANSION PURPOSES, RECORDED NOVEMBER 25, 2013 AS INSTRUMENT NO. 2013-0554592 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

UTILITY CONTACTS

WATER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

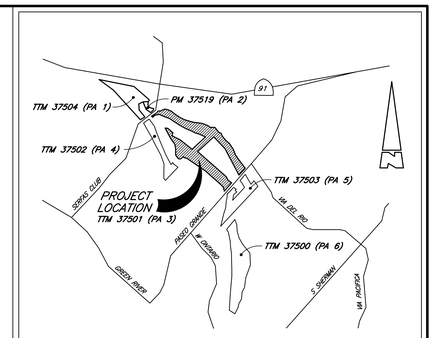
SEWER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

POWER: SOUTHERN CALIFORNIA EDISON CO.
1351 E. FRANCIS
ONTARIO, CA. 91761
(800) 930-8591

GAS: SOUTHERN CALIFORNIA GAS CO.
P.O. BOX 3003
REDLANDS, CA. 92373
(800) 427-2200

PHONE: AT&T
1265 N. VAN BUREN ST., #180
ANAHEIM, CA 92807
(714) 666-5423

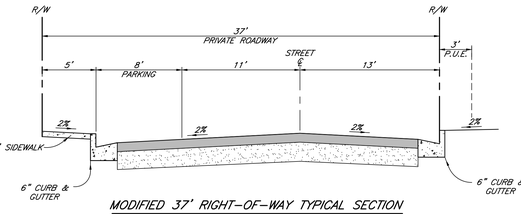
CABLE TV: TIME WARNER CABLE
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
(909) 975-3396



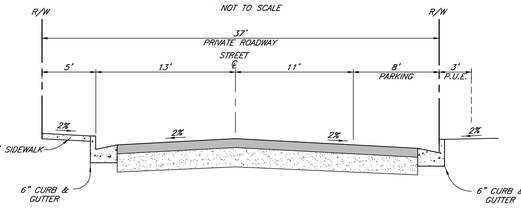
VICINITY MAP
NOT TO SCALE

LEGEND:

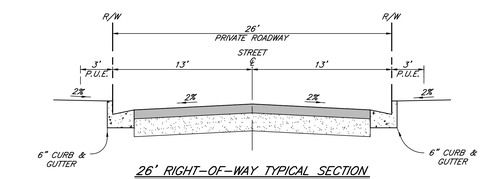
- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (A) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1200 = EXISTING CONTOUR ELEVATION
- 1200 = PROPOSED SURFACE ELEVATION
- 1,378.3 = PROPOSED PAD ELEVATION
- ELEV. = ELEVATION
- FG = FINISH GRADE
- FL = FLOWLINE
- FS = FINISHED SURFACE
- D.G. = DECOMPOSED GRANITE
- L= = LENGTH
- W= = WIDTH
- MIN. = MINIMUM
- PL = PROPERTY LINE
- R/W = RIGHT OF WAY
- GB = GRADE BREAK
- TC = TOP OF CURB
- 45 = LOT NUMBER
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE



MODIFIED 37' RIGHT-OF-WAY TYPICAL SECTION
STREET "A" AND "D"
NOT TO SCALE



MODIFIED 37' RIGHT-OF-WAY TYPICAL SECTION
STREET "B"
NOT TO SCALE



26' RIGHT-OF-WAY TYPICAL SECTION
STREET "C"
NOT TO SCALE

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES

GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
PM 37519 (PA 2)	276	14,213	13,937 (FILL)
TTM 37500 (PA 6)	142,030	89,951	52,079 (CUT)
TOTAL	400,827	360,188	40,639 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF LATEST CHANGE TO THE MAP: 10/28/21 BY: HC
DATE OF THIS PLOT: 10/28/21

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37501
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

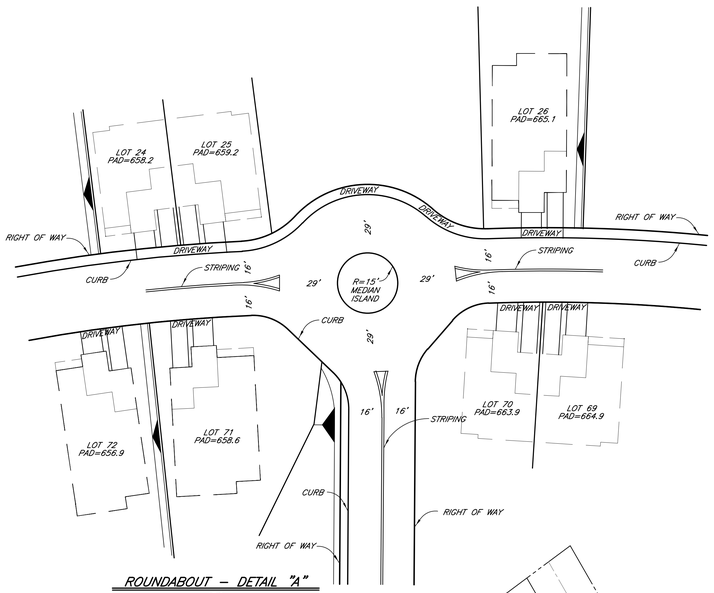
PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

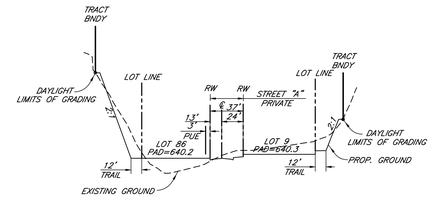
SHEET 1 OF 3 SHEETS

JOB NO. 15.1311.1 R:\15\1311\PRELIM MAPS\EXH\PA3\1311 PA 03 TTM 01.dwg 11/4/21 8:45 AM

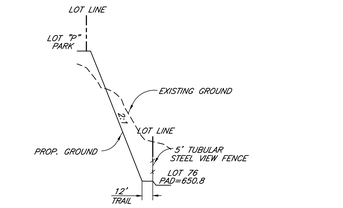
THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37501
IN THE COUNTY OF RIVERSIDE



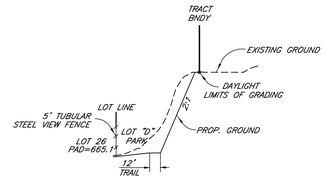
ROUNDABOUT – DETAIL "A"
N.T.S.



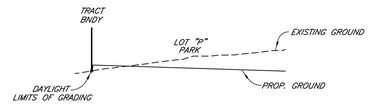
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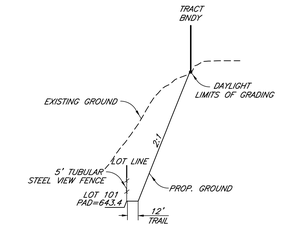
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SECTION "C–C"
N.T.S.

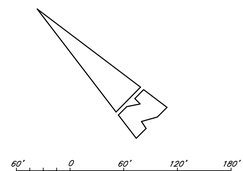


SECTION "D–D"
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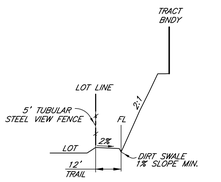


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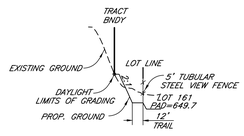
SEE SHEET 3



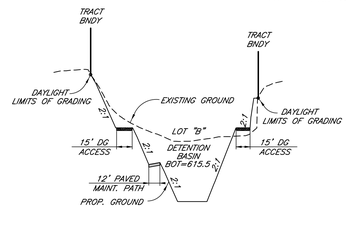
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SCALE IN FEET



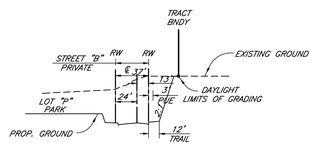
TYPICAL TRAIL DETAIL
N.T.S.



SECTION "F–F"
N.T.S.



SECTION "G–G"
N.T.S.



SECTION "H–H"
N.T.S.

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER DATE OF TTM SUBMITTAL TO THE RWQCB
10/28/21 BY: HC
DATE OF THIS PLOT
10/28/21

TENTATIVE TRACT MAP NO. 37501
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394–3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881–3370 951–734–2130

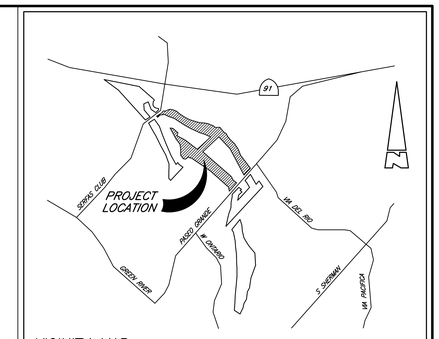
Date	By	REVISIONS	App'd

SHEET 2 OF 3 SHEETS

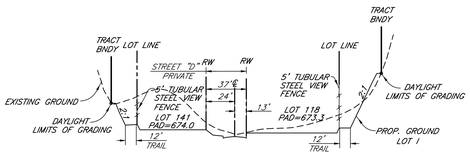
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THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37501
IN THE COUNTY OF RIVERSIDE

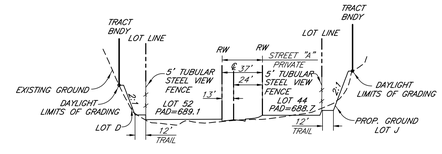




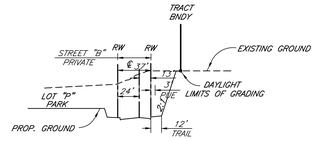
VICINITY MAP
NOT TO SCALE



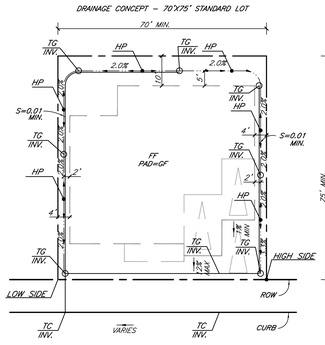
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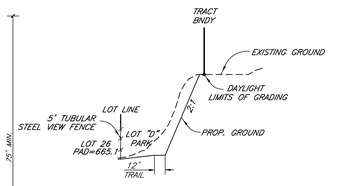
SECTION "J–J"
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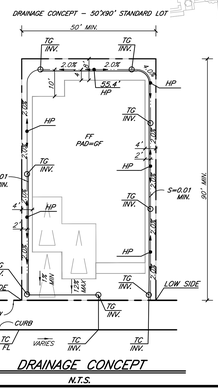
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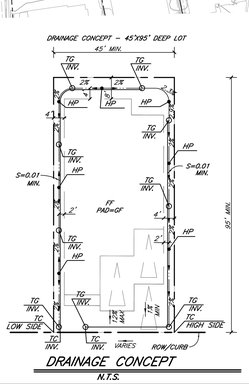
DRAINAGE CONCEPT
N.T.S.



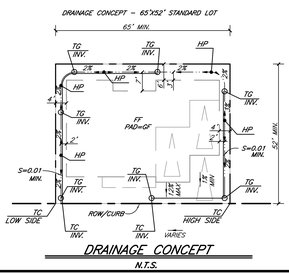
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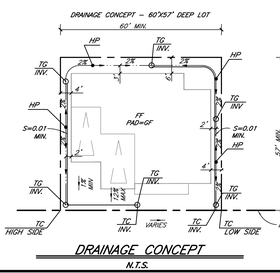
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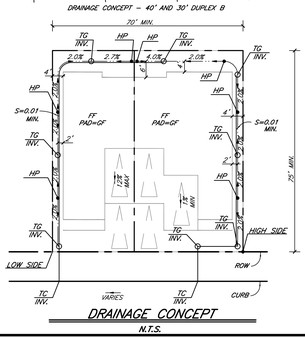
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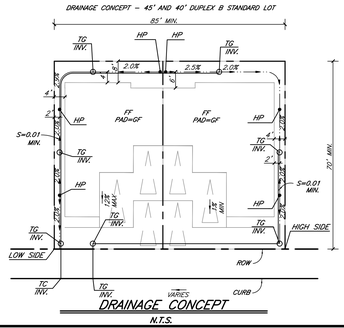
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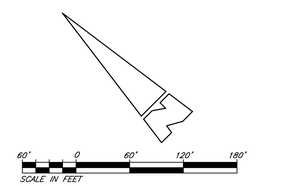
DRAINAGE CONCEPT
N.T.S.



DRAINAGE CONCEPT
N.T.S.



DRAINAGE CONCEPT
N.T.S.



REGISTERED PROFESSIONAL ENGINEER
BRADDON M. BARRETT
No. 78472
CIVIL
STATE OF CALIFORNIA

TIM DATE IDENTIFIER DATE OF LATEST CHANGE TO TMS MAP
10/28/21 BY: HC
DATE OF THIS PLOT
10/28/21

NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX.
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEYARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUILDING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37501
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 104, CORONA, CA 92881-3310 951-734-2130

SHEET 3 OF 3 SHEETS

JOB NO. 15-1511 P:\15\1511\PRELIM MAPS\TENTMAP1511 PA 03 TTM 03.dwg 11/4/21 8:11 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37502
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT	FT
1	5,097	4,273	60	84
2	5,566	4,891	60	89
3	5,973	4,982	63	96
4	6,581	4,902	63	102
5	6,606	4,731	65	100
6	6,449	4,339	70	91
7	5,547	3,728	70	79
8	5,339	3,648	75	72
9	5,181	3,653	72	72
10	5,302	3,571	70	75
11	5,835	3,499	72	80
12	5,359	3,647	67	79
13	6,083	3,880	73	72
14	7,018	4,931	71	100
15	7,107	6,208	70	100
16	4,259	4,259	48	70
17	3,722	3,722	62	57
18	6,166	4,708	63	94
19	3,738	3,738	55	94
20	5,335	5,335	84	75
21	5,637	4,276	66	85
22	5,790	3,631	66	87
23	5,852	3,620	65	90
24	5,954	3,895	64	92
25	11,795	7,355	121	93
26	5,962	5,560	58	110
27	4,944	4,417	75	65
28	10,114	6,354	92	129
29	6,280	4,212	69	82
30	4,942	3,677	61	81
31	4,938	3,634	67	74
32	5,034	3,752	74	70
33	5,942	4,145	79	77
34	5,813	3,778	75	76
35	5,224	3,596	72	75
36	5,032	3,958	73	69
37	6,465	5,124	91	71
38	6,094	4,073	77	79
39	6,580	3,907	75	88
40	6,403	3,990	67	93
41	6,089	3,791	66	91
42	5,512	4,230	61	83
43	4,700	4,350	70	70
44	4,108	3,912	70	59
45	3,968	3,789	64	60
46	4,367	4,367	66	65
47	4,120	4,120	60	68
Σ=	269,922	202,156	3,277	3,863
AVG=	5,743	4,301	70	82
MAX=	11,795	7,355	121	129
MIN=	3,722	3,499	48	57

LETTERED LOTS:

THE TRAILS PA 4 - LETTERED LOTS				
LOT	AREA (SF)	AREA (AC)	LAND USE	MAINTAINED BY
A	9,209	0.21	PARK/WQMP	H.O.A
B	20,435	0.47	PARK/OPEN SPACE	H.O.A
C	29,555	0.68	PARK/OPEN SPACE/H.O.A. SLOPES	H.O.A
D	6,556	0.15	OPEN SPACE	H.O.A
E	859	0.02	OPEN SPACE	H.O.A
F	12,338	0.28	OPEN SPACE	H.O.A
G	430	0.01	H.O.A. SLOPES	H.O.A
H	16,679	0.38	H.O.A. SLOPES	H.O.A
I	75,673	1.74	PRIVATE STREETS	H.O.A
J	5,964	0.14	PRIVATE ENTRY	H.O.A
TOTAL	177,697	4.08		

STREET LOTS:

	STREET AREA		CL
STREET	SF	AC	FT
A	58,408	1.34	1637
B	22,354	0.51	648
Total	80,762	1.85	2285

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES			
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TOTAL	400,827	360,188	40,639 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.

ADJACENT LAND USE:

WEST: MDR MEDIUM DENSITY RESIDENTIAL
EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID H5, H6, AND G5

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SBCC, 7*474", AND "CVPP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PER THAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

UTILITY CONTACTS

WATER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

SEWER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

POWER: SOUTHERN CALIFORNIA EDISON CO.
1351 E. FRANCIS
ONTARIO, CA. 91761
(800) 930-8591

GAS: SOUTHERN CALIFORNIA GAS CO.
P.O. BOX 3003
REDLANDS, CA. 92373
(800) 427-2200

PHONE: AT&T
1265 N. VAN BUREN ST., #180
ANAHEIM, CA 92807
(714) 666-5423

CABLE TV: TIME WARNER CABLE
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
(909) 975-3396

LEGAL DESCRIPTION:

LOT "E" OF TRACT NO. 2585, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 47, PAGES 10 THROUGH 14, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE COUNTY.

EXCEPT FROM SAID LOT "E" OF SAID TRACT NO. 2585, THAT PORTION DESCRIBED AS FOLLOWS:
BEGINNING AT THE MOST EASTERLY CORNER OF LOT 155 OF SAID TRACT NO. 2585; THENCE SOUTHEASTERLY, ALONG THE NORTHEASTERLY LINE OF SAID LOT "E" ON A CURVE, CONCAVE TO THE NORTHEAST, HAVING A RADIUS OF 530.00 FEET, THROUGH AN ANGLE OF 10° 48' 40", AN ARC LENGTH OF 100.00 FEET; THE INITIAL RADIAL LINE BEARS SOUTH 41° 43' 20" WEST; THENCE SOUTH 30° 54' 40" WEST, A DISTANCE OF 115.00 FEET; THENCE NORTH 57° 13' 25" WEST, A DISTANCE OF 132.47 FEET TO THE MOST SOUTHERLY CORNER OF SAID LOT 155; THENCE NORTH 41° 43' 20" EAST, ALONG THE SOUTHEASTERLY LINE OF SAID LOT 155, A DISTANCE OF 122.59 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPT THAT PORTION LYING WITHIN THE LAND DESCRIBED IN THE QUITCLAIM DEED TO ROBERT PEASE, A MARRIED MAN, RECORDED APRIL 12, 1972 AS INSTRUMENT NO. 47406, OFFICIAL RECORDS.

A.P.N. 102-050-008, 102-113-015
T3S, R7W, SECTION 33

GENERAL NOTES

1. PREPARED: OCTOBER 2021
2. SITE ACREAGE:.....10.26 ACRES GROSS, 10.17 ACRES NET
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN
14. THIS PLANNING AREA IS AN AGE RESTRICTED COMMUNITY.

ASSESSOR'S PARCEL NUMBERS:

102-050-008
102-113-015

PROJECT DENSITY:

TOTAL LOT: 47
TOTAL GROSS ACREAGE: 10.26 ACRES
DENSITY = 47 / 10.26 = 4.58 DU/AC
PA 4 - AGE RESTRICTED COMMUNITY

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE. 227
CORONA DE MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.
PLOTTABLE EASEMENTS ARE INDICATED BY A "△". NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□"

[2] AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[J] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

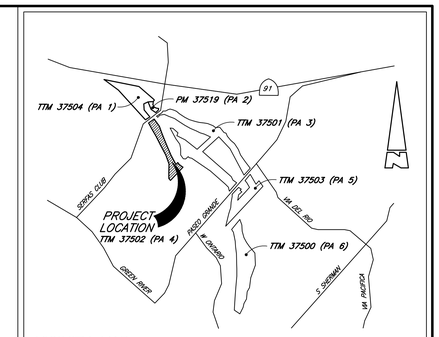
[5A] AN EASEMENT FOR PUBLIC UTILITIES AS SHOWN WITHIN TRACT MAP 2585, RECORDED MAY 28, 1963 WITH FILING NUMBER 55546 IN RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

[10] A RIGHT OF WAY EASEMENT IN FAVOR OF THE CALIFORNIA ELECTRIC POWER COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 12, 1963 AS INSTRUMENT NO. 73238 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED/RELOCATED.**

[28] EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

LEGEND:

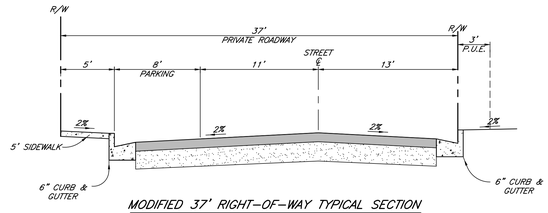
- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (A) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1200 = EXISTING CONTOUR ELEVATION
- 1200 = PROPOSED SURFACE ELEVATION
- 1378.3 = PROPOSED PAD ELEVATION
- ELEV. = ELEVATION
- FG = FINISH GRADE
- FL = FLOWLINE
- FS = FINISHED SURFACE
- D.G. = DECOMPOSED GRANITE
- L= = LENGTH
- W= = WIDTH
- MIN. = MINIMUM
- PL = PROPERTY LINE
- R/W = RIGHT OF WAY
- GB = GRADE BREAK
- TC = TOP OF CURB
- 45 = LOT NUMBER
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE



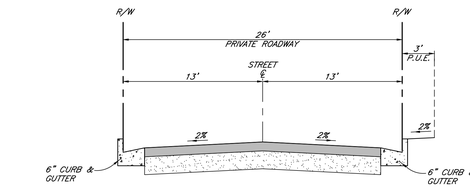
VICINITY MAP
NOT TO SCALE

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	47
TOTAL NUMBER OF REQUIRED PARKING *	118
NUMBER OF ONE CAR GARAGES	0
NUMBER OF TWO OR THREE CAR GARAGES	47
NUMBER OF ZERO CAR DRIVEWAY PARKING	13
NUMBER OF ONE CAR DRIVEWAY PARKING	34
NUMBER OF ON STREET PARAILLEL PARKING	38
NUMBER OF ONSITE PARKING STALLS	0
TOTAL NUMBER OF PARKING PROVIDED	166

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT



MODIFIED 37' RIGHT-OF-WAY TYPICAL SECTION
STREET "A" & "B"
NOT TO SCALE



26' RIGHT-OF-WAY TYPICAL SECTION
STREET "B"
NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DAY OF 2021 TENTATIVE TRACT MAP
10/28/21 BY: HC
DAY OF 20XX FINAL MAP
10/28/21

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37502
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

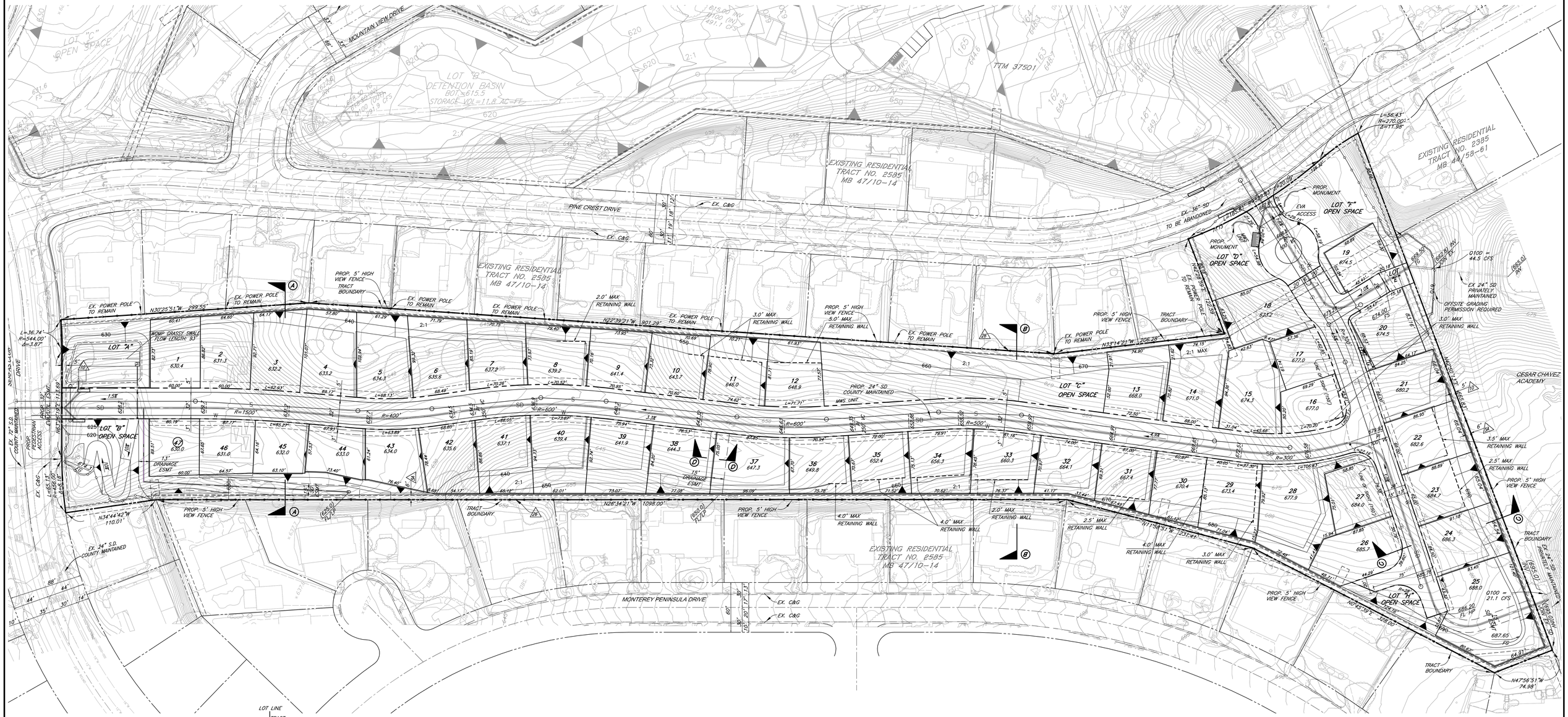
PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

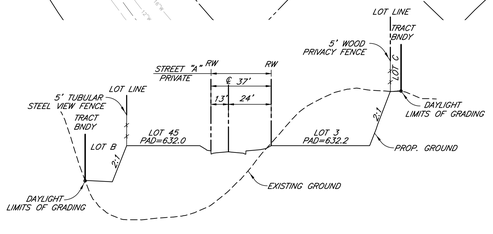
PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

SHEET 1 OF 2 SHEETS

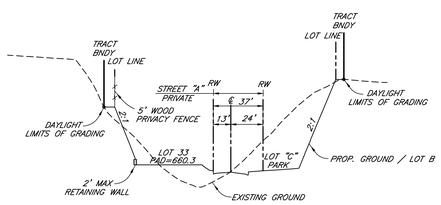
JOB NO. 15.1511.1 R:\15\1511\PRELIM MAPS\TENTPA41511 PA 04 TTM 01.dwg 11/29/21 9:36 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37502
IN THE COUNTY OF RIVERSIDE

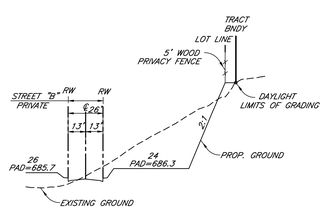




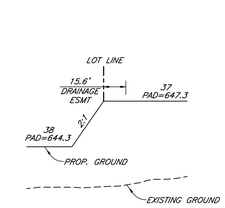
SECTION "A–A"
N.T.S.



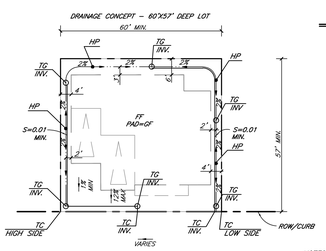
SECTION "B–B"
N.T.S.



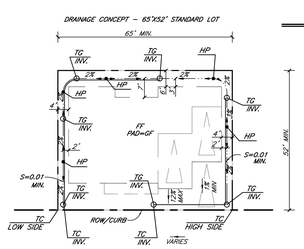
SECTION "C–C"
N.T.S.



SECTION "D–D"
N.T.S.

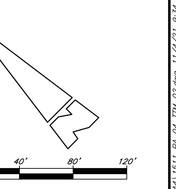


TYPICAL LOT DRAINAGE
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.

NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX.
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEYARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUILDING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING



REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BANNOT
No. 78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER (LAST DIGIT OF YEAR, MONTH, DAY TTM WAS SIGNED)
10/28/21 BY: HC
DATE OF THIS PLOT
10/28/21

TENTATIVE TRACT MAP NO. 37502
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR:
PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100, CORONA, CA. 92881-3310 951-734-2130

SHEET 2 OF 2 SHEETS

Date	By	REVISIONS	App'd

JOB NO. 13.1311 P:\13\1311\PRELIM\MAPS\TENTMAP1311 Pg 2a TTM 02.dwg 11/4/21 8:34 AM

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37503
IN THE COUNTY OF RIVERSIDE

NUMBERED LOTS:

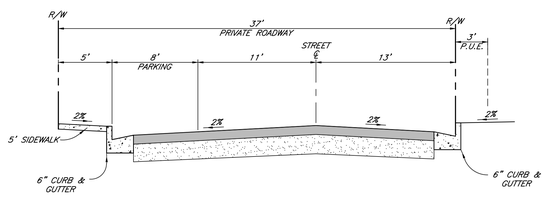
	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT	FT
1	5,850	5,141	78	83
2	5,335	4,780	76	73
3	4,619	3,728	76	63
4	4,851	3,890	84	62
5	4,818	3,989	78	62
6	4,364	3,869	68	60
7	4,621	3,648	76	60
8	4,313	4,002	66	63
9	4,180	3,881	65	63
10	3,878	3,878	60	64
11	11,573	6,917	117	110
12	8,220	5,421	54	148
13	7,563	5,923	45	176
14	5,023	5,023	58	97
15	7,733	5,343	65	105
16	7,538	4,712	68	73
17	7,309	4,436	72	100
18	7,833	4,712	70	111
19	5,371	4,822	88	65
20	6,137	5,511	87	94
21	6,536	5,212	83	75
22	4,632	4,188	60	77
23	4,601	4,287	60	77
24	4,797	4,239	63	76
25	4,926	4,108	65	75
26	4,700	3,600	65	72
27	4,768	3,597	71	67
28	4,564	4,115	71	64
29	8,115	5,206	67	116
30	5,596	5,315	45	126
31	7,536	7,238	47	168
Σ=	181,900	144,729	2,148	2,725
AVG=	5,868	4,669	69	88
MAX=	11,573	7,238	117	176
MIN=	3,878	3,597	45	60

LETTERED LOTS:

THE TRAILS PAS - LETTERED LOTS			
LOT	AREA (SF)	AREA (Acre)	LAND USE
A	21,782	0.50	WQMP
B	78,135	1.79	DETENTION BASIN/H.O.A. SLOPE/ PARK
C	38,797	0.89	OPEN SPACE/SLOPE/TRAILS
D	8,386	0.19	OPEN SPACE/SLOPE/TRAILS
E	30,368	0.70	OPEN SPACE/SLOPE/TRAILS
F	28,768	0.66	OPEN SPACE/SLOPE/TRAILS
G	477	0.01	SLOPE
H	67,406	1.55	PRIVATE STREETS
I	5,911	0.14	PRIVATE ENTRY
TOTAL	280,029	6.43	

STREET LOTS:

	Street Area		CL
Street	sqft	acre	Ft.
A	33,392	0.77	899
B	39,924	0.92	897
Total	73,316	1.68	1,796



37' RIGHT-OF-WAY TYPICAL SECTION

NOT TO SCALE

STREET "A", "B"

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY; REPORT NO. 23061250, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A "△". NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□"

2 AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

3 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 782 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

4D AN EASEMENT IN FAVOR OF R. A. WATT COMPANY, INC. FOR DRAINAGE FACILITIES AND INCIDENTAL PURPOSES, RECORDED APRIL 2, 1969 AS INSTRUMENT NO. 32422 AND AS INSTRUMENT NO. 32423 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

4E EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 192437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

LEGAL DESCRIPTION:

THAT PORTION OF LOT 3 OF TRINIDAD YORBA TRACT, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 2, PAGE 22 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE COUNTY.

EXCEPT THAT PORTION OF SAID LAND CONVEYED TO KENNETH E. GRIFFIN, A MARRIED MAN AND JOHN R. GRIFFIN, A MARRIED MAN, BY DEED RECORDED JUNE 20, 1963 AS INSTRUMENT NO. 64373, OFFICIAL RECORDS.

ALSO EXCEPT THE FOLLOWING DESCRIBED PARCEL:

BEGINNING AT A POINT ON THE SOUTHEASTERLY LINE OF PASEO GRANDE, 66.00 FEET IN WIDTH, AS CONVEYED TO THE COUNTY OF RIVERSIDE, BY DEED RECORDED JANUARY 15, 1962 IN BOOK 3057, PAGE 574 OF OFFICIAL RECORDS, WHICH BEARS SOUTH 42° 02' 10" WEST, ALONG THE SOUTHEASTERLY LINE OF SAID PASEO GRANDE, A DISTANCE OF 397.90 FEET FROM THE SOUTHERLY LINE OF YORBA HEIGHTS, UNIT NO. 1, AS SHOWN BY MAP ON FILE IN BOOK 22, PAGE 5 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE SOUTH 40° 19' 20" EAST, A DISTANCE OF 82.73 FEET;
THENCE SOUTH 35° 57' 50" EAST, A DISTANCE OF 142.00 FEET;
THENCE SOUTH 29° 57' 50" EAST, A DISTANCE OF 151.00 FEET;
THENCE SOUTH 47° 02' 10" WEST, A DISTANCE OF 151.00 FEET;
THENCE SOUTH 43° 12' 10" WEST, A DISTANCE OF 287.00 FEET;
THENCE NORTH 65° 27' 50" WEST, A DISTANCE OF 22.00 FEET;
THENCE NORTH 08° 37' 50" WEST, A DISTANCE OF 125.91 FEET;
THENCE NORTH 43° 12' 10" EAST, A DISTANCE OF 141.74 FEET;
THENCE NORTH 44° 57' 50" WEST, A DISTANCE OF 130.50 FEET;
THENCE NORTH 42° 02' 10" EAST, A DISTANCE OF 45.00 FEET;
THENCE NORTH 47° 57' 50" WEST, A DISTANCE OF 100.00 FEET TO THE SOUTHEASTERLY LINE OF SAID PASEO GRANDE;
THENCE NORTH 42° 02' 10" EAST, ALONG THE SOUTHEASTERLY LINE OF SAID PASEO GRANDE, A DISTANCE OF 258.07 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPT THAT PORTION OF SAID LAND CONVEYED TO REED SPRINKLE, A MARRIED MAN, BY DEED RECORDED JUNE 14, 1965 AS INSTRUMENT NO. 68567, OFFICIAL RECORDS.

A.P.N. 102-192-017, 102-203-007
T3S, R7W, SECTION 33

GENERAL NOTES

1. PREPARED: OCTOBER 2021
2. SITE ACREAGE:.....10.60 ACRES GROSS, 9.26 ACRES NET
3. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE
4. ALL STREETS HEREON SHALL BE: PRIVATE
5. THIS TRACT MAP ONLY INCLUDES A PORTION OF THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
6. THIS PROJECT IS WITHIN THE CORONA-NORCO UNIFIED SCHOOL DISTRICT.
7. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0688G AND 06065C1351G.
8. THIS PROJECT IS SUBJECT TO VERY LOW LIQUEFACTION POTENTIAL. THE PROJECT SITE IS NOT LOCATED WITHIN ANY SPECIAL STUDIES ZONE OR SUBJECT TO OTHER GEOLOGIC HAZARD.
9. THIS PROJECT IS LOCATED WITHIN THE TRAILS SPECIFIC PLAN.
10. THE FINAL DESIGN OF THIS PROJECT WILL CONSIDER AND COMPLY WITH RIVERSIDE COUNTY WQMP.
11. NO STRUCTURES ARE TO BE LOCATED WITHIN ANY EASEMENTS
12. THERE ARE NO KNOWN EXISTING WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THIS TENTATIVE TRACT MAP BOUNDARY.
13. ALL SLOPE ARE 2:1 UNLESS NOTED ON PLAN
14. THIS PLANNING AREA IS AN AGE RESTRICTED COMMUNITY.

LEGEND:

- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (A) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1200 = EXISTING CONTOUR ELEVATION
- 1200 = PROPOSED SURFACE ELEVATION
- 1378.3 = PROPOSED PAD ELEVATION
- ELEV. = ELEVATION
- FG = FINISH GRADE
- FL = FLOWLINE
- FS = FINISHED SURFACE
- D.G. = DECOMPOSED GRANITE
- L= = LENGTH
- W= = WIDTH
- MIN. = MINIMUM
- PL = PROPERTY LINE
- R/W = RIGHT OF WAY
- GB = GRADE BREAK
- TC = TOP OF CURB
- 45 = LOT NUMBER
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE

ADJACENT LAND USE:

WEST: MDR MEDIUM DENSITY RESIDENTIAL

EAST AND SOUTH: MEDIUM DENSITY RESIDENTIAL

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORTHERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SBCC, "P474.1" AND "CHPP" HADJ83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PERTHAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

THOMAS BROS. MAP:

2012 RIVERSIDE COUNTY
PAGE 742, GRID H6 AND J6

EXISTING / PROPOSED ZONING:

EXISTING: R-1, SINGLE FAMILY DWELLING

PROPOSED: SP, MEDIUM DENSITY RESIDENTIAL

EXISTING / PROPOSED LAND USE:

EXISTING: OPEN SPACE RECREATION

PROPOSED: TRAILS SPECIFIC PLAN

UTILITY CONTACTS

WATER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

SEWER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

POWER: SOUTHERN CALIFORNIA EDISON CO.
1351 E. FRANCIS
ONTARIO, CA. 91761
(800) 930-8591

GAS: SOUTHERN CALIFORNIA GAS CO.
P.O. BOX 3003
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PHONE: AT&T
1265 N. VAN BUREN ST., #180
ANAHEIM, CA 92807
(714) 666-5423

CABLE TV: TIME WARNER CABLE
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
(909) 975-3396

ASSESSOR'S PARCEL NUMBERS:

102-192-017
102-203-007

PROJECT DENSITY

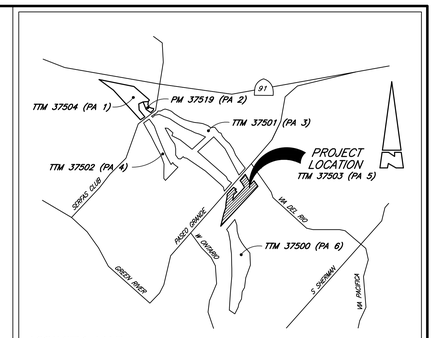
TOTAL LOT: 31
TOTAL GROSS ACREAGE: 10.60 ACRES
DENSITY = 31 / 10.60 = 2.92 DU/AC
PA 5 - AGE RESTRICTED COMMUNITY

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES

GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
PM 37519 (PA 2)	276	14,213	13,937 (FILL)
TTM 37500 (PA 6)	142,030	89,951	52,079 (CUT)
TOTAL	400,827	360,188	40,639 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.



VICINITY MAP

NOT TO SCALE

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE 227
CORONA DEL MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	31
TOTAL NUMBER OF REQUIRED PARKING *	78
NUMBER OF ONE CAR GARAGES	0
NUMBER OF TWO OR THREE CAR GARAGES	31
NUMBER OF ONE CAR DRIVEWAY PARKING	31
NUMBER OF TWO CAR DRIVEWAY PARKING	0
NUMBER OF ON STREET PARALLEL PARKING	41
NUMBER OF ONSITE PARKING STALLS	0
TOTAL NUMBER OF PARKING PROVIDED	134

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4805 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE of LATEST CHANGE to THE MAP
10/28/21 BY: HC
DATE OF THIS PLOT
10/28/21

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37503
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

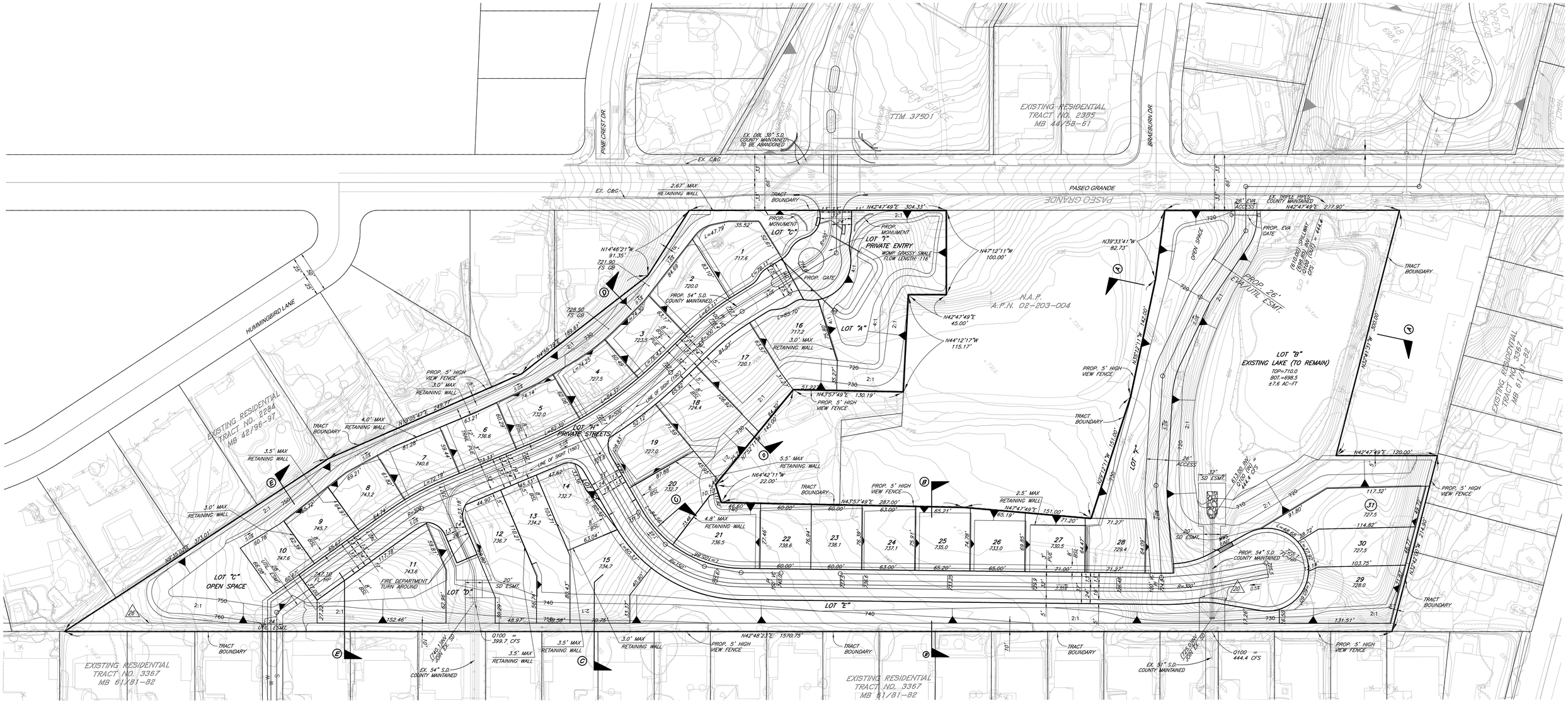
PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

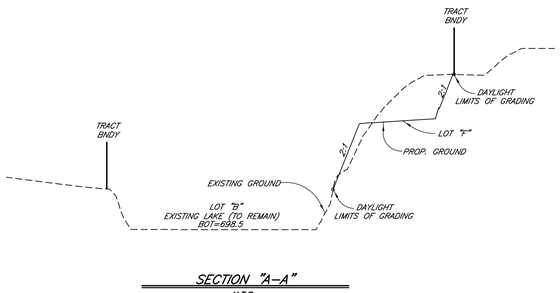
PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881-3370 951-734-2130

SHEET 1 OF 2 SHEETS

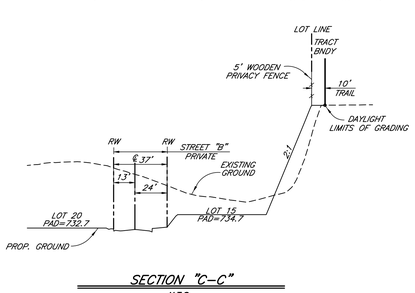
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THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37503
IN THE COUNTY OF RIVERSIDE

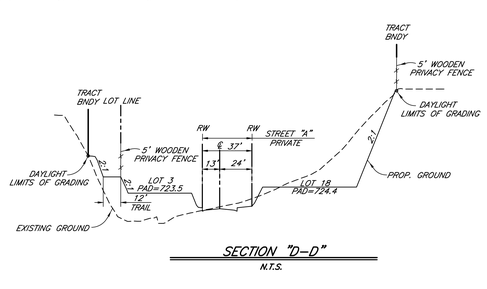




SECTION "A–A"
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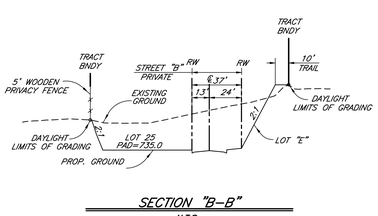


SECTION "C–C"
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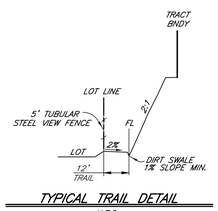


SECTION "D–D"
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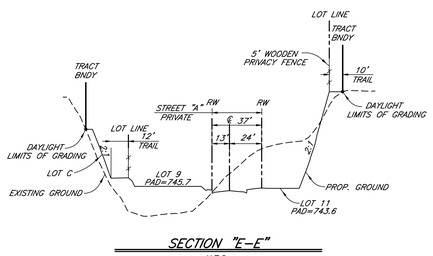
NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX.
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEYARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUILDING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING



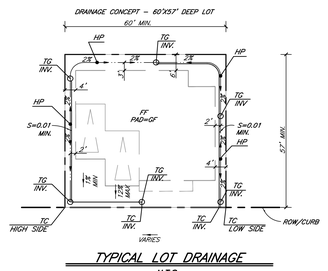
SECTION "B–B"
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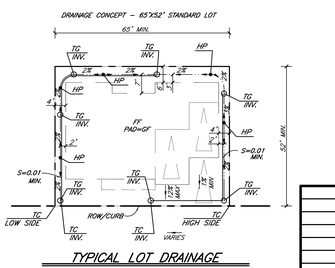
TYPICAL TRAIL DETAIL
N.T.S.



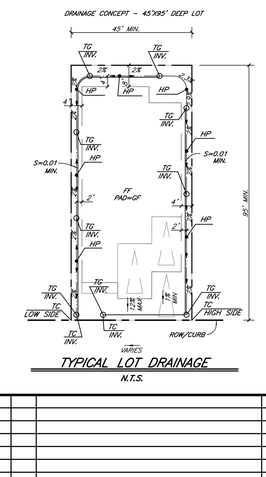
SECTION "E–E"
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.



TYPICAL LOT DRAINAGE
N.T.S.

REGISTERED PROFESSIONAL ENGINEER BRANNON M. BANNETT No.78472 CIVIL STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF MAJOR CHANGE TO TTM MAP
10/28/21 BY: BWP
DATE OF TTM FILE
10/28/21

40' 0 40' 80' 120'
SCALE IN FEET

TENTATIVE TRACT MAP NO. 37503
THE TRAILS AT CORONA
COUNTY OF RIVERSIDE

PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY: KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

Date	By	REVISIONS	App'd

SHEET 2 OF 2 SHEETS

JOB NO. 15131.1 R1 15131 PRELIMMAPS\TENTMAS\15131 PA 05 TTM 02.dwg 11/04/21 10:39 AM

DPR18-XXX

THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37500
IN THE CITY OF CORONA

NUMBERED LOTS:

	LOT AREA	USEABLE PAD AREA	LOT WIDTH	LOT DEPTH
LOT NO	SF	SF	FT	FT
1	7,962	6,793	79	100
2	8,389	7,010	81	103
3	9,165	7,787	86	106
4	8,645	7,418	82	104
5	8,100	6,917	79	102
6	8,147	7,023	79	102
7	8,143	6,954	79	102
8	76,774	75,671	79	101
9	8,027	6,829	79	100
10	7,934	6,631	79	100
11	7,877	6,417	79	100
12	7,936	6,725	79	103
13	8,218	6,990	79	105
14	8,344	7,178	79	104
15	8,266	7,093	79	104
16	8,338	5,876	103	98
17	10,292	7,829	123	81
18	9,851	7,437	158	75
19	11,631	10,130	167	72
20	11,454	9,040	75	116
21	9,990	6,425	90	122
22	11,109	11,109	75	99
23	6,481	5,277	78	110
24	8,846	7,492	78	121
25	9,603	8,270	78	116
26	9,105	7,879	79	109
27	8,648	7,336	90	113
28	9,557	8,215	82	127
29	10,357	8,729	79	142
30	11,274	10,620	80	115
31	8,966	7,061	82	120
32	9,711	9,711	110	160
33	12,895	10,648	89	118
34	10,767	8,991	78	119
35	9,315	6,159	77	118
36	10,656	10,656	66	110
37	7,686	7,686	66	110
38	7,236	7,236	67	108
39	7,263	7,263	86	107
40	9,095	6,286	88	129
41	10,924	9,143	66	130
42	8,513	6,703	67	130
43	8,725	7,034	65	131
44	8,376	6,064	86	135
45	11,095	11,095	66	115
46	8,642	8,642	70	130
47	9,029	9,029	114	138
48	13,669	10,625	82	136
49	10,934	9,039	65	138
50	8,925	5,851	56	140
51	10,799	10,799	70	105
52	7,726	7,726	85	110
53	9,318	7,523	66	130
54	10,734	8,732	85	129
55	11,505	11,505	74	113
56	8,232	8,232	73	113
Σ=	589,202	514,538	4,631	6,374
AVG=	10,521	9,188	83	114
MAX=	76,774	75,671	167	160
MIN=	6,481	5,277	56	72

LETTERED LOTS:

THE TRAILS PA 6 - LETTERED LOTS				
LOT	AREA (SF)	AREA (AC)	LAND USE	MAINTAINED BY
A	21,305	0.49	WQMP	H.O.A
B	14,996	0.34	WQMP	H.O.A
C	276,432	6.35	OPEN SPACE/TRAIL	H.O.A
D	1,871	0.04	OPEN SPACE	H.O.A
E	2,075	0.05	OPEN SPACE	H.O.A
F	2,535	0.06	OPEN SPACE	H.O.A
G	2,120	0.05	OPEN SPACE	H.O.A
H	76,774	1.76	OPEN SPACE/TRAIL	H.O.A
I	56,547	1.30	OPEN SPACE/TRAIL	H.O.A
J	99,349	2.28	PRIVATE STREETS	H.O.A
K	10,099	0.23	PRIVATE ENTRY	H.O.A
TOTAL	564,104	12.95		

STREET LOTS:

	STREET AREA		CL
STREET	SF	AC	FT
A	81,227	1.86	1,892
B	4,666	0.11	184
C	4,531	0.10	207
D	7,842	0.18	357
E	5,651	0.13	313
F	5,531	0.13	216
TOTAL	109,448	2.51	3,169

PROJECT TOTALS		
	SF	ACRES
TOTAL PROJECT AREA	1,084,778	24.90
TOTAL AREA DISTURBED	833,629	19.14
TOTAL AREA TO REMAIN NATURAL	251,149	5.76

ESTIMATED EARTHWORK QUANTITIES:

ON-SITE EARTHWORK QUANTITIES

GRADING SUMMARY - RAW EXCAVATION	CUT (C.Y.)	FILL (C.Y.)	NET (C.Y.)
TTM 37501 (PA 3)	158,534	83,444	75,090 (CUT)
TTM 37502 (PA 4)	37,997	34,575	3,422 (CUT)
TTM 37503 (PA 5)	42,953	28,479	14,474 (CUT)
TTM 37504 (PA 1)	19,037	109,526	90,489 (FILL)
PM 37519 (PA 2)	276	14,213	13,937 (FILL)
TTM 37500 (PA 6)	142,030	89,951	52,079 (CUT)
TOTAL	400,827	360,188	40,639 (CUT)

NOTES:
1) EARTHWORK VOLUMES ARE ESTIMATED BASED ON-SITE AND OFFSITE GRADING BOUNDARIES.
2) EARTHWORK VOLUMES ARE RAW VOLUMES AND DOES NOT INCLUDE SHRINKAGE AND SUBSIDENCE, OVEREXCAVATION, AND OTHER ADJUSTMENT FACTORS.
3) EARTHWORK VOLUMES BASED ON COMPARISON TO EXISTING TOPO DATED AUGUST 17, 2017.

EASEMENTS:

ITEMS SHOWN HEREON WERE PLOTTED FROM RECORD DATA BASED ON EXCEPTION DOCUMENTS FROM THE FIDELITY NATIONAL TITLE COMPANY, REPORT NO. 23061250, DATED MARCH 17, 2015.

PLOTTABLE EASEMENTS ARE INDICATED BY A "△"; NON-PLOTTABLE EASEMENTS ARE INDICATED BY A "□".

2 AN EASEMENT IN FAVOR OF THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY FOR THE RIGHT TO ERECT AND MAINTAIN THREE ANCHORS, RECORDED APRIL 21, 1910 IN BOOK 304 OF DEEDS, PAGE 133 OF RIVERSIDE COUNTY; **TO BE QUITCLAIMED.**

3 A RIGHT OF WAY EASEMENT IN FAVOR OF THE CORONITA MUTUAL WATER COMPANY FOR THE RIGHT TO EXCAVATE FOR AND LAY, CONSTRUCT, MAINTAIN, OPERATE, REPAIR, ALTER, REPLACE AND REMOVE PIPE LINES FOR THE CONVEYANCE OF WATER WITHIN LOT 3 OF THE TRINIDAD YORBA TRACT, RECORDED JULY 5, 1946 IN BOOK 762 OF OFFICIAL RECORDS, PAGE 208 OF RIVERSIDE COUNTY. **TO BE QUITCLAIMED.**

15 AN EASEMENT IN FAVOR OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT FOR DRAINAGE AND INCIDENTAL PURPOSES, RECORDED MAY 11, 1964 IN BOOK 3689 OFFICIAL RECORDS, PAGE 344 OF RIVERSIDE COUNTY; **TO REMAIN.**

17 AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 14, 1965 AS INSTRUMENT NO. 105591 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY; **TO REMAIN.**

18 AN EASEMENT IN FAVOR OF THE CITY OF CORONA FOR STORM DRAIN FACILITIES AND INCIDENTAL PURPOSES, RECORDED MAY 2, 1966 AS INSTRUMENT NO. 45735 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY. **TO REMAIN.**

19 A DEDICATION TO THE CITY OF CORONA ALL CONSTRUCTION AND DEVELOPMENT RIGHTS IN AND TO PARCEL 5, SUBJECT TO EXCEPTIONS AND RESERVATION TO K.A. WATT COMPANY AND ITS SUCCESSORS, OF ALL DEVELOPMENT AND CONSTRUCTION RIGHTS IN AND TO SAID PROPERTY FOR GOLF COURSE, COUNTY CLUB, OR OTHER RECREATIONAL PURPOSES, RECORDED AUGUST 7, 1968 AS INSTRUMENT NO. 76374 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY; BLANKET IN NATURE. **TO BE QUITCLAIMED.**

28 EASEMENT AGREEMENT BETWEEN WILLIAM K. HELLBERG AND SHARLENE M. HELLBERG AND MOUNTAIN VIEW COUNTRY CLUB, RECORDED MAY 10, 1994 AS INSTRUMENT NO. 182437, OF OFFICIAL RECORDS, FOR GOLF BALLS, INGRESS AND EGRESS, CONSTRUCTION OF A NET OR FENCE. BLANKET IN NATURE. **TO BE QUITCLAIMED.**

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, CCS83, ZONE 6, BASED LOCALLY ON CONTROL STATIONS "SRCC, "P474" AND "CVPP" NAD83 (NSRS2011) EPOCH 2010.00 AS SHOWN HEREON. ALL BEARINGS SHOWN ON THIS MAP ARE GRID. QUOTED BEARINGS AND DISTANCES FROM REFERENCE MAPS OR DEEDS AS SHOWN PER THAT RECORD REFERENCE. ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS SPECIFIED OTHERWISE. GRID DISTANCES MAY BE OBTAINED BY MULTIPLYING THE GROUND DISTANCE BY A COMBINATION FACTOR OF 0.99996571. CALCULATIONS ARE MADE AT A SITE CONTROL POINT WITH COORDINATED OF: N: 2262450.709 (GRID), E: 6149982.277 (GRID), USING AN ELEVATION OF 777.76 (NAVD 88).

BENCHMARK:

CITY OF CORONA DESIGNATION: C-122

A 2-1/2" BRASS DISK STAMPED "C-122" SET IN THE TOP OF CURB, LOCATED 5' NORMERLY OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF ONTARIO AVENUE AND PASEO GRANDE.

ELEVATION (FEET): 772.22 (NGVD29)

PROPERTY OWNERSHIP INFORMATION:

APNS: 103-020-007, 103-020-008, 103-020-009, 103-020-010, & 103-020-011.

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

LEGAL DESCRIPTION:

THAT PORTION OF LOTS 1 AND 2 OF THE TRINIDAD YORBA TRACT, IN THE CITY OF CORONA, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 2, PAGE 22 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE COUNTY.

UTILITY CONTACTS

WATER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

SEWER: CITY OF CORONA DEPARTMENT OF WATER AND POWER
755 CORPORATION YARD WAY
CORONA, CA. 92880
(951) 736-2321

POWER: SOUTHERN CALIFORNIA EDISON CO.
1351 E. FRANCIS
ONTARIO, CA. 91761
(800) 930-8591

GAS: SOUTHERN CALIFORNIA GAS CO.
P.O. BOX 3003
REDLANDS, CA. 92373
(800) 427-2200

PHONE: AT&T
1265 N. VAN BUREN ST., #180
ANAHEIM, CA 92807
(714) 666-5423

CABLE TV: TIME WARNER CABLE
1500 AUTO CENTER DRIVE
ONTARIO, CA 91761
(909) 975-3396

PARKING SUMMARY TABLE	
NUMBER OF DWELLING UNITS	56
TOTAL NUMBER OF REQUIRED PARKING *	140
NUMBER OF ONE CAR GARAGES	0
NUMBER OF TWO OR THREE CAR GARAGES	56
NUMBER OF ONE CAR DRIVEWAY PARKING	0
NUMBER OF TWO CAR DRIVEWAY PARKING	56
NUMBER OF ON STREET PARALLEL PARKING	35
NUMBER OF ONSITE PARKING STALLS	0
TOTAL NUMBER OF PARKING PROVIDED	203

*PARKING REQUIREMENTS DETERMINED TO BE 2.5 PARKING REQUIRED PER DWELLING UNIT PER RIVERSIDE COUNTY ORDINANCE 348.4885 SECTION 18.12 OFF STREET VEHICLE PARKING ARTICLE XVII PROVISIONS SUBHEADING: RESIDENTIAL USES SUBHEADING: PLANNED RESIDENTIAL DEVELOPMENT

ENGINEER:

KWC ENGINEERS
1880 COMPTON AVENUE
CORONA, CA. 92881-3370
(951) 734-2130
CONTACT: BRANDON M. BARNETT, P.E.

DEVELOPER:

OXBOW PARTNERS
2855 PACIFIC COAST HIGHWAY, STE 227
CORONA DEL MAR, CA 92625
(714) 904-5948
CONTACT: THOMAS GRABIEL

OWNER:

PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718
CONTACT: DIANNE O'BRIEN

GENERAL NOTES:

1. PREPARED: OCTOBER 2021

2. TOTAL PROJECT GROSS ACREAGE IS 24.90 ACRES.

3. ACREAGE SUMMARY

ITEM	ACREAGE	PERCENT
A. LOT GROSS AREA (1-56 LOTS)	13.53	54.3%
B. DRAINAGE (WQMP/DEBRIS/DETENTION)	0.83	3.3%
C. STREETS (ROW-ROW)	2.44	9.8%
D. H.O.A. MAINTAINED SLOPES/OPEN	2.33	9.4%
E. OPEN SPACE (NATURAL)	5.77	23.2%
TOTAL	24.90	100.0%

4. PROPOSED NO. OF DWELLING UNITS: 56 LOTS.

5. PROPOSED PROJECT DENSITY: 2.25 DU/AC.

6. EXISTING GENERAL PLAN DESIGNATION: LOW DENSITY RESIDENTIAL (3-6 DU/AC)

7. PROPOSED GENERAL PLAN DESIGNATION: LOW DENSITY RESIDENTIAL (3-6 DU/AC)

8. EXISTING LAND USE: OPEN SPACE

9. PROPOSED LAND USE: SINGLE FAMILY RESIDENTIAL

10. EXISTING ZONING: A-AGRICULTURAL

11. PROPOSED ZONING: R-1-7.2 SINGLE FAMILY RESIDENTIAL

12. ADJACENT LAND USE:
NORTH:
GENERAL PLAN - LOW DENSITY RESIDENTIAL (3-6 DU/AC)
ZONING - R-1-7.2 SINGLE FAMILY RESIDENTIAL
EXISTING USE - SINGLE FAMILY RESIDENTIAL
SOUTH:
GENERAL PLAN - LOW DENSITY RESIDENTIAL (3-6 DU/AC)
ZONING - R-1-7.2 SINGLE FAMILY RESIDENTIAL
EXISTING USE - SINGLE FAMILY RESIDENTIAL
EAST:
GENERAL PLAN - LOW DENSITY RESIDENTIAL (3-6 DU/AC)
ZONING - R-1-7.2 SINGLE FAMILY RESIDENTIAL
EXISTING USE - SINGLE FAMILY RESIDENTIAL
WEST:
GENERAL PLAN - LOW DENSITY RESIDENTIAL (3-6 DU/AC)
ZONING - R-1-7.2 SINGLE FAMILY RESIDENTIAL
EXISTING USE - SINGLE FAMILY RESIDENTIAL

13. SOURCE OF TOPOGRAPHY IS AERIAL TOPOGRAPHY FLOWN ON AUGUST 17, 2017 BY INLAND AERIAL SURVEYS, INC.

14. ALL LOT LINES AND DIMENSIONS ARE APPROXIMATE.

15. ALL EXISTING EASEMENTS AND IRREVOCABLE OFFERS OF DEDICATION THAT AFFECT THE PROPERTY BEING SUBDIVIDED ARE SHOWN ON THIS TENTATIVE TRACT MAP.

16. ALL EXISTING EASEMENTS ARE TO REMAIN IN THEIR DESIGNATED LOCATIONS UNLESS NOTED OTHERWISE.

17. SCHOOL DISTRICT: CORONA-NORCO SCHOOL DISTRICT

18. STREETS GRADES: 1.0% MINIMUM, 8.2% MAXIMUM.

19. ALL CONC. GUTTERS AND SWALES SHALL HAVE A MINIMUM GRADE OF: 1.0%

20. ALL A.C. PAVING SHALL HAVE A MINIMUM GRADE OF: 1.0%

21. CONCRETE PAVEMENT SHALL BE PROVIDED FOR ALL ROADWAYS THAT HAVE STREET GRADES EXCEEDING 10% OR AS APPROVED BY THE CITY OF CORONA.

22. CURB FRONTAGE AT CUL-DE-SACS AND KNUCKLES SHALL BE A MINIMUM OF 45 FEET.

23. ESTIMATED DISTURBED AREA FOR THE PROJECT SITE IS 19.14 ACRES, COMPRISING OF 76.87% OF THE TOTAL PROJECT AREA.

24. ALL SLOPES ADJACENT TO STREET R.O.W. TO BE MAINTAINED BY H.O.A. OR AS IDENTIFIED HEREON.

25. ALL SLOPES SHOWN HEREON ARE 2:1 MAXIMUM UNLESS OTHERWISE NOTED.

26. ALL SLOPES ARE PRIVATE UNLESS THEY ARE WITHIN A LETTERED H.O.A. MAINTAINED LOT.

27. ALL MAJOR SLOPES OR COMMON AREAS, OPEN SPACE, PRIVATE DRAINAGE FACILITIES, ROAD ACCESS EASEMENTS, AND ANY OTHER COMMON AMENITIES SHALL BE MAINTAINED BY A HOMEOWNERS ASSOCIATION OR ESTABLISHED SUBJECT TO CURRENT STATE LAWS AND BE SUBJECT TO THE APPROVAL OF THE CITY OF CORONA WHO SHALL REVIEW ALL CC & R'S AND RULES FOR THEIR CC & R'S, HOMEOWNERS ASSOCIATION DOCUMENTS AND ALL DOCUMENTS TO CONVEY TITLE TO THE HOMEOWNERS ASSOCIATION.

28. FENCING SHALL BE INSTALLED ON SITE AS NECESSARY TO RESTRICT PUBLIC ACCESS TO PROPOSED OPEN SPACE AREAS. REFER TO WALL AND FENCE PLAN FOR LOCATIONS.

29. THERE ARE NO KNOWN ACTIVE EARTHQUAKE FAULTS IMPACTING THE PROJECT SITE. REFER TO SOILS REPORT FOR ADDITIONAL INFORMATION.

30. DRAINAGE SYSTEM WILL BE DEVELOPED IN ACCORDANCE WITH THE CITY OF CORONA AND RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT STANDARDS AND SPECIFICATIONS. DRAINAGE ON THIS SITE WILL BE CONVEYED BY MEANS OF A STORM DRAIN SYSTEM CONSISTING OF VARYING SIZES OF STORM DRAIN PIPES. STORM FLOWS TRIBUTARY TO THE SITE SHALL BE INTERCEPTED AND CONVEYED AROUND THE SITE VIA THE STORM DRAIN SYSTEMS SHOWN HEREON. ALL STORM DRAIN SHOWN HEREON ARE PRELIMINARY.

31. PROPOSED WQMP BASINS MAY BE MAINTAINED BY FUTURE HOA OR CFD FORMED SPECIFICALLY FOR DEVELOPMENT. THE MAINLINE STORM DRAIN, INLETS, AND OUTLET STRUCTURES SHALL BE PUBLICLY MAINTAINED VIA A PROPOSED DEDICATED DRAINAGE EASEMENT.

32. THE SUBJECT PROPERTY IS WITHIN A MAPPED FLOOD ZONE AS SHOWN ON FEMA FIRM PANEL 06065C0686G AND 06065C1315G.

33. THE SUBJECT PROPERTY IS NOT WITHIN A SPECIAL FIRE HAZARD ZONE.

34. THE SUBJECT PROPERTY IS WITHIN A SANTA ANA RIVER WATERSHED.

35. ALL PARTIES HAVING A BENEFICIARY INTEREST IN THE PROPERTY BEING SUBDIVIDED ARE AWARE OF AND CONSENT TO THE FILING OF THIS TENTATIVE TRACT MAP.

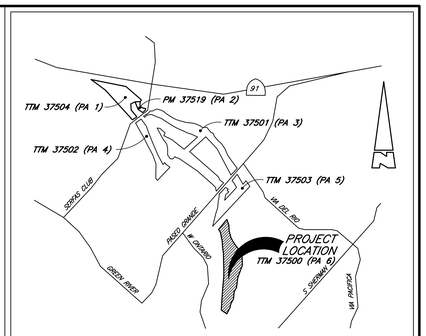
STATEMENT OF PREPARER

I HEREBY STATE THAT THIS MAP WAS PREPARED UNDER MY SUPERVISION AND THAT THE OWNER OF RECORD HAS KNOWLEDGE OF AND CONSENTS TO THE FILING OF THIS MAP.

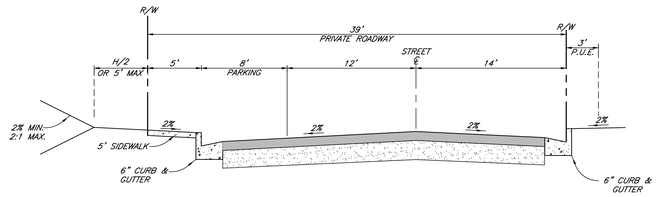
_____ DATE _____
BRANDON M. BARNETT, P.E.

LEGEND:

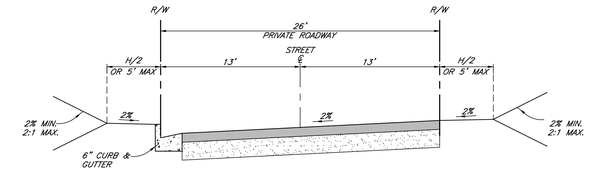
- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RECLAIMED WATER
- PROPOSED STORM DRAIN
- LOT LINE
- EXIST. EASEMENT LINE
- PROPOSED EASEMENT LINE
- (A) PROPOSED EASEMENT (SEE EASEMENT NOTES)
- RETAINING WALL
- EXISTING WATER
- EXISTING SEWER
- EXISTING RECLAIMED WATER
- EXISTING STORM DRAIN
- 1200 = EXISTING CONTOUR ELEVATION
- 1200 = PROPOSED SURFACE ELEVATION
- 1378.3 = PROPOSED PAD ELEVATION
- ELEV. = ELEVATION
- FG = FINISH GRADE
- FL = FLOWLINE
- FS = FINISHED SURFACE
- D.G. = DECOMPOSED GRANITE
- L= = LENGTH
- W= = WIDTH
- MIN. = MINIMUM
- PL = PROPERTY LINE
- R/W = RIGHT OF WAY
- GB = GRADE BREAK
- TC = TOP OF CURB
- 45 = LOT NUMBER
- TOE OF SLOPE
- TOP OF SLOPE
- DAYLIGHT LINE



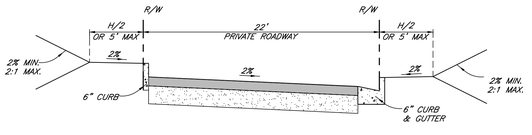
VICINITY MAP
NOT TO SCALE



39' RIGHT-OF-WAY TYPICAL SECTION
STREET "A"
NOT TO SCALE



MODIFIED PRIVATE WAY
STREET "B", "F"
NOT TO SCALE



MODIFIED PRIVATE COURT
STREET "C", "D", "E"
NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER
DATE OF LATEST CHANGE TO THIS MAP
10/28/21 BY: BWP
DATE OF THIS PLOT
10/28/21

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37500
THE TRAILS AT CORONA
CITY OF CORONA

PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

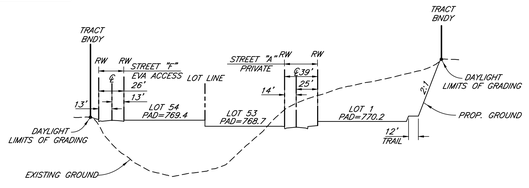
PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA. 92881-3370 951-734-2130

SHEET 1 OF 2 SHEETS

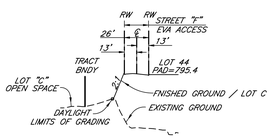
JOB NO. 15.1311 R:\15\1311\PRELIM\MAPS\TENT\DPR\1311 PA 06 TTM 01.dwg 11/4/21 11:31 AM

DPR18-XXX

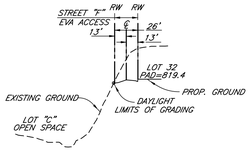
THE TRAILS AT CORONA
TENTATIVE TRACT MAP NO. 37500
IN THE CITY OF CORONA



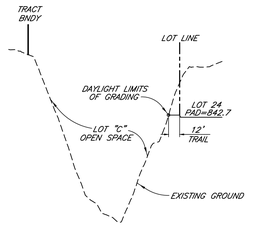
SECTION "A–A"
N.T.S.



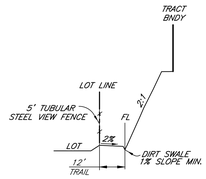
SECTION "B–B"
N.T.S.



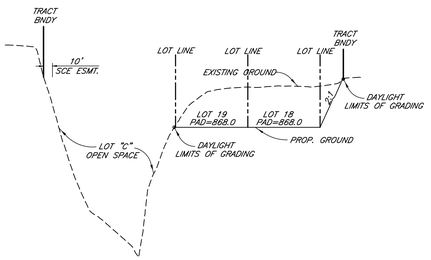
SECTION "C–C"
N.T.S.



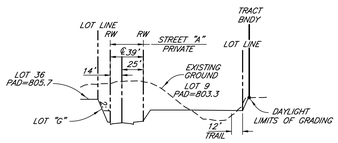
SECTION "D–D"
N.T.S.



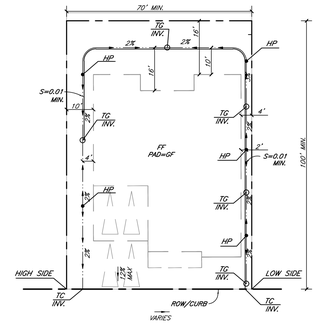
TYPICAL TRAIL DETAIL
N.T.S.



SECTION "E–E"
N.T.S.

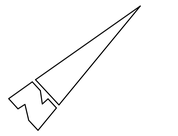


SECTION "F–F"
N.T.S.



NOTES:
1. SWALES TO BE GRADED AT 2% MIN AND 4% MAX
2. 4" DIAMETER DRAINAGE PIPE USED (1.0% MIN. PIPE SLOPE)
3. SIDEYARDS TO DRAIN AT 5% MIN AND 20% AWAY FROM BUDLING
4. BACKYARD TO DRAIN AT 5% MIN AWAY FROM BUILDING

TYPICAL LOT DRAINAGE
N.T.S.



REGISTERED PROFESSIONAL ENGINEER
BRANDON M. BARNETT
No.78472
CIVIL
STATE OF CALIFORNIA

TTM DATE IDENTIFIER (MO. OF LATEST CHANGE TO TTM MAP)
10/28/21 BY: BWP
SOIL OF THIS PLOT
10/28/21

Date	By	REVISIONS	App'd

TENTATIVE TRACT MAP NO. 37500
THE TRAILS AT CORONA
CITY OF CORONA

PREPARED FOR: PINECREST BADGER ASSOCIATES, LLC
48900 MILMONT DRIVE
FREMONT, CA 94538
(951) 394-3718

PREPARED BY:
KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 CORONA, CA 92881-3370 951-734-2130

SHEET 2 OF 2 SHEETS

J:\JOB NO_15-131-1 PI\15-131-1 PRELIM MAPS\TENT MAP\15-131-1 PA 106 TTM 02.dwg 11/4/21 11:35 AM

Appendix

C
DRAINAGE AREA AND SEWERSHED BOUNDARY MAP

	The Trails at Corona & Coronita - Projected Sewer Flows																	
	Drainage Area	Proposed Flows from Trails at Corona						Ultimate Flows from Coronita						Total ADWF		Total PDWF		Total PWWF[§]	
		GCC (AC)	PROP MDR (DU)	PROP LDR (DU)	SUBTOTAL			EX GCC (AC)	EX LDR (DU)	SUBTOTAL									
					ADWF (CFS)	PDWF (CFS)	PWWF (CFS)[§]			ADWF (CFS)	PDWF (CFS)	PWWF (CFS)[§]		MGD	CFS	MGD	CFS	MGD	CFS
X	Area A*		66		0.0245	0.3565	0.0813		74	0.0309	0.0796	0.1007		0.0358	0.0554	0.0525	0.0813	0.0525	0.0813
X	Area B	0.78			0.0013	0.0042	-			0.0000	0.0000	-		0.0008	0.0013	0.0027	0.0042	-	-
X	Area C		35		0.0130	0.0359	-			0.0000	0.0000	-		0.0084	0.0130	0.0232	0.0359	-	-
X	Area D		12		0.0045	0.0134	-			0.0000	0.0000	-		0.0029	0.0045	0.0087	0.0134	-	-
X	Area E		107		0.0397	0.1003	-			0.0000	0.0000	-		0.0257	0.0397	0.0648	0.1003	-	-
X	Area F		89		0.0330	0.0847	-		43	0.0180	0.0483	-		0.0330	0.0510	0.0815	0.1262	-	-
X	Area G			56	0.0234	0.0616	-			0.0000	0.0000	-		0.0151	0.0234	0.0398	0.0616	-	-
	Area H				0.0000	0.0000	-	6.73	323	0.1459	0.3318	-		0.0943	0.1459	0.2143	0.3318	-	-
	Area I[†]				0.0000	0.0000	-		138	0.0576	0.1538	0.0344		0.0373	0.0576	0.0912	0.1412	0.0222	0.0344
	Area J[‡]				0.0000	0.0000	-			0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Area K (Non-Tributary)				0.0000	0.0000	-		119	0.0497	0.1232	-		0.0321	0.0497	0.0796	0.1232	-	-
	Area L (Non-Tributary)				0.0000	0.0000	-		39	0.0163	0.0442	-		0.0105	0.0163	0.0285	0.0442	-	-
	TOTAL	0.78	309	56	0.1394	0.6229	0.0813	6.73	736	0.3184	0.6959	0.0344		0.2959	0.4578	0.8242	1.2758	0.0747	0.1157

1) ADWF based on 240 gpd/du for Medium Density Residential, 270gpd/du for Low Density Residential, and 1050 gpd/ac for General Community Commercial

2) For areas requiring a lift station, the pumped flow is the peak flow.

*Area A requires a lift sataion. The design pump rate is 160 gpm = 0.3565 cfs

[†]Area I requires a lift station for 23 homes. The PWWF is used to estimate the pumped flowrate.

[‡]Area J requires a lift station for all homes. The PWWF is used to estimate the pumped flowrate.

[§]PWWF used to estimate lift station pumping rate.

Drainage Area	Tributary to Ex Node
Area A	1-21-152
Area B	1-21-152
Area C	1-21-152
Area D	1-21-132
Area E	1-21-152
Area F	1-21-150
Area G	1-21-150
Area H	1-21-152
Area I	1-21-130
Area J	1-21-152
Area K	1-21-10-06110
Area L	1-21-10-07060

THE TRAILS AT CORONA
SEWER NODE DEMAND AREAS

LEGEND

- 8" PROPOSED GRAVITY SEWER BY THE TRAILS PROJECT
- 8" EXISTING GRAVITY SEWER
- 4" PROPOSED SEWER FORCE MAIN BY THE TRAILS PROJECT
- FUTURE GRAVITY SEWER BY CITY OF CORONA
- FUTURE SEWER FORCE MAIN BY CITY OF CORONA
- PLANNING AREA/TRACT BOUNDARY
- CITY/COUNTY BOUNDARY

AREA A
56 PROPOSED MDR

AREA B
4.78 AC GCC

AREA C
35 PROPOSED MDR

AREA D
12 PROPOSED MDR

AREA E
98 PROPOSED MDR

AREA F
66 PROPOSED MDR
43 EXISTING LDR

AREA G
56 PROPOSED LDR

AREA H
323 EXISTING LDR
4.73 AC GCC

AREA I
138 EXISTING LDR

AREA J
74 EXISTING LDR

AREA K
119 EXISTING LDR
(NOT TRIBUTARY TO PROJECT AREA)

AREA L
39 EXISTING LDR
(NOT TRIBUTARY TO PROJECT AREA)

EXISTING SCHOOL

PA 1 BOUNDARY (TTM NO. 37518)
PA 2 BOUNDARY (TTM NO. 37519)
PA 3 BOUNDARY (TTM NO. 37501)
PA 4 BOUNDARY (TTM NO. 37502)
PA 5 BOUNDARY (TTM NO. 37503)
PA 6 BOUNDARY (TTM NO. 37500)

SEWERSHED 10
SEWERSHED 14

CITY OF CORONA
COUNTY OF RIVERSIDE

TO WWTP 1

AUTO CENTER DRIVE
RESEARCH DR
WARDLOW RD
RIDGEVIEW TERRACE
MOUNTAIN VIEW DR
CYPRESS POINT DR
BRAE BURN DR
OAKLAND HILLS DR
PINE CREST DR
VIA DEL RIO
PASEO GRANDE
KIRKWOOD DR
DAWN RIDGE DR
AVENIDA DEL VISTA
APPLEGATE DR
HUMMINGBIRD LN
SERFAS CLUB DRIVE
NORTH MOOR DR
MONTEREY PENINSULA DR
STREET "A"
STREET "B"
STREET "C"
STREET "D"
STREET "E"
STREET "F"

FUTURE SEWER LIFT STATION
PROP. LIFT STATION 160 GPM (FIRM PUMP CAPACITY)
PROP. 4" FORCEMAIN

715.0 FUT. RIM 707.0 FUT. INV
705.0 FUT. RIM 697.0 FUT. INV
697.0 FUT. RIM 689.0 FUT. INV
706.0 FUT. RIM 698.0 FUT. INV
706.0 FUT. RIM 698.0 FUT. INV
716.0 FUT. RIM 708.0 FUT. INV
733.0 FUT. RIM 725.0 FUT. INV
710.0 FUT. RIM 702.0 FUT. INV
715.0 FUT. RIM 687.0 FUT. INV
716.0 FUT. RIM 708.0 FUT. INV
692.0 FUT. RIM 682.0 FUT. INV
689.0 FUT. RIM 681.0 FUT. INV
687.0 FUT. RIM 674.0 FUT. INV
688.0 FUT. RIM 681.0 FUT. INV
677.0 FUT. RIM 669.0 FUT. INV
662.0 FUT. RIM 654.0 FUT. INV
645.6 EX. RIM 632.6 EX. INV
641.8 EX. RIM 627.5 EX. INV
650.0 EX. RIM 640.0 EX. INV
639.4 EX. RIM 627.3 EX. INV
622.1 EX. RIM 611.7 EX. INV
617.0 FUT. RIM 680.0 FUT. INV
680.0 FUT. RIM 653.9 FUT. INV
682.7 EX. RIM 659.1 EX. INV
720.0 FUT. RIM 713.0 FUT. INV
747.0 FUT. RIM 739.0 FUT. INV
710.0 FUT. RIM 704.0 FUT. INV
801.0 FUT. RIM 793.0 FUT. INV
784.0 FUT. RIM 775.0 FUT. INV
791.0 FUT. RIM 783.0 FUT. INV
624.0 FUT. RIM 624.0 FUT. INV
610.0 EX. RIM 601.2 EX. INV
654.6 EX. RIM 644.8 EX. INV
654.3 EX. RIM 646.3 EX. INV
680.0 FUT. RIM 667.0 FUT. INV
650.0 FUT. RIM 637.0 FUT. INV
708.0 FUT. RIM 700.0 FUT. INV
752.0 FUT. RIM 747.0 FUT. INV
625.0 FUT. RIM 617.0 FUT. INV
612.0 FUT. RIM 604.0 FUT. INV
637.0 FUT. RIM 629.0 FUT. INV
680.0 FUT. RIM 665.0 FUT. INV
633.0 FUT. RIM 625.0 FUT. INV
617.0 FUT. RIM 629.0 FUT. INV
644.0 FUT. RIM 636.0 FUT. INV
633.0 FUT. RIM 625.0 FUT. INV
610.0 FUT. RIM 602.0 FUT. INV
596.0 FUT. RIM 588.0 FUT. INV
634.2 EX. RIM 625.0 EX. INV
680.0 FUT. RIM 614.6 EX. INV

250' 0 250' 500' 750'
SCALE IN FEET

EXHIBIT C-1
THE TRAILS AT CORONA
FUTURE SEWER NODE DEMAND AREAS

KWC ENGINEERS
CIVIL ENGINEERS • PLANNERS • SURVEYORS
1880 COMPTON AVENUE, SUITE 100 • CORONA, CA. 92881-3370 • 951-734-2130

12.1344.121 R:\12\1344\121\PRELIM\REPORTS\SEW\Appendix C - Drainage Areas\Sewer Node Demand Areas.dwg 11/08/2021 13:39

Appendix

D

SEWER SYSTEM MODELING OUTPUT

Pipe Model ID	U/S Node ID	D/S Node ID	Pipe Dia. (in)	Length (ft)	Slope (ft/ft)	Ex. Peak Flow (cfs)	Ex. w/ The Trails Project Peak Flow (cfs)	Ex. w/ Coronita Area Peak Flow (cfs)	Ultimate Peak Flow (cfs)	Ex. Peak Flow d/D	Ex. w/ The Trails Project Peak Flow d/D	Ex. w/ Coronita Area Peak Flow d/D	Ultimate Peak Flow d/D	% of Ult. Flow Contrib. by the Trails
1-21-1539	1-21-10-07590	1-21-10-07550	8.00	199.00	0.01759	0.05	0.71	0.89	1.17	0.12	0.46	0.53	0.63	59.01%
1-21-1586	1-21-10-07630	1-21-10-07590	8.00	290.65	0.01187	0.04	0.70	0.89	1.16	0.12	0.52	0.60	0.73	59.03%
1-21-1646	1-21-10-07610	1-21-10-07630	8.00	304.04	0.00987	0.04	0.70	0.89	1.16	0.13	0.55	0.64	0.79	59.03%
1-21-1670	1-21-10-07580	1-21-10-07610	8.00	160.00	0.00975	0.02	0.68	0.87	1.14	0.08	0.54	0.63	0.78	59.13%
1-21-4979	1-21-10-07350	1-21-10-07230	8.00	198.50	0.01396	0.06	0.72	0.90	1.17	0.14	0.50	0.58	0.69	58.98%
1-21-1159	1-21-10-07870	1-21-10-08180	21.00	380.28	0.00150	4.53	5.11	5.38	5.61	0.64	0.70	0.72	0.75	54.24%
1-21-1167	1-21-10-07670	1-21-10-07870	21.00	280.09	0.00136	4.53	5.11	5.38	5.61	0.66	0.72	0.76	0.78	54.24%
1-21-1184	1516	1-21-10-07570	21.00	265.63	0.00124	4.51	5.10	5.37	5.59	0.68	0.75	0.78	0.82	54.24%
1-21-5983	1-21-10-08180	1-21-10-08330	21.00	200.58	0.00010	4.53	5.11	5.38	5.61	1.00	1.00	1.00	1.00	54.24%
2203	1-21-10-07470	1516	21.00	40.00	0.00050	4.51	5.10	5.36	5.59	1.00	1.00	1.00	1.00	54.24%
1-21-984	1-21-10-08320	1-21-10-08410	42.00	71.25	0.00042	20.26	20.85	21.11	21.34	0.80	1.00	1.00	1.00	54.25%
1-21-1502	1-21-10-07030	1-21-10-07080	18.00	350.00	0.00183	4.42	4.42	4.53	4.53	0.80	0.80	1.00	1.00	0.00%
1-21-1525	1-21-10-06580	1-21-10-06760	18.00	294.00	0.00160	4.42	4.42	4.53	4.53	1.00	1.00	1.00	1.00	0.00%
1-21-1535	1-21-10-06440	1-21-10-06580	18.00	203.02	0.00143	4.42	4.42	4.53	4.53	1.00	1.00	1.00	1.00	0.00%
1-21-1553	1-21-10-06210	1-21-10-06440	18.00	350.00	0.00183	4.42	4.42	4.53	4.53	0.80	0.80	1.00	1.00	0.00%
1-21-1640	1-21-10-05860	1-21-10-06100	18.00	277.87	0.00198	4.41	4.41	4.52	4.52	0.77	0.77	0.79	0.79	0.00%
1-21-1660	1-21-10-05090	1-21-10-05200	18.00	161.58	0.00192	4.41	4.41	4.52	4.52	0.78	0.78	0.80	0.80	0.00%
1-21-1664	1-21-10-05200	1-21-10-05560	18.00	350.31	0.00197	4.41	4.41	4.52	4.52	0.77	0.77	0.79	0.79	0.00%
1-21-1743	1-21-10-05650	1-21-10-05500	12.00	156.09	0.00186	1.43	1.43	1.55	1.55	0.76	0.76	1.00	1.00	0.00%
1-21-7440	1-21-10-06760	1-21-10-06910	18.00	350.00	0.00170	4.42	4.42	4.53	4.53	1.00	1.00	1.00	1.00	0.00%
1-21-7441	1-21-10-06910	1-21-10-07030	18.00	162.00	0.00170	4.42	4.42	4.53	4.53	1.00	1.00	1.00	1.00	0.00%

Note: $\%\ of\ Ult.Flow = \frac{Post\ Project\ Flow\ - Ex\ Flow}{Ult.Flow\ - Ex.Flow}$

Deficient Pipe Lines		
Condition	Diameter (in)	Length (ft)
Existing	12	156
	18	2499
	21	241
	42	71
Existing With Coronita Area	21	926
Existing with Trails Project	21	546
Ultimate (Coronita Area then Trails)	8	1152

The Trails at Corona - Exisitng Condition Sewer Analysis

8/1/2019

Pipe Model ID	U/S Node ID	D/S Node ID	Pipe Dia. (in)	Length (ft)	Slope (ft/ft)	Unpeakable Flow (cfs)	Peakable Flow (cfs)	Total Peak Dry Weather Flow (cfs)	Full Flow (cfs)	Peak Dry Weather Velocity (ft/s)	Peak Dry Weather d/D	
1-21-1056	1-21-10-08730	1-21-10-08700	8.00	55.00	0.4898	0.00	0.00	0.00	8.48	0.00	0.00	
1-21-1060	1-21-10-08520	1-21-10-08700	21.00	175.00	0.0079	0.00	2.51	4.54	14.11	5.23	0.39	
1-21-1093	1-21-10-08330	1-21-10-08520	21.00	274.64	0.0026	0.00	2.51	4.54	8.02	3.44	0.54	
1-21-111	1-21-116	1-21-120	8.00	222.18	0.0100	0.00	0.00	0.00	1.21	0.00	0.00	
1-21-113	1-21-120	1-21-122	8.00	255.19	0.0245	0.00	0.00	0.00	1.90	0.00	0.00	
1-21-115	1-21-122	1-21-124	8.00	123.28	0.0544	0.00	0.00	0.00	2.82	0.00	0.00	
1-21-1159	1-21-10-07870	1-21-10-08180	21.00	380.28	0.0015	0.00	2.50	4.53	6.15	2.80	0.64	
1-21-1167	1-21-10-07670	1-21-10-07870	21.00	280.09	0.0014	0.00	2.50	4.53	5.85	2.69	0.66	
1-21-117	1-21-124	1-21-126	8.00	290.47	0.0565	0.00	0.00	0.00	2.88	0.00	0.00	
1-21-1184	1516	1-21-10-07570	21.00	265.63	0.0012	0.00	2.49	4.51	5.60	2.59	0.68	
1-21-119	1-21-126	1-21-128	8.00	300.97	0.0785	0.00	0.00	0.00	3.39	0.00	0.00	
1-21-1191	1-21-10-07310	1514	30.00	234.96	0.0011	0.00	2.49	4.51	13.68	2.50	0.40	
1-21-121	1-21-128	1-21-130	8.00	178.86	0.0096	0.00	0.00	0.00	1.19	0.80	0.04	
1-21-1213	1-21-10-07190	1-21-10-07310	30.00	166.71	0.0015	0.00	2.49	4.51	15.93	2.79	0.36	
1-21-123	1-21-130	1-21-132	8.00	80.44	0.0155	0.00	0.00	0.00	1.51	0.94	0.04	
1-21-125	1-21-132	1-21-134	8.00	96.02	0.0391	0.00	0.00	0.00	2.39	1.30	0.03	
1-21-1257	1512	1-21-10-07190	30.00	166.82	0.0014	0.00	2.49	4.51	15.60	2.75	0.37	
1-21-127	1-21-134	1-21-136	8.00	117.28	0.0096	0.00	0.00	0.00	1.19	0.80	0.04	
1-21-129	1-21-136	1-21-138	8.00	111.70	0.0098	0.00	0.00	0.00	1.20	0.80	0.04	
1-21-131	1-21-138	1-21-140	8.00	269.04	0.0095	0.00	0.00	0.00	1.18	0.79	0.04	
1-21-1320	1-21-10-07140	1-21-10-07130	30.00	15.67	0.0185	0.00	0.03	0.07	55.96	1.96	0.03	
1-21-133	1-21-140	1-21-142	8.00	267.16	0.0237	0.00	0.00	0.00	1.87	1.09	0.04	
1-21-135	1-21-142	1-21-144	8.00	265.81	0.0452	0.00	0.00	0.00	2.57	1.36	0.03	
1-21-137	1-21-144	1-21-146	8.00	149.95	0.0338	0.00	0.00	0.00	2.23	1.23	0.03	
1-21-139	1-21-146	1-21-148	8.00	119.17	0.0331	0.00	0.00	0.00	2.20	1.22	0.03	
1-21-1400	1-21-10-07120	1-21-10-07130	30.00	19.77	0.0051	0.00	0.03	0.07	29.25	1.23	0.04	
1-21-141	1-21-148	1-21-150	8.00	129.72	0.0483	0.00	0.00	0.00	2.66	1.40	0.03	
1-21-1424	1-21-10-07080	1-21-10-07130	18.00	63.83	0.0089	0.00	2.43	4.42	9.95	5.46	0.47	
1-21-1428	1-21-10-07100	1-21-10-07120	15.00	56.12	0.0018	0.00	0.03	0.07	2.73	0.94	0.11	
1-21-143	1-21-150	1-21-152	8.00	51.31	0.0708	0.00	0.00	0.00	3.22	1.60	0.03	
1-21-145	1-21-152	1-21-154	12.00	162.48	0.0039	0.00	0.00	0.00	2.24	0.55	0.03	
1-21-147	1-21-154	1-21-156	12.00	31.43	0.0029	0.00	0.00	0.00	1.91	0.49	0.03	
1-21-149	1-21-156	1-21-158	12.00	147.15	0.0058	0.00	0.00	0.00	2.73	0.63	0.03	
1-21-1502	1-21-10-07030	1-21-10-07080	18.00	350.00	0.0018	0.00	2.43	4.42	4.50	2.90	0.80	<-DEFICIENT
1-21-151	1-21-158	1-21-160	12.00	128.98	0.0041	0.00	0.00	0.01	2.29	0.76	0.05	
1-21-1525	1-21-10-06580	1-21-10-06760	18.00	294.00	0.0016	0.00	2.43	4.42	4.21	2.50	1.00	<-DEFICIENT
1-21-153	1-21-160	1-21-162	12.00	100.73	0.0040	0.00	0.00	0.01	2.25	0.75	0.05	
1-21-1530	1-21-10-06510	1-21-10-06740	12.00	353.92	0.0021	0.00	0.00	0.00	1.62	0.00	0.00	
1-21-1531	1-21-10-07460	1-21-10-07350	8.00	203.60	0.0293	0.00	0.02	0.05	2.07	2.43	0.10	
1-21-1535	1-21-10-06440	1-21-10-06580	18.00	203.02	0.0014	0.00	2.43	4.42	3.98	2.50	1.00	<-DEFICIENT
1-21-1539	1-21-10-07590	1-21-10-07550	8.00	199.00	0.0176	0.00	0.02	0.05	1.61	2.03	0.12	
1-21-1540	1-21-10-07550	1-21-10-07460	8.00	184.50	0.0288	0.00	0.02	0.05	2.06	2.42	0.10	
1-21-1542	1-21-10-05840	1-21-10-06030	12.00	204.30	0.0024	0.00	0.00	0.01	1.73	0.49	0.04	
1-21-155	1-21-162	1-21-172	15.00	353.54	0.0049	0.00	0.00	0.01	4.53	0.78	0.04	
1-21-1553	1-21-10-06210	1-21-10-06440	18.00	350.00	0.0018	0.00	2.43	4.42	4.50	2.90	0.80	<-DEFICIENT
1-21-1554	1-21-10-06220	1-21-10-06510	12.00	449.35	0.0023	0.00	0.00	0.00	1.69	0.00	0.00	
1-21-1586	1-21-10-07630	1-21-10-07590	8.00	290.65	0.0119	0.00	0.02	0.04	1.32	1.72	0.12	
1-21-161	1-21-168	1-21-170	8.00	316.98	0.0139	0.00	0.00	0.01	1.43	1.09	0.05	
1-21-163	1-21-170	1-21-158	8.00	48.63	0.0378	0.00	0.00	0.01	2.36	1.55	0.04	
1-21-1632	1-21-10-05710	1-21-10-05860	18.00	146.52	0.0131	0.00	2.43	4.41	12.06	6.29	0.42	
1-21-1639	1-21-10-06100	1-21-10-06170	18.00	186.38	0.0292	0.00	2.43	4.41	18.01	8.42	0.34	
1-21-1640	1-21-10-05860	1-21-10-06100	18.00	277.87	0.0020	0.00	2.43	4.41	4.69	3.02	0.77	<-DEFICIENT
1-21-1646	1-21-10-07610	1-21-10-07630	8.00	304.04	0.0099	0.00	0.02	0.04	1.20	1.61	0.13	
1-21-165	1-21-172	1-21-10-07580	15.00	346.61	0.0043	0.00	0.00	0.01	4.25	0.75	0.04	
1-21-1654	1-21-10-07790	1-21-10-07610	8.00	355.00	0.0304	0.00	0.01	0.03	2.11	2.10	0.08	
1-21-1660	1-21-10-05090	1-21-10-05200	18.00	161.58	0.0019	0.00	2.43	4.41	4.61	2.97	0.78	<-DEFICIENT
1-21-1661	1-21-10-08030	1-21-10-07790	8.00	355.00	0.0272	0.00	0.01	0.02	2.00	1.84	0.07	
1-21-1663	1-21-10-05560	1-21-10-05710	18.00	332.86	0.0042	0.00	2.43	4.41	6.78	4.09	0.59	
1-21-1664	1-21-10-05200	1-21-10-05560	18.00	350.31	0.0020	0.00	2.43	4.41	4.67	3.01	0.77	<-DEFICIENT
1-21-1666	1-21-10-08220	1-21-10-08030	8.00	171.92	0.0276	0.00	0.01	0.02	2.01	1.85	0.07	
1-21-1670	1-21-10-07580	1-21-10-07610	8.00	160.00	0.0098	0.00	0.01	0.02	1.20	1.23	0.08	
1-21-1672	1-21-10-05030	1-21-10-05090	12.00	112.75	0.0063	0.00	0.71	1.43	2.83	3.62	0.50	
1-21-1673	1-21-10-08430	1-21-10-08220	8.00	209.01	0.0279	0.00	0.00	0.00	2.02	0.00	0.00	
1-21-1688	1-21-10-05180	1-21-10-05030	12.00	221.06	0.0210	0.00	0.71	1.43	5.17	5.63	0.36	
1-21-1720	1-21-10-05500	1-21-10-05180	12.00	350.00	0.0054	0.00	0.71	1.43	2.63	3.41	0.53	
1-21-1743	1-21-10-05650	1-21-10-05500	12.00	156.09	0.0019	0.00	0.71	1.43	1.54	2.23	0.76	<-DEFICIENT
1-21-1752	1-21-10-05810	1-21-10-05650	12.00	143.91	0.0020	0.00	0.58	1.19	1.60	2.24	0.64	
1-21-1803	1-21-10-06110	1-21-10-05810	12.00	389.60	0.0266	0.00	0.58	1.19	5.83	5.83	0.31	
1-21-1847	1-21-10-06310	1-21-10-06110	12.00	291.04	0.0266	0.00	0.58	1.19	5.82	5.82	0.31	
1-21-1887	1-21-10-06490	1-21-10-06310	12.00	350.00	0.0266	0.00	0.58	1.19	5.83	5.82	0.31	
1-21-1966	1-21-10-06720	1-21-10-06660	12.00	184.35	0.0299	0.00	0.58	1.19	6.18	6.08	0.30	
1-21-2026	1-21-10-06850	1-21-10-06720	12.00	350.00	0.0118	0.00	0.58	1.19	3.89	4.35	0.38	
1-21-2078	1-21-10-06930	1-21-10-06850	12.00	350.00	0.0024	0.00	0.58	1.19	1.74	2.38	0.61	
1-21-4926	1-21-10-08700	1-21-10-08320	42.00	476.29	0.0009	15.69	2.51	20.22	30.31	3.37	0.60	
1-21-4979	1-21-10-07350	1-21-10-07230	8.00	198.50	0.0140	0.00	0.02	0.06	1.43	2.00	0.14	
1-21-5051	1-21-10-06660	1-21-10-06490	12.00	350.00	0.0315	0.00	0.58	1.19	6.34	6.18	0.29	
1-21-5968	1-21-10-07130	1-21-10-06950	30.00	450.52	0.0017	0.00	2.49	4.51	17.00	2.93	0.35	
1-21-5969	1-21-10-06950	1-21-10-07000	30.00	159.62	0.0015	0.00	2.49	4.51	15.95	2.79	0.36	
1-21-5983	1-21-10-08180	1-21-10-08330	21.00	200.58	0.0001	0.00	2.50	4.53	1.59	1.88	1.00	<-DEFICIENT
1-21-5986	1-21-10-08620	1-21-10-08330	8.00	350.00	0.0553	0.00	0.01	0.02	2.85	2.29	0.06	
1-21-5988	1-21-10-07570	1-21-10-07600	21.00	76.63	0.0021	0.00	2.49	4.52	7.19	3.16	0.57	
1-21-5989	1-21-10-07600	1-21-10-07670	21.00	211.72	0.0021	0.00	2.49	4.52	7.19	3.16	0.57	
1-21-6673	1-21-10-07060	1-21-10-06930	12.00	350.00	0.0024	0.00	0.58	1.19	1.74	2.38	0.61	
1-21-7137	1-21-10-06030	1-21-10-06210	12.00	192.00	0.0024	0.00	0.00	0.01	1.75	0.50	0.04	
1-21-7138	1-21-10-06170	1-21-10-06210	18.00	218.91	0.0252	0.00	2.43	4.42	16.72	7.99	0.35	
1-21-7139	1-21-10-07040	1-21-10-07100	15.00	349.93	0.0022	0.00	0.03	0.07	3.04	1.02	0.10	
1-21-7140	1-21-10-07230	1-21-10-07040	8.00	324.70	0.0366	0.00	0.02	0.06	2.32	2.81	0.11	
1-21-7440	1-21-10-06760	1-21-10-06910	18.00	350.00	0.0017	0.00	2.43	4.42	4.34	2.50	1.00	<-DEFICIENT
1-21-7441	1-21-10-06910	1-21-10-07030	18.00	162.00	0.0017	0.00	2.43	4.42	4.34	2.50	1.00	<-DEFICIENT
1-21-7442	1-21-10-06740	1-21-10-06900	12.00	353.76	0.0021	0.00	0.00	0.01	1.65	0.63	0.06	
1-21-7443	1-21-10-06900	1-21-10-07040	12.00	193.35	0.0021	0.00	0.00	0.01	1.64	0.63	0.06	
1-21-7829	1-21-10-05790	1-21-10-05840	10.00	120.00	0.0029	0.00	0.00	0.01	1.19	0.54	0.05	
1-21-7830	1-21-10-05330	1-21-10-05790	10.00	400.00	0.0030	0.00	0.00	0.00	1.20	0.29	0.02	
1-21-984	1-21-10-08320	1-21-10-08410	42.00	71.25	0.0004	15.69	2.53	20.26	20.70	2.45	0.80	<-DEFICIENT
2197	1-21-10-07000	1510	30.00	210.13	0.0014	0.00	2.49	4.51	15.54	2.74	0.37	
2199	1510	1512	30.00	144.80	0.0015	0.00	2.49	4.51	16.03	2.80	0.36	

The Trails at Corona - Exisitng with Coronita Only

8/1/2019

Pipe Model ID	U/S Node ID	D/S Node ID	Pipe Dia. (in)	Length (ft)	Slope (ft/ft)	Unpeakable Flow (cfs)	Peakable Flow (cfs)	Total Peak Dry Weather Flow (cfs)	Full Flow (cfs)	Peak Dry Weather Velocity (ft/s)	Peak Dry Weather d/D	
1-21-1056	1-21-10-08730	1-21-10-08700	8.00	55.00	0.4898	0.00	0.00	0.00	8.48	0.00	0.00	
1-21-1060	1-21-10-08520	1-21-10-08700	21.00	175.00	0.0079	0.39	2.78	5.39	14.11	5.47	0.43	
1-21-1093	1-21-10-08330	1-21-10-08520	21.00	274.64	0.0026	0.39	2.78	5.39	8.02	3.58	0.60	
1-21-111	1-21-116	1-21-120	8.00	222.18	0.0100	0.00	0.00	0.00	1.21	0.00	0.00	
1-21-113	1-21-120	1-21-122	8.00	255.19	0.0245	0.00	0.00	0.00	1.90	0.00	0.00	
1-21-115	1-21-122	1-21-124	8.00	123.28	0.0544	0.00	0.00	0.00	2.82	0.00	0.00	
1-21-1159	1-21-10-07870	1-21-10-08180	21.00	380.28	0.0015	0.39	2.78	5.38	6.15	2.88	0.72	<-DEFICIENT
1-21-1167	1-21-10-07670	1-21-10-07870	21.00	280.09	0.0014	0.39	2.78	5.38	5.85	2.76	0.76	<-DEFICIENT
1-21-117	1-21-124	1-21-126	8.00	290.47	0.0565	0.00	0.00	0.00	2.88	0.00	0.00	
1-21-1184	1516	1-21-10-07570	21.00	265.63	0.0012	0.39	2.77	5.37	5.60	2.65	0.78	<-DEFICIENT
1-21-119	1-21-126	1-21-128	8.00	300.97	0.0785	0.00	0.00	0.00	3.39	0.00	0.00	
1-21-1191	1-21-10-07310	1514.00	30.00	234.96	0.0011	0.39	2.77	5.36	13.68	2.62	0.43	
1-21-121	1-21-128	1-21-130	8.00	178.86	0.0096	0.00	0.00	0.00	1.19	0.80	0.04	
1-21-1213	1-21-10-07190	1-21-10-07310	30.00	166.71	0.0015	0.39	2.77	5.36	15.93	2.93	0.40	
1-21-123	1-21-130	1-21-132	8.00	80.44	0.0155	0.03	0.05	0.16	1.51	2.80	0.22	
1-21-125	1-21-132	1-21-134	8.00	96.02	0.0391	0.03	0.05	0.16	2.39	3.87	0.17	
1-21-1257	1512	1-21-10-07190	30.00	166.82	0.0014	0.39	2.76	5.36	15.60	2.88	0.40	
1-21-127	1-21-134	1-21-136	8.00	117.28	0.0096	0.03	0.05	0.16	1.19	2.36	0.25	
1-21-129	1-21-136	1-21-138	8.00	111.70	0.0098	0.03	0.05	0.16	1.20	2.37	0.24	
1-21-131	1-21-138	1-21-140	8.00	269.04	0.0095	0.03	0.05	0.16	1.18	2.35	0.25	
1-21-1320	1-21-10-07140	1-21-10-07130	30.00	15.67	0.0185	0.00	0.03	0.07	55.96	1.96	0.03	
1-21-133	1-21-140	1-21-142	8.00	267.16	0.0237	0.03	0.05	0.16	1.87	3.25	0.20	
1-21-135	1-21-142	1-21-144	8.00	265.81	0.0452	0.03	0.05	0.16	2.57	4.07	0.17	
1-21-137	1-21-144	1-21-146	8.00	149.95	0.0338	0.03	0.05	0.16	2.23	3.68	0.18	
1-21-139	1-21-146	1-21-148	8.00	119.17	0.0331	0.03	0.05	0.16	2.20	3.65	0.18	
1-21-1400	1-21-10-07120	1-21-10-07130	30.00	19.77	0.0051	0.39	0.24	0.91	29.25	2.70	0.12	
1-21-141	1-21-148	1-21-150	8.00	129.72	0.0483	0.03	0.05	0.16	2.66	4.17	0.16	
1-21-1424	1-21-10-07080	1-21-10-07130	18.00	63.83	0.0089	0.00	2.50	4.53	9.95	5.50	0.47	
1-21-1428	1-21-10-07100	1-21-10-07120	15.00	56.12	0.0018	0.39	0.24	0.91	2.73	2.00	0.40	
1-21-143	1-21-150	1-21-152	8.00	51.31	0.0708	0.03	0.07	0.20	3.22	5.11	0.17	
1-21-145	1-21-152	1-21-154	12.00	162.48	0.0039	0.39	0.21	0.86	2.24	2.67	0.43	
1-21-147	1-21-154	1-21-156	12.00	31.43	0.0029	0.39	0.21	0.86	1.91	2.37	0.47	
1-21-149	1-21-156	1-21-158	12.00	147.15	0.0058	0.39	0.21	0.86	2.73	3.08	0.39	
1-21-1502	1-21-10-07030	1-21-10-07080	18.00	350.00	0.0018	0.00	2.50	4.53	4.50	2.56	1.00	<-DEFICIENT
1-21-151	1-21-158	1-21-160	12.00	128.98	0.0041	0.39	0.22	0.87	2.29	2.71	0.43	
1-21-1525	1-21-10-06580	1-21-10-06760	18.00	294.00	0.0016	0.00	2.50	4.53	4.21	2.56	1.00	<-DEFICIENT
1-21-153	1-21-160	1-21-162	12.00	100.73	0.0040	0.39	0.22	0.87	2.25	2.68	0.43	
1-21-1530	1-21-10-06510	1-21-10-06740	12.00	353.92	0.0021	0.00	0.00	0.00	1.62	0.00	0.00	
1-21-1531	1-21-10-07460	1-21-10-07350	8.00	203.60	0.0293	0.39	0.23	0.89	2.07	5.72	0.46	
1-21-1535	1-21-10-06440	1-21-10-06580	18.00	203.02	0.0014	0.00	2.50	4.53	3.98	2.56	1.00	<-DEFICIENT
1-21-1539	1-21-10-07590	1-21-10-07550	8.00	199.00	0.0176	0.39	0.23	0.89	1.61	4.72	0.53	
1-21-1540	1-21-10-07550	1-21-10-07460	8.00	184.50	0.0288	0.39	0.23	0.89	2.06	5.69	0.46	
1-21-1542	1-21-10-05840	1-21-10-06030	12.00	204.30	0.0024	0.00	0.00	0.01	1.73	0.49	0.04	
1-21-155	1-21-162	1-21-172	15.00	353.54	0.0049	0.39	0.22	0.87	4.53	2.85	0.30	
1-21-1553	1-21-10-06210	1-21-10-06440	18.00	350.00	0.0018	0.00	2.50	4.53	4.50	2.56	1.00	<-DEFICIENT
1-21-1554	1-21-10-06220	1-21-10-06510	12.00	449.35	0.0023	0.00	0.00	0.00	1.69	0.00	0.00	
1-21-1586	1-21-10-07630	1-21-10-07590	8.00	290.65	0.0119	0.39	0.23	0.89	1.32	4.06	0.60	
1-21-161	1-21-168	1-21-170	8.00	316.98	0.0139	0.00	0.00	0.01	1.43	1.09	0.05	
1-21-163	1-21-170	1-21-158	8.00	48.63	0.0378	0.00	0.00	0.01	2.36	1.55	0.04	
1-21-1632	1-21-10-05710	1-21-10-05860	18.00	146.52	0.0131	0.00	2.49	4.52	12.06	6.33	0.42	
1-21-1639	1-21-10-06100	1-21-10-06170	18.00	186.38	0.0292	0.00	2.49	4.52	18.01	8.48	0.34	
1-21-1640	1-21-10-05860	1-21-10-06100	18.00	277.87	0.0020	0.00	2.49	4.52	4.69	3.02	0.79	<-DEFICIENT
1-21-1646	1-21-10-07610	1-21-10-07630	8.00	304.04	0.0099	0.39	0.23	0.89	1.20	3.77	0.64	
1-21-165	1-21-172	1-21-10-07580	15.00	346.61	0.0043	0.39	0.22	0.87	4.25	2.72	0.31	
1-21-1654	1-21-10-07790	1-21-10-07610	8.00	355.00	0.0304	0.00	0.01	0.03	2.11	2.10	0.08	
1-21-1660	1-21-10-05090	1-21-10-05200	18.00	161.58	0.0019	0.00	2.49	4.52	4.61	2.98	0.80	<-DEFICIENT
1-21-1661	1-21-10-08030	1-21-10-07790	8.00	355.00	0.0272	0.00	0.01	0.02	2.00	1.84	0.07	
1-21-1663	1-21-10-05560	1-21-10-05710	18.00	332.86	0.0042	0.00	2.49	4.52	6.78	4.11	0.60	
1-21-1664	1-21-10-05200	1-21-10-05560	18.00	350.31	0.0020	0.00	2.49	4.52	4.67	3.01	0.79	<-DEFICIENT
1-21-1666	1-21-10-08220	1-21-10-08030	8.00	171.92	0.0276	0.00	0.01	0.02	2.01	1.85	0.07	
1-21-1670	1-21-10-07580	1-21-10-07610	8.00	160.00	0.0098	0.39	0.22	0.87	1.20	3.74	0.63	
1-21-1672	1-21-10-05030	1-21-10-05090	12.00	112.75	0.0063	0.00	0.78	1.55	2.83	3.69	0.53	
1-21-1673	1-21-10-08430	1-21-10-08220	8.00	209.01	0.0279	0.00	0.00	0.00	2.02	0.00	0.00	
1-21-1688	1-21-10-05180	1-21-10-05030	12.00	221.06	0.0210	0.00	0.78	1.55	5.17	5.75	0.38	
1-21-1720	1-21-10-05500	1-21-10-05180	12.00	350.00	0.0054	0.00	0.78	1.55	2.63	3.48	0.55	
1-21-1743	1-21-10-05650	1-21-10-05500	12.00	156.09	0.0019	0.00	0.78	1.55	1.54	1.97	1.00	<-DEFICIENT
1-21-1752	1-21-10-05810	1-21-10-05650	12.00	143.91	0.0020	0.00	0.65	1.31	1.60	2.28	0.69	
1-21-1803	1-21-10-06110	1-21-10-05810	12.00	389.60	0.0266	0.00	0.65	1.31	5.83	5.99	0.32	
1-21-1847	1-21-10-06310	1-21-10-06110	12.00	291.04	0.0266	0.00	0.60	1.22	5.82	5.86	0.31	
1-21-1887	1-21-10-06490	1-21-10-06310	12.00	350.00	0.0266	0.00	0.60	1.22	5.83	5.86	0.31	
1-21-1966	1-21-10-06720	1-21-10-06660	12.00	184.35	0.0299	0.00	0.60	1.22	6.18	6.12	0.30	
1-21-2026	1-21-10-06850	1-21-10-06720	12.00	350.00	0.0118	0.00	0.60	1.22	3.89	4.38	0.38	
1-21-2078	1-21-10-06930	1-21-10-06850	12.00	350.00	0.0024	0.00	0.60	1.22	1.74	2.40	0.62	
1-21-4926	1-21-10-08700	1-21-10-08320	42.00	476.29	0.0009	16.08	2.78	21.08	30.31	3.40	0.61	
1-21-4979	1-21-10-07350	1-21-10-07230	8.00	198.50	0.0140	0.39	0.23	0.90	1.43	4.34	0.58	
1-21-5051	1-21-10-06660	1-21-10-06490	12.00	350.00	0.0315	0.00	0.60	1.22	6.34	6.23	0.30	
1-21-5968	1-21-10-07130	1-21-10-06950	30.00	450.52	0.0017	0.39	2.76	5.36	17.00	3.07	0.39	
1-21-5969	1-21-10-06950	1-21-10-07000	30.00	159.62	0.0015	0.39	2.76	5.36	15.95	2.93	0.40	
1-21-5983	1-21-10-08180	1-21-10-08330	21.00	200.58	0.0001	0.39	2.78	5.38	1.59	2.24	1.00	<-DEFICIENT
1-21-5986	1-21-10-08620	1-21-10-08330	8.00	350.00	0.0553	0.00	0.01	0.02	2.85	2.29	0.06	
1-21-5988	1-21-10-07570	1-21-10-07600	21.00	76.63	0.0021	0.39	2.77	5.37	7.19	3.28	0.64	
1-21-5989	1-21-10-07600	1-21-10-07670	21.00	211.72	0.0021	0.39	2.77	5.37	7.19	3.28	0.64	
1-21-6673	1-21-10-07060	1-21-10-06930	12.00	350.00	0.0024	0.00	0.60	1.22	1.74	2.40	0.62	
1-21-7137	1-21-10-06030	1-21-10-06210	12.00	192.00	0.0024	0.00	0.00	0.01	1.75	0.50	0.04	
1-21-7138	1-21-10-06170	1-21-10-06210	18.00	218.91	0.0252	0.00	2.50	4.53	16.72	8.04	0.36	
1-21-7139	1-21-10-07040	1-21-10-07100	15.00	349.93	0.0022	0.39	0.24	0.91	3.04	2.16	0.38	
1-21-7140	1-21-10-07230	1-21-10-07040	8.00	324.70	0.0366	0.39	0.23	0.90	2.32	6.22	0.43	
1-21-7440	1-21-10-06760	1-21-10-06910	18.00	350.00	0.0017	0.00	2.50	4.53	4.34	2.56	1.00	<-DEFICIENT
1-21-7441	1-21-10-06910	1-21-10-07030	18.00	162.00	0.0017	0.00	2.50	4.53	4.34	2.56	1.00	<-DEFICIENT
1-21-7442	1-21-10-06740	1-21-10-06900	12.00	353.76	0.0021	0.00	0.00	0.01	1.65	0.63	0.06	
1-21-7443	1-21-10-06900	1-21-10-07040	12.00	193.35	0.0021	0.00	0.00	0.01	1.64	0.63	0.06	
1-21-7829	1-21-10-05790	1-21-10-05840	10.00	120.00	0.0029	0.00	0.00	0.01	1.19	0.54	0.05	
1-21-7830	1-21-10-05330	1-21-10-05790	10.00	400.00	0.0030	0.00	0.00	0.00	1.20	0.29	0.02	
1-21-984	1-21-10-08320	1-21-10-08410	42.00	71.25	0.0004	16.08	2.81	21.11	20.70	2.19	1.00	<-DEFICIENT
2197	1-21-10-07000	1510	30.00	210.13	0.0014	0.39	2.76	5.36	15.54	2.87	0.41	
2199	1510	1512	30.00	144.80	0.0015	0.39	2.76	5.36	16.03	2.94	0.40	
2201	1514	1-21-10-07470	30.00	55.28	0.0015	0.39	2.77	5.36	15.65	2.89	0.40	
2203	1-21-10-07470	1516	21.00	40.00	0.0005	0.39	2.77	5.36	3.55	2.23	1.00	<-DEFICIENT

The Trails at Corona - Exisitng with Trails Only

8/1/2019

Pipe Model ID	U/S Node ID	D/S Node ID	Pipe Dia. (in)	Length (ft)	Slope (ft/ft)	Unpeakable Flow (cfs)	Peakable Flow (cfs)	Total Peak Dry Weather Flow (cfs)	Full Flow (cfs)	Peak Dry Weather Velocity (ft/s)	Peak Dry Weather d/D	
1-21-1056	1-21-10-08730	1-21-10-08700	8.00	55.00	0.4898	0.00	0.00	0.00	8.48	0.00	0.00	
1-21-1060	1-21-10-08520	1-21-10-08700	21.00	175.00	0.0079	0.36	2.64	5.12	14.11	5.40	0.42	
1-21-1093	1-21-10-08330	1-21-10-08520	21.00	274.64	0.0026	0.36	2.64	5.12	8.02	3.54	0.58	
1-21-111	1-21-116	1-21-120	8.00	222.18	0.0100	0.00	0.00	0.00	1.21	0.00	0.00	
1-21-113	1-21-120	1-21-122	8.00	255.19	0.0245	0.00	0.00	0.00	1.90	0.00	0.00	
1-21-115	1-21-122	1-21-124	8.00	123.28	0.0544	0.00	0.00	0.00	2.82	0.00	0.00	
1-21-1159	1-21-10-07870	1-21-10-08180	21.00	380.28	0.0015	0.36	2.64	5.11	6.15	2.86	0.70	
1-21-1167	1-21-10-07670	1-21-10-07870	21.00	280.09	0.0014	0.36	2.64	5.11	5.85	2.74	0.72	<-DEFICIENT
1-21-117	1-21-124	1-21-126	8.00	290.47	0.0565	0.00	0.00	0.00	2.88	0.00	0.00	
1-21-1184	1516	1-21-10-07570	21.00	265.63	0.0012	0.36	2.63	5.10	5.60	2.64	0.75	<-DEFICIENT
1-21-119	1-21-126	1-21-128	8.00	300.97	0.0785	0.00	0.00	0.00	3.39	0.00	0.00	
1-21-1191	1-21-10-07310	1514	30.00	234.96	0.0011	0.36	2.62	5.09	13.68	2.58	0.42	
1-21-121	1-21-128	1-21-130	8.00	178.86	0.0096	0.00	0.00	0.00	1.19	0.80	0.04	
1-21-1213	1-21-10-07190	1-21-10-07310	30.00	166.71	0.0015	0.36	2.62	5.09	15.93	2.89	0.39	
1-21-123	1-21-130	1-21-132	8.00	80.44	0.0155	0.00	0.00	0.00	1.51	0.94	0.04	
1-21-125	1-21-132	1-21-134	8.00	96.02	0.0391	0.00	0.01	0.02	2.39	2.05	0.06	
1-21-1257	1512	1-21-10-07190	30.00	166.82	0.0014	0.36	2.62	5.09	15.60	2.84	0.39	
1-21-127	1-21-134	1-21-136	8.00	117.28	0.0096	0.00	0.01	0.02	1.19	1.26	0.09	
1-21-129	1-21-136	1-21-138	8.00	111.70	0.0098	0.00	0.01	0.02	1.20	1.26	0.09	
1-21-131	1-21-138	1-21-140	8.00	269.04	0.0095	0.00	0.01	0.02	1.18	1.25	0.09	
1-21-1320	1-21-10-07140	1-21-10-07130	30.00	15.67	0.0185	0.00	0.03	0.07	55.96	1.96	0.03	
1-21-133	1-21-140	1-21-142	8.00	267.16	0.0237	0.00	0.01	0.02	1.87	1.72	0.07	
1-21-135	1-21-142	1-21-144	8.00	265.81	0.0452	0.00	0.01	0.02	2.57	2.16	0.06	
1-21-137	1-21-144	1-21-146	8.00	149.95	0.0338	0.00	0.01	0.02	2.23	1.95	0.07	
1-21-139	1-21-146	1-21-148	8.00	119.17	0.0331	0.00	0.01	0.02	2.20	1.93	0.07	
1-21-1400	1-21-10-07120	1-21-10-07130	30.00	19.77	0.0051	0.36	0.16	0.73	29.25	2.52	0.11	
1-21-141	1-21-148	1-21-150	8.00	129.72	0.0483	0.00	0.01	0.02	2.66	2.21	0.06	
1-21-1424	1-21-10-07080	1-21-10-07130	18.00	63.83	0.0089	0.00	2.43	4.42	9.95	5.46	0.47	
1-21-1428	1-21-10-07100	1-21-10-07120	15.00	56.12	0.0018	0.36	0.16	0.73	2.73	1.88	0.35	
1-21-143	1-21-150	1-21-152	8.00	51.31	0.0708	0.00	0.07	0.17	3.22	4.87	0.16	
1-21-145	1-21-152	1-21-154	12.00	162.48	0.0039	0.36	0.14	0.67	2.24	2.50	0.38	
1-21-147	1-21-154	1-21-156	12.00	31.43	0.0029	0.36	0.14	0.67	1.91	2.22	0.41	
1-21-149	1-21-156	1-21-158	12.00	147.15	0.0058	0.36	0.14	0.67	2.73	2.88	0.34	
1-21-1502	1-21-10-07030	1-21-10-07080	18.00	350.00	0.0018	0.00	2.43	4.42	4.50	2.90	0.80	<-DEFICIENT
1-21-151	1-21-158	1-21-160	12.00	128.98	0.0041	0.36	0.14	0.68	2.29	2.54	0.37	
1-21-1525	1-21-10-06580	1-21-10-06760	18.00	294.00	0.0016	0.00	2.43	4.42	4.21	2.50	1.00	<-DEFICIENT
1-21-153	1-21-160	1-21-162	12.00	100.73	0.0040	0.36	0.14	0.68	2.25	2.51	0.38	
1-21-1530	1-21-10-06510	1-21-10-06740	12.00	353.92	0.0021	0.00	0.00	0.00	1.62	0.00	0.00	
1-21-1531	1-21-10-07460	1-21-10-07350	8.00	203.60	0.0293	0.36	0.15	0.71	2.07	5.37	0.40	
1-21-1535	1-21-10-06440	1-21-10-06580	18.00	203.02	0.0014	0.00	2.43	4.42	3.98	2.50	1.00	<-DEFICIENT
1-21-1539	1-21-10-07590	1-21-10-07550	8.00	199.00	0.0176	0.36	0.15	0.71	1.61	4.46	0.46	
1-21-1540	1-21-10-07550	1-21-10-07460	8.00	184.50	0.0288	0.36	0.15	0.71	2.06	5.35	0.40	
1-21-1542	1-21-10-05840	1-21-10-06030	12.00	204.30	0.0024	0.00	0.00	0.01	1.73	0.49	0.04	
1-21-155	1-21-162	1-21-172	15.00	353.54	0.0049	0.36	0.14	0.68	4.53	2.65	0.26	
1-21-1553	1-21-10-06210	1-21-10-06440	18.00	350.00	0.0018	0.00	2.43	4.42	4.50	2.90	0.80	<-DEFICIENT
1-21-1554	1-21-10-06220	1-21-10-06510	12.00	449.35	0.0023	0.00	0.00	0.00	1.69	0.00	0.00	
1-21-1586	1-21-10-07630	1-21-10-07590	8.00	290.65	0.0119	0.36	0.15	0.70	1.32	3.84	0.52	
1-21-161	1-21-168	1-21-170	8.00	316.98	0.0139	0.00	0.00	0.01	1.43	1.09	0.05	
1-21-163	1-21-170	1-21-158	8.00	48.63	0.0378	0.00	0.00	0.01	2.36	1.55	0.04	
1-21-1632	1-21-10-05710	1-21-10-05860	18.00	146.52	0.0131	0.00	2.43	4.41	12.06	6.29	0.42	
1-21-1639	1-21-10-06100	1-21-10-06170	18.00	186.38	0.0292	0.00	2.43	4.41	18.01	8.42	0.34	
1-21-1640	1-21-10-05860	1-21-10-06100	18.00	277.87	0.0020	0.00	2.43	4.41	4.69	3.02	0.77	<-DEFICIENT
1-21-1646	1-21-10-07610	1-21-10-07630	8.00	304.04	0.0099	0.36	0.15	0.70	1.20	3.58	0.55	
1-21-165	1-21-172	1-21-10-07580	15.00	346.61	0.0043	0.36	0.14	0.68	4.25	2.53	0.27	
1-21-1654	1-21-10-07790	1-21-10-07610	8.00	355.00	0.0304	0.00	0.01	0.03	2.11	2.10	0.08	
1-21-1660	1-21-10-05090	1-21-10-05200	18.00	161.58	0.0019	0.00	2.43	4.41	4.61	2.97	0.78	<-DEFICIENT
1-21-1661	1-21-10-08030	1-21-10-07790	8.00	355.00	0.0272	0.00	0.01	0.02	2.00	1.84	0.07	
1-21-1663	1-21-10-05560	1-21-10-05710	18.00	332.86	0.0042	0.00	2.43	4.41	6.78	4.09	0.59	
1-21-1664	1-21-10-05200	1-21-10-05560	18.00	350.31	0.0020	0.00	2.43	4.41	4.67	3.01	0.77	<-DEFICIENT
1-21-1666	1-21-10-08220	1-21-10-08030	8.00	171.92	0.0276	0.00	0.01	0.02	2.01	1.85	0.07	
1-21-1670	1-21-10-07580	1-21-10-07610	8.00	160.00	0.0098	0.36	0.14	0.68	1.20	3.54	0.54	
1-21-1672	1-21-10-05030	1-21-10-05090	12.00	112.75	0.0063	0.00	0.71	1.43	2.83	3.62	0.50	
1-21-1673	1-21-10-08430	1-21-10-08220	8.00	209.01	0.0279	0.00	0.00	0.00	2.02	0.00	0.00	
1-21-1688	1-21-10-05180	1-21-10-05030	12.00	221.06	0.0210	0.00	0.71	1.43	5.17	5.63	0.36	
1-21-1720	1-21-10-05500	1-21-10-05180	12.00	350.00	0.0054	0.00	0.71	1.43	2.63	3.41	0.53	
1-21-1743	1-21-10-05650	1-21-10-05500	12.00	156.09	0.0019	0.00	0.71	1.43	1.54	2.23	0.76	<-DEFICIENT
1-21-1752	1-21-10-05810	1-21-10-05650	12.00	143.91	0.0020	0.00	0.58	1.19	1.60	2.24	0.64	
1-21-1803	1-21-10-06110	1-21-10-05810	12.00	389.60	0.0266	0.00	0.58	1.19	5.83	5.83	0.31	
1-21-1847	1-21-10-06310	1-21-10-06110	12.00	291.04	0.0266	0.00	0.58	1.19	5.82	5.82	0.31	
1-21-1887	1-21-10-06490	1-21-10-06310	12.00	350.00	0.0266	0.00	0.58	1.19	5.83	5.82	0.31	
1-21-1966	1-21-10-06720	1-21-10-06660	12.00	184.35	0.0299	0.00	0.58	1.19	6.18	6.08	0.30	
1-21-2026	1-21-10-06850	1-21-10-06720	12.00	350.00	0.0118	0.00	0.58	1.19	3.89	4.35	0.38	
1-21-2078	1-21-10-06930	1-21-10-06850	12.00	350.00	0.0024	0.00	0.58	1.19	1.74	2.38	0.61	
1-21-4926	1-21-10-08700	1-21-10-08320	42.00	476.29	0.0009	16.04	2.64	20.81	30.31	3.39	0.61	
1-21-4979	1-21-10-07350	1-21-10-07230	8.00	198.50	0.0140	0.36	0.16	0.72	1.43	4.10	0.50	
1-21-5051	1-21-10-06660	1-21-10-06490	12.00	350.00	0.0315	0.00	0.58	1.19	6.34	6.18	0.29	
1-21-5968	1-21-10-07130	1-21-10-06950	30.00	450.52	0.0017	0.36	2.62	5.09	17.00	3.03	0.38	
1-21-5969	1-21-10-06950	1-21-10-07000	30.00	159.62	0.0015	0.36	2.62	5.09	15.95	2.89	0.39	
1-21-5983	1-21-10-08180	1-21-10-08330	21.00	200.58	0.0001	0.36	2.64	5.11	1.59	2.13	1.00	<-DEFICIENT
1-21-5986	1-21-10-08620	1-21-10-08330	8.00	350.00	0.0553	0.00	0.01	0.02	2.85	2.29	0.06	
1-21-5988	1-21-10-07570	1-21-10-07600	21.00	76.63	0.0021	0.36	2.63	5.10	7.19	3.24	0.62	
1-21-5989	1-21-10-07600	1-21-10-07670	21.00	211.72	0.0021	0.36	2.63	5.10	7.19	3.24	0.62	
1-21-6673	1-21-10-07060	1-21-10-06930	12.00	350.00	0.0024	0.00	0.58	1.19	1.74	2.38	0.61	
1-21-7137	1-21-10-06030	1-21-10-06210	12.00	192.00	0.0024	0.00	0.00	0.01	1.75	0.50	0.04	
1-21-7138	1-21-10-06170	1-21-10-06210	18.00	218.91	0.0252	0.00	2.43	4.42	16.72	7.99	0.35	
1-21-7139	1-21-10-07040	1-21-10-07100	15.00	349.93	0.0022	0.36	0.16	0.73	3.04	2.03	0.33	
1-21-7140	1-21-10-07230	1-21-10-07040	8.00	324.70	0.0366	0.36	0.16	0.72	2.32	5.85	0.38	
1-21-7440	1-21-10-06760	1-21-10-06910	18.00	350.00	0.0017	0.00	2.43	4.42	4.34	2.50	1.00	<-DEFICIENT
1-21-7441	1-21-10-06910	1-21-10-07030	18.00	162.00	0.0017	0.00	2.43	4.42	4.34	2.50	1.00	<-DEFICIENT
1-21-7442	1-21-10-06740	1-21-10-06900	12.00	353.76	0.0021	0.00	0.00	0.01	1.65	0.63	0.06	
1-21-7443	1-21-10-06900	1-21-10-07040	12.00	193.35	0.0021	0.00	0.00	0.01	1.64	0.63	0.06	
1-21-7829	1-21-10-05790	1-21-10-05840	10.00	120.00	0.0029	0.00	0.00	0.01	1.19	0.54	0.05	
1-21-7830	1-21-10-05330	1-21-10-05790	10.00	400.00	0.0030	0.00	0.00	0.00	1.20	0.29	0.02	
1-21-984	1-21-10-08320	1-21-10-08410	42.00	71.25	0.0004	16.04	2.67	20.85	20.70	2.17	1.00	<-DEFICIENT
2197	1-21-10-07000	1510	30.00	210.13	0.0014	0.36	2.62	5.09	15.54	2.83	0.39	
2199	1510	1512	30.00	144.80	0.0015	0.36	2.62	5.09	16.03	2.90	0.39	
2201	1514	1-21-10-07470	30.00	55.28	0.0015	0.36	2.62	5.09	15.65	2.85	0.39	
2203	1-21-10-07470	1516	21.00	40.00	0.0005	0.36	2.63	5.10	3.55	2.12	1.00	<-DEFICIENT

The Trails at Corona - Ultimate Condition Sewer Analysis

8/1/2019

Pipe Model ID	U/S Node ID	D/S Node ID	Pipe Dia. (in)	Length (ft)	Slope (ft/ft)	Unpeakable Flow (cfs)	Peakable Flow (cfs)	Total Peak Dry Weather Flow (cfs)	Full Flow (cfs)	Peak Dry Weather Velocity (ft/s)	Peak Dry Weather d/D	
1-21-1056	1-21-10-08730	1-21-10-08700	8.00	55.00	0.4898	0.00	0.00	0.00	8.48	0.00	0.00	
1-21-1060	1-21-10-08520	1-21-10-08700	21.00	175.00	0.0079	0.39	2.92	5.62	14.11	5.53	0.44	
1-21-1093	1-21-10-08330	1-21-10-08520	21.00	274.64	0.0026	0.39	2.92	5.62	8.02	3.61	0.62	
1-21-111	1-21-116	1-21-120	8.00	222.18	0.0100	0.00	0.00	0.00	1.21	0.00	0.00	
1-21-113	1-21-120	1-21-122	8.00	255.19	0.0245	0.00	0.00	0.00	1.90	0.00	0.00	
1-21-115	1-21-122	1-21-124	8.00	123.28	0.0544	0.00	0.00	0.00	2.82	0.00	0.00	
1-21-1159	1-21-10-07870	1-21-10-08180	21.00	380.28	0.0015	0.39	2.91	5.61	6.15	2.90	0.75	<-DEFICIENT
1-21-1167	1-21-10-07670	1-21-10-07870	21.00	280.09	0.0014	0.39	2.91	5.61	5.85	2.77	0.78	<-DEFICIENT
1-21-117	1-21-124	1-21-126	8.00	290.47	0.0565	0.00	0.00	0.00	2.88	0.00	0.00	
1-21-1184	1516	1-21-10-07570	21.00	265.63	0.0012	0.39	2.91	5.59	5.60	2.65	0.82	<-DEFICIENT
1-21-119	1-21-126	1-21-128	8.00	300.97	0.0785	0.00	0.00	0.00	3.39	0.00	0.00	
1-21-1191	1-21-10-07310	1514.00	30.00	234.96	0.0011	0.39	2.90	5.59	13.68	2.65	0.45	
1-21-121	1-21-128	1-21-130	8.00	178.86	0.0096	0.00	0.00	0.00	1.19	0.80	0.04	
1-21-1213	1-21-10-07190	1-21-10-07310	30.00	166.71	0.0015	0.39	2.90	5.59	15.93	2.96	0.41	
1-21-123	1-21-130	1-21-132	8.00	80.44	0.0155	0.03	0.05	0.16	1.51	2.80	0.22	
1-21-125	1-21-132	1-21-134	8.00	96.02	0.0391	0.03	0.05	0.17	2.39	3.96	0.18	
1-21-1257	1512	1-21-10-07190	30.00	166.82	0.0014	0.39	2.90	5.59	15.60	2.91	0.41	
1-21-127	1-21-134	1-21-136	8.00	117.28	0.0096	0.03	0.05	0.17	1.19	2.41	0.25	
1-21-129	1-21-136	1-21-138	8.00	111.70	0.0098	0.03	0.05	0.17	1.20	2.42	0.25	
1-21-131	1-21-138	1-21-140	8.00	269.04	0.0095	0.03	0.05	0.17	1.18	2.40	0.26	
1-21-1320	1-21-10-07140	1-21-10-07130	30.00	15.67	0.0185	0.00	0.03	0.07	55.96	1.96	0.03	
1-21-133	1-21-140	1-21-142	8.00	267.16	0.0237	0.03	0.05	0.17	1.87	3.32	0.20	
1-21-135	1-21-142	1-21-144	8.00	265.81	0.0452	0.03	0.05	0.17	2.57	4.16	0.17	
1-21-137	1-21-144	1-21-146	8.00	149.95	0.0338	0.03	0.05	0.17	2.23	3.76	0.19	
1-21-139	1-21-146	1-21-148	8.00	119.17	0.0331	0.03	0.05	0.17	2.20	3.73	0.19	
1-21-1400	1-21-10-07120	1-21-10-07130	30.00	19.77	0.0051	0.39	0.38	1.18	29.25	2.92	0.14	
1-21-141	1-21-148	1-21-150	8.00	129.72	0.0483	0.03	0.05	0.17	2.66	4.26	0.17	
1-21-1424	1-21-10-07080	1-21-10-07130	18.00	63.83	0.0089	0.00	2.50	4.53	9.95	5.50	0.47	
1-21-1428	1-21-10-07100	1-21-10-07120	15.00	56.12	0.0018	0.39	0.38	1.18	2.73	2.15	0.46	
1-21-143	1-21-150	1-21-152	8.00	51.31	0.0708	0.03	0.14	0.34	3.22	6.02	0.22	
1-21-145	1-21-152	1-21-154	12.00	162.48	0.0039	0.39	0.35	1.13	2.24	2.86	0.50	
1-21-147	1-21-154	1-21-156	12.00	31.43	0.0029	0.39	0.35	1.13	1.91	2.54	0.55	
1-21-149	1-21-156	1-21-158	12.00	147.15	0.0058	0.39	0.35	1.13	2.73	3.32	0.45	
1-21-1502	1-21-10-07030	1-21-10-07080	18.00	350.00	0.0018	0.00	2.50	4.53	4.50	2.56	1.00	<-DEFICIENT
1-21-151	1-21-158	1-21-160	12.00	128.98	0.0041	0.39	0.35	1.14	2.29	2.91	0.50	
1-21-1525	1-21-10-06580	1-21-10-06760	18.00	294.00	0.0016	0.00	2.50	4.53	4.21	2.56	1.00	<-DEFICIENT
1-21-153	1-21-160	1-21-162	12.00	100.73	0.0040	0.39	0.35	1.14	2.25	2.88	0.50	
1-21-1530	1-21-10-06510	1-21-10-06740	12.00	353.92	0.0021	0.00	0.00	0.00	1.62	0.00	0.00	
1-21-1531	1-21-10-07460	1-21-10-07350	8.00	203.60	0.0293	0.39	0.37	1.17	2.07	6.11	0.54	
1-21-1535	1-21-10-06440	1-21-10-06580	18.00	203.02	0.0014	0.00	2.50	4.53	3.98	2.56	1.00	<-DEFICIENT
1-21-1539	1-21-10-07590	1-21-10-07550	8.00	199.00	0.0176	0.39	0.37	1.17	1.61	5.02	0.63	
1-21-1540	1-21-10-07550	1-21-10-07460	8.00	184.50	0.0288	0.39	0.37	1.17	2.06	6.08	0.54	
1-21-1542	1-21-10-05840	1-21-10-06030	12.00	204.30	0.0024	0.00	0.00	0.01	1.73	0.49	0.04	
1-21-155	1-21-162	1-21-172	15.00	353.54	0.0049	0.39	0.35	1.14	4.53	3.07	0.34	
1-21-1553	1-21-10-06210	1-21-10-06440	18.00	350.00	0.0018	0.00	2.50	4.53	4.50	2.56	1.00	<-DEFICIENT
1-21-1554	1-21-10-06220	1-21-10-06510	12.00	449.35	0.0023	0.00	0.00	0.00	1.69	0.00	0.00	
1-21-1586	1-21-10-07630	1-21-10-07590	8.00	290.65	0.0119	0.39	0.36	1.16	1.32	4.27	0.73	<-DEFICIENT
1-21-161	1-21-168	1-21-170	8.00	316.98	0.0139	0.00	0.00	0.01	1.43	1.09	0.05	
1-21-163	1-21-170	1-21-158	8.00	48.63	0.0378	0.00	0.00	0.01	2.36	1.55	0.04	
1-21-1632	1-21-10-05710	1-21-10-05860	18.00	146.52	0.0131	0.00	2.49	4.52	12.06	6.33	0.42	
1-21-1639	1-21-10-06100	1-21-10-06170	18.00	186.38	0.0292	0.00	2.49	4.52	18.01	8.48	0.34	
1-21-1640	1-21-10-05860	1-21-10-06100	18.00	277.87	0.0020	0.00	2.49	4.52	4.69	3.02	0.79	<-DEFICIENT
1-21-1646	1-21-10-07610	1-21-10-07630	8.00	304.04	0.0099	0.39	0.36	1.16	1.20	3.93	0.79	<-DEFICIENT
1-21-165	1-21-172	1-21-10-07580	15.00	346.61	0.0043	0.39	0.35	1.14	4.25	2.93	0.35	
1-21-1654	1-21-10-07790	1-21-10-07610	8.00	355.00	0.0304	0.00	0.01	0.03	2.11	2.10	0.08	
1-21-1660	1-21-10-05090	1-21-10-05200	18.00	161.58	0.0019	0.00	2.49	4.52	4.61	2.98	0.80	<-DEFICIENT
1-21-1661	1-21-10-08030	1-21-10-07790	8.00	355.00	0.0272	0.00	0.01	0.02	2.00	1.84	0.07	
1-21-1663	1-21-10-05560	1-21-10-05710	18.00	332.86	0.0042	0.00	2.49	4.52	6.78	4.11	0.60	
1-21-1664	1-21-10-05200	1-21-10-05560	18.00	350.31	0.0020	0.00	2.49	4.52	4.67	3.01	0.79	<-DEFICIENT
1-21-1666	1-21-10-08220	1-21-10-08030	8.00	171.92	0.0276	0.00	0.01	0.02	2.01	1.85	0.07	
1-21-1670	1-21-10-07580	1-21-10-07610	8.00	160.00	0.0098	0.39	0.36	1.14	1.20	3.90	0.78	<-DEFICIENT
1-21-1672	1-21-10-05030	1-21-10-05090	12.00	112.75	0.0063	0.00	0.78	1.55	2.83	3.69	0.53	
1-21-1673	1-21-10-08430	1-21-10-08220	8.00	209.01	0.0279	0.00	0.00	0.00	2.02	0.00	0.00	
1-21-1688	1-21-10-05180	1-21-10-05030	12.00	221.06	0.0210	0.00	0.78	1.55	5.17	5.75	0.38	
1-21-1720	1-21-10-05500	1-21-10-05180	12.00	350.00	0.0054	0.00	0.78	1.55	2.63	3.48	0.55	
1-21-1743	1-21-10-05650	1-21-10-05500	12.00	156.09	0.0019	0.00	0.78	1.55	1.54	1.97	1.00	<-DEFICIENT
1-21-1752	1-21-10-05810	1-21-10-05650	12.00	143.91	0.0020	0.00	0.65	1.31	1.60	2.28	0.69	
1-21-1803	1-21-10-06110	1-21-10-05810	12.00	389.60	0.0266	0.00	0.65	1.31	5.83	5.99	0.32	
1-21-1847	1-21-10-06310	1-21-10-06110	12.00	291.04	0.0266	0.00	0.60	1.22	5.82	5.86	0.31	
1-21-1887	1-21-10-06490	1-21-10-06310	12.00	350.00	0.0266	0.00	0.60	1.22	5.83	5.86	0.31	
1-21-1966	1-21-10-06720	1-21-10-06660	12.00	184.35	0.0299	0.00	0.60	1.22	6.18	6.12	0.30	
1-21-2026	1-21-10-06850	1-21-10-06720	12.00	350.00	0.0118	0.00	0.60	1.22	3.89	4.38	0.38	
1-21-2078	1-21-10-06930	1-21-10-06850	12.00	350.00	0.0024	0.00	0.60	1.22	1.74	2.40	0.62	
1-21-4926	1-21-10-08700	1-21-10-08320	42.00	476.29	0.0009	16.08	2.92	21.30	30.31	3.41	0.62	
1-21-4979	1-21-10-07350	1-21-10-07230	8.00	198.50	0.0140	0.39	0.37	1.17	1.43	4.58	0.69	<-DEFICIENT
1-21-5051	1-21-10-06660	1-21-10-06490	12.00	350.00	0.0315	0.00	0.60	1.22	6.34	6.23	0.30	
1-21-5968	1-21-10-07130	1-21-10-06950	30.00	450.52	0.0017	0.39	2.90	5.59	17.00	3.10	0.39	
1-21-5969	1-21-10-06950	1-21-10-07000	30.00	159.62	0.0015	0.39	2.90	5.59	15.95	2.96	0.41	
1-21-5983	1-21-10-08180	1-21-10-08330	21.00	200.58	0.0001	0.39	2.91	5.61	1.59	2.33	1.00	<-DEFICIENT
1-21-5986	1-21-10-08620	1-21-10-08330	8.00	350.00	0.0553	0.00	0.01	0.02	2.85	2.29	0.06	
1-21-5988	1-21-10-07570	1-21-10-07600	21.00	76.63	0.0021	0.39	2.91	5.60	7.19	3.30	0.66	
1-21-5989	1-21-10-07600	1-21-10-07670	21.00	211.72	0.0021	0.39	2.91	5.60	7.19	3.30	0.66	
1-21-6673	1-21-10-07060	1-21-10-06930	12.00	350.00	0.0024	0.00	0.60	1.22	1.74	2.40	0.62	
1-21-7137	1-21-10-06030	1-21-10-06210	12.00	192.00	0.0024	0.00	0.00	0.01	1.75	0.50	0.04	
1-21-7138	1-21-10-06170	1-21-10-06210	18.00	218.91	0.0252	0.00	2.50	4.53	16.72	8.04	0.36	
1-21-7139	1-21-10-07040	1-21-10-07100	15.00	349.93	0.0022	0.39	0.38	1.18	3.04	2.32	0.43	
1-21-7140	1-21-10-07230	1-21-10-07040	8.00	324.70	0.0366	0.39	0.37	1.17	2.32	6.66	0.50	
1-21-7440	1-21-10-06760	1-21-10-06910	18.00	350.00	0.0017	0.00	2.50	4.53	4.34	2.56	1.00	<-DEFICIENT
1-21-7441	1-21-10-06910	1-21-10-07030	18.00	162.00	0.0017	0.00	2.50	4.53	4.34	2.56	1.00	<-DEFICIENT
1-21-7442	1-21-10-06740	1-21-10-06900	12.00	353.76	0.0021	0.00	0.00	0.01	1.65	0.63	0.06	
1-21-7443	1-21-10-06900	1-21-10-07040	12.00	193.35	0.0021	0.00	0.00	0.01	1.64	0.63	0.06	
1-21-7829	1-21-10-05790	1-21-10-05840	10.00	120.00	0.0029	0.00	0.00	0.01	1.19	0.54	0.05	
1-21-7830	1-21-10-05330	1-21-10-05790	10.00	400.00	0.0030	0.00	0.00	0.00	1.20	0.29	0.02	
1-21-984	1-21-10-08320	1-21-10-08410	42.00	71.25	0.0004	16.08	2.94	21.34	20.70	2.22	1.00	<-DEFICIENT
2197	1-21-10-07000	1510	30.00	210.13	0.0014	0.39	2.90	5.59	15.54	2.91	0.41	
2199	1510	1512	30.00	144.80	0.0015	0.39	2.90	5.59	16.03	2.97	0.41	
2201	1514	1-21-10-07470	30.00	55.28	0.0015	0.39	2.90	5.59	15.65	2.92	0.41	
2203	1-21-10-07470	1516	21.00	40.00	0.0005	0.39	2.90	5.59	3.55	2.32	1.00	<-DEFICIENT

Appendix

E

PRELIMINARY LIFT STATION SIZING CALCULATIONS

Preliminary Lift Station Design

Area J - Prelim LS Size for 74 Ex. Homes

1) Pump Sizing

Determine Minimum Pump Rate		
Average Dry Weather Flow (ADWF) =	0.0309	CFS
Peak Dry Weather Flow (PDWF) =	0.0796	CFS
Peak Wet Weather Flow (PWWF)=	0.1007	CFS
Minimum Pumping Rate Required =	45	GPM
Design Pumping Rate =	**160**	GPM

2) Pipeline Sizing

Using min. pump rate: 45 gpm = 0.1007 cfs

4" Sewer Forcemain yields velocity = 1.1541 fps

Using design pump rate: 160 gpm = 0.3565 cfs

4" Sewer Forcemain yields velocity = 4.0870 fps

3) Pump Total Dynamic Head

Pump TDH = Hsmax + Hf + Hm

Where, Hsmax= maximum static lift, ft
Hf=pipe friction losses, ft
Hm= minor losses, ft

Static Head:

Sewer Forcemain Discharge Elevation = 620 ft
Sewer Forcemain Highest Elevation = 620 ft
Sewer Forcemain Pump Elevation = 585.00 ft

Hsmax = 35.00 ft

Friction Losses:

Use $Hf = ((10.44*L*(Q^{1.85}))/((C^{1.85})*(d^{4.8655}))$

Where,	Flow, Q =	160	gpm
	SFM Length, L =	1,078	ft
	SFM diameter, d =	4	in
	H.W. Coeff., C =	130	
	Hf =	19.45	ft

Minor Losses:

Use $Hm = \sum K*(v^2/(2*g)$

Where,	velocity, v =	4.0870	fps
	gravity, g =	32.17	ft
	$\sum K$ =	10	Assume for bends, tee-branch, tee-thru, check valve, exit loss
	Hm =	2.60	ft

Pump TDH = 57.04 ft

Design Pumps for 160 gpm at 57 ft. TDH

4) Wet Well Sizing

* Size wet well operation volume for 6 pump starts per hour maximum (i.e. min. cycle time=10 min.)

* Worse case cycle time occurs when inflow=1/2 pump flow

$V = Qt/4$

Where, V = operation volume, gal
Q = pump flow, gpm
t = cycle time, min.

so,

Q =	160	gpm
t =	10	min.
V =	400.0	gal
or V =	53.5	cu. ft

try 5 ft diameter wet well,

$V = (\pi*(D^2)*H)/4$

Where, V = Operation Volume, cu. ft
D = Wet Well diameter, ft
H = height, ft

so,

D =	5	ft
V =	53.5	cu. Ft
H =	2.7	ft

Use 5 ft Diameter Wet Well & Set Pump On/Off Levels 2.7 ft Apart

G.5 - Preliminary Reclaimed Water Report

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PRELIMINARY RECLAIMED WATER REPORT

for The Trails at Corona
in the City of Corona,
County of Riverside, California





PREPARED FOR :

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Freemont, CA 94538

PREPARED BY:

KWC Engineers
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Corona, CA 92881
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November 2021

Stephen M. Nielsen, RCE 51070

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Section

1
INTRODUCTION

1.1 PURPOSE OF STUDY

The purpose of this report is to present the reclaimed water facility requirements for The Trails at Corona project (Project) based on the the City of Corona's requirements and plans for the reclaimed water system in the area. More specifically, this report will identify the existing reclaimed water system in the area, present the estimated project reclaimed water demands, and recommend the proposed pipelines needed to support the proposed project and adjacent developments. The project reclaimed water demands are based on the proposed land use and the Draft City of Corona 2018 Reclaimed Water Master Plan. The analysis presented in this report is based on the current land use plan for The Trails Specific Plan Planning Area (PA) 1 through 6 and the tentative tract maps being prepared for each planning area of the project.

1.2 PROJECT DESCRIPTION

The Trails at Corona project is comprised of 105 acres of vacant infill land neighboring the Serfas Club Drive exit of the 91 Freeway, within the City of Corona. **Figure 1-1** provides a location map for the project. This land was formerly utilized as a golf course and is being repurposed to fill in the residential community. The site is made up of six separate proposed parcels of land. Five of these parcels are located within the County of Riverside, and one parcel is located within the City of Corona. All parcels are currently within the sphere of influence for the City of Corona's reclaimed water distribution system. All planning areas except for the 0.78 commercial site will have park and slope areas that will qualify for reclaimed water use. The proposed commercial area may qualify for reclaimed water use, but a landscape plan is not known at this time.

PA 1 and 2 are bound by single-family residential to the south and west, the 91 Freeway to the north, and by Serfas Club Drive to the east. Access for these areas will be from the frontage road off Serfas Drive. PA 3 is bound by single-family residential development to the north and south and by Serfas Club Drive to the west and by Paseo Grande to the east. These two roads will serve as the circulatory access through the PA 3 site. PA 4 is bound by Serfas Club Drive to the west, by Pine Crest Drive to the north, by single-family residential development to the south, and by Cesar Chavez Academy to the east. Serfas Club Drive and Pine Crest Drive will serve as the circulatory access points through the site. PA 5 is bound by single-family residential development to the north, east, and south and by Paseo Grande to the west. Paseo Grande will serve as the primary access for PA 5. PA 6 is bound by Kirkwood Drive to the west and by single-family residential development to the south, east, and north. Kirkwood Drive will serve as the primary access for PA 6. The residential regions surrounding the project within the City of

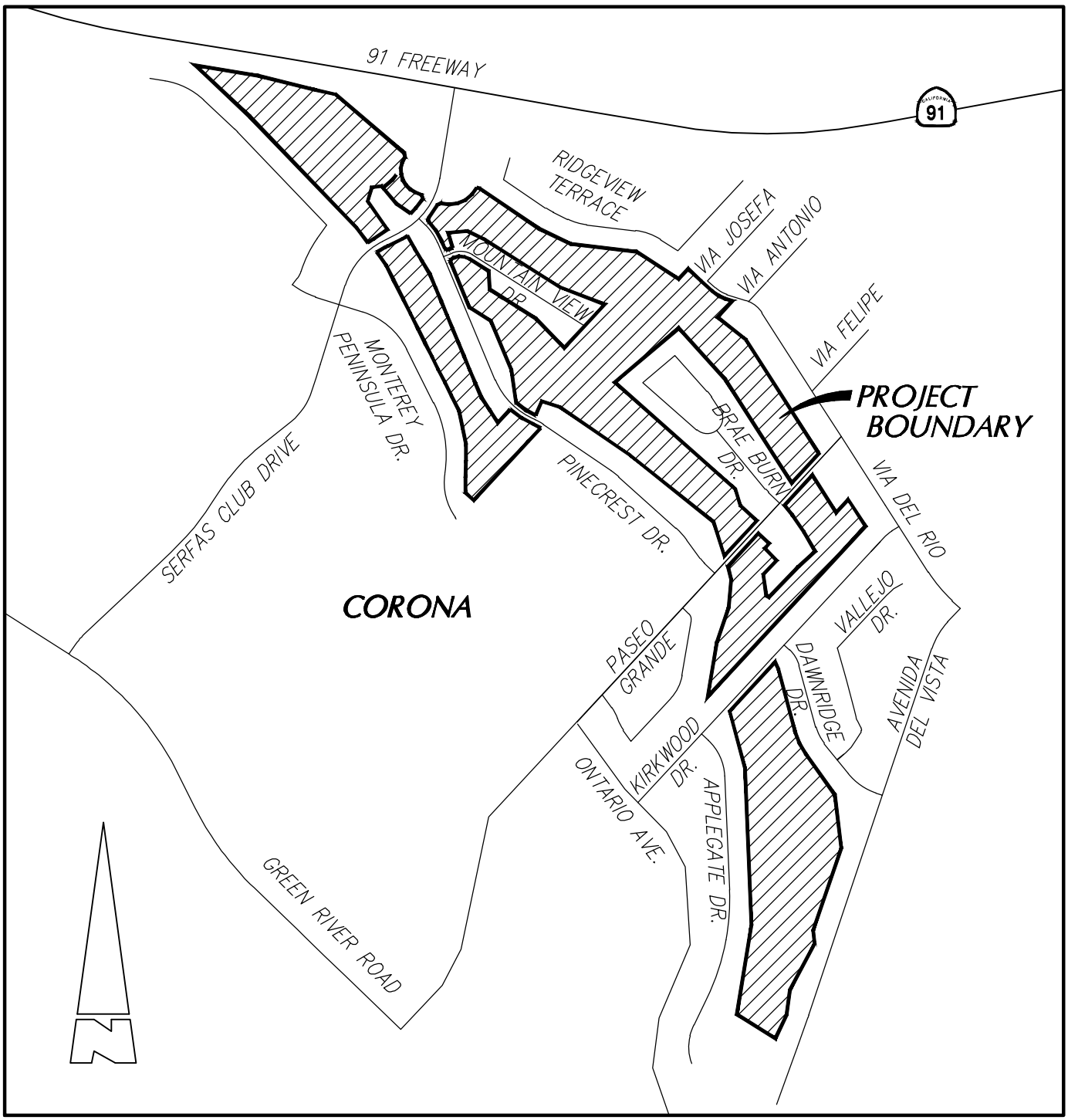
Corona are generally Low Density Residential (2-6 du/ac) and those surrounding the project within Riverside County are generally Medium Density Residential (2-5 du/ac).

The project site consists of sparsely vegetated and otherwise vacant land with the exception of a few existing culverts. The site is characterized by relatively flat topography, generally increasing in elevation from the northwest to the southeast. There are very few natural drainage features apart from a small lake on the north side of PA 5 and a natural stream on the east side of PA 6.

The proposed land use plan for the project consists of 309 Medium Density Residential lots, 56 Low Density Residential lots, and a 0.78-acre General Commercial lot based on The Trails Specific Plan. The project site is comprised of approximately 105 acres of undeveloped vacant land. **Figure 1-2** provides a map of the area illustrating the location of the project relative to existing developments in the area.

1.3 RELATED STUDIES

The City of Corona Draft 2018 Reclaimed Water Master Plan provides a regional study identifying existing and future proposed reclaimed water supply, storage, pumping and pipeline facilities within the City's ultimate service area. The study also presents design criteria to be utilized in reclaimed water supply, system pressures, pipeline velocities, storage volumes, and pumping capacities. The report also provides information on the City's planning and evaluation criteria that can be applied to determine projected reclaimed water demands. The criteria utilized in this study are also in accordance with the City's 2012 Department of Water and Power Design Policy.



LOCATION MAP

NOT TO SCALE

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FIGURE 1-1

J.N. 15.1511.8.17/ R:\15\1511\PRELIM\REPORTS\REC WAT\FIGURES\FIGURE 1-1 - Location Map.dwg 09/13/2018 14:22

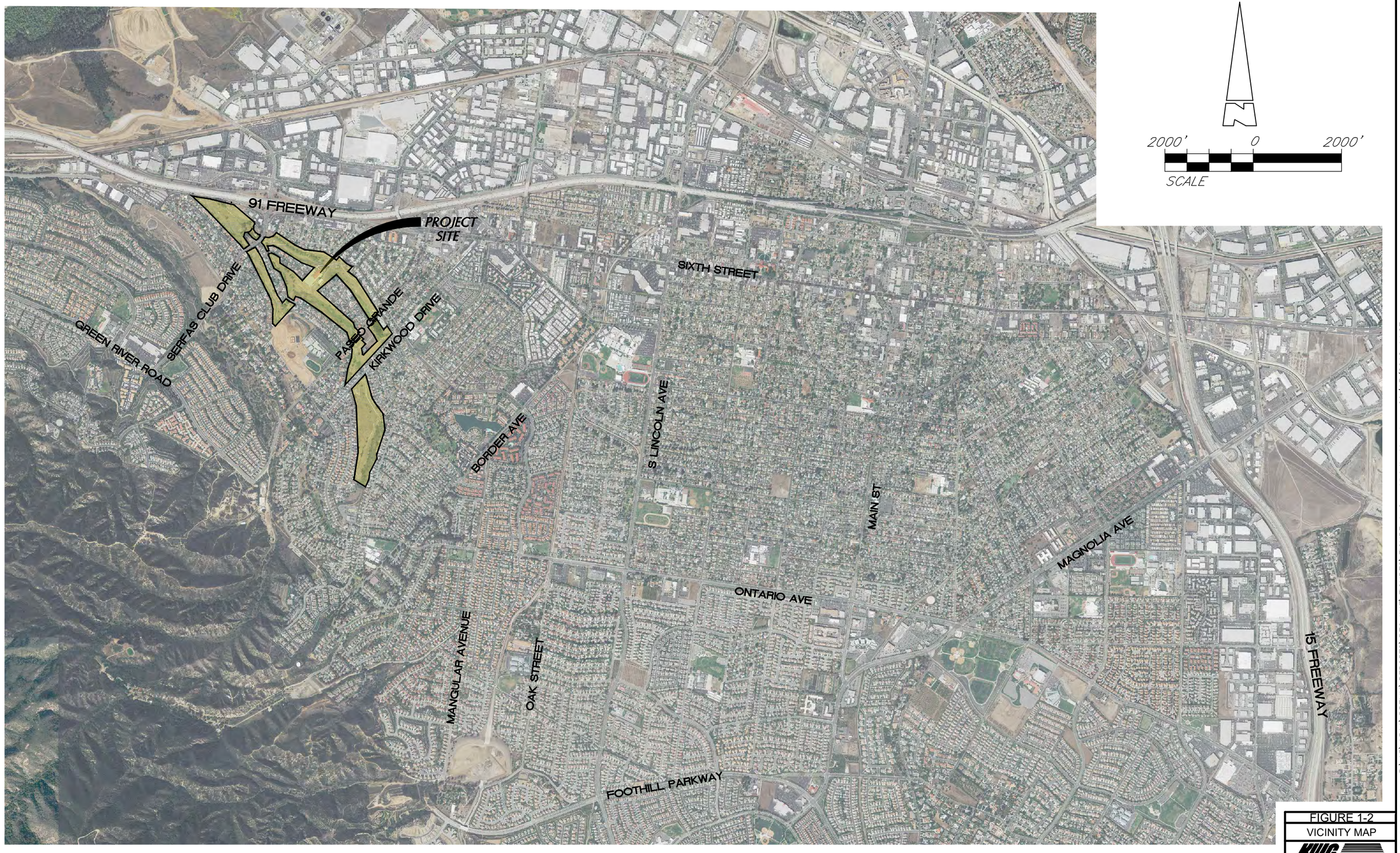


FIGURE 1-2
VICINITY MAP

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J.N. 15.1511.8.19 R:\15\1511\PRELIM\REPORTS\REC WAT\FIGURES\FIGURE 1-2 — Vicinity Map.dwg 09/13/2018 14:27

Section

2
DESIGN CRITERIA

This section presents the design criteria used to evaluate the recommended reclaimed water system improvements required for the Trails at Corona project. The criteria utilized in this study are in accordance with the City of Corona Draft 2018 Reclaimed Water Master Plan, and the 2012 City's Department of Water and Power Design Policy.

2.1 WATER DUTY FACTORS

The primary use for reclaimed water for The Trails at Corona is for slope stabilization and park irrigation. According to the reclaimed water master plan, the average day demand (ADD) duty factor for slope stabilization is 10.5 gallons per year per square foot, or approximately 1,253 gallons per day per acre. The average day demand (ADD) duty factor for park irrigation is 26.3 gallons per year per square foot, or approximately 3,139 gallons per day per acre. When analyzing the reclaimed water system for the Trails at Corona, the peak scenarios considered are the maximum monthly demand (MMD), and peak hour demand (PHD). To convert from ADD to MMD, a factor of 1.8 was used. To convert from ADD to PHD, a factor of 2.5 was used.

2.2 PLANNING CRITERIA

The planning criteria are used to evaluate the proposed reclaimed water system hydraulic models. They are utilized as a check to confirm that the values being developed are reasonable. A list of planning criteria used in the evaluation of this project is provided in **Table 2-1.**

TABLE 2-1

PLANNING CRITERIA		
Description	**Value**	**Unit**
Pressure		
Minimum Static Pressure	40	psi
Max Static Pressure	150 or pressure rating of pipe	psi
Preferred Pressure Range	90-110	psi
Distribution Pipe Velocity During PHD	7	fps

2.3 SYSTEM PRESSURES

The preferred static pressures for the reclaimed water system are between 90 psi to 110 psi. The lowest allowable pressure is 40 psi. The maximum allowable pressure is 150 psi or up to the pressure rating of the pipe. These criteria are used to initially divide a project between water service zones. **Appendix B** presents the Existing Service Zones Map from the 2018 Draft Reclaimed Water Master Plan, which illustrates the general pressure zone boundaries within the City's service area. The Trails at Corona project falls entirely within the 1008.5 Zone.

The anticipated system pressures are believed to exceed the minimum requirements. Under direction from the City, computer modeling is not required to ensure that adequate residual pressures are obtained under all demand conditions, since the static pressures within the project area are so high.

2.4 PIPELINE VELOCITIES

Distribution pipelines are to have a maximum velocity of 7 feet per second under peak hour demand conditions. Based on this, the maximum allowable flow at peak velocity in an 8-inch pipe is approximately 1,100 gallons per minute.

Section

3

EXISTING AND PROPOSED RECLAIMED WATER FACILITIES

This section discusses the existing and proposed reclaimed water facilities as identified in the City of Corona Draft 2018 Reclaimed Water Master Plan report and presents the proposed reclaimed water facilities for the Project.

3.1 EXISTING FACILITIES

The Trails at Corona is located in the City's western service area. The existing reclaimed water facilities in the vicinity of the project are located within the City's 1008.5 Zone. **Figure 3-1** presents a map showing the boundaries of the project and the existing reclaimed water facilities in the vicinity of the project.

3.1.1 1008.5 ZONE

The 1008.5 Zone reclaimed water source is the WRF 1 Booster Station, which is supplied directly from the 4.0 MG WRF1 Tank and discharges into the 2.0 MG Border Avenue Reservoir. There are existing 1008.5 Zone 20-inch and 24-inch reclaimed water transmission lines in Serfas Club Drive, Pine Crest Drive, Paseo Grande, and Kirkwood Drive, adjacent to the Project.

3.2 PROPOSED FACILITIES

The Trails at Corona project will be served by the City's existing 1008.5 Zone. Existing transmission lines that surround the area will provide a source of supply for the site. Proposed 8-inch lines will stub out from the transmission lines to provide one or more sources of connection for each planning area's irrigation meters. **Figure 3-2** presents the Proposed Reclaimed Water Facilities Plan, which illustrates the boundaries of the project and the proposed reclaimed water facilities for The Trails at Corona project.

THE TRAILS AT CORONA

EXISTING RECLAIMED WATER FACILITY PLAN

LEGEND

20" EXISTING RECLAIMED WATER LINE (1008.5 ZONE)

PLANNING AREA/TRACT BOUNDARY

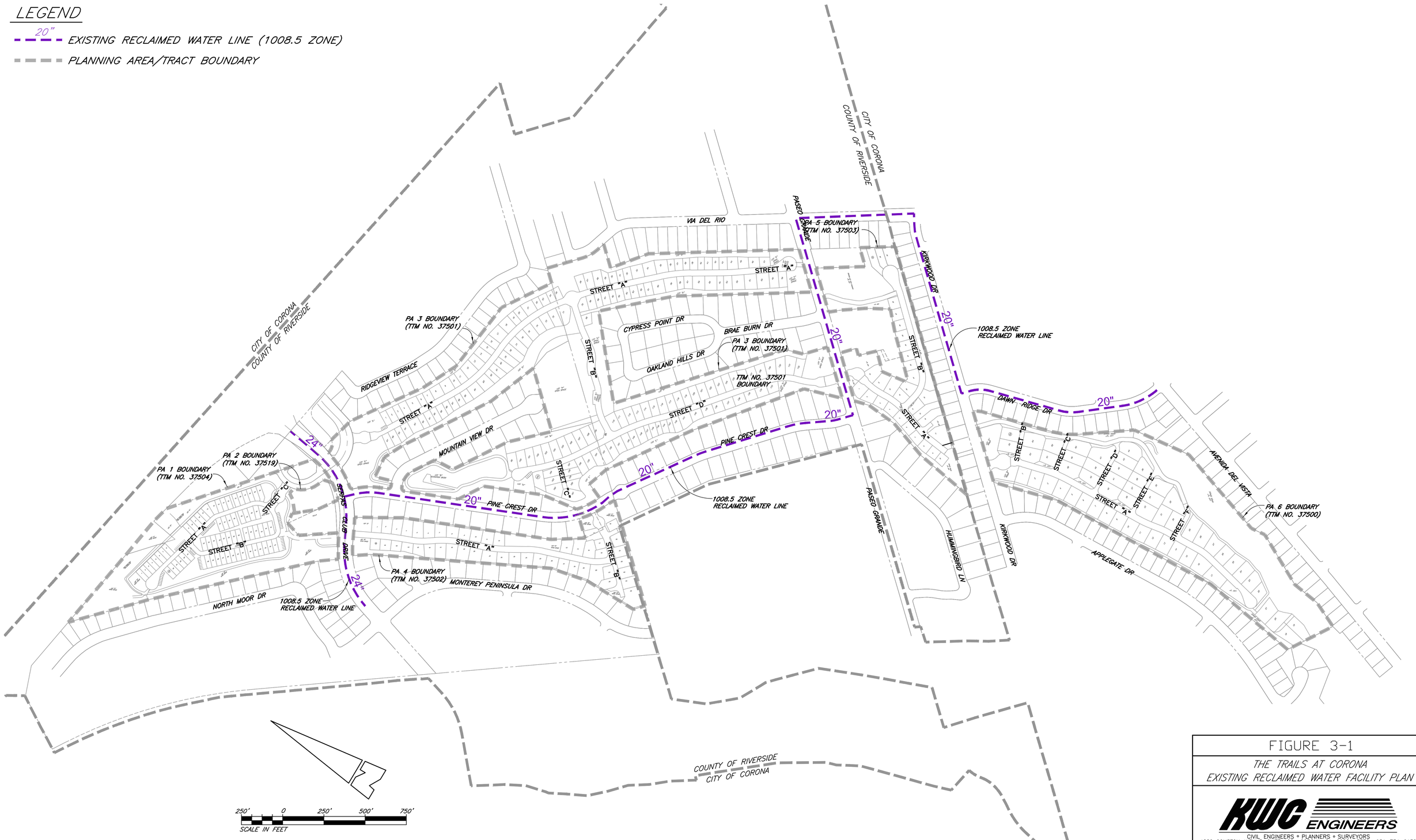


FIGURE 3-1

THE TRAILS AT CORONA
EXISTING RECLAIMED WATER FACILITY PLAN

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15.1911.8.19 R:\15\1511\PRELIM\REPORTS\REC WAT\FIGURES\FIGURE 3-1 - Existing Facilities Plan.dwg 11/08/2021 17:03

THE TRAILS AT CORONA

CONCEPTUAL RECLAIMED WATER FACILITY PLAN

LEGEND

- 20" EXISTING RECLAIMED WATER
- 8" PROPOSED RECLAIMED WATER
- PLANNING AREA/TRACT BOUNDARY

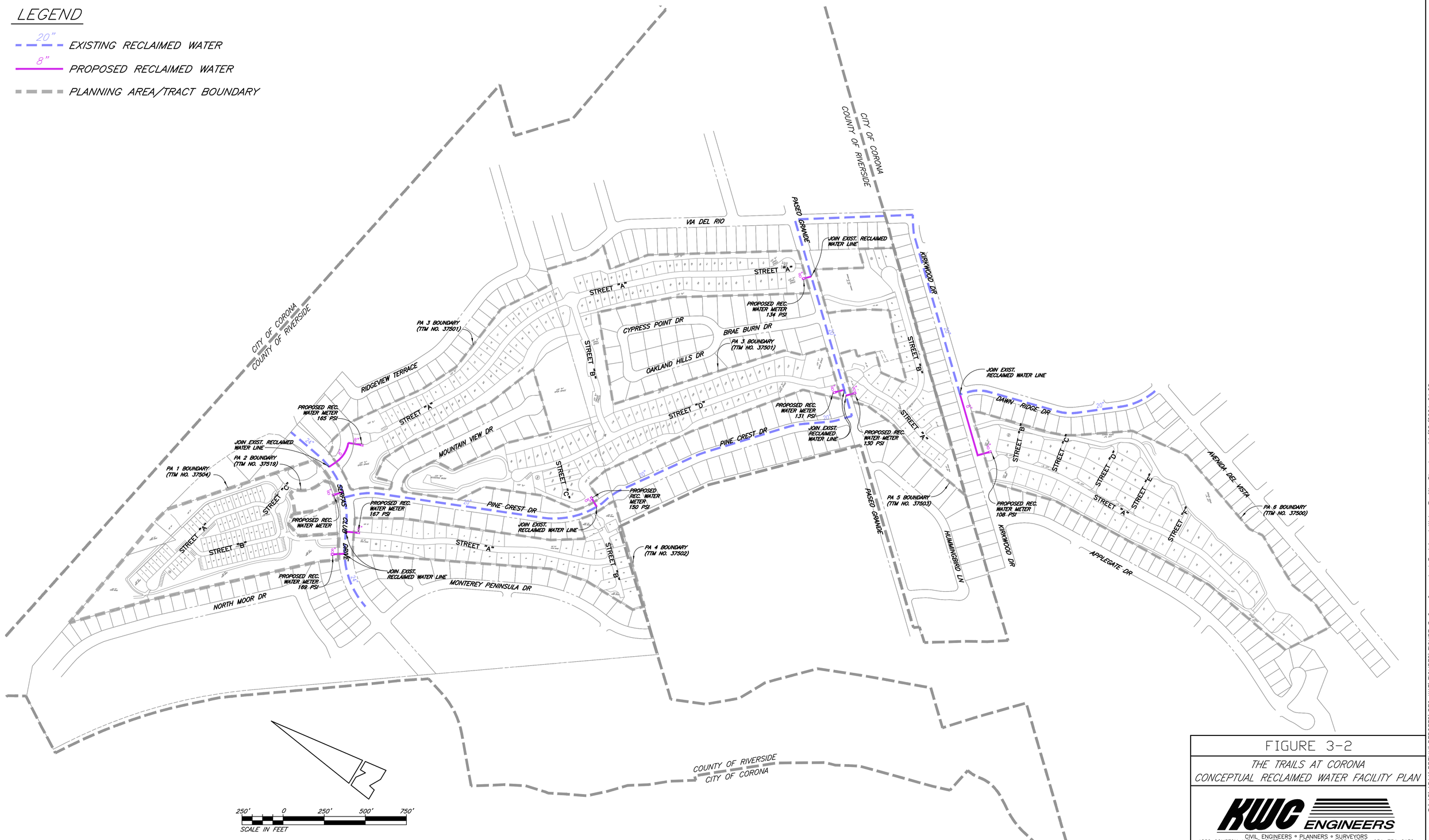


FIGURE 3-2

THE TRAILS AT CORONA
CONCEPTUAL RECLAIMED WATER FACILITY PLAN

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18.1511.8.19 R:\1511\PRELIM\REPORTS\REC WAT\FIGURES\FIGURE 3-2 - Conceptual Reclaimed Water Facility Plan.dwg 11/08/2021 21:08

Section

4

RECLAIMED WATER DEMANDS AND SIZING OF FACILITIES

This section provides the projected water demand for The Trails at Corona project, proposed pipe sizing, and the project's reservoir storage requirements.

4.1 PROJECTED RECLAIMED WATER DEMANDS

There are total of 29.73 acres to be served off of the 1008.5 Zone. There are 16.97 acres of slope stabilization, and 12.76 acres of park irrigation. **Appendix C** shows the proposed landscaped areas within The Trails at Corona project that are to be served by the 1008.5 Zone. **Table 4-1** summarizes the projected average day, maximum month, and peak hour reclaimed water demands for the Project. As shown below the total estimated reclaimed water demand generated by The Trails at Corona project is approximately 0.06 MGD average day demand, 0.11 MGD maximum month demand, and 0.15 MGD peak hour demand. The demand for the PA 2 Commercial property will be determined during final engineering phase as this demand is anticipated to be negligible.

TABLE 4-1

Reclaimed Water Demand Summary					
Land Use	**Quantity (ac)**	**Demand Factor (gpd/ac)**	**Average Day Demand (MGD)**	**Maximum Month Demand (MGD)**	**Peak Hour Demand (MGD)**
Slope Stabilization	16.97	1,253	0.021	0.038	0.053
Park Irrigation	12.96	3,139	0.041	0.073	0.102
TOTAL	**29.73**		**0.062**	**0.112**	**0.155**

4.2 RECLAIMED WATER SYSTEM ANALYSIS

The proposed reclaimed water system for The Trails at Corona project will be connecting to existing transmission lines at several locations to extend a distribution line to the proposed meter locations. Given the HWL of the reclaimed water service zone and from discussions with the City, computer analysis of the proposed reclaimed water network is not needed at this preliminary phase and, therefore, was not performed. Instead, approximate static pressures were calculated at the proposed meter locations to determine potential for connection into the existing

reclaimed water system. The analysis in **Appendix C** provides the static pressures that will be provided at the proposed meter locations and confirms they are well above minimum requirements.

Section

5
PHASING & CONCLUSIONS

This section discusses the anticipated construction phasing of the proposed reclaimed water infrastructure needed to support The Trails at Corona project and summarizes the proposed facilities to be constructed by the project.

5.1 PROJECT PHASING

The Trails at Corona project will be developed as six (6) separate maps. All planning areas will require reclaimed water for irrigation. As each planning area is constructed, the appropriate facilities will be put in place to provide the required reclaimed water supply. Due to the location of existing transmission lines in the area, no single planning area will be dependent on another for its source of reclaimed water. **Figure 3-2** provided the planning area boundaries and improvements to serve each area. Each planning area will be developed as a single phase.

5.2 CONCLUSIONS

Table 5-1 summarizes the reclaimed water infrastructure that The Trails at Corona project will require for the build-out condition:

TABLE 5-1

Trails at Corona - Proposed Infrastructure Improvements

PA and Map Number	Project Description	Facility Location	Zone	Proposed Pipe Size (inches)	Quantity
PA 1 (TTM 37504)	Reclaimed Water Irrigation Meter	Onsite	1008.5	-	1 (EA)
	Distribution Reclaimed Water Lines	Onsite	1008.5	8	65 (LF)
PA 2 (TTM 37519)	Reclaimed Water Irrigation Meter	Onsite	1008.5	-	1 (EA)
	Distribution Reclaimed Water Lines	Onsite	1008.5	8	65 (LF)
PA 3 (TTM 37501)	Reclaimed Water Irrigation Meter	Onsite	1008.5	-	4 (EA)
	Distribution Reclaimed Water Lines	Onsite	1008.5	8	460 (LF)
PA 4 (TTM 37502)	Reclaimed Water Irrigation Meter	Onsite	1008.5	-	1 (EA)
	Distribution Reclaimed Water Lines	Onsite	1008.5	8	70 (LF)
PA 5 (TTM 37503)	Reclaimed Water Irrigation Meter	Onsite	1008.5	-	1 (EA)
	Distribution Reclaimed Water Lines	Onsite	1008.5	8	50 (LF)
PA 6 (TTM 37500)	Reclaimed Water Irrigation Meter	Onsite	1008.5	-	1 (EA)
	Distribution Reclaimed Water Lines	Onsite	1008.5	8	650 (LF)

These proposed reclaimed water infrastructure facilities with respect to their approximate locations, alignments, and sizes are based on the results of the reclaimed water system analysis presented in this report and are consistent with the City's 2018 Draft Reclaimed Water Master Plan and related reclaimed water system studies in the City's service area. The proposed Trails of Corona project onsite reclaimed water facilities presented in this report are preliminary estimates of the anticipated reclaimed water facilities necessary to service the project landscape irrigation needs and may need to be adjusted during the preparation of final engineering improvement plans for the project.

Appendix

A
REFERENCES

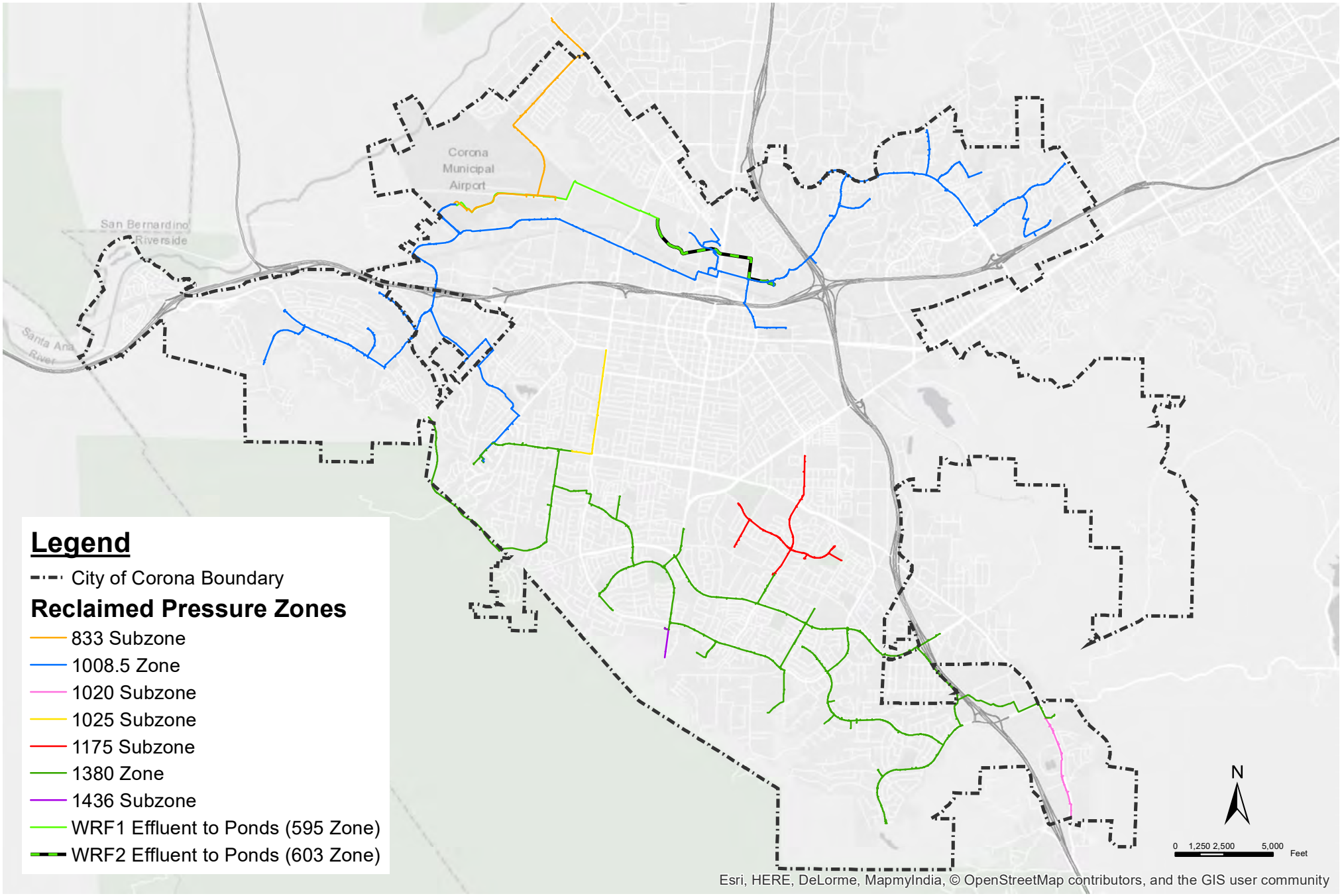
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Appendix

B

CITY OF CORONA RECLAIMED WATER SYSTEM AND PRESSURE ZONE MAP


Corona Municipal Airport
San Bernardino
Riverside
Santa Ana River
Legend
City of Corona Boundary
Reclaimed Pressure Zones
833 Subzone
1008.5 Zone
1020 Subzone
1025 Subzone
1175 Subzone
1380 Zone
1436 Subzone
WRF1 Effluent to Ponds (595 Zone)
WRF2 Effluent to Ponds (603 Zone)
N
0 1,250 2,500 5,000
Feet
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

Appendix

C

PROJECT RECLAIMED WATER DEMAND AREAS

THE TRAILS AT CORONA
RECLAIMED WATER DEMAND AREAS

LEGEND

- 20" EXISTING RECLAIMED WATER
- 8" PROPOSED RECLAIMED WATER
- SLOPE IRRIGATION BY ZONE 1 (1008.5 HWL)
- PARK IRRIGATION BY ZONE 1 (1008.5 HWL)
- PLANNING AREA/TRACT BOUNDARY



EXHIBIT C-1

THE TRAILS AT CORONA
RECLAIMED WATER DEMAND AREAS

KWC ENGINEERS
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