

DRAINAGE REPORT
FOR
PARADISE RV PARK PHASE II
ALBUQUERQUE, NM
April 2025

City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
APPROVED

DATE: 4/29/2025

BY: *[Signature]*

HydroTrans # K08D003

THE APPROVAL OF THESE PLANS/REPORTS SHALL NOT BE CONSTRUED TO PERMIT VIOLATIONS OF ANY CITY ORDINANCE OR STATE LAW, AND SHALL NOT PREVENT THE CITY OF ALBUQUERQUE FROM REQUIRING CORRECTIONS FOR ERRORS OR DIMENSIONS IN PLANS, SPECIFICATIONS, OR CONSTRUCTION DOCUMENTS. SUCH APPROVED PLANS/REPORTS SHALL NOT BE CHANGED, MODIFIED OR ALTERED WITHOUT AUTHORIZATION.

THE APPROVAL OF THESE PLANS/REPORTS SHALL EXPIRE TWO (2) YEARS AFTER THE APPROVAL DATE IF NO BUILDING PERMIT HAS BEEN PULLED ON THE DEVELOPMENT.

Prepared By



The HENSLEY ENGINEERING GROUP

Ron E. Hensley P.E.
300 Branding Iron Road S.E.
Rio Rancho, NM 87124



Table of Contents

I.INTRODUCTION & PROJECT DESCRIPTION.....	1
Legal Description.....	2
Flood Zone	2
Previous Studies.....	2
Methodology.....	2
II.BASIN ANALYSIS	3
Existing Conditions.....	3
Hydrology.....	4
Existing Basin Map	5
Existing Basin Routing	6
Interim Conditions	7
Hydrology.....	7
Interim Basin Map.....	8
Interim Basin Routing	9
Proposed Final Conditions	10
Hydrology.....	10
Proposed Basin Map	11
Proposed Basin Routing.....	12
III.SITE & DRAINAGE IMPROVEMENT ANALYSES	13
Existing Conditions.....	13
Hydrology.....	13
Phase II “Interim” Conditions.....	13
Hydrology.....	13
Hydraulics	13
Storm Drain Layout	15
Interim Storm Drain Profile.....	16
Storm Drain Summary.....	17
Storm Drain Inlets	17
Storm Drain HGL Calcs	18
Storm Drain “Final” Conditions.....	19

Hydrology.....	19
Hydraulics	19
IV.GRADING AND DRAINAGE PLAN.....	19
V.CONCLUSION	19
VI.Appendix A.....	20
Amole-Hubbell Drainage Management Plan	21
VII.Appendix B.....	22
Standard Equations.....	22
Inlet Capacity	22
Culvert Flow	22
HEC 14-1, Scour at Culvert Outlet.....	23
Existing Hydrology.....	24
AHYMO Summary	24
AHYMO Input	26
Interim Hydrology	35
AHYMO Summary	35
AHYMO Input	38
Final Hydrology	47
AHYMO Summary	47
AHYMO Input	49
Final Storm Drain Layout	59
Final Storm Drain Profile.....	60
Storm Drain Summary.....	61
Storm Drain Inlets	61
Storm Drain HGL Calcs	62
VIII.EXHIBITS.....	63
EXHIBIT A –Grading and Drainage Plan.....	64

I. INTRODUCTION & PROJECT DESCRIPTION

This report is submitted as support for Paradise RV Park Phase II Site Plan for Building Permit. As depicted on Figure 1 Zone Atlas Page K-8 below, the project is the second phase of an RV Park located at Volcano Rd. and 102nd St. This report will revise the interim conditions established in the Drainage Report for Paradise RV Park Phase I, dated September 9, 2015, and it will provide final storm drain analysis.

The project site is within the boundaries of the Amole Hubbell Drainage area. The Amole Hubbell Drainage Master Plan provides the basis for the developed conditions of the area. A two cell pond made up of Pond NE2 and Pond NE3 receives the area's runoff. Proposed conditions and development have added a sub-surface storm drainage system to collect runoff and convey it to basin ponds to prevent excessive street flow.

The runoff from the site will be directed to the depressed landscape areas along the site boundaries and routed to an inlet at the southeast corner of the site. Offsite runoffs to the northwest will be captured by inlets in 102nd Street. Offsite runoffs from the west will continue in the existing condition until development requires improvement with additional inlet installation.

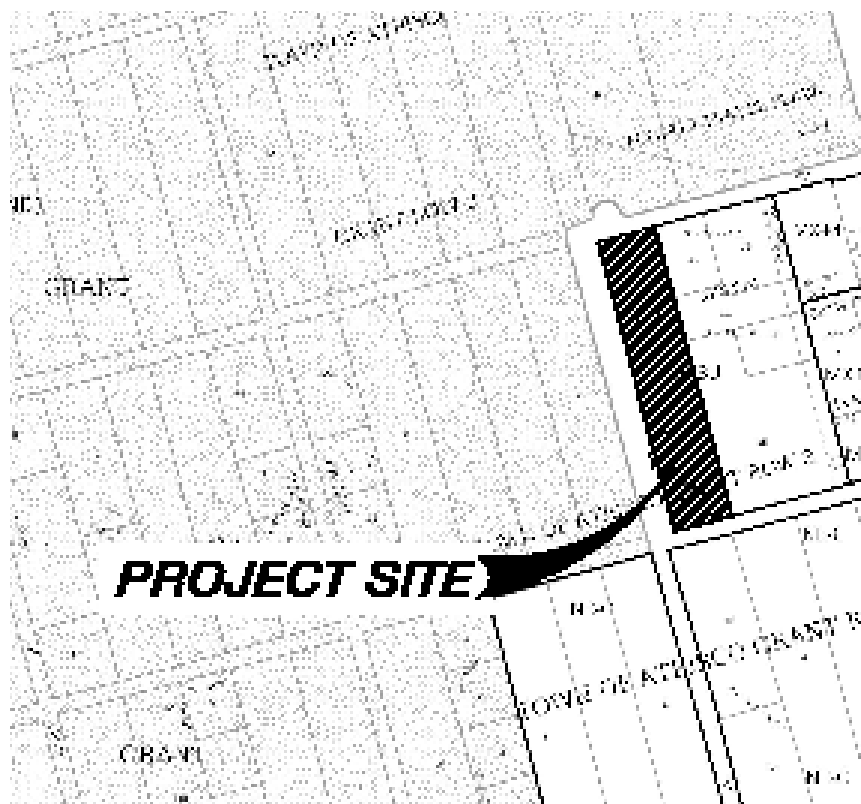


Figure 1 Zone Atlas Page K-8

Legal Description

Tract 3E, ROW A, UNIT A, West of Westland, Town of Atrisco Grant

Flood Zone

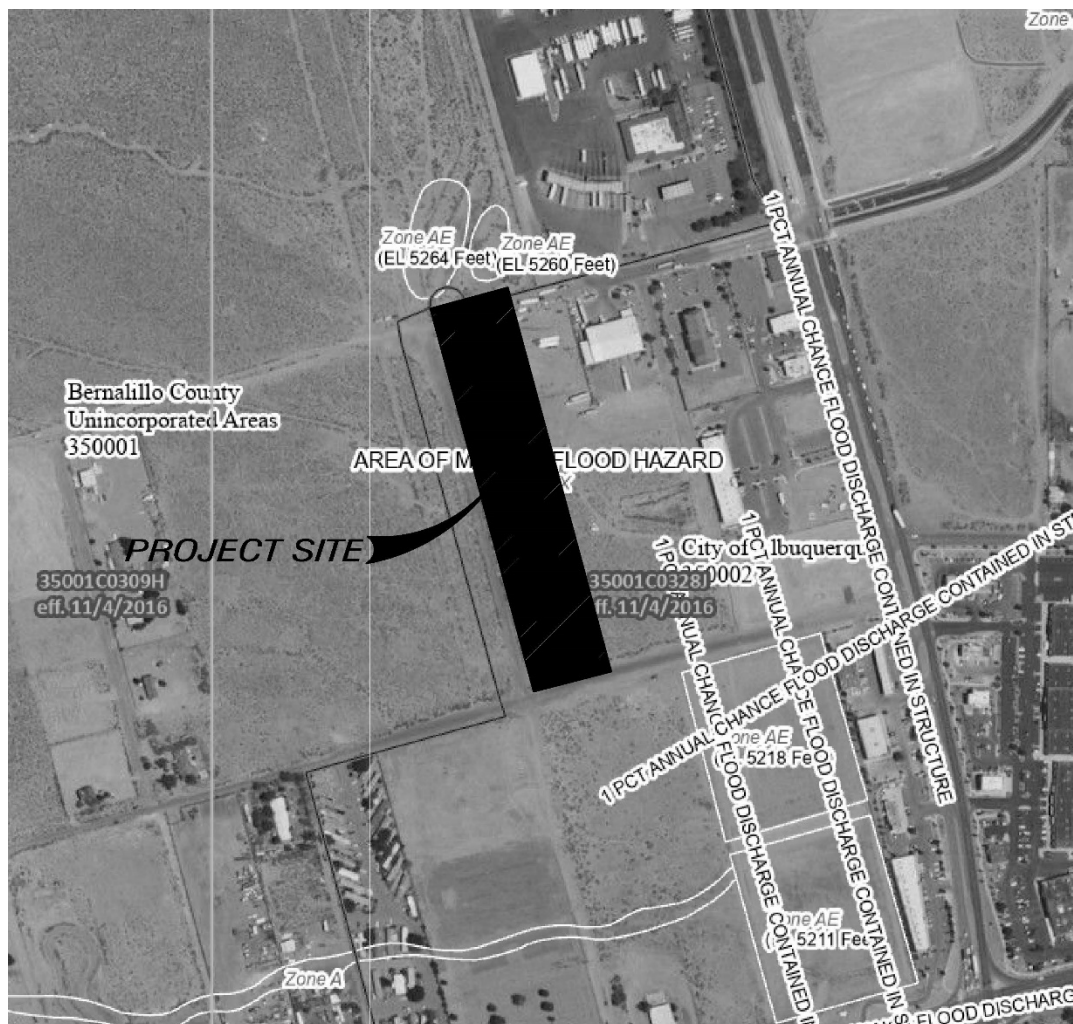


Figure 2 - FEMA's FIRM 35001C0328J

This project, as shown on Figure 2 - FEMA's FIRM 35001C0328J, dated August 16, 2012 is not within a designated 100-year floodplain.

Previous Studies

The "Amole-Hubbell Drainage Master Plan", dated May 2013, (Appendix A) is a drainage master plan for the area that established the drainage infrastructure and design runoff in the vicinity of the site for the allowable developed flows to and from the City's 98th Street Ponds. This study will be the basis for establishing the allowable discharge from this area. The Drainage Report for Paradise RV Park Phase I performed a detailed study of the Basin to determine final conditions, dated September 9, 2015.

Methodology

The Grading and Drainage plan presented in this report has been prepared in accordance with the City of Albuquerque Drainage Ordinances and Chapter 6 of the

Development Process Manual (DPM). Hydrology for the 100-yr 24-hr duration storm was used as the design storm for this analysis for flow calculations. The site is within zone 1 as identified in the city of Albuquerque Development Process Manual, Section 6.2 for rainfall intensity and quantified utilizing AHYMO software.

Rainfall intensities per this report are as follows:

Zone	<i>P</i>₆₀	<i>P</i>₃₆₀	<i>P</i>₁₄₄₀
1	1.87	2.20	2.66

The proposed storm drains included in this report were modeled using hydrology, topographic and planimetric data obtained in the design. The hydraulic analysis for this report was performed to determine capacities and HGL utilizing Hydraflow software.

II. BASIN ANALYSIS

The site is located within the area included in the Amole-Hubbell Drainage Master Plan area. The specific area within the plan is designated as the “98th & Central Basin. The basin boundaries and nomenclature contained in that plan have been continued in this report. The analyses contained in this report address the three conditions of development proposed for the site. The analysis of the existing conditions provides a baseline for the development of future conditions. The interim condition analysis demonstrates the conditions after diversions of existing upstream flows to inlets on east side of 102nd St., but prior to construction of all the storm drain inlets. The final conditions provide an analysis of proposed conditions that adhere to the Master Plan. The “98th & Central Basin” is approximately 0.73 sq. mi. This sub-area is generally bounded on the east by 98th Street and north by I-40, while on the south by Central Avenue and the west by the Powerline Channel. A two cell City Pond receives the area’s runoff.

Existing Conditions

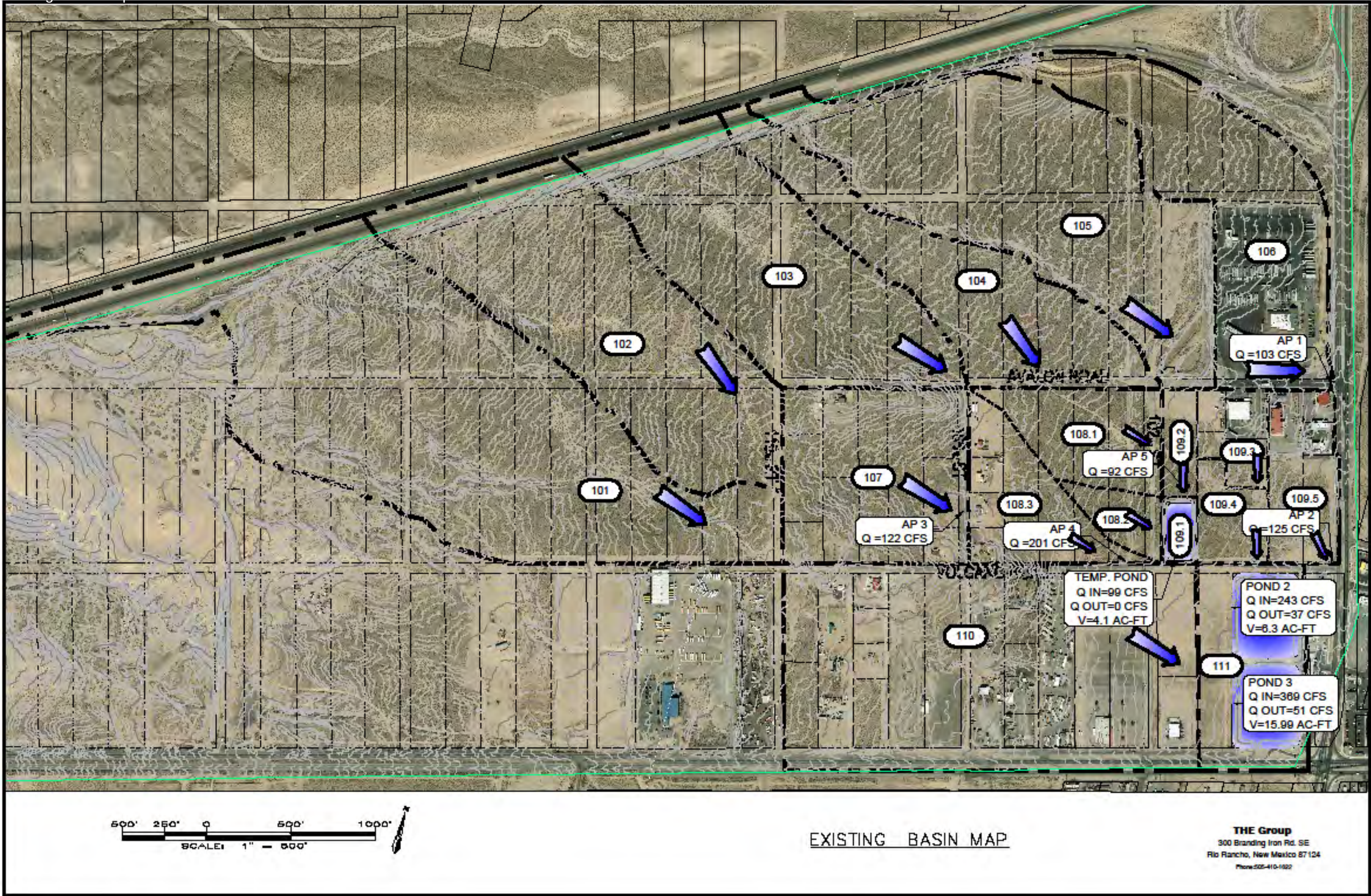
The land uses in 98th & Central Area are platted undeveloped, industrial, commercial, and low density residential. Without the conveyance infrastructure in place, developed and undeveloped lots experience large amounts of cross-lot drainage. There are only two storm drain systems in the sub-area, the first begins near the intersection of Volcano Road and 98th Street and runs through Pond 2 with outlet into Pond 3. The second is the network from Leonidas Lane to Volcano Road discharging to Pond 2. The existing condition corresponds to the “Interim Condition” detailed in the Drainage Report for Paradise RV Park Phase I. Since most of the sub-area is not conveyed via a sub-surface drainage system, large amounts of runoff spill directly into the ponds. The two-cell pond outlets into a storm drain system located in the Tierra Bayita Area, which ultimately connects to the Tierra Bayita Channel.

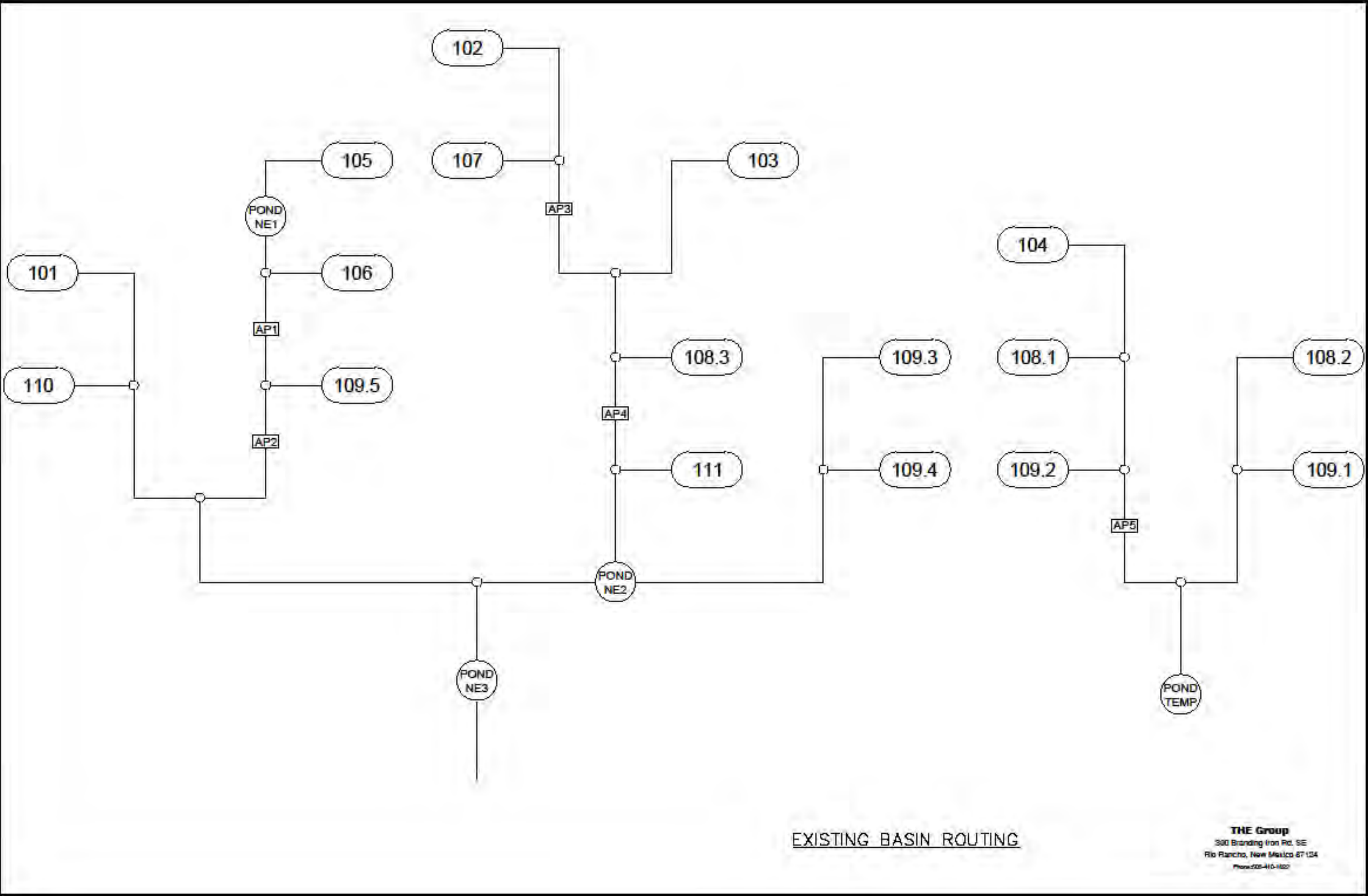
Hydrology

The analysis for the 100-yr 24-hr duration storm was done using AHYMO software. The land treatments reflect existing conditions of the basins and routing depicted on the following pages. A summary of the result is listed below and the

AHYMO files are detailed in Appendix B.

Basin	Area (ac.)	Land Treatment				Yield (cfs/ac.)	Q ₁₀₀₋₂₄ (cfs)	V ₁₀₀₋₂₄ (cfs)
		A	B	C	D			
101	91.21	79	8	8	5	1.48	135.00	4.731
102	49.41	79	8	8	5	1.71	84.30	2.563
103	41.62	79	8	8	5	1.68	69.95	2.159
104	27.69	37	8	38	17	2.54	70.39	2.369
105	54.50	79	8	8	5	1.59	86.52	2.827
106	35.80	36	6	6	52	2.82	100.97	4.746
107	26.44	70	12	12	6	1.82	48.18	1.493
108.1	11.35	37	8	38	17	2.54	28.86	0.971
108.2	3.66	37	8	38	17	2.55	9.32	0.313
108.3	12.67	67	13	13	7	1.87	23.68	0.735
109.1	2.02	0	0	100	0	2.98	6.00	0.172
109.2	3.10	0	0	95	5	3.14	9.72	0.292
109.3	4.94	0	0	20	80	4.32	21.33	0.933
109.4	5.25	0	0	20	80	4.32	22.66	0.992
109.5	9.74	65	7	8	20	3.16	30.73	1.273
110	68.30	22	11	21	46	2.49	169.70	8.876
111	18.05	79	8	8	5	3.79	20.55	0.936





Interim Conditions

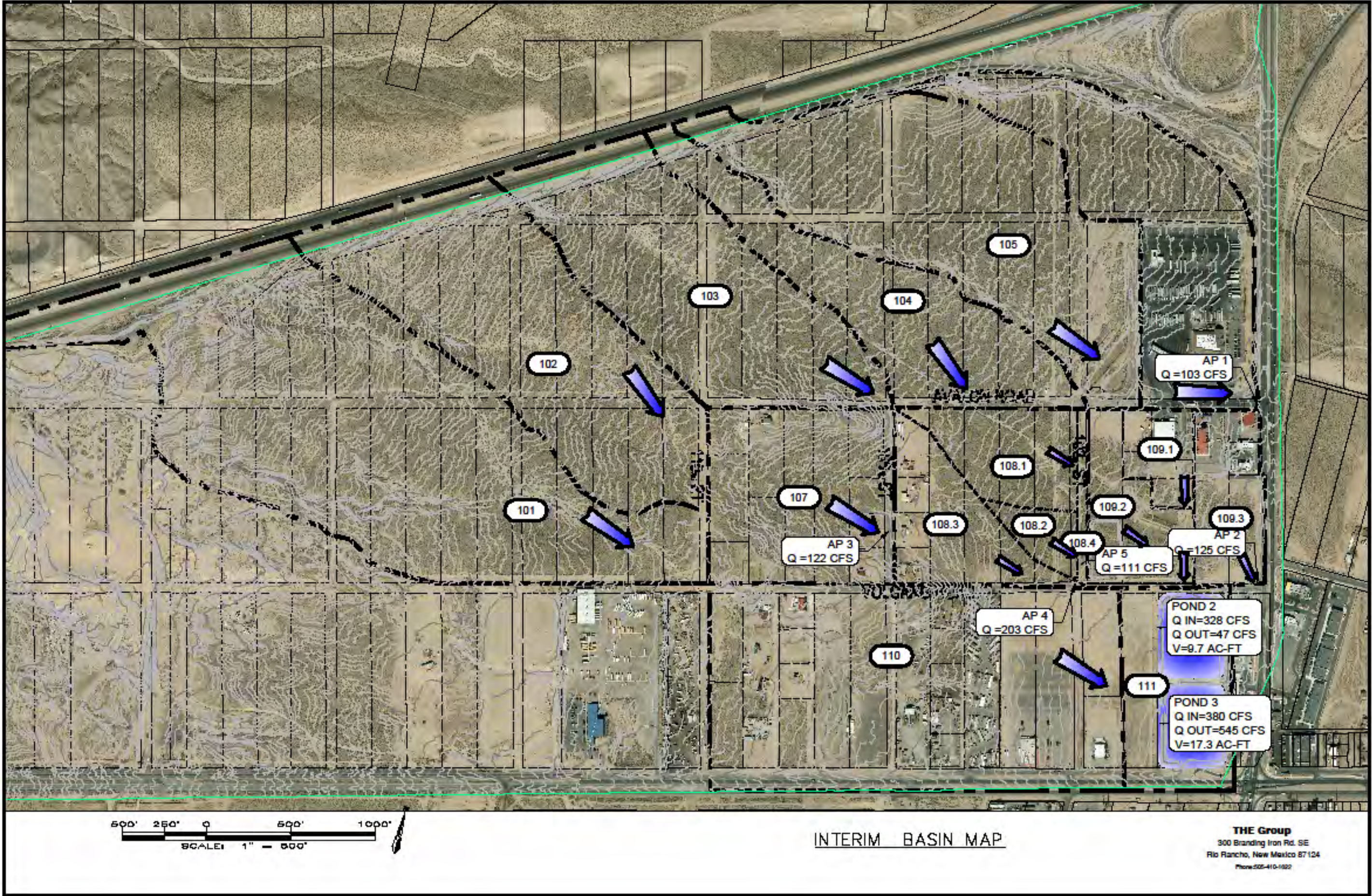
The interim condition provides analyses for the basin modifications due to the development of the Paradise RV Phase II Site. The existing conditions will be modified with the following:

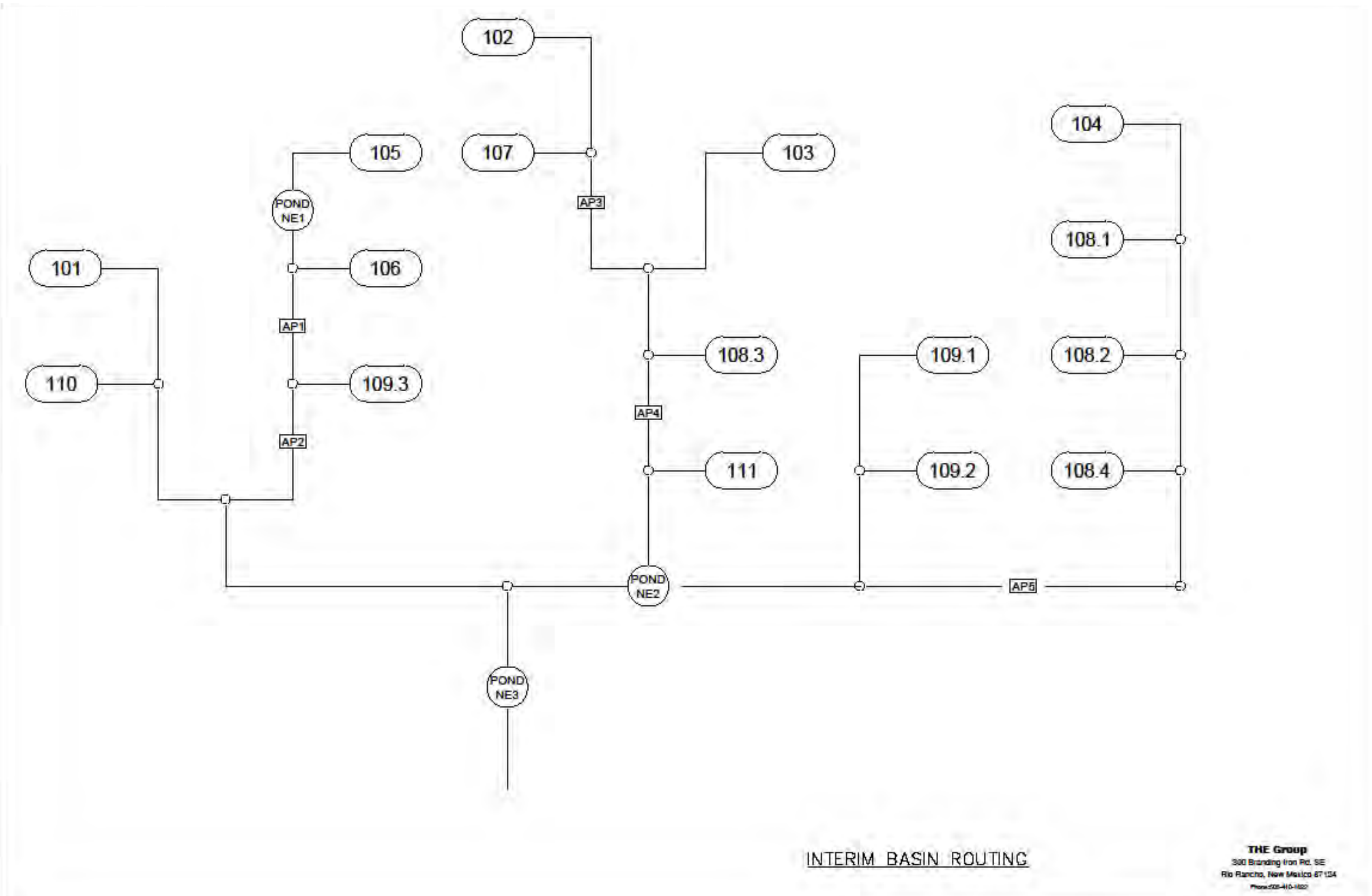
- Modification of sub-basin boundaries and runoff due to the proposed development of Phase II.
- Frontage construction of 102nd Street, Volcano Ave. and Avalon Rd.
- Due to the development of the site, sub-basins upstream from the site will be captured by inlets in 102nd Street.

Hydrology

The analysis for the 100-yr 24-hr duration storm was done using AHYMO software. The land treatments reflect existing and the proposed interim conditions of the basins and routing depicted on the following page. If development of the drainage area is developed without drainage improvement, the land treatments for the sub-basins routed to the retention pond have been modified to allow for a development density of 1 DU/AC as per current county zoning. The land treatments in sub-basin 109 have increased impervious area treatment for development. A summary of the result is listed below and the AHYMO files are detailed in the Appendix B.

Basin	Area (ac.)	Land Treatment				Yield (cfs/ac.)	Q ₁₀₀₋₂₄ (cfs)	V ₁₀₀₋₂₄ (cfs)
		A	B	C	D			
101	91.21	79	8	8	5	1.48	135.00	4.731
102	49.41	79	8	8	5	1.71	84.30	2.563
103	41.62	79	8	8	5	1.68	69.95	2.159
104	27.69	37	8	38	17	2.54	70.39	2.369
105	54.50	79	8	8	5	1.59	86.52	2.827
106	35.80	36	6	6	52	2.82	100.97	4.746
107	26.44	70	12	12	6	1.82	48.18	1.493
108.1	10.41	37	8	38	17	2.54	26.48	0.891
108.2	3.19	37	8	38	17	2.56	8.13	0.273
108.3	12.61	67	13	13	7	2.37	29.94	0.938
108.4	1.46	0	0	100	0	2.15	6.43	0.285
109.1	4.94	0	0	95	5	4.32	21.33	0.933
109.2	10.37	0	0	20	80	4.32	44.74	1.959
109.3	9.74	0	0	20	80	3.15	30.73	1.273
110	68.30	22	11	21	46	2.49	169.70	8.876
111	18.05	79	8	8	5	3.79	20.55	0.936





Proposed Final Conditions

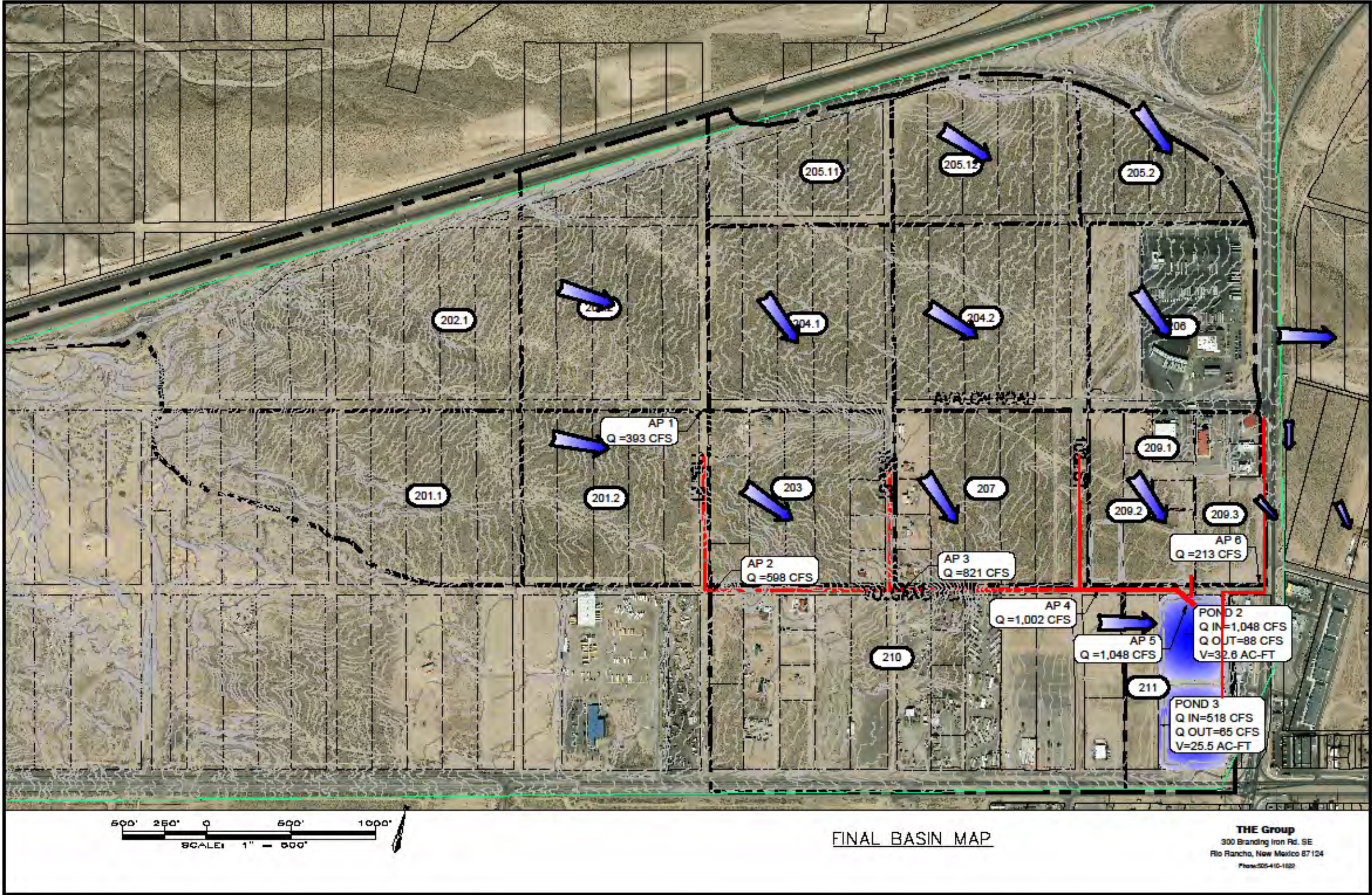
The proposed condition provides analyses for the basin modifications due to the extension of storm drain into the basin. The interim conditions will be modified with the following:

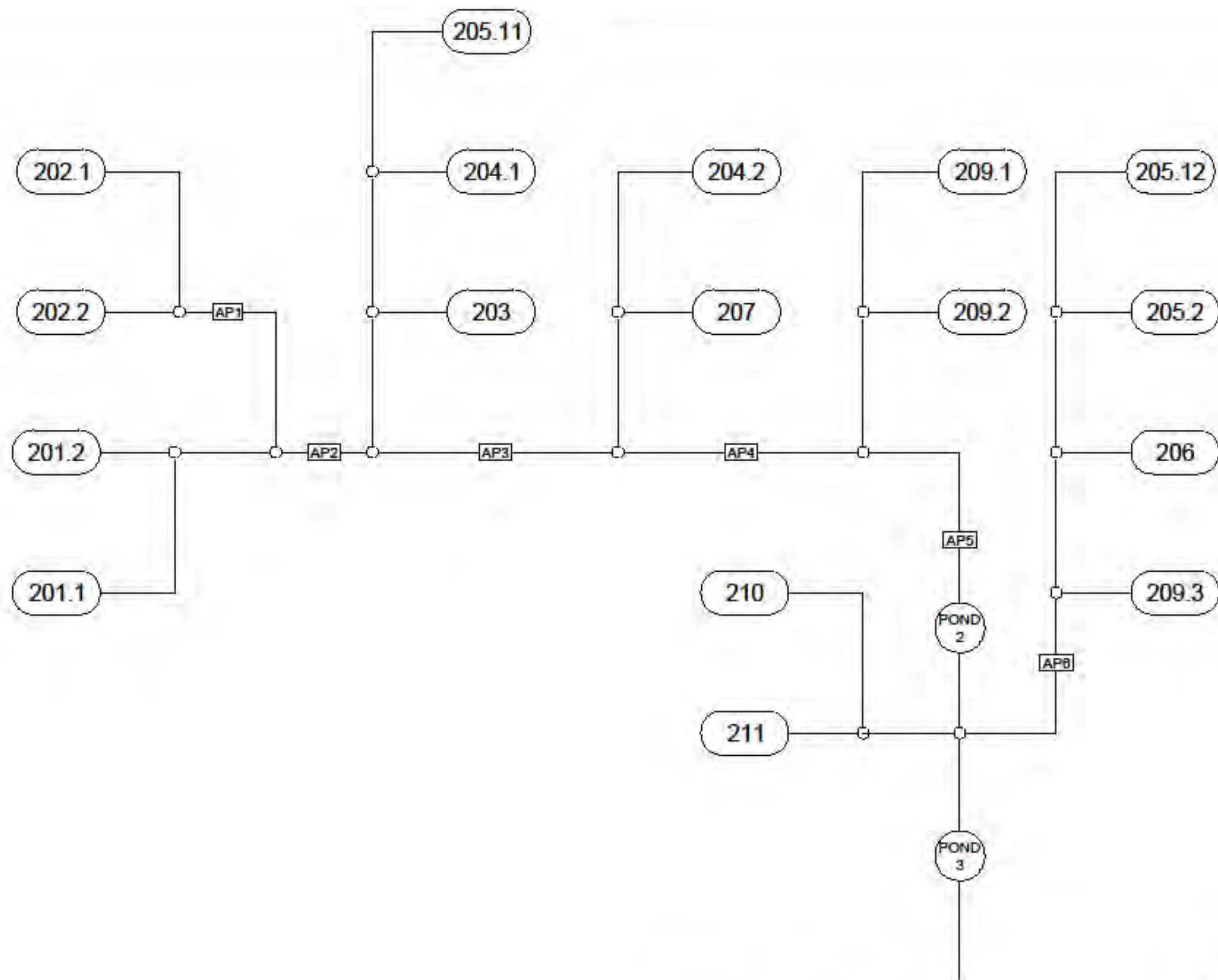
- Modification of sub-basin boundaries and runoff due to future development.
- The runoff analysis includes storm drain extension.

Hydrology

The analysis for the 100-yr 24-hr duration storm was done using AHYMO software. The land treatments reflect existing and the proposed conditions of the basins and routing depicted on the following page. Unless current development is of higher density, the land treatments for the undeveloped sub-basins have been modified to allow for a development density of 1 DU/AC as per current county zoning. The land treatments in other sub-basins will remain equivalent to the interim condition. A summary of the result is listed below and the AHYMO files are detailed in the Appendix.

Basin	Area (ac.)	Land Treatment				Yield (cfs/ac.)	Q ₁₀₀₋₂₄ (cfs)	V ₁₀₀₋₂₄ (cfs)
		A	B	C	D			
201.1	54.16	0	18	19	63	3.88	209.91	8.520
201.2	27.83	0	18	19	63	3.88	107.94	4.378
202.1	54.01	0	18	19	63	3.88	209.31	8.496
202.2	39.58	0	18	19	63	3.88	153.51	6.227
203	32.93	0	18	19	63	3.88	127.70	5.180
204.1	27.72	0	18	19	63	3.88	107.52	4.361
204.2	29.22	0	18	19	63	3.88	113.33	4.597
205.11	16.82	0	41	22	37	3.26	54.79	2.008
205.12	30.95	0	41	22	37	3.26	100.80	3.696
205.2	38.64	0	41	42	17	2.94	113.62	3.688
206	28.15	0	15	16	69	4.00	112.51	4.653
207	32.89	0	18	19	63	3.88	127.55	5.174
209.1	5.80	0	0	20	80	4.32	25.06	1.064
209.2	10.00	0	0	20	80	4.32	43.14	1.832
209.3	11.95	0	0	15	85	4.40	52.51	2.261
210	83.10	0	20	21	59	2.93	243.06	12.612
211	15.08	16	5	21	58	2.76	41.54	2.201





FINAL BASIN ROUTING

III. SITE & DRAINAGE IMPROVEMENT ANALYSES

Existing Conditions

The proposed site is 5 acres located on the north side of Volcano Road. east of 102nd Street as seen on the Figure 1 Zone Atlas Page . The site is Phase II of Paradise RV Park. Phase I of the site is currently developed under an approved site plan and the Paradise RV Park Phase I Grading and Drainage plan attached in Appendix B. Avalon Road is to the north. This site is currently directed to the temporary retention pond with overflow discharge to Volcano Road. The existing temporary retention pond on the site also intercepts existing runoff from upstream undeveloped basins traversing the site.

Hydrology

The analysis for the 100-yr 24-hr duration storm was done using AHYMO software. See the analysis in Section II. BASIN ANALYSIS, Existing Conditions. That analysis establishes the discharge from the site.

Phase II “Interim” Conditions

The proposed development is Phase II of the RV park. The site and adjacent infrastructure were developed for Phase I with a single structure and RV parking. As shown on Exhibit A: Grading and Drainage Plan, the developed runoff from the Phase II site discharges to Phase I and is routed to the storm drain in Volcano Road. Existing runoff from upstream undeveloped basins traversing the site are to be intercepted by the proposed inlets in 102nd Street. The modified interim condition proposed will remove the existing pond on site.

Hydrology

The analysis for the 100-yr 24-hr duration storm was done using AHYMO software. See the analysis in Section II. BASIN ANALYSIS, Interim Conditions. That analysis establishes the offsite flows impacting the site and the site runoff. The following analysis of the drainage depicted on Exhibit A, Grading and Drainage Plan for Phase II, provides the discharge due to the specific site improvements of Phase II, 102nd Street, Volcano Road and Avalon Road.

Hydraulics

The existing development to the north (sub-basin 109.1), is directed to a storm drain in Leonidas Lane that is routed to Volcano Road. The runoff from Phase II of the site combined with Phase I of the site discharges to the storm drain in Volcano Road. The storm drains discharge to the existing City Pond south of Volcano Road.

The runoff from the undeveloped upstream basins (basins 104, 108.1, 108.2, and 108.4) that directly flow to the site are to be captured by the 102nd Street inlets as shown.

The additional basins that flow to the City pond will be maintained in their current state and point of discharge to the City pond. The following summarizes the hydraulics and storm drain flows

Curb Openings - Wier



2' Opening

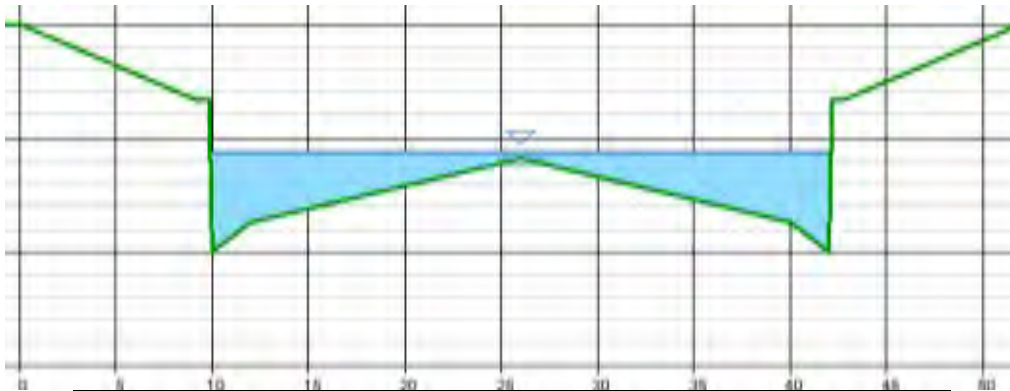
Depth (ft)	Q (cfs)	Area (sqft)	Veloc (ft/s)	Cw (ft)	TopWidth (ft)
0.50	2.36	1.00	2.35	3.33	2.00

4' Opening

Depth (ft)	Q (cfs)	Area (sqft)	Veloc (ft/s)	Cw (ft)	TopWidth (ft)
0.50	4.70	2.00	2.35	3.33	4.00

8' Opening

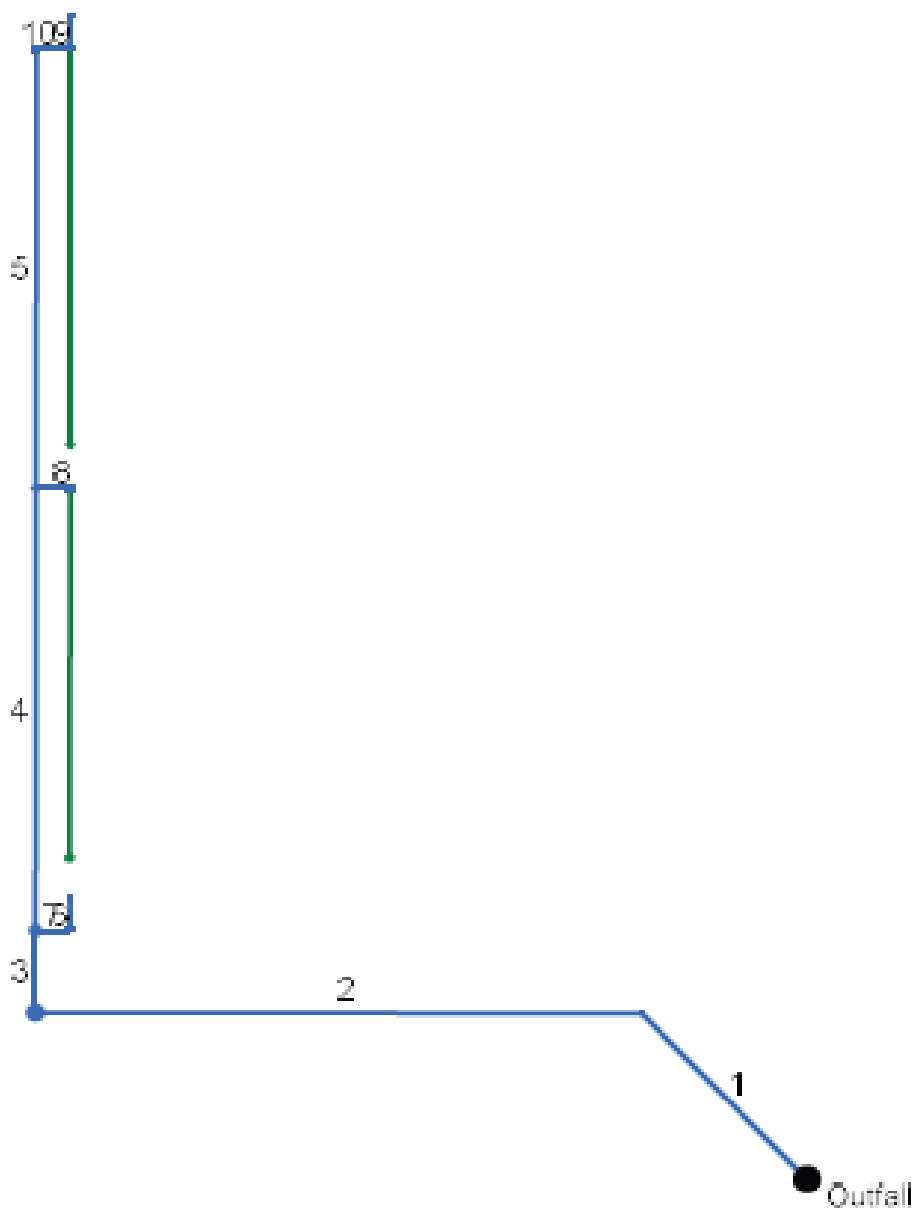
Depth (ft)	Q (cfs)	Area (sqft)	Veloc (ft/s)	Cw (ft)	TopWidth (ft)
0.50	9.42	4.00	2.35	3.33	8.00

102nd Street

Depth (ft)	Q (cfs)	Area (sqft)	Veloc (ft/s)	Wp (ft)	Yc (ft)	TopWidth (ft)	Energy (ft)
0.67	70.39	16.49	5.54	41.40	0.74	40.34	0.99
0.82	112.40	22.38	5.02	51.11	0.93	50.05	1.21

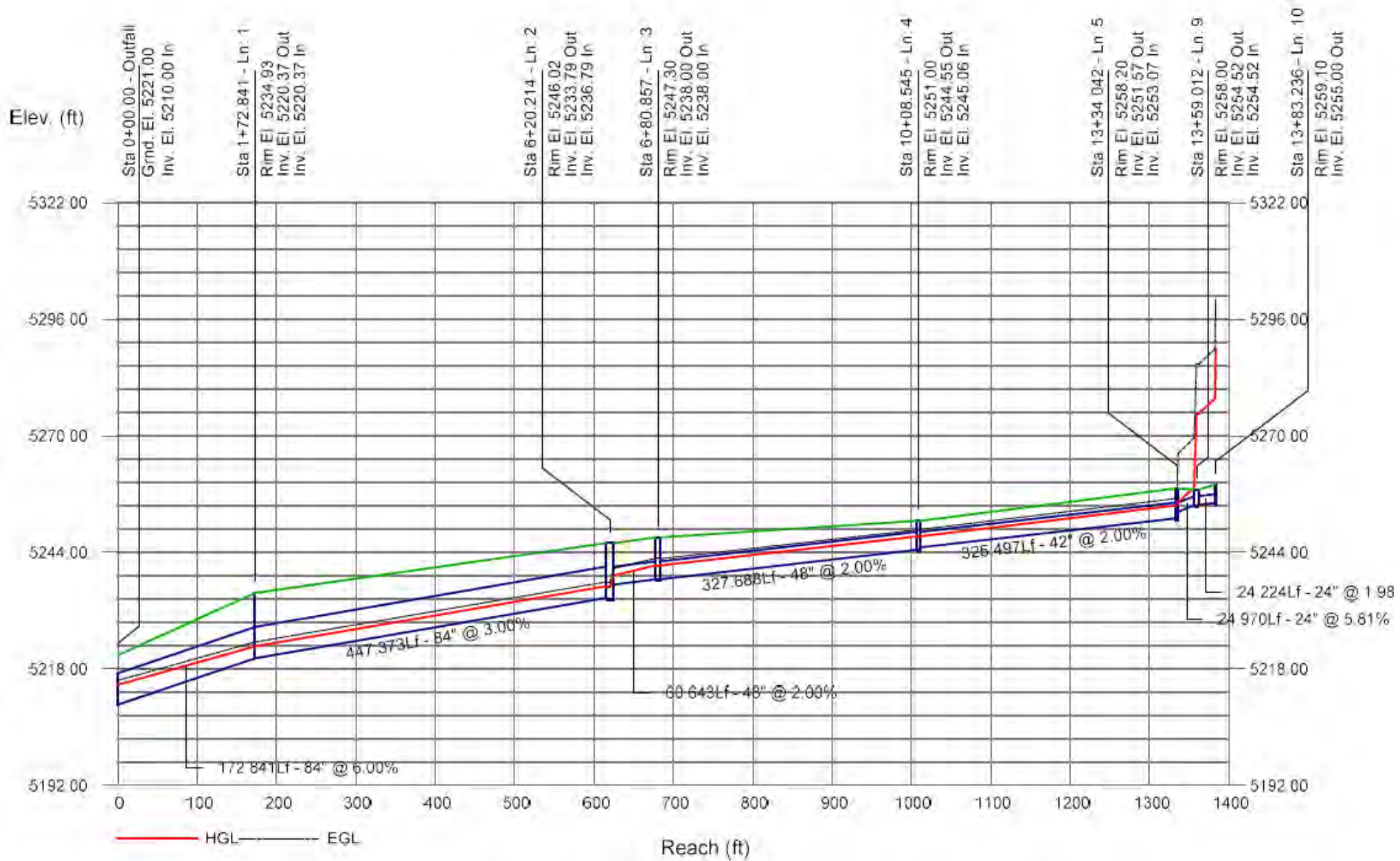
DRAINAGE REPORT - PARADISE RV PARK PHASE I

Storm Drain Layout



DRAINAGE REPORT - PARADISE RV PARK PHASE I

Interim Storm Drain Profile



DRAINAGE REPORT - PARADISE RV PARK PHASE I

Storm Drain Summary

Line No.	Line ID	Flow Rate (cfs)	Line Size (in)	Capacity Full (cfs)	Line Length (ft)	Invert Dn (ft)	Invert Up (ft)	Line Slope (%)	HGL Dn (ft)	HGL Up (ft)	Grnd/Rim Elev Up (ft)	HGL Jnct (ft)	DnStrm Line No.
1	OUTFALL	104.99	84	1531.56	172.84	5210.00	5219.93	5.75	5214.40	5222.56	5234.93	5222.56	Outfall
2	VOLCANO 1	104.99	84	1107.08	447.37	5219.93	5233.36	3.00	5222.56	5235.99	5246.02	5235.99	1
3	102ND 1	104.99	48	202.90	60.64	5236.36	5237.57	2.00	5238.40	5240.67	5245.40	5240.67	2
4	102ND 2	96.86	48	219.85	327.69	5237.58	5244.12	2.00	5240.67	5247.10	5250.91	5247.10	3
5	102ND 3	83.62	42	142.28	325.50	5244.62	5251.13	2.00	5247.10	5253.98	5258.15	5253.98	4
6	CB9	8.13	24	37.88	24.59	5239.57	5240.26	2.81	5240.67	5241.27 j	5244.53	5241.27	3
7	CB7	8.13	24	31.83	24.26	5240.26	5240.74	1.98	5241.27	5241.76	5244.63	5241.76	6
8	CB5	13.24	24	32.01	24.97	5246.12	5246.62	2.00	5247.10	5247.93	5250.62	5247.93	4
9	CB3	83.62	24	44.58	24.97	5252.63	5253.60	3.89	5254.63	5258.05	5257.87	5274.57	5
10	CB1	83.62	24	31.84	24.22	5253.60	5254.08	1.98	5274.57	5277.89	5258.04	5288.90	9

Notes: j-Line contains hyd. jump

Storm Drain Inlets

Line No.	Inlet ID	Line ID	Known Q (cfs)	Q Carryover (cfs)	Q Captured (cfs)	Q Bypass (cfs)	Gutter Depth (ft)	Grate Length (ft)	Grate Width (ft)	Gutter Spread (ft)
1	MH1	OUTFALL	0.00	....	....	....	....	....	....	....
2	MH2	VOLCANO 1	0.00	....	....	....	....	....	....	....
3	MH3	102ND 1	0.00	....	....	....	....	....	....	....
4	MH4	102ND 2	0.00	....	....	....	....	....	....	....
5	MH5	102ND 3	0.00	....	....	....	....	....	....	....
6	CB9	CB9	0.00	5.43	5.43	0.00	0.34	6.00	2.00	12.77
7	CB7	CB7	8.13	5.96	8.66	5.43	0.41	6.00	2.00	16.22
8	CB5	CB5	13.24	0.00	7.28	5.96	0.40	6.00	2.00	15.83
9	CB3	CB3	0.00	54.66	54.66	0.00	1.51	6.00	2.00	71.35
10	CB1	CB1	83.62	0.00	28.96	54.66	0.73	6.00	2.00	32.28

DRAINAGE REPORT - PARADISE RV PARK PHASE I

Storm Drain HGL Calcs

Line	Pipe Size	Q	Inv Elev Dn	HGL Dn	Depth Dn	Area Dn	Veloc Dn	Vel Hd Dn	EGL Dn	Line Length	Inv Elev Up	HGL Up	Depth Up	Area Up	Veloc Up	Vel Hd Up	EGL Up
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)
1	84	104.99	5210.00	5214.40	4.40	13.22	4.12	0.98	5215.38	172.84	5219.93	5222.56	2.63**	13.22	7.94	0.98	5223.54
2	84	104.99	5219.93	5222.56	2.63*	13.22	7.94	0.98	5223.54	447.37	5233.36	5235.99	2.63**	13.22	7.94	0.98	5236.97
3	48	104.99	5236.36	5238.40	2.04*	6.45	16.28	1.57	5239.97	60.64	5237.57	5240.67	3.10**	10.45	10.05	1.57	5242.24
4	48	96.86	5237.58	5240.67	3.09	10.04	9.30	1.45	5242.12	327.69	5244.12	5247.10	2.98**	10.04	9.65	1.45	5248.55
5	42	83.62	5244.62	5247.10	2.48	7.29	11.47	1.55	5248.65	325.50	5251.13	5253.98	2.85**	8.39	9.97	1.55	5255.52
6	24	8.13	5239.57	5240.67	1.10	1.60	4.59	0.40	5241.07	24.59	5240.26	5241.27 j	1.01**	1.60	5.08	0.40	5241.68
7	24	8.13	5240.26	5241.27	1.01*	1.60	5.08	0.40	5241.68	24.26	5240.74	5241.76	1.01**	1.60	5.08	0.40	5242.16
8	24	13.24	5246.12	5247.10	0.98	1.53	8.65	0.57	5247.68	24.97	5246.62	5247.93	1.31**	2.18	6.08	0.57	5248.50
9	24	83.62	5252.63	5254.63	2.00*	3.14	26.62	11.02	5265.65	24.97	5253.60	5258.05	2.00**	3.14	26.62	11.01	5269.06
10	24	83.62	5253.60	5274.57	2.00	3.14	26.62	11.02	5285.59	24.22	5254.08	5277.89	2.00**	3.14	26.62	11.01	5288.90

Storm Drain “Final” Conditions

Construction of the storm drain improvements described herein will represent the final condition. The interim conditions will be modified with the following:

- Elimination of the temporary retention pond.
- Development of the roadways and inlets in Volcano and 102nd Street.

Hydrology

The analysis for the 100-yr 24-hr duration storm was done using AHYMO software. See the analysis in Section II. BASIN ANALYSIS, Storm Drain “Final” Conditions. That analysis establishes the ultimate flow conditions and the allowable discharge rates. The analysis for the Phase II proposed site condition provides the discharge due to the specific site improvements of Phase II.

Hydraulics

As shown in this report, the curb openings and street sections have the capacity to convey the flows indicated, and the analysis of the developed storm drain flows are summarized in the Final Storm Drain Hydraulics in Appendix B:

IV. GRADING AND DRAINAGE PLAN

The Grading and Drainage Plan Phase II included in VIII. EXHIBITS, depicts the developed drainage characteristics of the area affected by Phase II of the project. The plan demonstrates that the runoff from the site is directed to appropriate points of discharge and the proposed facilities are adequate to accommodate the flows impacted by the site.

V. CONCLUSION

As shown, the capacity of the proposed infrastructure is adequate to accommodate the runoff from the site as described. The Grading and Drainage Plan included in VIII. EXHIBITS, provides support of the Site Plan and construction of the infrastructure improvements. The flow is contained within the street sections and the downstream drainage infrastructure has adequate capacity to accept the runoff.

VI. Appendix A

2013 Report



VII. Appendix B

Grate Opening COA STD. DWG 2220



Grate Length	Grate Width	Grate Area	Bar Area	Orifice Area
30"	25"	6.77	1.86	4.91

Standard Equations

Inlet Capacity

Hydraflow Storm Sewers uses methods presented by HEC-22. The interception capacity of combination inlets on grade is essentially equal to that of the grate alone. Hydraflow Storm Sewers computes this capacity by neglecting the curb. The interception capacity of grate inlets on grade is computed using the following equations, as specified in HEC-22:

$$E = R_f E_o + R_s (1 - E_o)$$

Where:

E = Efficiency of the grate

R_f = Ratio of intercepted frontal flow to total gutter flow=1

E_o = Ratio of frontal flow to total gutter flow

R_s = Side flow interception efficiency

$$R_s = \frac{1}{1 + \left(\frac{K_c V^{1.8}}{S_x L^{2.3}} \right)}$$

Where:

K_c = 0.15

V = Velocity of flow in the gutter in ft/s

L = Grate length in ft

Culvert Flow

Per the HDS-5 method, the following inlet control equations are used. If H_w is above the pipe crown, the submerged equation is used. Otherwise, the unsubmerged equation is used.

Submerged

$$H_w = D \times \left[c \left(\frac{Q}{A \sqrt{D}} \right)^2 + Y - .5S \right]$$

Where:

H_w = Headwater depth above invert

D = Line Rise, ft

Q = Flow rate, cfs

A = Full cross-sectional area of pipe, sqft

A = Full cross-sectional area of pipe, sqft

K, M, c, Y = Coefficients based on edge configurations

S = Line slope, ft/ft

Submerged

$$H_w = D \times \left[K \left(\frac{Q}{A \sqrt{D}} \right)^M \right]$$

$$H_{di} = D \times \left[c \left(\frac{Q}{A \sqrt{D}} \right)^2 + Y - .5S \right]$$

Where:

H_{di} = Headwater depth above invert

D = Line Rise, ft

c = 0.0398 (Coeff. for square edged circular section)

Q = Flow rate, cfs

A = Full cross-sectional area of pipe, sqft

Y = Coeff. 0.67

S = Line slope, ft/ft

HEC 14-1, Scour at Culvert Outlet

The general expression for determining scour geometry in a cohesionless soil at the culvert outlet is:

$$\left[\frac{h_s}{R_c}, \frac{W_s}{R_c}, \frac{L_s}{R_c}, \frac{V_s}{R_c^3} \right] = C_s C_h \left(\frac{\alpha}{\sigma^{1/3}} \right) \left(\frac{Q}{\sqrt{g(R_c^{2.5})}} \right)^\beta \left(\frac{t}{316} \right)^\theta \quad (5.1)$$

where,

- h_s = depth of scour, m (ft)
- W_s = width of scour, m (ft)
- L_s = length of scour, m (ft)
- V_s = volume of scour, m^3 (ft^3)
- R_c = hydraulic radius at the end of the culvert (assuming full flow)
- Q = discharge, m^3/s (ft^3/s)
- g = acceleration of gravity, $9.81 m/s^2$ ($32.2 ft/s^2$)
- t = time in minutes
- σ = $(D_{84}/D_{16})^{0.5}$, material standard deviation
- α, β, θ are coefficients, see Table 5.1
- C_s = slope correction coefficient, see Table 5.2
- C_h = drop height adjustment coefficient, see Table 5.3

Table 5.1. Coefficients for Culvert Outlet Scour in Cohesionless Soils

	α	β	θ
Depth, h_s	2.27	0.39	0.06
Width, W_s	6.94	0.53	0.08
Length, L_s	17.10	0.47	0.10
Volume, V_s	127.08	1.24	0.18

Table 5.3. Coefficient C_s for Culvert Slope

Slope %	Depth	Width	Length	Volume
0	1.00	1.00	1.00	1.00
2	1.03	1.28	1.17	1.30
5	1.08	1.28	1.17	1.30
>7	1.12	1.28	1.17	1.30

$$h_s, W_s, L_s = C_s \left(\frac{\alpha}{\sigma^{1/3}} \right) \left(\frac{Q}{\sqrt{g(R_c^{2.5})}} \right)^\beta \left(\frac{t}{316} \right)^\theta = 3.11 \text{ ft.}, 18.30 \text{ ft.}, 31.32 \text{ ft.}$$

Rip-Rap Erosion Blanket W=19' x L=32' x Depth=3' $D_{50}=18''$

DRAINAGE REPORT - PARADISE RV PARK PHASE I

Existing Hydrology AHYMO Summary

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
*S	PARADISE RV PARK									
*S	Drainage Basin Analysis									
*S	"EXISTING" CONDITION MODEL									
START										TIME= 0.00
LOCATION										
*S	RAINFALL FROM COA DEVELOPMENT PROCESS MANUAL									
*S	*****									
*S	100 YEAR 6HR STORM									
RAINFALL	TYPE=13									RAIN24= 2.660
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	101.00	-	1	0.14252	135.00	4.731	0.62241	1.567	1.480	PER IMP= 5.00
ROUTE MCUNGE	101RT	1	2	0.14252	131.08	4.693	0.61738	1.766	1.437	CCODE = 0.1
COMPUTE NM HYD	110.00	-	1	0.10672	169.70	8.876	1.55942	1.600	2.485	PER IMP= 45.90
ADD HYD	110SUM	2& 1	10	0.24924	251.93	13.569	1.02074	1.700	1.579	
COMPUTE NM HYD	105.00	-	1	0.08515	86.52	2.827	0.62241	1.533	1.588	PER IMP= 5.00
ROUTE RESERVOIR	POND1	1	2	0.08515	10.44	2.827	0.62241	2.033	0.192	AC-FT= 1.957
ROUTE MCUNGE	POND1RT	2	1	0.08515	10.44	2.826	0.62237	2.066	0.192	CCODE = 0.2
COMPUTE NM HYD	106.00	-	2	0.05594	100.97	4.746	1.59081	1.533	2.820	PER IMP= 51.45
ADD HYD	106SUM	1& 2	1	0.14109	102.63	7.572	1.00633	1.533	1.137	
*S	AP1									
ROUTE MCUNGE	106SUMRT	1	20	0.14109	101.11	7.562	1.00500	1.600	1.120	CCODE = 0.1
COMPUTE NM HYD	109.50	-	2	0.01522	30.73	1.273	1.56800	1.500	3.155	PER IMP= 50.00
ADD HYD	109SUMA	20& 2	20	0.15631	125.07	8.835	1.05981	1.567	1.250	
*S	AP2									
COMPUTE NM HYD	104.00	-	1	0.04326	70.39	2.369	1.02698	1.500	2.543	PER IMP= 17.00
ROUTE MCUNGE	104RT	1	2	0.04326	69.09	2.359	1.02227	1.633	2.495	CCODE = 0.1
COMPUTE NM HYD	108.10	-	1	0.01773	28.86	0.971	1.02698	1.500	2.543	PER IMP= 17.00
ADD HYD	108SUMA	1& 2	1	0.06099	88.11	3.330	1.02363	1.600	2.257	
ROUTE MCUNGE	108.1RT	1	2	0.06099	87.55	3.321	1.02112	1.700	2.243	CCODE = 0.1
COMPUTE NM HYD	109.20	-	1	0.00485	9.72	0.292	1.12989	1.500	3.131	PER IMP= 5.00
ADD HYD	109SUMA	1& 2	2	0.06584	91.89	3.614	1.02912	1.700	2.181	
*S	AP5									
COMPUTE NM HYD	108.20	-	1	0.00572	9.32	0.313	1.02698	1.500	2.546	PER IMP= 17.00
ADD HYD	109SUMB	1& 2	2	0.07156	96.22	3.927	1.02895	1.700	2.101	
COMPUTE NM HYD	109.10	-	1	0.00315	6.00	0.172	1.02341	1.500	2.978	PER IMP= 0.00
ADD HYD	POND	1& 2	1	0.07471	98.91	4.099	1.02871	1.700	2.069	

DRAINAGE REPORT - PARADISE RV PARK PHASE I

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 2 NOTATION
*S TEMP. POND										
COMPUTE NM HYD	109.30	-	1	0.00772	21.33	0.933	2.26717	1.500	4.317	PER IMP= 80.00
ROUTE MCUNGE	109.3RT	1	2	0.00772	21.16	0.934	2.26762	1.533	4.283	CCODE = 0.2
COMPUTE NM HYD	109.40	-	1	0.00820	22.66	0.992	2.26717	1.500	4.317	PER IMP= 80.00
ADD HYD	109SUMC	1& 2	2	0.01592	43.46	1.925	2.26734	1.500	4.266	
ROUTE MCUNGE	POND2SUMA	2	21	0.01592	43.29	1.925	2.26740	1.533	4.249	CCODE = 0.2
*S TO STORM DRAIN										
COMPUTE NM HYD	102.00	-	1	0.07721	84.30	2.563	0.62241	1.533	1.706	PER IMP= 5.00
ROUTE MCUNGE	102RT	1	2	0.07721	83.35	2.552	0.61971	1.600	1.687	CCODE = 0.1
COMPUTE NM HYD	107.00	-	1	0.04132	48.18	1.493	0.67727	1.533	1.822	PER IMP= 6.40
ADD HYD	107SUM	2& 1	1	0.11853	121.87	4.044	0.63977	1.600	1.607	
*S AP3										
ROUTE MCUNGE	107RT	1	2	0.11853	120.46	4.031	0.63766	1.667	1.588	CCODE = 0.1
COMPUTE NM HYD	103.00	-	1	0.06503	69.95	2.159	0.62241	1.533	1.681	PER IMP= 5.00
ROUTE MCUNGE	103RT	1	3	0.06503	68.74	2.147	0.61907	1.633	1.652	CCODE = 0.1
ADD HYD	108SUMA	2& 3	1	0.18356	187.35	6.178	0.63107	1.667	1.595	
COMPUTE NM HYD	108.30	-	2	0.01979	23.68	0.735	0.69616	1.533	1.869	PER IMP= 6.80
ADD HYD	108SUMB	1& 2	1	0.20335	200.58	6.913	0.63740	1.667	1.541	
*S AP4										
ROUTE MCUNGE	108SUMBRT	1	2	0.20335	199.38	6.912	0.63735	1.667	1.532	CCODE = 0.2
COMPUTE NM HYD	111.00	-	1	0.02820	20.55	0.936	0.62241	1.600	1.139	PER IMP= 5.00
ADD HYD	POND2SUMB	2& 1	1	0.23155	218.65	7.848	0.63553	1.667	1.475	
ADD HYD	POND2SUM	21& 1	1	0.24747	242.39	9.774	0.74051	1.667	1.530	
ROUTE RESERVOIR	POND2	1	30	0.24747	36.72	9.774	0.74051	2.166	0.232	AC-FT= 6.282
ADD HYD	POND3SUMA	10&20	10	0.40555	344.90	22.404	1.03580	1.700	1.329	
ADD HYD	POND3SUMB	10&30	10	0.65302	369.21	32.177	0.92389	1.700	0.883	
ROUTE RESERVOIR	POND3	10	30	0.65302	51.17	32.177	0.92389	2.966	0.122	AC-FT= 15.989
FINISH										

DRAINAGE REPORT - PARADISE RV PARK PHASE I

AHYMO Input

```

*S  PARADISE RV PARK
*S  Drainage Basin Analysis
*S  "EXISTING" CONDITION MODEL
*
START          TIME=0.0  PUNCH CODE=0  PRINT CODE=0
LOCATION        AHYM097
*
*S  RAINFALL FROM COA DEVELOPMENT PROCESS MANUAL
*S  *****
*S  100 YEAR 6HR STORM
RAINFALL      TYPE=13  RAIN QUARTER=0
              RAIN ONE=1.87 IN  RAIN SIX=2.20 IN
              RAIN DAY=2.66 IN  DT=0.03333 HRS
*
*
***Adding Sediment Bulk Factor to all Basins
SEDIMENT BULKCODE=1 BULK FACTOR=1.06
*
*
*** Sub-BASIN 101 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                      NK=1  ISLOPE=1
                      LENGTH=3653 FT  SLOPE=0.048  K=0.7
COMPUTE NM HYD          ID=1  HYD NO=101  DA=0.14252 SQ MI
                      PER A=79 PER B=8  PER C=8  PER D=5
                      TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1  CODE=1
*
*
****Route HYD 101 to Sub-Basin 110
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                      MIN ELEV=100 FT  MAX ELEV=105 FT
                      CH SLP=0.030  FP SLP=0.01  N=0.030
                      DIST=20 FT

                      DIST  ELEV
                          0 105
                          10 100
                          15 100
                          20 105
*
ROUTE MCUNGE          ID=2  HYD NO=101RT  INFLOW ID=1
                      DT=0  HR  LENGTH=3110 FT
                      NS=0  SLOPE=0.030
*
PRINT HYD              ID=2  CODE=1
*
*
*** Sub-BASIN 110 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                      NK=1  ISLOPE=1
                      LENGTH=3483 FT  SLOPE=0.026  K=0.7
COMPUTE NM HYD          ID=1  HYD NO=110  DA=0.10672 SQ MI
                      PER A=22.1 PER B=11  PER C=21  PER D=45.9

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

TP=0.0    MASSRAIN=-1

*
PRINT HYD          ID=1    CODE=1
*
*
* Total Flow from Basin (101Rt + 110)
ADD HYD            ID=10   HYD NO=110SUM ID I=2    ID II=1
PRINT HYD          ID=10   CODE=1
*
*
*****
*
*
*** Sub-BASIN 105 ****
*
COMPUTE LT TP      LCODE=1    UPLAND/LAG TIME METHOD
                   NK=1      ISLOPE=1
                   LENGTH=2509 FT    SLOPE=0.037    K=0.7
COMPUTE NM HYD     ID=1      HYD NO=105    DA=0.08515 SQ MI
                   PER A=79 PER B=8    PER C=8    PER D=5
                   TP=0.0    MASSRAIN=-1

*
PRINT HYD          ID=1    CODE=1
*
*
****Route Hyd 105 through Pond1
*
ROUTE RESERVOIR    ID=2    HYD NO=POND1    INFLOW ID=1    CODE=10
                   OUTFLOW (CFS)    STORAGE (AC FT)    ELEV
                   0                0                5260
                   5                1.061             5262
                   14               2.542             5264

*
*
****Route HYD POND1 to Sub-Basin 106
COMPUTE RATING CURVE    CID=1 VS NO=1 NO SEGS=1
                       MIN ELEV=100 FT MAX ELEV=105 FT
                       CH SLP=0.026    FP SLP=0.01    N=0.017
                       DIST=20 FT

                       DIST    ELEV
                           0    105
                           10   100
                           15   100
                           20   105

*
ROUTE MCUNGE        ID=1    HYD NO=POND1RT    INFLOW ID=2
                   DT=0 HR    LENGTH=780 FT
                   NS=0    SLOPE=0.026

*
PRINT HYD          ID=1    CODE=1
*
*
*** Sub-BASIN 106 ****
*
COMPUTE LT TP      LCODE=1    UPLAND/LAG TIME METHOD
                   NK=1      ISLOPE=1
                   LENGTH=2718 FT    SLOPE=0.032    K=0.7
COMPUTE NM HYD     ID=2      HYD NO=106    DA=0.05594 SQ MI
                   PER A=35.8 PER B=6.4    PER C=6.4    PER D=51.5

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

TP=0.0    MASSRAIN=-1

*
PRINT HYD          ID=2    CODE=1
*
*
* Total Flow from Basin (POND1RT + 106)
ADD HYD            ID=1    HYD NO=106SUM ID I=1    ID II=2
PRINT HYD          ID=1    CODE=1
*
*S AP1
*
****Route HYD 106SUM to Sub-Basin 109 Through a Pipe
COMPUTE RATING CURVE      CID=1    VS NO=1 CODE=-1    SLP=0.013
                        DIA=42 IN    N=0.013
*
ROUTE MCUNGE          ID=20    HYD NO=106SUMRT    INFLOW ID=1
                        DT=0 HR    LENGTH=1240 FT
                        NS=0    SLOPE=0.013
*
PRINT HYD            ID=20    CODE=1
*
*
*** Sub-BASIN 109.5 ****
*
COMPUTE LT TP          LCODE=1    UPLAND/LAG TIME METHOD
                        NK=1    ISLOPE=1
                        LENGTH=1367 FT    SLOPE=0.030    K=0.7
COMPUTE NM HYD          ID=2    HYD NO=109.5    DA=0.01522 SQ MI
                        PER A=35 PER B=7.5    PER C=7.5    PER D=50
                        TP=0.0    MASSRAIN=-1
*
PRINT HYD            ID=2    CODE=1
*
*
* Total Flow from Basin (106SUMRT + 109.5)
ADD HYD              ID=20    HYD NO=109SUMA ID I=20    ID II=2
PRINT HYD            ID=20    CODE=1
*
*S AP2
*
*
*****
*** Sub-BASIN 104 ****
*
COMPUTE LT TP          LCODE=1    UPLAND/LAG TIME METHOD
                        NK=1    ISLOPE=1
                        LENGTH=1952 FT    SLOPE=0.036    K=0.7
COMPUTE NM HYD          ID=1    HYD NO=104    DA=0.04326 SQ MI
                        PER A=37 PER B=8    PER C=38    PER D=17
                        TP=0.0    MASSRAIN=-1
*
PRINT HYD            ID=1    CODE=1
*
*
****Route HYD 104 to Sub-Basin 108.1
COMPUTE RATING CURVE      CID=1    VS NO=1 NO SEGS=1
                        MIN ELEV=100 FT MAX ELEV=105 FT
                        CH SLP=0.030    FP SLP=0.01    N=0.030
                        DIST=20 FT

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

DIST  ELEV
      0 105
    10  100
    15  100
    20  105
*
ROUTE MCUNGE      ID=2  HYD NO=104RT  INFLOW ID=1
DT=0  HR  LENGTH=1410 FT
NS=0  SLOPE=0.030
*
PRINT HYD          ID=2  CODE=1
*
*
*** Sub-BASIN 108.1 ***
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
NK=1  ISLOPE=1
LENGTH=720 FT  SLOPE=0.030  K=0.7
COMPUTE NM HYD     ID=1  HYD NO=108.1  DA=0.01773 SQ MI
PER A=37 PER B=8  PER C=38  PER D=17
TP=0.0  MASSRAIN=-1
*
PRINT HYD          ID=1  CODE=1
*
*
* Total Flow from Basin (104RT + 108.1)
ADD HYD            ID=1  HYD NO=108SUMA ID I=1  ID II=2
PRINT HYD          ID=1  CODE=1
*
*
****Route HYD 108SUMA to Sub-Basin 109.2
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
MIN ELEV=100 FT MAX ELEV=105 FT
CH SLP=0.033  FP SLP=0.01 N=0.030
DIST=20 FT

DIST  ELEV
      0 105
    10  100
    15  100
    20  105
*
ROUTE MCUNGE      ID=2  HYD NO=108.1RT  INFLOW ID=1
DT=0  HR  LENGTH=1100 FT
NS=0  SLOPE=0.033
*
PRINT HYD          ID=2  CODE=1
*
*
*** Sub-BASIN 109.2 ***
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
NK=1  ISLOPE=1
LENGTH=275 FT  SLOPE=0.030  K=0.7
COMPUTE NM HYD     ID=1  HYD NO=109.2  DA=0.00485 SQ MI
PER A=0  PER B=0  PER C=95  PER D=5
TP=0.0  MASSRAIN=-1
*
PRINT HYD          ID=1  CODE=1
*

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
* Total Flow from Basin (108.1RT + 109.2)
ADD HYD          ID=2  HYD NO=109SUMA ID I=1  ID II=2
PRINT HYD        ID=2  CODE=1
*
*S AP5
*
*** Sub-BASIN 108.2 ****
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
                   NK=1    ISLOPE=1
                   LENGTH=370 FT  SLOPE=0.030  K=0.7
COMPUTE NM HYD     ID=1    HYD NO=108.2  DA=0.00572 SQ MI
                   PER A=37 PER B=8  PER C=38  PER D=17
                   TP=0.0  MASSRAIN=-1
*
PRINT HYD          ID=1  CODE=1
*
* Total Flow from Basin (109SUMA + 108.2)
ADD HYD          ID=2  HYD NO=109SUMB ID I=1  ID II=2
PRINT HYD        ID=2  CODE=1
*
*** Sub-BASIN 109.1 ****
*
COMPUTE NM HYD     ID=1    HYD NO=109.1  DA=0.00315 SQ MI
                   PER A=0 PER B=8  PER C=100  PER D=0
                   TP=0.0  MASSRAIN=-1
*
* Total Flow from Basin (109SUMA + 109.1)
ADD HYD          ID=1  HYD NO=POND ID I=1  ID II=2
PRINT HYD        ID=1  CODE=1
*
*S TEMP. POND
*****
*** Sub-BASIN 109.3 ****
*
COMPUTE NM HYD     ID=1    HYD NO=109.3  DA=0.00772 SQ MI
                   PER A=0 PER B=0  PER C=20  PER D=80
                   TP=0.0  MASSRAIN=-1
*
PRINT HYD          ID=1  CODE=1
*
****Route HYD 109.4 to Sub-Basin 109.3
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
                   MIN ELEV=100 FT MAX ELEV=105 FT
                   CH SLP=0.033  FP SLP=0.01 N=0.017
                   DIST=20 FT

                   DIST  ELEV
                   0 105
                   10 100
                   15 100
                   20 105
*
ROUTE MCUNGE       ID=2  HYD NO=109.3RT  INFLOW ID=1
                   DT=0 HR  LENGTH=436 FT
                   NS=0  SLOPE=0.033

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
PRINT HYD                      ID=2    CODE=1
*
*** Sub-BASIN 109.4 ***
*
COMPUTE NM HYD                 ID=1    HYD NO=109.4    DA=0.00820 SQ MI
                                PER A=0 PER B=0 PER C=20 PER D=80
                                TP=0.0    MASSRAIN=-1
*
PRINT HYD                      ID=1    CODE=1
*
*
* Total Flow from Basin (109.3RT + 109.4)
ADD HYD                        ID=2    HYD NO=109SUMC ID I=1    ID II=2
PRINT HYD                      ID=2    CODE=1
*
****Route HYD 109SUMC to Sub-Basin 111 Through a Pipe
COMPUTE RATING CURVE          CID=1    VS NO=1 CODE=-1    SLP=0.013
                                DIA=36 IN    N=0.013
*
ROUTE MCUNGE                   ID=21   HYD NO=POND2SUMA INFLOW ID=2
                                DT=0 HR    LENGTH=300 FT
                                NS=0    SLOPE=0.013
*
PRINT HYD                      ID=21   CODE=1
*
*
*S TO STORM DRAIN
*
*****
*** Sub-BASIN 102 ***
*
COMPUTE LT TP                  LCODE=1    UPLAND/LAG TIME METHOD
                                NK=1    ISLOPE=1
                                LENGTH=2025 FT    SLOPE=0.048    K=0.7
COMPUTE NM HYD                 ID=1    HYD NO=102    DA=0.07721 SQ MI
                                PER A=79 PER B=8 PER C=8 PER D=5
                                TP=0.0    MASSRAIN=-1
*
PRINT HYD                      ID=1    CODE=1
*
*
****Route HYD 102 to Sub-Basin 107
COMPUTE RATING CURVE          CID=1    VS NO=1 NO SEGS=1
                                MIN ELEV=100 FT MAX ELEV=105 FT
                                CH SLP=0.033 FP SLP=0.01 N=0.030
                                DIST=20 FT

                                DIST    ELEV
                                    0 105
                                    10 100
                                    15 100
                                    20 105
*
ROUTE MCUNGE                   ID=2    HYD NO=102RT INFLOW ID=1
                                DT=0 HR    LENGTH=1100 FT
                                NS=0    SLOPE=0.033
*
PRINT HYD                      ID=2    CODE=1

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
*
*** Sub-BASIN 107 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                        NK=1    ISLOPE=1
                        LENGTH=1285 FT  SLOPE=0.037  K=0.7
COMPUTE NM HYD          ID=1    HYD NO=107  DA=0.04132 SQ MI
                        PER A=70.3 PER B=11.6 PER C=11.7 PER D=6.4
                        TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1    CODE=1
*
*
* Total Flow from Basin (102RT + 107)
ADD HYD                ID=1    HYD NO=107SUM ID I=2    ID II=1
PRINT HYD              ID=1    CODE=1
*
*S AP3
*
****Route HYD 107SUM to Sub-Basin 108.3
COMPUTE RATING CURVE   CID=1 VS NO=1 NO SEGS=1
                        MIN ELEV=100 FT MAX ELEV=105 FT
                        CH SLP=0.029  FP SLP=0.01 N=0.030
                        DIST=20 FT

                        DIST  ELEV
                        0 105
                        10 100
                        15 100
                        20 105
*
ROUTE MCUNGE           ID=2    HYD NO=107RT  INFLOW ID=1
                        DT=0  HR  LENGTH=1300 FT
                        NS=0  SLOPE=0.029
*
PRINT HYD              ID=2    CODE=1
*
*
*** Sub-BASIN NE103 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                        NK=1    ISLOPE=1
                        LENGTH=2330 FT  SLOPE=0.041  K=0.7
COMPUTE NM HYD          ID=1    HYD NO=103  DA=0.06503 SQ MI
                        PER A=79 PER B=8 PER C=8 PER D=5
                        TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1    CODE=1
*
*
****Route HYD 103 to Sub-Basin 108.3
COMPUTE RATING CURVE   CID=1 VS NO=1 NO SEGS=1
                        MIN ELEV=100 FT MAX ELEV=105 FT
                        CH SLP=0.031  FP SLP=0.01 N=0.030
                        DIST=20 FT

                        DIST  ELEV
                        0 105
                        10 100

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

15      100
20      105
*
ROUTE MCUNGE      ID=3  HYD NO=103RT  INFLOW ID=1
                  DT=0  HR  LENGTH=1490 FT
                  NS=0  SLOPE=0.031
*
PRINT HYD          ID=3  CODE=1
*
*
* Total Flow from Basin (107RT + 103RT)
ADD HYD            ID=1  HYD NO=108SUMA ID I=2  ID II=3
PRINT HYD          ID=1  CODE=1
*
*
*** Sub-BASIN 108.3 ****
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
                  NK=1  ISLOPE=1
                  LENGTH=1486 FT  SLOPE=0.030  K=0.7
COMPUTE NM HYD     ID=2  HYD NO=108.3  DA=0.01979 SQ MI
                  PER A=66.9 PER B=13.1 PER C=13.2 PER D=6.8
                  TP=0.0  MASSRAIN=-1
*
PRINT HYD          ID=2  CODE=1
*
*
* Total Flow from Basin (108SUMA + 108)
ADD HYD            ID=1  HYD NO=108SUMB ID I=1  ID II=2
PRINT HYD          ID=1  CODE=1
*
*S AP4
*
****Route HYD 108SUMB to Sub-Basin 111
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
                  MIN ELEV=100 FT MAX ELEV=105 FT
                  CH SLP=0.023  FP SLP=0.005 N=0.030
                  DIST=20 FT

                  DIST  ELEV
                  0 105
                  10 100
                  15 100
                  20 105
*
ROUTE MCUNGE      ID=2  HYD NO=108SUMBRT  INFLOW ID=1
                  DT=0  HR  LENGTH=610 FT
                  NS=0  SLOPE=0.023
*
PRINT HYD          ID=2  CODE=1
*
*
** Sub-BASIN 111 ****
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
                  NK=1  ISLOPE=1
                  LENGTH=936 FT  SLOPE=0.005  K=0.7
COMPUTE NM HYD     ID=1  HYD NO=111  DA=0.02820 SQ MI
                  PER A=79 PER B=8 PER C=8 PER D=5
                  TP=0.0  MASSRAIN=-1

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
PRINT HYD                      ID=1    CODE=1
*
*
* Total Flow from Basin (108SUMBRT + 111)
ADD HYD                        ID=1    HYD NO=POND2SUMB ID I=2    ID II=1
PRINT HYD                      ID=1    CODE=1
*
*
* Total Flow from Basin (POND2SUMA + POND2SUMB)
ADD HYD                        ID=1    HYD NO=POND2SUM ID I=21   ID II=1
PRINT HYD                      ID=1    CODE=1
*
*
****Route Hyd 111SUM through Pond2
*
ROUTE RESERVOIR                ID=30  HYD NO=POND2  INFLOW ID=1  CODE=10
                                OUTFLOW (CFS)  STORAGE (AC FT)  ELEV
                                0                0                5204.21
                                3                0.287            5205
                                13               1.532            5206
                                25               3.486            5207
                                42               7.543            5209
                                52              11.939            5211
                                64              16.689            5213
                                72              21.805            5215
                                80              27.301            5217
                                88              33.189            5219
                                90              39.483            5221
                                91              46.197            5223
                                968             49.715            5224
                                2615            53.343            5225
                                4809            57.082            5226

* Total Flow from Basin (110SUM + 109SUMA)
ADD HYD                        ID=10  HYD NO=POND3SUMA ID I=10   ID II=20
PRINT HYD                      ID=10  CODE=1
*
*
* Total Flow from Basin (POND3SUMA + POND2)
ADD HYD                        ID=10  HYD NO=POND3SUMB ID I=10   ID II=30
PRINT HYD                      ID=10  CODE=1
*
*
****Route Hyd PONDNE3SUMB through PondNE3
*
ROUTE RESERVOIR                ID=30  HYD NO=POND3  INFLOW ID=10  CODE=10
                                OUTFLOW (CFS)  STORAGE (AC FT)  ELEV
                                0                0                5201
                                5                0.934            5202
                                6                3.359            5203
                                27               6.08             5204
                                43              11.813            5206
                                55              17.946            5208
                                64              24.492            5210
                                72              31.465            5212
                                1137            35.115            5213
                                3122            38.877            5214
                                7217            44.733            5215.5

FINISH

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

Interim Hydrology

AHYMO Summary

*S PARADISE RV PARK
 *S Drainage Basin Analysis
 *S "INTERIM" CONDITION MODEL

START

TIME= 0.00

LOCATION AHYMO_97

*S RAINFALL FROM COA DEVELOPMENT PROCESS MANUAL

*S*****

*S 100 YEAR 24HR STORM

RAINFALL TYPE=13

RAIN24= 2.660

SEDIMENT BULK

PK BF = 1.06

PAGE = 1

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
COMPUTE NM HYD	101.00	-	1	0.14521	137.71	4.820	0.62241	1.567	1.482	PER IMP= 5.00
*S***Route HYD 101 to Sub-Basin 110										
ROUTE MCUNGE	101RT	1	2	0.14521	133.63	4.781	0.61734	1.766	1.438	CCODE = 0.1
COMPUTE NM HYD	110.00	-	1	0.12985	206.65	10.800	1.55942	1.600	2.487	PER IMP= 45.90
ADD HYD	110SUM	2& 1	10	0.27506	284.08	15.580	1.06207	1.700	1.614	
COMPUTE NM HYD	105.00	-	1	0.08439	85.72	2.801	0.62241	1.533	1.587	PER IMP= 5.00
*S***Route Hyd 105 through Pond1										
ROUTE RESERVOIR	POND1	1	2	0.08439	10.34	2.801	0.62241	2.033	0.191	AC-FT= 1.940
*S***Route HYD POND1 to Sub-Basin 106										
ROUTE MCUNGE	POND1RT	2	1	0.08439	10.34	2.801	0.62237	2.066	0.191	CCODE = 0.2
COMPUTE NM HYD	106.00	-	2	0.05741	103.63	4.871	1.59081	1.533	2.820	PER IMP= 51.45
ADD HYD	106SUM	1& 2	1	0.14180	105.27	7.672	1.01445	1.533	1.160	
*S AP1										
*S***Route HYD 106SUM to Sub-Basin 109 Through a Pipe										
ROUTE MCUNGE	106SUMRT	1	20	0.14180	105.27	7.671	1.01433	1.567	1.160	CCODE = 0.2
COMPUTE NM HYD	109.30	-	2	0.01867	37.69	1.561	1.56800	1.500	3.154	PER IMP= 50.00
*S Total Flow from Basin (106SUMRT + 109.3)										
ADD HYD	109SUMA	20& 2	20	0.16047	137.42	9.232	1.07874	1.567	1.338	
*S AP2										
COMPUTE NM HYD	109.10	-	1	0.00907	25.06	1.097	2.26717	1.500	4.317	PER IMP= 80.00
*S***Route HYD 109.1 to Sub-Basin 109.2										
ROUTE MCUNGE	109.1RT	1	2	0.00907	24.69	1.097	2.26729	1.500	4.254	CCODE = 0.2
COMPUTE NM HYD	109.20	-	1	0.01562	43.15	1.889	2.26717	1.500	4.316	PER IMP= 80.00
*S Total Flow from Basin (109.1 + 109.2)										
ADD HYD	109SUM	1& 2	1	0.02469	67.84	2.985	2.26718	1.500	4.293	
FROM TO		PEAK		RUNOFF	TIME TO	CFS	PAGE = 2			

DRAINAGE REPORT - PARADISE RV PARK PHASE I

COMMAND	HYDROGRAPH IDENTIFICATION	ID NO.	ID NO.	AREA (SQ MI)	DISCHARGE (CFS)	VOLUME (AC-FT)	RUNOFF (INCHES)	PEAK (HOURS)	PER ACRE	NOTATION
COMPUTE NM HYD	108.50	-	2	0.00450	12.90	0.581	2.41880	1.500	4.479	PER IMP= 90.00
*S***Route HYD 108.5 to Sub-Basin 109										
ROUTE MCUNGE	108.5RT	2	1	0.00450	12.92	0.581	2.41928	1.567	4.485	CCODE = 0.2
*S Total Flow from Basin (109SUM + 108.5)										
ADD HYD	PIPE 1& 2	1		0.00900	24.54	1.161	2.41896	1.533	4.260	
*S***Route HYD 109SUMC to Sub-Basin 111 Through a Pipe										
ROUTE MCUNGE	POND2SUMA	2	21	0.00450	12.90	0.580	2.41874	1.500	4.479	CCODE = 0.0
*S TO STORM DRAIN										
COMPUTE NM HYD	102.00	-	1	0.07604	82.98	2.524	0.62241	1.533	1.705	PER IMP= 5.00
*S***Route HYD 102 to Sub-Basin 107										
ROUTE MCUNGE	102RT	1	2	0.07604	82.05	2.513	0.61973	1.600	1.686	CCODE = 0.1
COMPUTE NM HYD	107.00	-	1	0.04325	50.43	1.562	0.67727	1.533	1.822	PER IMP= 6.40
*S Total Flow from Basin (102RT + 107)										
ADD HYD	107SUM	2& 1	1	0.11929	122.38	4.075	0.64058	1.600	1.603	
*S AP3										
ADD HYD	109SUMB	1& 2	2	.06835	92.50	3.688	1.01178	1.700	2.115	
COMPUTE NM HYD	109.10	-	1	.00486	9.26	.265	1.02347	1.500	2.977	PER IMP= .00
ADD HYD	POND	1& 2	1	.07321	96.64	3.954	1.01255	1.700	2.063	
*S TEMP. POND										
COMPUTE NM HYD	109.30	-	1	.00907	25.06	1.064	2.19950	1.500	4.317	PER IMP= 80.00
ROUTE MCUNGE	109.3RT	1	2	.00907	24.83	1.064	2.19871	1.533	4.278	CCODE = .2
COMPUTE NM HYD	109.40	-	1	.00784	21.66	.920	2.19951	1.500	4.317	PER IMP= 80.00
ADD HYD	109SUMC	1& 2	2	.01691	46.15	1.983	2.19908	1.500	4.264	
ROUTE MCUNGE	POND2SUMA	2	21	.01691	46.03	1.983	2.19869	1.533	4.253	CCODE = .2
*S TO STORM DRAIN										
COMPUTE NM HYD	102.00	-	1	.07604	82.97	2.507	.61817	1.533	1.705	PER IMP= 5.00
ROUTE MCUNGE	102RT	1	2	.07604	82.06	2.496	.61537	1.600	1.686	CCODE = .1
COMPUTE NM HYD	107.00	-	1	.04325	50.42	1.550	.67185	1.533	1.821	PER IMP= 6.40
ADD HYD	107SUM	2& 1	1	.11929	122.36	4.045	.63585	1.600	1.603	
*S AP3										
*S***Route HYD 107SUM to Sub-Basin 108.3										
ROUTE MCUNGE	107RT	1	2	0.11929	121.15	4.062	0.63848	1.667	1.587	CCODE = 0.1
COMPUTE NM HYD	103.00	-	1	0.06441	69.27	2.138	0.62241	1.533	1.680	PER IMP= 5.00
*S***Route HYD 103 to Sub-Basin 108.3										
ROUTE MCUNGE	103RT	1	3	0.06441	68.08	2.127	0.61909	1.633	1.651	CCODE = 0.1
*S Total Flow from Basin (107RT + 103RT)										
ADD HYD	108SUMA	2& 3	1	0.18370	187.41	6.189	0.63167	1.667	1.594	
COMPUTE NM HYD	108.30	-	2	0.01813	27.54	0.863	0.89214	1.500	2.373	PER IMP= 9.83
*S Total Flow from Basin (108SUMA + 108)										
	HYDROGRAPH	FROM ID	TO ID	AREA	PEAK DISCHARGE	RUNOFF VOLUME	RUNOFF	TIME TO PEAK	CFS PER	PAGE = 3

DRAINAGE REPORT - PARADISE RV PARK PHASE I

COMMAND	IDENTIFICATION	NO.	NO.	(SQ MI)	(CFS)	(AC-FT)	(INCHES)	(HOURS)	ACRE	NOTATION
ADD HYD	108SUMB	1& 2	1	0.20183	202.66	7.051	0.65507	1.667	1.569	
*S AP4										
*S***Route HYD 108SUMB to Sub-Basin 111										
ROUTE MCUNGE	108SUMBRT	1	2	0.20183	201.88	7.051	0.65500	1.667	1.563	CCODE = 0.2
COMPUTE NM HYD	111.00	-	1	0.02356	17.17	0.782	0.62241	1.600	1.139	PER IMP= 5.00
*S Total Flow from Basin (108SUMBRT + 111)										
ADD HYD	POND2SUMB	2& 1	1	0.22539	217.98	7.833	0.65159	1.667	1.511	
*S Total Flow from Basin (POND2SUMA + POND2SUMB)										
ADD HYD	POND2SUM	21& 1	1	0.22989	224.51	8.413	0.68618	1.667	1.526	
*S***Route Hyd 111SUM through Pond2										
ROUTE RESERVOIR	POND2	1	30	0.22989	33.33	8.413	0.68618	2.133	0.227	AC-FT= 5.474
*S Total Flow from Basin (110SUM + 109SUMA)										
ADD HYD	POND3SUMA	10&20	10	0.43553	375.45	24.813	1.06821	1.667	1.347	
*S Total Flow from Basin (POND3SUMA + POND2)										
ADD HYD	POND3SUMB	10&30	10	0.66542	395.71	33.226	0.93623	1.700	0.929	
*S***Route Hyd PONDNE3SUMB through PondNE3										
ROUTE RESERVOIR	POND3	10	30	0.66542	53.65	33.226	0.93623	2.833	0.126	AC-FT= 17.254
*S TEMP POND BASINS										
COMPUTE NM HYD	104.00	-	1	0.04197	68.29	2.299	1.02698	1.500	2.543	PER IMP= 17.00
*S***Route HYD 104 to Sub-Basin 108.4										
ROUTE MCUNGE	104RT	1	2	0.04197	68.29	2.299	1.02697	1.500	2.543	CCODE = 0.0
COMPUTE NM HYD	108.10	-	1	0.01077	17.54	0.590	1.02698	1.500	2.544	PER IMP= 17.00
*S Total Flow from Basin (104RT + 108.1)										
ADD HYD	108SUMA	1& 2	1	0.05274	85.83	2.889	1.02697	1.500	2.543	
COMPUTE NM HYD	108.20	-	2	0.00171	2.80	0.094	1.02698	1.500	2.557	PER IMP= 17.00
ADD HYD	108SUMB	1& 2	1	0.05445	88.63	2.982	1.02697	1.500	2.543	
*S AP5										
COMPUTE NM HYD	108.40	-	2	0.00784	10.79	0.296	0.70742	1.533	2.150	PER IMP= 0.00
*S Total Flow to pond from BasinS (108SUMC + 108.4)										
ADD HYD	POND	1& 2	1	0.06229	99.37	3.278	0.98675	1.500	2.493	
*S TEMP. POND										

DRAINAGE REPORT - PARADISE RV PARK PHASE I

AHYMO Input

```

*S  PARADISE RV PARK
*S  Drainage Basin Analysis
*S  "INTERIM" CONDITION MODEL
*
START          TIME=0.0  PUNCH CODE=0  PRINT CODE=0
LOCATION        AHYMO97
*
*S RAINFALL FROM COA DEVELOPMENT PROCESS MANUAL
*S*****
*S 100 YEAR 24HR STORM
RAINFALL      TYPE=13  RAIN QUARTER=0
               RAIN ONE=1.87 IN  RAIN SIX=2.20 IN
               RAIN DAY=2.66 IN  DT=0.03333 HRS
*
*
****Adding Sediment Bulk Factor to all Basins
SEDIMENT BULKCODE=1 BULK FACTOR=1.06
*
*
*** Sub-BASIN 101 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                       NK=1    ISLOPE=1
                       LENGTH=3653 FT  SLOPE=0.048  K=0.7
COMPUTE NM HYD         ID=1    HYD NO=101  DA=0.14521 SQ MI
                       PER A=79 PER B=8  PER C=8  PER D=5
                       TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1    CODE=1
*
*
*S***Route HYD 101 to Sub-Basin 110
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
                       MIN ELEV=100 FT MAX ELEV=105 FT
                       CH SLP=0.030  FP SLP=0.01 N=0.030
                       DIST=20 FT

                       DIST  ELEV
                           0 105
                           10 100
                           15 100
                           20 105
*
ROUTE MCUNGE          ID=2  HYD NO=101RT  INFLOW ID=1
                       DT=0  HR  LENGTH=3110 FT
                       NS=0  SLOPE=0.030
*
PRINT HYD              ID=2    CODE=1
*
*
*** Sub-BASIN 110 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                       NK=1    ISLOPE=1
                       LENGTH=3483 FT  SLOPE=0.026  K=0.7
COMPUTE NM HYD         ID=1    HYD NO=110  DA=0.12985 SQ MI
                       PER A=22.1 PER B=11 PER C=21 PER D=45.9
                       TP=0.0  MASSRAIN=-1

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
PRINT HYD                      ID=1    CODE=1
*
*
* Total Flow from Basin (101Rt + 110)
ADD HYD                        ID=10   HYD NO=110SUM ID I=2    ID II=1
PRINT HYD                      ID=10   CODE=1
*
*
*****
*
*** Sub-BASIN 105 ****
*
COMPUTE LT TP                  LCODE=1   UPLAND/LAG TIME METHOD
                                NK=1     ISLOPE=1
                                LENGTH=2509 FT   SLOPE=0.037   K=0.7
COMPUTE NM HYD                 ID=1     HYD NO=105   DA=0.08439 SQ MI
                                PER A=79 PER B=8   PER C=8   PER D=5
                                TP=0.0   MASSRAIN=-1
*
PRINT HYD                      ID=1     CODE=1
*
*
*S***Route Hyd 105 through Pond1
*
ROUTE RESERVOIR                ID=2   HYD NO=POND1   INFLOW ID=1   CODE=10
                                OUTFLOW (CFS)   STORAGE (AC FT)   ELEV
                                0                   0                   5260
                                5                   1.061               5262
                                14                  2.542               5264
*
*
*S***Route HYD POND1 to Sub-Basin 106
COMPUTE RATING CURVE           CID=1   VS NO=1   NO SEGS=1
                                MIN ELEV=100 FT MAX ELEV=105 FT
                                CH SLP=0.026   FP SLP=0.01   N=0.017
                                DIST=20 FT
                                DIST   ELEV
                                0   105
                                10   100
                                15   100
                                20   105
*
ROUTE MCUNGE                   ID=1   HYD NO=POND1RT   INFLOW ID=2
                                DT=0   HR   LENGTH=780 FT
                                NS=0   SLOPE=0.026
*
PRINT HYD                      ID=1     CODE=1
*
*
*** Sub-BASIN 106 ****
*
COMPUTE LT TP                  LCODE=1   UPLAND/LAG TIME METHOD
                                NK=1     ISLOPE=1
                                LENGTH=2718 FT   SLOPE=0.032   K=0.7
COMPUTE NM HYD                 ID=2     HYD NO=106   DA=0.05741 SQ MI
                                PER A=35.8 PER B=6.4   PER C=6.4   PER D=51.5
                                TP=0.0   MASSRAIN=-1

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
PRINT HYD                      ID=2    CODE=1
*
*
* Total Flow from Basin (POND1RT + 106)
ADD HYD                        ID=1    HYD NO=106SUM ID I=1    ID II=2
PRINT HYD                      ID=1    CODE=1
*
*S AP1
*
*S***Route HYD 106SUM to Sub-Basin 109 Through a Pipe
COMPUTE RATING CURVE          CID=1    VS NO=1 CODE=-1    SLP=0.013
                                DIA=42 IN    N=0.013
*
ROUTE MCUNGE                   ID=20    HYD NO=106SUMRT INFLOW ID=1
                                DT=0 HR    LENGTH=1240 FT
                                NS=0    SLOPE=0.013
*
PRINT HYD                      ID=20    CODE=1
*
*
*** Sub-BASIN 109.3 ****
*
COMPUTE LT TP                  LCODE=1    UPLAND/LAG TIME METHOD
                                NK=1    ISLOPE=1
                                LENGTH=1367 FT    SLOPE=0.030    K=0.7
COMPUTE NM HYD                 ID=2    HYD NO=109.3    DA=0.01867 SQ MI
                                PER A=35 PER B=7.5 PER C=7.5 PER D=50
                                TP=0.0    MASSRAIN=-1
*
PRINT HYD                      ID=2    CODE=1
*
*
*S Total Flow from Basin (106SUMRT + 109.3)
ADD HYD                        ID=20    HYD NO=109SUMA ID I=20    ID II=2
PRINT HYD                      ID=20    CODE=1
*
*S AP2
*
*
*** Sub-BASIN 109.1 ****
*
COMPUTE NM HYD                 ID=1    HYD NO=109.1    DA=0.00907 SQ MI
                                PER A=0 PER B=0 PER C=20 PER D=80
                                TP=0.0    MASSRAIN=-1
*
PRINT HYD                      ID=1    CODE=1
*
*
*S***Route HYD 109.1 to Sub-Basin 109.2
COMPUTE RATING CURVE          CID=1 VS NO=1 NO SEGS=1
                                MIN ELEV=100 FT MAX ELEV=105 FT
                                CH SLP=0.033 FP SLP=0.02 N=0.017
                                DIST=20 FT

                                DIST  ELEV
                                    0 105
                                    10 100
                                    15 100
                                    20 105

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
ROUTE MCUNGE          ID=2  HYD NO=109.1RT  INFLOW ID=1
                        DT=0  HR  LENGTH=436 FT
                        NS=0  SLOPE=0.033
*
PRINT HYD              ID=2    CODE=1
*
*** Sub-BASIN 109.2 ****
*
COMPUTE NM HYD          ID=1    HYD NO=109.2    DA=0.01562 SQ MI
                        PER A=0 PER B=0 PER C=20 PER D=80
                        TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1    CODE=1
*
*S Total Flow from Basin (109.1 + 109.2)
ADD HYD                 ID=1    HYD NO=109SUM ID I=1    ID II=2
PRINT HYD               ID=1    CODE=1
*
*** Sub-BASIN 108.5 ****
*
COMPUTE NM HYD          ID=2    HYD NO=108.5    DA=0.00450 SQ MI
                        PER A=0 PER B=0 PER C=10 PER D=90
                        TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=2    CODE=1
*
*S***Route HYD 108.5 to Sub-Basin 109
COMPUTE RATING CURVE    CID=1 VS NO=1 NO SEGS=1
                        MIN ELEV=100 FT MAX ELEV=105 FT
                        CH SLP=0.033 FP SLP=0.01 N=0.017
                        DIST=20 FT

                        DIST  ELEV
                          0 105
                         10 100
                         15 100
                         20 105
*
ROUTE MCUNGE          ID=1  HYD NO=108.5RT  INFLOW ID=2
                        DT=0  HR  LENGTH=1436 FT
                        NS=0  SLOPE=0.033
*
PRINT HYD              ID=1    CODE=1
*
*S Total Flow from Basin (109SUM + 108.5)
ADD HYD                 ID=1    HYD NO=PIPE ID I=1    ID II=2
PRINT HYD               ID=1    CODE=1
*
*S***Route HYD 109SUMC to Sub-Basin 111 Through a Pipe
COMPUTE RATING CURVE    CID=1 VS NO=1 CODE=-1 SLP=0.013
                        DIA=42 IN N=0.013
*
ROUTE MCUNGE          ID=21  HYD NO=POND2SUMA  INFLOW ID=2
                        DT=0  HR  LENGTH=100 FT
                        NS=0  SLOPE=0.013
*

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

PRINT HYD                      ID=21   CODE=1
*
*
*S TO STORM DRAIN
*
*
*****
*** Sub-BASIN 102 ****
*
COMPUTE LT TP                  LCODE=1   UPLAND/LAG TIME METHOD
                                NK=1     ISLOPE=1
                                LENGTH=2025 FT   SLOPE=0.048   K=0.7
COMPUTE NM HYD                 ID=1     HYD NO=102   DA=0.07604 SQ MI
                                PER A=79 PER B=8   PER C=8   PER D=5
                                TP=0.0   MASSRAIN=-1
*
PRINT HYD                      ID=1     CODE=1
*
*
*S***Route HYD 102 to Sub-Basin 107
COMPUTE RATING CURVE          CID=1 VS NO=1 NO SEGS=1
                                MIN ELEV=100 FT MAX ELEV=105 FT
                                CH SLP=0.033 FP SLP=0.01 N=0.030
                                DIST=20 FT

                                DIST  ELEV
                                    0 105
                                    10 100
                                    15 100
                                    20 105
*
ROUTE MCUNGE                   ID=2   HYD NO=102RT   INFLOW ID=1
                                DT=0   HR   LENGTH=1100 FT
                                NS=0   SLOPE=0.033
*
PRINT HYD                      ID=2     CODE=1
*
*
*** Sub-BASIN 107 ****
*
COMPUTE LT TP                  LCODE=1   UPLAND/LAG TIME METHOD
                                NK=1     ISLOPE=1
                                LENGTH=1285 FT   SLOPE=0.037   K=0.7
COMPUTE NM HYD                 ID=1     HYD NO=107   DA=0.04325 SQ MI
                                PER A=70.3 PER B=11.6 PER C=11.7 PER D=6.4
                                TP=0.0   MASSRAIN=-1
*
PRINT HYD                      ID=1     CODE=1
*
*
*S Total Flow from Basin (102RT + 107)
ADD HYD                        ID=1   HYD NO=107SUM ID I=2   ID II=1
PRINT HYD                      ID=1     CODE=1
*
*S AP3
*
*S***Route HYD 107SUM to Sub-Basin 108.3
COMPUTE RATING CURVE          CID=1 VS NO=1 NO SEGS=1
                                MIN ELEV=100 FT MAX ELEV=105 FT
                                CH SLP=0.029 FP SLP=0.01 N=0.030

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

DIST=20 FT

DIST  ELEV
      0 105
      10 100
      15 100
      20 105

*
ROUTE MCUNGE      ID=2  HYD NO=107RT  INFLOW ID=1
DT=0 HR  LENGTH=1300 FT
NS=0  SLOPE=0.029

*
PRINT HYD          ID=2  CODE=1
*
*
*** Sub-BASIN NE103 ****
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
                  NK=1  ISLOPE=1
                  LENGTH=2330 FT  SLOPE=0.041  K=0.7
COMPUTE NM HYD     ID=1  HYD NO=103  DA=0.06441 SQ MI
                  PER A=79 PER B=8  PER C=8  PER D=5
                  TP=0.0  MASSRAIN=-1

*
PRINT HYD          ID=1  CODE=1
*
*
*S***Route HYD 103 to Sub-Basin 108.3
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
                  MIN ELEV=100 FT MAX ELEV=105 FT
                  CH SLP=0.031  FP SLP=0.01 N=0.030
                  DIST=20 FT

DIST  ELEV
      0 105
      10 100
      15 100
      20 105

*
ROUTE MCUNGE      ID=3  HYD NO=103RT  INFLOW ID=1
DT=0 HR  LENGTH=1490 FT
NS=0  SLOPE=0.031

*
PRINT HYD          ID=3  CODE=1
*
*
*S Total Flow from Basin (107RT + 103RT)
ADD HYD            ID=1  HYD NO=108SUMA ID I=2  ID II=3
PRINT HYD          ID=1  CODE=1
*
*
*** Sub-BASIN 108.3 ****
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
                  NK=1  ISLOPE=1
                  LENGTH=1486 FT  SLOPE=0.030  K=0.7
COMPUTE NM HYD     ID=2  HYD NO=108.3  DA=0.01813 SQ MI
                  PER A=37 PER B=81 PER C=38 PER D=17
                  TP=0.0  MASSRAIN=-1

*

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

PRINT HYD                      ID=2    CODE=1
**
*S Total Flow from Basin (108SUMA + 108)
ADD HYD                        ID=1    HYD NO=108SUMB ID I=1    ID II=2
PRINT HYD                      ID=1    CODE=1
*
*S AP4
*
*
*S***Route HYD 108SUMB to Sub-Basin 111
COMPUTE RATING CURVE          CID=1 VS NO=1 NO SEGS=1
                                MIN ELEV=100 FT MAX ELEV=105 FT
                                CH SLP=0.023  FP SLP=0.005 N=0.030
                                DIST=20 FT

                                DIST  ELEV
                                    0 105
                                    10 100
                                    15 100
                                    20 105
*
ROUTE MCUNGE                   ID=2    HYD NO=108SUMBRT  INFLOW ID=1
                                DT=0 HR  LENGTH=610 FT
                                NS=0    SLOPE=0.023
*
PRINT HYD                      ID=2    CODE=1
**
** Sub-BASIN 111 ****
*
COMPUTE LT TP                   LCODE=1  UPLAND/LAG TIME METHOD
                                NK=1    ISLOPE=1
                                LENGTH=936 FT  SLOPE=0.005  K=0.7
COMPUTE NM HYD                 ID=1    HYD NO=111  DA=0.02356 SQ MI
                                PER A=79 PER B=8  PER C=8  PER D=5
                                TP=0.0  MASSRAIN=-1
*
PRINT HYD                      ID=1    CODE=1
*
*
*S Total Flow from Basin (108SUMBRT + 111)
ADD HYD                        ID=1    HYD NO=POND2SUMB ID I=2    ID II=1
PRINT HYD                      ID=1    CODE=1
*
*
*S Total Flow from Basin (POND2SUMA + POND2SUMB)
ADD HYD                        ID=1    HYD NO=POND2SUM ID I=21    ID II=1
PRINT HYD                      ID=1    CODE=1
*
*
*S***Route Hyd 111SUM through Pond2
*
ROUTE RESERVOIR                ID=30  HYD NO=POND2  INFLOW ID=1  CODE=10
                                OUTFLOW (CFS)  STORAGE (AC FT)  ELEV
                                0                0                5204.21
                                3                0.287            5205
                                13               1.532            5206
                                25               3.486            5207
                                42               7.543            5209
                                52              11.939            5211
                                64              16.689            5213

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

72	21.805	5215
80	27.301	5217
88	33.189	5219
90	39.483	5221
91	46.197	5223
968	49.715	5224
2615	53.343	5225
4809	57.082	5226

*S Total Flow from Basin (110SUM + 109SUMA)
 ADD HYD ID=10 HYD NO=POND3SUMA ID I=10 ID II=20
 PRINT HYD ID=10 CODE=1

*

*

*S Total Flow from Basin (POND3SUMA + POND2)
 ADD HYD ID=10 HYD NO=POND3SUMB ID I=10 ID II=30
 PRINT HYD ID=10 CODE=1

*

*

*S***Route Hyd PONDNE3SUMB through PondNE3

*

ROUTE RESERVOIR	ID=30	HYD NO=POND3	INFLOW ID=10	CODE=10
OUTFLOW (CFS)	STORAGE (AC FT)	ELEV		
0	0	5201		
5	0.934	5202		
6	3.359	5203		
27	6.08	5204		
43	11.813	5206		
55	17.946	5208		
64	24.492	5210		
72	31.465	5212		
1137	35.115	5213		
3122	38.877	5214		
7217	44.733	5215.5		

*

*S TEMP POND BASINS

*** Sub-BASIN 104 ***

*

COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD
 NK=1 ISLOPE=1
 LENGTH=1952 FT SLOPE=0.036 K=0.7
 COMPUTE NM HYD ID=1 HYD NO=104 DA=0.04197 SQ MI
 PER A=37 PER B=8 PER C=38 PER D=17
 TP=0.0 MASSRAIN=-1

*

PRINT HYD ID=1 CODE=1

*

*

*S***Route HYD 104 to Sub-Basin 108.4

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
 MIN ELEV=100 FT MAX ELEV=105 FT
 CH SLP=0.030 FP SLP=0.01 N=0.030
 DIST=20 FT

DIST	ELEV
0	105
10	100
15	100
20	105

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
ROUTE MCUNGE          ID=2  HYD NO=104RT  INFLOW ID=1
                      DT=0  HR  LENGTH=110 FT
                      NS=0  SLOPE=0.030
*
PRINT HYD              ID=2    CODE=1
*
*
*** Sub-BASIN 108.1 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                      NK=1    ISLOPE=1
                      LENGTH=720 FT  SLOPE=0.030  K=0.7
COMPUTE NM HYD          ID=1    HYD NO=108.1  DA=0.01077 SQ MI
                      PER A=37 PER B=8  PER C=38  PER D=17
                      TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1    CODE=1
*
*
*S Total Flow from Basin (104RT + 108.1)
ADD HYD                ID=1  HYD NO=108SUMA ID I=1  ID II=2
PRINT HYD              ID=1    CODE=1
*
*
*** Sub-BASIN 108.2 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                      NK=1    ISLOPE=1
                      LENGTH=370 FT  SLOPE=0.030  K=0.7
COMPUTE NM HYD          ID=2  HYD NO=108.2  DA=0.00171 SQ MI
                      PER A=37 PER B=8  PER C=38  PER D=17
                      TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=2    CODE=1
*
ADD HYD                ID=1  HYD NO=108SUMB ID I=1  ID II=2
PRINT HYD              ID=1    CODE=1
*
*
*S AP5
*** Sub-BASIN 108.4 ****
*
COMPUTE NM HYD          ID=2  HYD NO=108.4  DA=0.00784 SQ MI
                      PER A=0 PER B=100 PER C=0  PER D=0
                      TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=2    CODE=1
*S Total Flow to pond from Basins (108SUMC + 108.4)
ADD HYD                ID=1  HYD NO=POND ID I=1  ID II=2
PRINT HYD              ID=1    CODE=1
*
*S TEMP. POND
*
*
FINISH

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

Final Hydrology

AHYMO Summary

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
*S	PARADISE RV PARK									
*S	Drainage Basin Analysis									
*S	"PROPOSED" CONDITION MODEL									
START										TIME= 0.00
LOCATION										
			AHYMO_97							
*S	RAINFALL FROM COA DEVELOPMENT PROCESS MANUAL									
*S	*****									
*S	100 YEAR 24HR STORM									
RAINFALL	TYPE=13									RAIN24= 2.660
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	202.10	-	1	0.09730	241.23	10.072	1.94095	1.500	3.874	PER IMP= 63.00
ROUTE MCUNGE	202.1RT	1	2	0.09730	238.46	10.072	1.94091	1.533	3.829	CCODE = 0.2
COMPUTE NM HYD	202.20	-	1	0.06312	156.66	6.534	1.94095	1.500	3.878	PER IMP= 63.00
ADD HYD	202.2SUM	2& 1	1	0.16042	393.03	16.606	1.94092	1.500	3.828	
*S	AP1									
ROUTE MCUNGE	202.2SUMRT	1	3	0.16042	366.49	16.484	1.92669	1.567	3.570	CCODE = 0.2
COMPUTE NM HYD	201.10	-	1	0.05919	146.91	6.127	1.94095	1.500	3.878	PER IMP= 63.00
ROUTE MCUNGE	201.1RT	1	2	0.05919	145.93	6.127	1.94104	1.533	3.852	CCODE = 0.2
COMPUTE NM HYD	201.20	-	1	0.04149	102.98	4.295	1.94095	1.500	3.878	PER IMP= 63.00
ADD HYD	201.2SUMA	2& 1	1	0.10068	245.82	10.422	1.94100	1.500	3.815	
ADD HYD	201.2SUMB	1& 3	1	0.26110	599.45	26.907	1.93220	1.533	3.587	
ROUTE MCUNGE	201.2SUMBRT	1	3	0.26110	597.72	26.905	1.93209	1.567	3.577	CCODE = 0.2
*S	AP2									
COMPUTE NM HYD	205.11	-	1	0.02628	54.79	2.052	1.46417	1.500	3.257	PER IMP= 37.00
COMPUTE NM HYD	204.10	-	2	0.04298	106.68	4.449	1.94095	1.500	3.878	PER IMP= 63.00
ADD HYD	204SUMA	2& 1	1	0.06926	161.46	6.501	1.76003	1.500	3.643	
ROUTE MCUNGE	204.1RT	1	2	0.06926	160.12	6.502	1.76018	1.533	3.612	CCODE = 0.2
COMPUTE NM HYD	203.00	-	1	0.04143	102.83	4.289	1.94095	1.500	3.878	PER IMP= 63.00
ADD HYD	203SUMA	2& 1	1	0.11069	261.04	10.791	1.82784	1.500	3.685	
ADD HYD	203SUMB	1& 3	1	0.37179	845.14	37.696	1.90105	1.533	3.552	
ROUTE MCUNGE	203SUMBRT	1	3	0.37179	820.63	37.474	1.88989	1.600	3.449	CCODE = 0.2
*S	AP3									
COMPUTE NM HYD	204.20	-	1	0.04529	112.41	4.688	1.94095	1.500	3.878	PER IMP= 63.00
ROUTE MCUNGE	204.2RT	1	2	0.04529	111.40	4.688	1.94093	1.533	3.843	CCODE = 0.2
COMPUTE NM HYD	207.00	-	1	0.04365	108.34	4.519	1.94095	1.500	3.878	PER IMP= 63.00
ADD HYD	207SUMA	2& 1	1	0.08894	218.38	9.207	1.94093	1.500	3.837	

DRAINAGE REPORT - PARADISE RV PARK PHASE I

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 2 NOTATION
ADD HYD	207SUMB	3& 1	1	0.46073	1010.00	46.681	1.89974	1.567	3.425	
ROUTE MCUNGE	207SUMBRT	1	3	0.46073	1001.52	46.680	1.89972	1.600	3.397	CCODE = 0.2
*S AP4										
COMPUTE NM HYD	209.10	-	1	0.00772	21.33	0.933	2.26714	1.500	4.317	PER IMP= 80.00
ROUTE MCUNGE	209.1RT	1	2	0.00772	21.02	0.933	2.26715	1.500	4.254	CCODE = 0.2
COMPUTE NM HYD	209.20	-	1	0.01620	44.74	1.959	2.26714	1.500	4.316	PER IMP= 80.00
ADD HYD	209.2SUMA	2& 1	1	0.02392	65.76	2.892	2.26711	1.500	4.296	
ROUTE MCUNGE	209.2SUMART	2	1	0.02392	65.76	2.892	2.26711	1.500	4.296	CCODE = 0.0
ADD HYD	209.2SUMC	3& 1	10	0.48465	1048.31	49.573	1.91785	1.600	3.380	
*S AP5										
ROUTE RESERVOIR	POND2	10	20	0.48465	87.69	49.573	1.91785	2.267	0.283	AC-FT= 32.583
COMPUTE NM HYD	205.12	-	1	0.03406	71.00	2.660	1.46417	1.500	3.257	PER IMP= 37.00
ROUTE MCUNGE	205.1RT	1	2	0.03406	70.60	2.657	1.46247	1.567	3.239	CCODE = 0.1
COMPUTE NM HYD	205.20	-	1	0.01917	36.08	1.186	1.15969	1.500	2.941	PER IMP= 17.20
ADD HYD	205.2SUM	1& 2	1	0.05323	102.25	3.842	1.35341	1.567	3.001	
ROUTE MCUNGE	205.2SUMRT	1	2	0.05323	100.36	3.830	1.34913	1.600	2.946	CCODE = 0.1
COMPUTE NM HYD	206.00	-	1	0.03958	101.26	4.311	2.04215	1.500	3.997	PER IMP= 69.03
ADD HYD	206SUM	2& 1	1	0.09281	179.93	8.141	1.64467	1.567	3.029	
ROUTE MCUNGE	206SUMRT	1	2	0.09281	179.21	8.138	1.64398	1.600	3.017	CCODE = 0.1
COMPUTE NM HYD	209.30	-	1	0.01522	42.81	1.902	2.34296	1.500	4.395	PER IMP= 85.00
ADD HYD	209.3SUMA	2& 1	3	0.10803	212.85	10.039	1.74245	1.567	3.079	
*S AP6										
COMPUTE NM HYD	210.00	-	1	0.10672	199.93	10.659	1.87272	1.600	2.927	PER IMP= 59.00
ROUTE MCUNGE	210RT	1	2	0.10672	199.05	10.650	1.87112	1.600	2.914	CCODE = 0.1
COMPUTE NM HYD	211.00	-	1	0.02820	49.72	2.711	1.80259	1.600	2.755	PER IMP= 58.00
ADD HYD	POND3SUMA	2& 1	30	0.13492	248.76	13.361	1.85679	1.600	2.881	
ADD HYD	POND3SUMB	3&30	10	0.24295	457.54	23.400	1.80595	1.600	2.943	
ADD HYD	POND3SUMC	10&20	30	0.72760	518.41	72.973	1.88048	1.600	1.113	
ROUTE RESERVOIR	POND3	30	1	0.72760	65.10	72.973	1.88048	5.500	0.140	AC-FT= 25.451
FINISH										

DRAINAGE REPORT - PARADISE RV PARK PHASE I

AHYMO Input

```

*S PARDISE RV PARK
*S Drainage Basin Analysis
*S "PROPOSED" CONDITION MODEL
*
START                TIME=0.0  PUNCH CODE=0  PRINT CODE=0
LOCATION              AHYM097
*
*S RAINFALL FROM COA DEVELOPMENT PROCESS MANUAL
*S *****
*S 100 YEAR 24HR STORM
*
RAINFALL              TYPE=13
                      QUARTER=1.46 IN
                      HOUR= 1.87 IN
                      SIX HR= 2.20 IN
                      DAY= 2.66 IN    DT=0.033333
*
*
****Adding Sediment Bulk Factor to all Basins
SEDIMENT BULKCODE=1 BULK FACTOR=1.06
*
*
*** Sub-BASIN 202.1 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                      NK=3  ISLOPE=1
                      LENGTH=400 FT  SLOPE=0.053  K=0.7
                      LENGTH=1600 FT  SLOPE=0.056  K=2.0
                      LENGTH=440 FT  SLOPE=0.039  K=3.0
COMPUTE NM HYD          ID=1  HYD NO=202.1  DA=0.09730 SQ MI
                      PER A=0 PER B=18 PER C=19 PER D=63
                      TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1  CODE=1
*
*
****Route HYD 202.1 to Sub-Basin 202.2
COMPUTE RATING CURVE    CID=1 VS NO=1 NO SEGS=1
                      MIN ELEV=100 FT MAX ELEV=105 FT
                      CH SLP=0.005  FP SLP=0.02 N=0.013
                      DIST=20 FT

                      DIST  ELEV
                          0    105
                          10   100
                          15   100
                          20   105
*
ROUTE MCUNGE           ID=2  HYD NO=202.1RT  INFLOW ID=1
                      DT=0 HR  LENGTH=1080 FT
                      NS=0  SLOPE=0.005
*
PRINT HYD              ID=2  CODE=1
*
*
*** Sub-BASIN 202.2 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

                                NK=3    ISLOPE=1
                                LENGTH=400 FT    SLOPE=0.050    K=0.7
                                LENGTH=1100 FT    SLOPE=0.039    K=2.0
                                LENGTH=170 FT    SLOPE=0.029    K=3.0
COMPUTE NM HYD                    ID=1    HYD NO=202.2    DA=0.06312 SQ MI
                                PER A=0 PER B=18 PER C=19 PER D=63
                                TP=0.0    MASSRAIN=-1
*
PRINT HYD                        ID=1    CODE=1
*
*
* Total Flow from Basin (202.1RT + 202.2)
ADD HYD                          ID=1    HYD NO=202.2SUM ID I=2    ID II=1
PRINT HYD                        ID=1    CODE=1
*
*S AP1
*
*
****Route HYD 202.2SUM to Sub-Basin 201.2 Through a Pipe
COMPUTE RATING CURVE            CID=1    VS NO=1 CODE=-1    SLP=0.02
                                DIA=54 IN    N=0.013
*
ROUTE MCUNGE                    ID=3    HYD NO=202.2SUMRT    INFLOW ID=1
                                DT=0 HR    LENGTH=1043 FT
                                NS=0    SLOPE=0.02
*
PRINT HYD                        ID=3    CODE=1
*
*
*****
*** Sub-BASIN 201.1 ***
*
COMPUTE LT TP                    LCODE=1    UPLAND/LAG TIME METHOD
                                NK=2    ISLOPE=1
                                LENGTH=280 FT    SLOPE=0.096    K=0.7
                                LENGTH=2145 FT    SLOPE=0.038    K=2.0
COMPUTE NM HYD                    ID=1    HYD NO=201.1    DA=0.05919 SQ MI
                                PER A=0 PER B=18 PER C=19 PER D=63
                                TP=0.0    MASSRAIN=-1
*
PRINT HYD                        ID=1    CODE=1
*
*
****Route HYD 201.1 to Sub-Basin 201.2
COMPUTE RATING CURVE            CID=1 VS NO=1 NO SEGS=1
                                MIN ELEV=100 FT MAX ELEV=105 FT
                                CH SLP=0.005 FP SLP=0.02 N=0.013
                                DIST=20 FT

                                DIST    ELEV
                                    0    105
                                10    100
                                15    100
                                20    105
*
ROUTE MCUNGE                    ID=2    HYD NO=201.1RT    INFLOW ID=1
                                DT=0 HR    LENGTH=1175 FT
                                NS=0    SLOPE=0.005
*
PRINT HYD                        ID=2    CODE=1

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
*
*** Sub-BASIN 201.2 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                        NK=2    ISLOPE=1
                        LENGTH=220 FT  SLOPE=0.050  K=0.7
                        LENGTH=965 FT  SLOPE=0.041  K=2.0
COMPUTE NM HYD          ID=1    HYD NO=201.2  DA=0.04149 SQ MI
                        PER A=0 PER B=18  PER C=19  PER D=63
                        TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1    CODE=1
*
*
* Total Flow from Basin (201.1RT + 201.2)
ADD HYD                ID=1    HYD NO=201.2SUMA ID I=2  ID II=1
PRINT HYD              ID=1    CODE=1
*
*
* Total Flow from Basin (201.2SUMA + 202.2SUMRT)
ADD HYD                ID=1    HYD NO=201.2SUMB ID I=1  ID II=3
PRINT HYD              ID=1    CODE=1
*
*
****Route HYD 201.2SUMB to Sub-Basin 203 Through a Pipe
COMPUTE RATING CURVE   CID=1    VS NO=1 CODE=-1  SLP=0.03
                        DIA=66 IN  N=0.013
*
ROUTE MCUNGE           ID=3    HYD NO=201.2SUMBRT  INFLOW ID=1
                        DT=0 HR  LENGTH=1175 FT
                        NS=0    SLOPE=0.03
*
PRINT HYD              ID=3    CODE=1
*
*S AP2
*
*****
*
*** Sub-BASIN 205.11 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                        NK=2    ISLOPE=1
                        LENGTH=250 FT  SLOPE=0.040  K=0.7
                        LENGTH=170 FT  SLOPE=0.037  K=2.0
COMPUTE NM HYD          ID=1    HYD NO=205.11  DA=0.02628 SQ MI
                        PER A=0 PER B=41  PER C=22  PER D=37
                        TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1    CODE=1
*
*
*** Sub-BASIN 204.1 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                        NK=1    ISLOPE=1
                        LENGTH=310 FT  SLOPE=0.039  K=0.7
                        LENGTH=730 FT  SLOPE=0.033  K=2.0
COMPUTE NM HYD          ID=2    HYD NO=204.1  DA=0.04298 SQ MI

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

PER A=0 PER B=18 PER C=19 PER D=63
TP=0.0 MASSRAIN=-1
*
PRINT HYD ID=2 CODE=1
*
* Total Flow from Basin (205.11 + 204.1)
ADD HYD ID=1 HYD NO=204SUMA ID I=2 ID II=1
PRINT HYD ID=1 CODE=1
*
****Route HYD 204.SUMA to Sub-Basin 203 Through a Pipe
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.023
DIA=54 IN N=0.013
*
ROUTE MCUNGE ID=2 HYD NO=204.1RT INFLOW ID=1
DT=0 HR LENGTH=1100 FT
NS=0 SLOPE=0.023
*
PRINT HYD ID=2 CODE=1
*
*** Sub-BASIN 203 ****
*
COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD
NK=1 ISLOPE=1
LENGTH=310 FT SLOPE=0.039 K=0.7
LENGTH=1230 FT SLOPE=0.033 K=2.0
COMPUTE NM HYD ID=1 HYD NO=203 DA=0.04143 SQ MI
PER A=0 PER B=18 PER C=19 PER D=63
TP=0.0 MASSRAIN=-1
*
PRINT HYD ID=1 CODE=1
*
* Total Flow from Basin (204.1RT + 203)
ADD HYD ID=1 HYD NO=203SUMA ID I=2 ID II=1
PRINT HYD ID=1 CODE=1
*
* Total Flow from Basin (203SUMA + 201.2SUMRT)
ADD HYD ID=1 HYD NO=203SUMB ID I=1 ID II=3
PRINT HYD ID=1 CODE=1
*
****Route HYD 203SUMB to Sub-Basin 207 Through a Pipe
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.035
DIA=66 IN N=0.013
*
ROUTE MCUNGE ID=3 HYD NO=203SUMBRT INFLOW ID=1
DT=0 HR LENGTH=1175 FT
NS=0 SLOPE=0.035
*
PRINT HYD ID=3 CODE=1
*
*S AP3
*
*****
*** Sub-BASIN 204.2 ****
*
COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

                                NK=1    ISLOPE=1
                                LENGTH=310 FT    SLOPE=0.039    K=0.7
                                LENGTH=1230 FT    SLOPE=0.033    K=2.0
COMPUTE NM HYD                ID=1    HYD NO=204.2    DA=0.04529 SQ MI
                                PER A=0 PER B=18 PER C=19 PER D=63
                                TP=0.0    MASSRAIN=-1
*
PRINT HYD                      ID=1    CODE=1
*
*
****Route HYD 204.2 to Sub-Basin 207 Through a Pipe
COMPUTE RATING CURVE          CID=1    VS NO=1 CODE=-1    SLP=0.023
                                DIA=54 IN    N=0.013
*
ROUTE MCUNGE                  ID=2    HYD NO=204.2RT    INFLOW ID=1
                                DT=0 HR    LENGTH=1100 FT
                                NS=0    SLOPE=0.023
*
PRINT HYD                      ID=2    CODE=1
*
*
*** Sub-BASIN 207 ****
*
COMPUTE LT TP                  LCODE=1    UPLAND/LAG TIME METHOD
                                NK=1    ISLOPE=1
                                LENGTH=310 FT    SLOPE=0.039    K=0.7
                                LENGTH=1230 FT    SLOPE=0.033    K=2.0
COMPUTE NM HYD                ID=1    HYD NO=207    DA=0.04365 SQ MI
                                PER A=0 PER B=18 PER C=19 PER D=63
                                TP=0.0    MASSRAIN=-1
*
PRINT HYD                      ID=1    CODE=1
*
*
* Total Flow from Basin (204.2RT + 207)
ADD HYD                        ID=1    HYD NO=207SUMA ID I=2    ID II=1
PRINT HYD                      ID=1    CODE=1
*
*
* Total Flow from Basin (203SUMBRT + 207SUMA)
ADD HYD                        ID=1    HYD NO=207SUMB ID I=3    ID II=1
PRINT HYD                      ID=1    CODE=1
*
*
****Route HYD 207SUMB to Sub-Basin 209.2 Through a Pipe
COMPUTE RATING CURVE          CID=1    VS NO=1 CODE=-1    SLP=0.038
                                DIA=72 IN    N=0.013
*
ROUTE MCUNGE                  ID=3    HYD NO=207SUMBRT    INFLOW ID=1
                                DT=0 HR    LENGTH=1695 FT
                                NS=0    SLOPE=0.038
*
PRINT HYD                      ID=3    CODE=1
*
*S AP4
*
*
*****
*** Sub-BASIN 209.1 ****
*

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

COMPUTE NM HYD          ID=1  HYD NO=209.1  DA=0.00772 SQ MI
                        PER A=0 PER B=0  PER C=20  PER D=80
                        TP=0.0  MASSRAIN=-1

*
PRINT HYD                ID=1  CODE=1
*
*
****Route HYD 209.1 to Sub-Basin 209.2
COMPUTE RATING CURVE      CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=100 FT MAX ELEV=105 FT
                        CH SLP=0.005  FP SLP=0.02  N=0.013
                        DIST=20 FT

                        DIST  ELEV
                        0      105
                        10     100
                        15     100
                        20     105

*
ROUTE MCUNGE              ID=2  HYD NO=209.1RT  INFLOW ID=1
                        DT=0 HR  LENGTH=500 FT
                        NS=0  SLOPE=0.005

*
*** Sub-BASIN 209.2 ****
*
COMPUTE NM HYD          ID=1  HYD NO=209.2  DA=0.01620 SQ MI
                        PER A=0 PER B=0  PER C=20  PER D=80
                        TP=0.0  MASSRAIN=-1

*
PRINT HYD                ID=1  CODE=1
*
*
* Total Flow from Basin (209.1RT + 209.2)
ADD HYD                  ID=1  HYD NO=209.2SUMA ID I=2  ID II=1
PRINT HYD                ID=1  CODE=1
*
*
****Route HYD 209.2SUMA to Sub-Basin 209.2SUMB Through a Pipe
COMPUTE RATING CURVE      CID=1  VS NO=1  CODE=-1  SLP=0.03
                        DIA=42 IN  N=0.013

*
ROUTE MCUNGE              ID=1  HYD NO=209.2SUMART  INFLOW ID=1
                        DT=0 HR  LENGTH=150 FT
                        NS=0  SLOPE=0.03

*
PRINT HYD                ID=1  CODE=1
*
*
* Total Flow from Basin (207SUMBRT + 209.2SUMART)
ADD HYD                  ID=10  HYD NO=209.2SUMC ID I=3  ID II=1
PRINT HYD                ID=10  CODE=1
*
*S AP5
*
****Route Hyd 209.2SUMC through Pond2
*
ROUTE RESERVOIR          ID=20  HYD NO=POND2  INFLOW ID=10  CODE=1
                        OUTFLOW (CFS)  STORAGE (AC FT)  ELEV
                        0                0                5204.21
                        3                0.287            5205

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

13	1.565	5206
25	3.402	5207
42	7.394	5209
52	11.731	5211
64	16.428	5213
72	21.498	5215
80	26.955	5217
88	32.809	5219
90	39.075	5221
91	45.767	5223
968	49.276	5224
2615	52.896	5225
4809	56.628	5226

*
*

*** Sub-BASIN 205.12 ***

*
 COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD
 NK=2 ISLOPE=1
 LENGTH=500 FT SLOPE=0.040 K=0.7
 LENGTH=870 FT SLOPE=0.037 K=2.0
 COMPUTE NM HYD ID=1 HYD NO=205.12 DA=0.03406 SQ MI
 PER A=0 PER B=41 PER C=22 PER D=37
 TP=0.0 MASSRAIN=-1

*
 PRINT HYD ID=1 CODE=1

*
 *****Route HYD 205.2SUM to Sub-Basin 206
 COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
 MIN ELEV=100 FT MAX ELEV=105 FT
 CH SLP=0.030 FP SLP=0.02 N=0.013
 DIST=20 FT

DIST	ELEV
0	105
10	100
15	100
20	105

*
 ROUTE MCUNGE ID=2 HYD NO=205.1RT INFLOW ID=1
 DT=0 HR LENGTH=1185 FT
 NS=0 SLOPE=0.030

*
 PRINT HYD ID=2 CODE=1

*
 *** Sub-BASIN 205.2 ***

*
 COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD
 NK=3 ISLOPE=1
 LENGTH=425 FT SLOPE=0.049 K=0.7
 LENGTH=840 FT SLOPE=0.021 K=2.0
 LENGTH=440 FT SLOPE=0.023 K=3.0
 COMPUTE NM HYD ID=1 HYD NO=205.2 DA=0.01917 SQ MI
 PER A=0 PER B=40.9 PER C=41.9 PER D=17.2
 TP=0.0 MASSRAIN=-1

*
 PRINT HYD ID=1 CODE=1

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
*
* Total Flow from Basin (205.1sumRT + 205.2)
ADD HYD          ID=1  HYD NO=205.2SUM ID I=1  ID II=2
PRINT HYD        ID=1  CODE=1
*
*
****Route HYD 205.2SUM to Sub-Basin 206
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
                      MIN ELEV=100 FT MAX ELEV=105 FT
                      CH SLP=0.005  FP SLP=0.02 N=0.013
                      DIST=20 FT

                      DIST  ELEV
                        0    105
                      10    100
                      15    100
                      20    105

*
ROUTE MCUNGE      ID=2  HYD NO=205.2SUMRT  INFLOW ID=1
DT=0 HR  LENGTH=1075 FT
NS=0  SLOPE=0.005

*
PRINT HYD          ID=2  CODE=1
*
*
*** Sub-BASIN 206 ****
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
                   NK=2  ISLOPE=1
                   LENGTH=445 FT  SLOPE=0.040  K=0.7
COMPUTE NM HYD     LENGTH=880 FT  SLOPE=0.020  K=3.0
                   ID=1  HYD NO=206  DA=0.03958 SQ MI
                   PER A=0.1 PER B=15.3 PER C=15.6 PER D=69.1
                   TP=0.0  MASSRAIN=-1

*
PRINT HYD          ID=1  CODE=1
*
*
* Total Flow from Basin (205.2SUMRT+ 206)
ADD HYD          ID=1  HYD NO=206SUM ID I=2  ID II=1
PRINT HYD        ID=1  CODE=1
*
*
****Route HYD 206SUM to Sub-Basin 209.3 Through a Pipe
COMPUTE RATING CURVE  CID=1  VS NO=1 CODE=-1  SLP=0.03
                      DIA=54 IN  N=0.013

*
ROUTE MCUNGE      ID=2  HYD NO=206SUMRT  INFLOW ID=1
DT=0 HR  LENGTH=1240 FT
NS=0  SLOPE=0.03

*
PRINT HYD          ID=2  CODE=1
*
*
*** Sub-BASIN 209.3 ****
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
                   NK=1  ISLOPE=1
                   LENGTH=675 FT  SLOPE=0.030  K=0.7

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

COMPUTE NM HYD          ID=1  HYD NO=209.3  DA=0.01522 SQ MI
                          PER A=0 PER B=0  PER C=15  PER D=85
                          TP=0.0  MASSRAIN=-1

*
PRINT HYD              ID=1  CODE=1
*
*
* Total Flow from Basin (206SUMRT + 209.3)
ADD HYD                ID=3  HYD NO=209.3SUMA ID I=2  ID II=1
PRINT HYD              ID=3  CODE=1
*
*S AP6
*
*
*****
*** Sub-BASIN 210 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                          NK=1  ISLOPE=1
                          LENGTH=3483 FT  SLOPE=0.026  K=0.7
COMPUTE NM HYD          ID=1  HYD NO=210  DA=0.10672 SQ MI
                          PER A=0 PER B=20  PER C=21  PER D=59
                          TP=0.0  MASSRAIN=-1

*
PRINT HYD              ID=1  CODE=1
*
*
****Route HYD 210 to Sub-Basin 211
COMPUTE RATING CURVE    CID=1 VS NO=1 NO SEGS=1
                          MIN ELEV=100 FT MAX ELEV=105 FT
                          CH SLP=0.005  FP SLP=0.02 N=0.013
                          DIST=20 FT

                          DIST  ELEV
                              0    105
                          10    100
                          15    100
                          20    105

*
ROUTE MCUNGE           ID=2  HYD NO=210RT  INFLOW ID=1
                          DT=0 HR  LENGTH=450 FT
                          NS=0  SLOPE=0.005

*
PRINT HYD              ID=2  CODE=1
*
*
*** Sub-BASIN 211 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                          NK=1  ISLOPE=1
                          LENGTH=936 FT  SLOPE=0.005  K=0.7
COMPUTE NM HYD          ID=1  HYD NO=211  DA=0.02820 SQ MI
                          PER A=16 PER B=5  PER C=21  PER D=58
                          TP=0.0  MASSRAIN=-1

*
PRINT HYD              ID=1  CODE=1
*
*
* Total Flow from Basin (210RT + 211)
ADD HYD                ID=30  HYD NO=POND3SUMA ID I=2  ID II=1

```

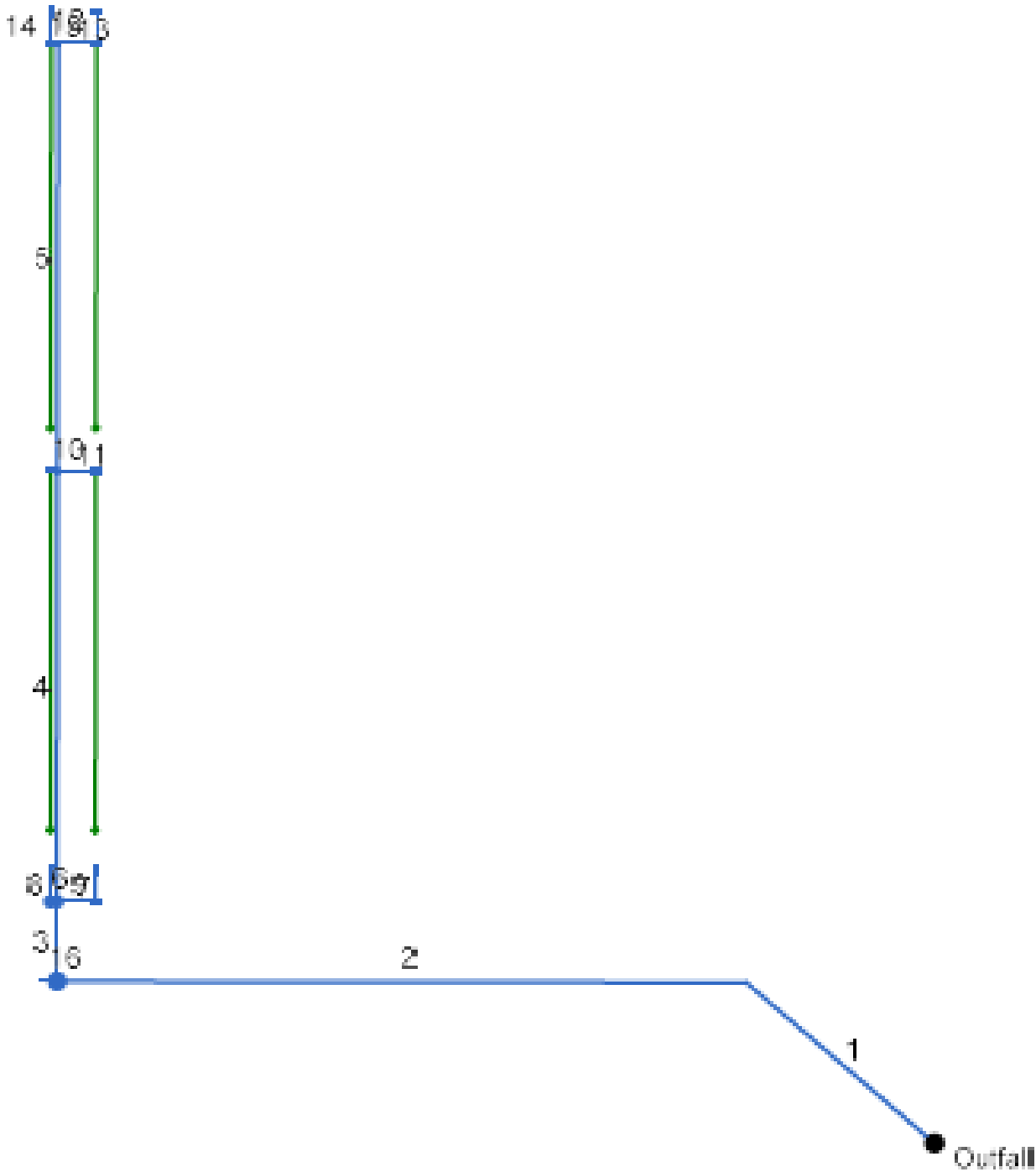
DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

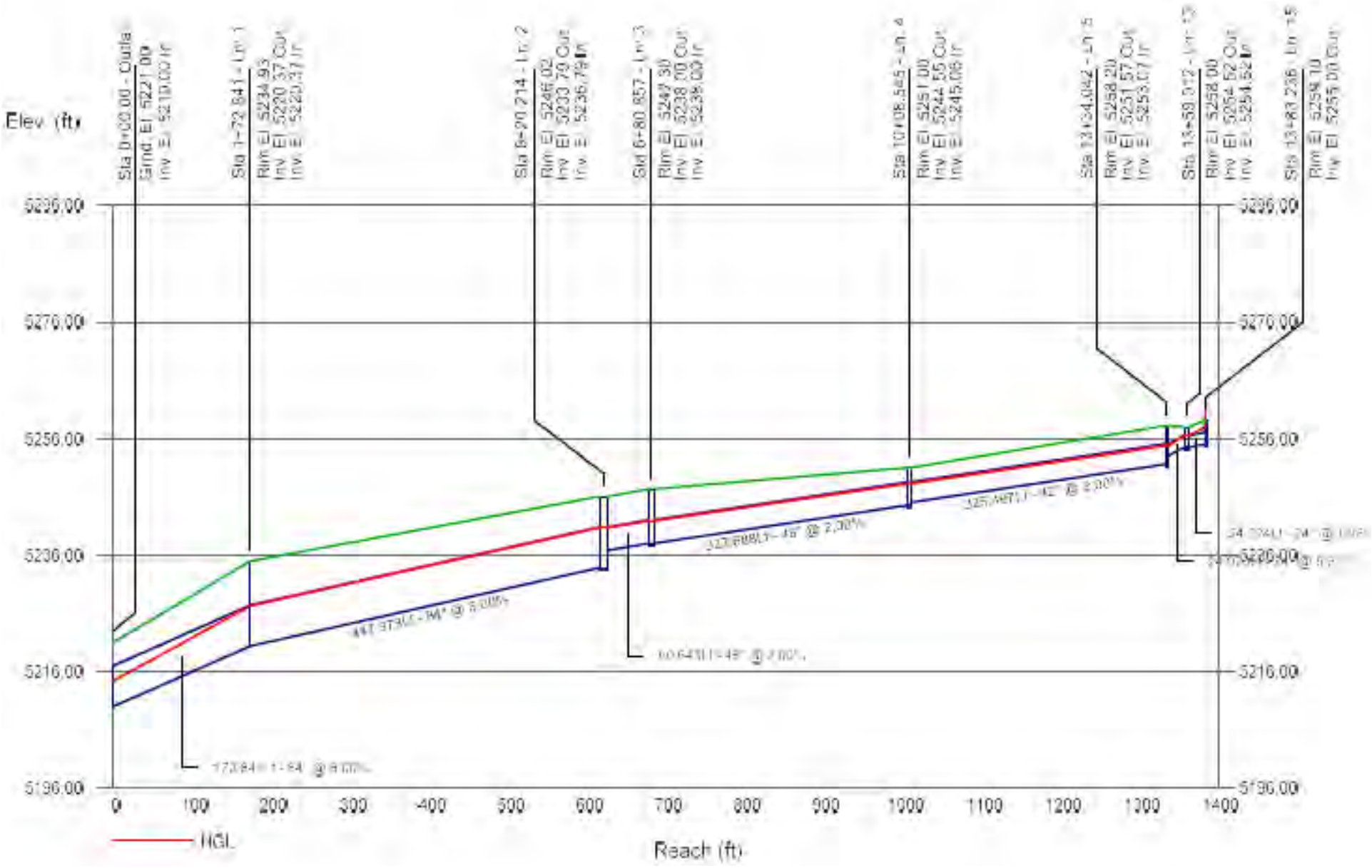
PRINT HYD                      ID=30   CODE=1
*
*
* Total Flow from Basin (209.3SUMA + 211)
ADD HYD                        ID=10   HYD NO=POND3SUMB ID I=3   ID II=30
PRINT HYD                      ID=10   CODE=1
*
*
*****
* Total Flow from Basin (POND3SUMB + POND2)
ADD HYD                        ID=30   HYD NO=POND3SUMC ID I=10   ID II=20
PRINT HYD                      ID=30   CODE=1
*
*
****Route Hyd POND3SUMB through Pond3
*
ROUTE RESERVOIR                ID=1   HYD NO=POND3   INFLOW ID=30   CODE=1
                                OUTFLOW (CFS)  STORAGE (AC FT)  ELEV
                                0              0              5201
                                5              0.934          5202
                                6              3.359          5203
                                27             6.08           5204
                                43             11.813         5206
                                55             17.946         5208
                                64             24.492         5210
                                72             31.465         5212
                                1137            35.115         5213
                                3122            38.877         5214
                                7217            44.733         5215.5
*
FINISH

```

Final Storm Drain Layout



Final Storm Drain Profile



Storm Drain Summary

Line No.	Line ID	Flow Rate (cfs)	Line Size (in)	Capacity Full (cfs)	Line Length (ft)	Invert Dn (ft)	Invert Up (ft)	Line Slope (%)	HGL Dn (ft)	HGL Up (ft)	Grnd/Rim Elev Up (ft)	HGL Jnct (ft)	DnStrm Line No.
1	OUTFALL	1018.19	84	1531.56	172.84	5210.00	5219.93	5.75	5214.40	5226.82	5234.93	5226.82	Outfall
2	VOLCANO 1	1018.19	84	1107.08	447.37	5219.93	5233.36	3.00	5226.82	5240.25	5246.02	5240.25	1
3	102ND 1	197.56	48	202.90	60.64	5236.36	5237.57	2.00	5240.25	5241.41	5245.04	5241.41	2
4	102ND 2	154.48	48	219.85	327.69	5237.58	5244.12	2.00	5241.41	5247.75	5250.91	5247.75	3
5	102ND 3	111.40	42	142.28	325.50	5244.62	5251.13	2.00	5247.75	5254.31	5258.15	5254.31	4
6	CB10	21.54	24	81.94	4.65	5239.57	5240.18	13.13	5241.41	5241.84j	5244.53	5241.84	3
7	CB9	21.54	24	37.88	24.59	5239.57	5240.26	2.81	5241.41	5241.92	5244.53	5241.92	3
8	CB8	21.54	24	31.83	24.26	5240.26	5240.74	1.98	5241.84	5242.40	5244.63	5242.40	6
9	CB7	21.54	24	31.83	24.26	5240.26	5240.74	1.98	5241.92	5242.40	5244.63	5242.40	7
10	CB6	21.54	24	74.46	4.61	5246.12	5246.62	10.84	5247.75	5248.28	5250.62	5248.28	4
11	CB5	21.54	24	32.01	24.97	5246.12	5246.62	2.00	5247.75	5248.28	5250.62	5248.28	4
12	CB4	55.70	24	103.20	4.66	5252.63	5253.60	20.82	5254.31	5255.59	5257.87	5255.59	5
13	CB3	55.70	24	44.58	24.97	5252.63	5253.60	3.89	5254.63	5256.15	5257.87	5263.48	5
14	CB2	55.70	24	31.84	24.22	5253.60	5254.08	1.98	5255.60	5257.07	5258.04	5261.96	12
15	CB1	55.70	24	31.84	24.22	5253.60	5254.08	1.98	5263.48	5264.95	5258.04	5269.84	13
16	VOLCANO 2	820.63	84	1107.27	10.00	5233.36	5233.66	3.00	5240.25	5240.40	5273.17	5240.40	2

Notes: j-Line contains hyd. jump

Storm Drain Inlets

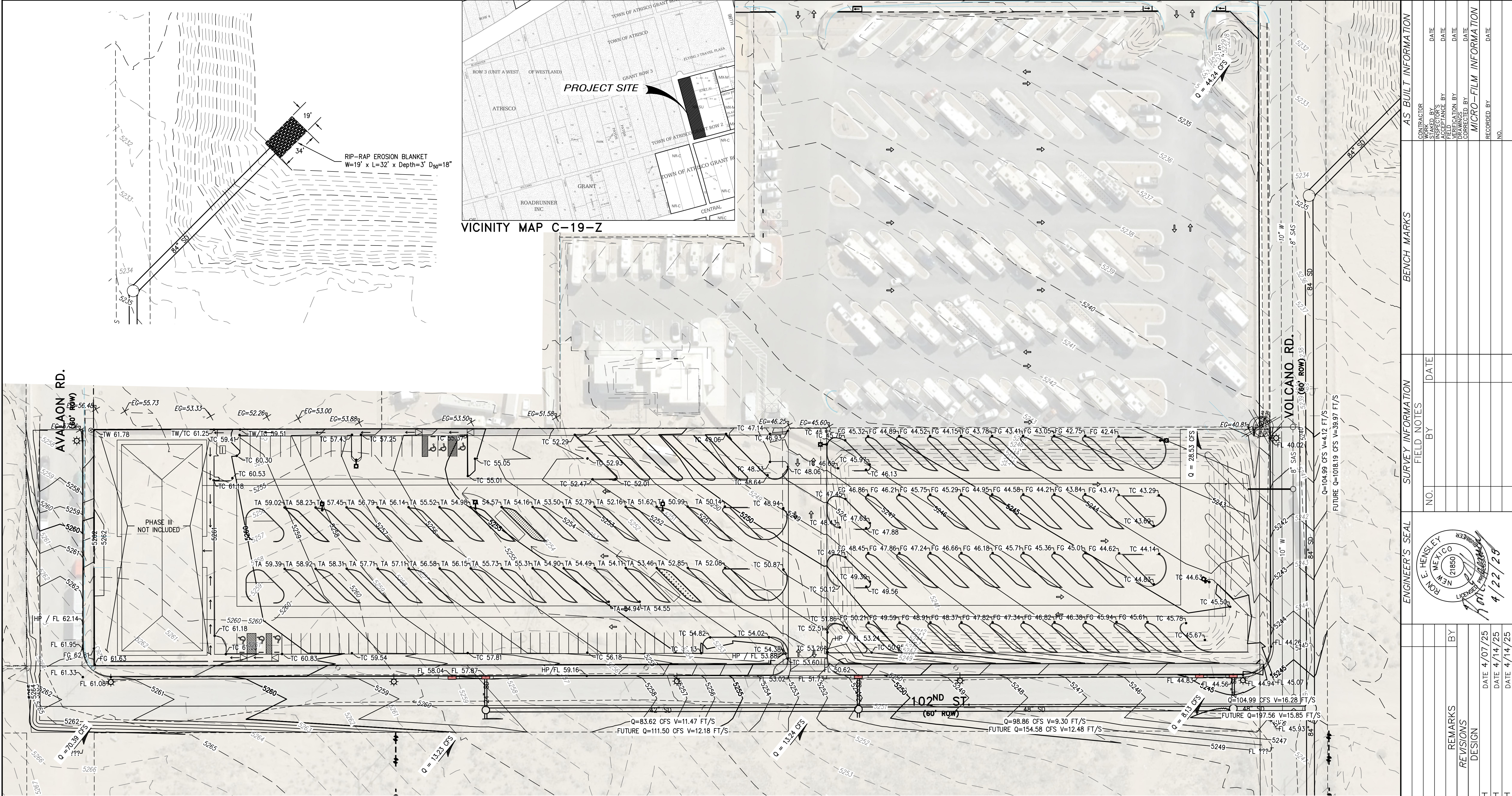
Line No.	Inlet ID	Line ID	Known Q (cfs)	Q Carryover (cfs)	Q Captured (cfs)	Q Bypass (cfs)	Gutter Depth (ft)	Grate Length (ft)	Grate Width (ft)	Gutter Spread (ft)
1	MH1	OUTFALL	0	....	....	....	....	....	....	....
2	MH2	VOLCANO 1	0.00	....	....	....	....	....	....	....
3	MH3	102ND 1	0.00	....	....	....	....	....	....	....
4	MH4	102ND 2	0.00	....	....	....	....	....	....	....
5	MH5	102ND 3	0.00	....	....	....	....	....	....	....
6	CB10	CB10	0.00	17.20	17.20	0.00	0.71	6.00	2.00	31.28
7	CB9	CB9	0.00	17.20	17.20	0.00	0.71	6.00	2.00	31.28
8	CB8	CB8	21.54	11.25	15.58	17.20	0.54	6.00	2.00	22.56
9	CB7	CB7	21.54	11.25	15.58	17.20	0.54	6.00	2.00	22.56
10	CB6	CB6	21.54	0.00	10.29	11.25	0.47	6.00	2.00	19.17
11	CB5	CB5	21.54	0.00	10.29	11.25	0.47	6.00	2.00	19.17
	CB4	CB4	0.00	33.49	33.49	0.00	1.10	6.00	2.00	50.57
13	CB3	CB3	0.00	33.49	33.49	0.00	1.10	6.00	2.00	50.57
14	CB2	CB2	55.70	0.00	22.21	33.49	0.64	6.00	2.00	27.64
15	CB1	CB1	55.70	0.00	22.21	33.49	0.64	6.00	2.00	27.64
16	FUTURE	VOLCANO 2	820.63	....	....	....	....	....	....	....

Storm Drain HGL Calcs

Line	Pipe Size	Q	Inv Elev Dn	HGL Dn	Depth Dn	Area Dn	Veloc Dn	Vel Hd Dn	EGL Dn	Line Length	Inv Elev Up	HGL Up	Depth Up	Area Up	Veloc Up	Vel Hd Up	EGL Up
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)
1	84	1018.19	5210.00	5214.40	4.40	25.47	39.97	10.96	5225.36	172.84	5219.93	5226.82	6.89**	38.35	26.55	10.96	5237.78
2	84	1018.19	5219.93	5226.82	6.89*	38.35	26.55	10.96	5237.78	447.37	5233.36	5240.25	6.89**	38.35	26.55	10.96	5251.21
3	48	197.56	5236.36	5240.25	3.89	12.39	15.85	3.95	5244.20	60.64	5237.57	5241.41	3.84**	12.39	15.94	3.95	5245.36
4	48	154.48	5237.58	5241.41	3.83	11.98	12.48	2.59	5244.00	327.69	5244.12	5247.75	3.63**	11.98	12.90	2.59	5250.33
5	42	111.40	5244.62	5247.75	3.13	9.07	12.28	2.29	5250.04	325.50	5251.13	5254.31	3.18**	9.18	12.13	2.29	5256.60
6	24	21.54	5239.57	5241.41	1.84	2.79	7.13	0.93	5242.34	4.65	5240.18	5241.84 j	1.66**	2.79	7.73	0.93	5242.77
7	24	21.54	5239.57	5241.41	1.84	2.79	7.13	0.93	5242.34	24.59	5240.26	5241.92	1.66**	2.79	7.73	0.93	5242.85
8	24	21.54	5240.26	5241.84	1.58	2.66	8.10	0.93	5242.77	24.26	5240.74	5242.40	1.66**	2.79	7.73	0.93	5243.33
9	24	21.54	5240.26	5241.92	1.66*	2.79	7.73	0.93	5242.85	24.26	5240.74	5242.40	1.66**	2.79	7.73	0.93	5243.33
10	24	21.54	5246.12	5247.75	1.63	2.74	7.87	0.93	5248.68	4.61	5246.62	5248.28	1.66**	2.79	7.73	0.93	5249.21
11	24	21.54	5246.12	5247.75	1.63	2.74	7.87	0.93	5248.68	24.97	5246.62	5248.28	1.66**	2.79	7.73	0.93	5249.21
12	24	55.70	5252.63	5254.31	1.68	2.82	19.76	4.90	5259.21	4.66	5253.60	5255.59	1.99**	3.14	17.75	4.90	5260.48
13	24	55.70	5252.63	5254.63	2.00*	3.14	17.73	4.89	5259.52	24.97	5253.60	5256.15	2.00	3.14	17.73	4.89	5261.03
14	24	55.70	5253.60	5255.60	2.00*	3.14	17.73	4.89	5260.49	24.22	5254.08	5257.07	2.00	3.14	17.73	4.89	5261.96
15	24	55.70	5253.60	5263.48	2.00	3.14	17.73	4.89	5268.37	24.22	5254.08	5264.95	2.00	3.14	17.73	4.89	5269.84
16	84	820.63	5233.36	5240.25	6.89	38.03	21.40	7.24	5247.49	10.00	5233.66	5240.40	6.74**	38.03	21.58	7.24	5247.64

Notes: * depth assumed ** Critical depth.; j-Line contains hyd. jump; z-Zero Junction Loss

VIII. EXHIBITS



EROSION CONTROL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL (CITY) ACCEPTANCE OF ANY PROJECT.

NOTES

ALL WORK WITHIN CITY ROW SHALL REQUIRE WORK ORDER.

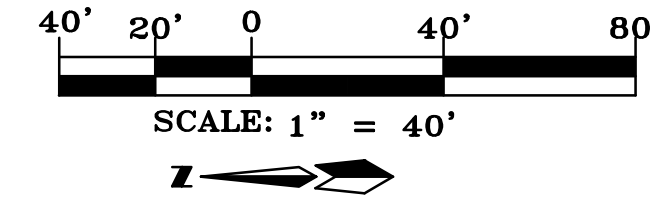
THE ENGINEER HAS UNDERTAKEN LIMITED FIELD VERIFICATION OF THE LOCATION, DEPTH, SIZE, OR TYPE OF EXISTING UNDERGROUND UTILITY LINES, MAKES NO REPRESENTATION PERTAINING THERETO AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFORE. THE CONTRACTOR SHALL INFORM ITSELF OF THE LOCATION OF ANY UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY, AND PRESERVE ANY AND ALL EXISTING UTILITIES. THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES AND REGULATIONS PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES IN PLANNING AND CONDUCTING EXCAVATION, WHETHER BY CALLING OR NOTIFYING THE UTILITIES, COMPLYING WITH "BLUE STAKES" PROCEDURES, OR OTHERWISE.

THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL REMAIN THE RESPONSIBILITY OF THE CONTRACTOR.

THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, ARE INTENDED FOR USE ON THIS PROJECT AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF THE GROUP. IN THE EVENT OF UNAUTHORIZED USE, THE USER ASSUMES ALL RESPONSIBILITY AND LIABILITY WHICH RESULTS.

GENERAL NOTES:

1. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED UNDER THIS CONTRACT SHALL, EXCEPT AS OTHERWISE STATED OR PROVIDED HEREIN, BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 2020 EDITION.
2. THE EROSION PROTECTION SPECIFIED ON THIS PLAN IS THE MINIMUM RECOMMENDED. THE OWNER IS ENCOURAGED TO INCORPORATE EROSION RESISTANT LANDSCAPING ON AREAS WHERE EROSION MAY OCCUR SUCH AS SLOPES AND SWALES. THE OWNER IS RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION CONTROL FEATURES NECESSARY TO PRESERVE THE DESIGN INTENT OF THE GRADING PLAN.
3. THE DRAINAGE INFRASTRUCTURE SHOWN ON THIS PLAN IS THE RESPONSIBILITY OF THE PROPERTY OWNER.
4. ALL DISTURBED AREAS OUTSIDE THE BUILDING ENVELOPE MUST BE RESEED IN ACCORDANCE WITH COA STD SPEC. 1013.
5. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, (260-1990) FOR LOCATION OF EXISTING UTILITIES.
6. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL OBSTRUCTIONS AND EXISTING PAVEMENT. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OR SURVEYOR SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM OF DELAY.



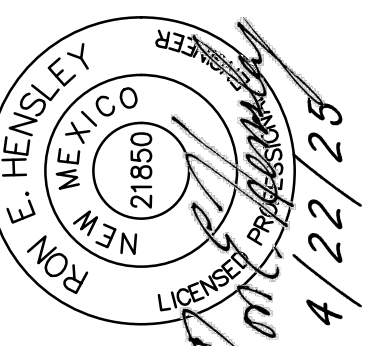
LEGEND

- SLOPE/FLOW ARROW
- EL=11.28 PROPOSED ELEVATION
- 66.33 EXISTING ELEVATION
- GRADE BREAK
- 5000 EXISTING CONTOUR
- 5000 EXISTING CONTOUR
- PROPOSED EASEMENT
- EXISTING WALL
- PROPOSED WALL



CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP PARADISE RV PARK PHASE 2 TRACT 5 GRADING AND DRAINAGE PLAN			
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	Mo./DAY/YR.	Mo./DAY/YR.
CITY PROJECT No. 676280		ZONE MAP NO. K-08	SHEET OF

ENGINEER'S SEAL



REVISIONS

NO.	DATE	REMARKS	BY
DESIGNED BY	REH	DATE 4/07/25	
DRAWN BY	REH	DATE 4/14/25	
CHECKED BY	REH	DATE 4/14/25	

SURVEY INFORMATION

NO.	DATE	FIELD NOTES
BY		

BENCH MARKS

AS BUILT INFORMATION

CONTRACTOR	DATE
STAKED BY	DATE
INSPECTOR'S	DATE
ACCEPTANCE BY	DATE
FIELD	DATE
VERIFICATION BY	DATE
DRAWINGS	DATE
CORRECTED BY	DATE
MICRO-FILM INFORMATION	
RECORDED BY	DATE
NO.	